

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of

Broadband Industry Practices

WC Docket No. 07-52

**COMMENTS OF VERIZON AND VERIZON WIRELESS  
ON THE NOTICE OF INQUIRY**

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**INTRODUCTION AND SUMMARY**

As a result of the Commission's procompetitive approach to the broadband marketplace, the Internet is evolving to meet new consumer demands with new technological capabilities. The industry has experienced massive new broadband investment resulting in increased availability of broadband from multiple, competing technologies and providers, as well as the increased adoption and use of broadband by consumers, who are benefiting from increasing speeds, falling prices, and innovation to better meet their demands.

As the Commission has recognized, broadband competition is intense and growing. More than half of United States households now subscribe to broadband Internet access services. Cable and DSL compete vigorously nationwide, and there are multiple other broadband alternatives available to most consumers, with additional choices rapidly emerging. The Commission's policies have been particularly successful at promoting investment in next-generation broadband networks. Investing nearly \$23 billion, Verizon has led the charge in fiber deployment and now makes its fiber-to-the-premises network (FiOS) available to 6.8 million

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<sup>1</sup> In addition to Verizon Wireless, the Verizon companies participating in this filing ("Verizon") are the regulated, wholly owned subsidiaries of Verizon Communications Inc.

homes and businesses, with plans to pass 18 million homes and businesses with FiOS by the end of 2010. Verizon's investments are prompting competitors – such as the cable companies and other broadband providers – to respond, which has benefited consumers with lower prices and increased speed and quality. Competitive alternatives include 3G mobile wireless, fixed wireless/WiMAX, WiFi, broadband over powerline, and satellite. Verizon Wireless's 3G technology, for example, now reaches 242 major United States cities with a total population of more than 200 million people. The Commission should continue its procompetitive, pro-investment approach, which has encouraged the rapid deployment of multiple, competing broadband technologies.

Maintaining that procompetitive approach will permit the continued development of an open Internet that fosters innovation and competition, and that better meets consumers' evolving demands. Proposals to regulate broadband Internet services – to impose what proponents euphemistically label “net neutrality,” but which they never precisely and fully define – should be rejected. Regulation of broadband Internet services would thwart the healthy development of the Internet by essentially freezing in place current business models, including so-called “best efforts” service from access and network providers, even though other models may better serve consumers and even though existing competition protects against abuses. For example, it is estimated that peer-to-peer file sharing services like BitTorrent already consume more than one-half of Internet bandwidth, and the video-sharing website YouTube alone consumes as much bandwidth today as the entire Internet consumed in 2000. Broadband regulation could hinder the Internet's ability to respond to the growth in bandwidth use by discouraging investment in networks and prohibiting efficient network-management services. Likewise, such regulation could prevent other innovations by broadband providers aimed at enabling new Internet

applications, such as medical monitoring, or improving existing services, such as streaming video, by addressing latency. And new regulation might impede the development of new business models that would free the end user from having to bear the entire cost of network investments – an advancement that would lower prices, strengthen demand, and generate even greater investments in next-generation broadband infrastructure.

There is no history of problems that could indicate a need for regulatory intervention that would risk those harms to broadband competition and investment. Indeed, with competition in the provision of broadband services growing ever more intense, the prospect of problems demanding a regulatory cure grows more remote. Moreover, empirical evidence demonstrates the benefits of the Commission’s past deregulatory decisions. For example, Professor Thomas Hazlett has shown that the Commission’s past deregulation of DSL service, to take one example, spurred significant gains in broadband subscribership, resulting in an estimated increase in consumer surplus of more than \$2 billion per year.

**I. BROADBAND COMPETITION IS ROBUST AND GROWING, AND CONSUMERS ARE THE BENEFICIARIES**

The United States broadband marketplace is vigorously competitive. Proponents of broadband regulation nonetheless incorrectly claim that network providers have power in the market for residential broadband access – the “last mile” to the home – and that those providers might leverage that power to harm the upstream market for Internet content and applications. As an initial matter, that claim ignores the reality that the content-and-applications market is at least national, and probably global. Thus, only a network provider with power in the national or global market for broadband access could possibly engage in the type of anticompetitive conduct that regulation advocates forecast, and no provider has power in those markets. *See infra* Part IV.B. In any event, competition in the last mile is thriving in most areas. Multiple network

providers compete in the market for broadband access, and there are many emerging network platforms that are rapidly deploying and gaining subscribers. Competition among those network providers, and the ongoing, heavy investments supporting it, benefits consumers.

Approximately 53 percent of all United States households subscribe to broadband.<sup>2</sup> And broadband now accounts for about 72 percent of all home Internet subscriptions – up from 60 percent last year.”<sup>3</sup> As of the end of the first quarter of 2007, Nielsen//NetRatings reported that 80 percent of “active Internet users” already had a broadband connection at home.<sup>4</sup> The Commission, courts, and state regulators have all recognized that the market for present and future broadband subscribers is vigorously competitive.<sup>5</sup> The broadband marketplace is generally characterized by falling prices, increasing transmission speeds, multiple competitors, large new investments, and rapidly developing content and applications.

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<sup>2</sup> Press Release, Leichtman Research Group, *Over Half of U.S. Households Subscribe to Broadband Internet* (June 7, 2007), <http://www.leichtmanresearch.com/press/060707release.html>.

<sup>3</sup> *Id.*

<sup>4</sup> Simon Flannery, *et al.*, Morgan Stanley, *Cable & Telecom; As Broadband Matures, Speeds (and CapEx) Rise* Exh. 21 (Apr. 23, 2007) (1Q07 estimate).

<sup>5</sup> See *EarthLink Inc. v. FCC*, 462 F.3d 1, 11 (D.C. Cir. 2006) (upholding as “reasonable” the Commission’s determination that “[t]he broadband market is still an emerging and changing market, where, as the [Commission] previously has concluded, the preconditions for monopoly are not present. In particular, actual and potential intermodal competition informs rational competitors’ decisions concerning next-generation broadband technologies.”) (internal quotation marks omitted); *United States Telecom Ass’n v. FCC*, 359 F.3d 554, 582 (D.C. Cir. 2004) (“agree[ing]” with Commission’s determination that “intermodal competition in broadband, particularly from cable companies,” ensures “vigorous competition” in the broadband market); see also Cal. Pub. Utils. Comm’n, *Broadband Deployment in California*, Ch. 2, at 6 (May 5, 2005), [http://www.cpuc.ca.gov/word\\_pdf/final\\_decision/46428\\_d0505013\\_bbreport\\_2of9.pdf](http://www.cpuc.ca.gov/word_pdf/final_decision/46428_d0505013_bbreport_2of9.pdf) (“All four broadband technologies surveyed . . . (Wireless, DSL, Cable and Satellite) are available in 26% of California zip codes, and 39% of California zip codes have DSL, Cable and Satellite broadband technologies available.”); N.Y. Dep’t of Pub. Serv. Staff, *Telecommunications in New York: Competition and Consumer Protection*, Case 05-C-0616, App. E (Sept. 21, 2005), [http://www3.dps.state.ny.us/pscweb/WebFileRoom.nsf/Web/C76443168615205885257083006ADF64/\\$File/05c0616.coverltr.09.21.05.pdf](http://www3.dps.state.ny.us/pscweb/WebFileRoom.nsf/Web/C76443168615205885257083006ADF64/$File/05c0616.coverltr.09.21.05.pdf) (“[I]t is critical to point out that the ILECs will be constrained from raising the prices of discretionary packages given the percentage of customers having reasonable intermodal options. As noted above, 93% of Verizon NY’s customers have two alternative platforms available to them.”).

**Falling Prices.** Overall, broadband prices – particularly, prices relative to bandwidth – are declining. The average cost of one megabit per second (“Mbps”) in 2002 was more than \$26 per month; by last year, it had dropped to \$7.<sup>6</sup> In the case of DSL services, average prices have fallen by more than 30 percent since 2002.<sup>7</sup> Cable modem operators also have reduced their prices for bandwidth, most often by offering consumers more bandwidth for the same price, and by offering various promotions. On a per Mbps basis, cable modem prices have decreased by 70 percent (in real terms) over the past three years,<sup>8</sup> not considering further discounts that are available to customers who buy their cable modem service as part of a bundle with voice and cable services.<sup>9</sup> Wireless broadband cost \$150-\$1000 per Mbps three years ago, and is down to approximately \$52 to \$178 per Mbps today.<sup>10</sup>

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<sup>6</sup> Arik Hesseldahl, *More Bandwidth Than You Can Use?*, BusinessWeek (May 29, 2007), [http://www.businessweek.com/technology/content/may2007/tc20070529\\_569646.htm](http://www.businessweek.com/technology/content/may2007/tc20070529_569646.htm).

<sup>7</sup> See generally J. Hodulik, *et al.*, UBS Investment Research, *Wireline Postgame Analysis 18.0*, 5 (May 31, 2007) (“Average DSL ARPU at the Bells was roughly \$26.9 in the first quarter.”); Mike McCormack, *et al.*, Bear Stearns, *March Broadband Buzz: A Monthly Update on Critical Broadband Issues 5* (Mar. 12, 2007) (“The weighted average DSL ARPU for large cap telecom fell . . . 2.3%, to \$32.06. . . . The decrease represents the ninth consecutive quarter of declining DSL ARPU and a reversal to the improving rates of decline experienced over the last two quarters. We note that AT&T, BellSouth, and Verizon all reported an acceleration in price declines.”); Craig Moffett, *et al.*, Bernstein Research, *Broadband Update: “Value Share” and “Subscriber Share” Have Diverged* Exh. 1 (Apr. 21, 2006) (Average revenue for DSL has fallen from \$45 per month in 2002 to \$31 per month in 2006).

<sup>8</sup> See Scott Cleland, NetCompetition.org, *Why Competition Obviates Net Neutrality*, presentation for the FTC Internet Access Task Force 5 (Sept. 26, 2006) (“*Cleland September 26, 2006 Presentation*”) (“Real cable modem prices have fallen ~70% as speeds have increased from 1.5Mbps to 5+ Mbps over the last two years with no price increase.”); see also, e.g., Jim Hu, *Comcast To Raise Broadband Speed*, CNET News.com (Jan. 16, 2005), [http://news.com.com/Comcast+raises+broadband+speed/2100-1034\\_3-5537306.html](http://news.com.com/Comcast+raises+broadband+speed/2100-1034_3-5537306.html).

<sup>9</sup> See Craig Moffett, *et al.*, Bernstein Research, *Quarterly VoIP Monitor: Playing Follow the Leader (. . . Cablevision, That Is)* 8-9 (Sept. 20, 2006).

<sup>10</sup> See Mike McCormack & Phil Cusick, Bear Stearns, *Wireless Broadband: The Impact of 802 Technology* Exh. 34 (June 2004) (AT&T Wireless offered GPRS/EDGE service at 100-130 kbps for \$19.99 per month for 8 MB; Verizon Wireless offered 1XRTT service at 40-60 kbps for \$39.99 per month for 20 MB); News Release, Verizon Wireless, *Verizon Wireless Rolls Out Faster EV-DO Revision A Wireless Broadband Network in Greater Chicago Area* (Feb. 2, 2007), <http://news.vzw.com/news/2007/02/pr2007-02-02.html>; Sprint Nextel, *Sprint Mobile Broadband Network*, <http://powervision.sprint.com/mobilebroadband/> (last visited June 8, 2007) (Sprint’s EV-DO

Verizon Online offers two main variations of residential DSL, with maximum download/upload connection speeds up to 768/128 kbps and 3 Mbps/768 kbps, respectively. Currently, the former variation can be purchased for as low as \$14.99 per month, while the faster variation (at up to four times the speed) is approximately twice that price. Verizon's two most popular variations of FiOS (with speeds up to 5/2 Mbps and 15/2 Mbps, respectively) are currently offered for as low as \$39.99 per month and \$49.99 per month, respectively. In addition, Verizon Wireless markets wireless 3G broadband access for laptops for \$79.99 per month.

**Increased Speed and Quality.** Broadband providers also continually improve the speed and quality of their services. In the past three years, the downstream speeds of major cable operators' fastest offerings have increased from 2-4 Mbps to 4-15 Mbps, while the major DSL operators have increased their top downstream speeds from less than 1 Mbps to 2-3 Mbps.<sup>11</sup> Further, telephone companies' massive investments in fiber-to-the-premises and fiber-to-the-node technologies promise quantum leaps in speed and service offerings, as well as improved reliability due to fiber-optic cable's resistance to moisture and decay. Verizon's FiOS network, for example, provides greater capacity and capabilities than any other network available to mass-market consumers today, including higher-speed Internet access, more video programming channels than the typical cable provider, best-of-class voice services, and other advanced

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Rev. A service offers download speeds of 600 kbps-1.4 Mbps; unlimited service is \$59.99 per month with a voice subscription and two-year contract); Verizon Wireless, *Broadband Access*, <http://www.verizonwireless.com/b2c/store/controller?item=planFirst&action=viewPlanDetail&sortOption=priceSort&catId=409> (last visited June 8, 2007) (Verizon Wireless's EV-DO Rev. A service offers download speeds of 400-700 kbps; unlimited service is \$79.99 per month with a one-year contract).

<sup>11</sup> See Craig Moffett & Amelia Wong, Bernstein Research, *Patchwork Pipes: The Dumb Pipe Paradox, Part II*, 3 (Feb. 28, 2006) ("The Dumb Pipe Paradox, Part II"); see also John Hodulik, et al., UBS Investment Research, *Is the Broadband Duopoly Under Threat?* 3 (May 10, 2006) ("Wired downstream speeds of 1-3 Mbps two years ago have been upgrade to 3-6 Mbps today. . . . Meanwhile, prices have come down dramatically.").

features such as multi-room digital video recorders. FiOS already offers speeds of up to 50 Mbps in some areas, and speeds of 100 Mbps or more will be provided in the future. In areas where it has been deployed, FiOS has already prompted cable operators to respond by lowering their prices (or increasing the quality of their service offerings) with respect to both high-speed Internet access and cable services.<sup>12</sup> At the May 2007 National Cable & Telecommunications Association show, Comcast demonstrated cable modem technology that promises to deliver speeds of up to 150 Mbps, which cable developed to respond to the competitive threat posed by new fiber networks such as FiOS.<sup>13</sup>

**Multiple Competitors and Platforms.** The vast majority of consumers in the United States live in areas with *at least* three competitive platforms for broadband, and consumers' broadband options are quickly increasing. According to Commission data, as of June 2006, 87 percent of U.S. zip codes have three or more broadband providers, up from 58 percent in June 2003. Sixty-three percent of U.S. zip codes are served by five or more broadband providers, up from 33 percent in June 2003. In one in five zip codes, there are now *10 or more* broadband choices.<sup>14</sup> Three years ago, broadband alternatives other than cable and DSL accounted for less

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<sup>12</sup> See, e.g., David W. Barden, *et al.*, Bank of America, *Battle for the Bundle: Consumer Wireline Services Pricing* 9 (Jan. 23, 2006) (“The rollout of Verizon’s FiOS service in select markets has elicited thinly advertised, yet highly competitive pricing responses for incumbent cable providers. . . . In each of these markets the respective cable provider . . . has responded with competitive pricing, well below their national average. . . . We discovered that incumbent cable customer sales reps were willing to offer more competitive pricing after mentioning FiOS, and significantly more competitive than Web pricing and out-of-region pricing.”).

<sup>13</sup> Ryan Nakashima, *Comcast CEO Shows Off Super Quick Modem*, Associated Press (May 9, 2007) (“The new cable technology is crucial because the industry is competing with a speedy new offering called FiOS, a TV and Internet service that Verizon Communications Inc. is selling over a new fiber-optic network. The top speed currently available through FiOS is 50 megabits per second, but the network is already capable of providing 100 Mbps and the fiber lines offer nearly unlimited potential.”).

<sup>14</sup> Ind. Anal. & Tech. Div., Wireline Competition Bureau, FCC, *High-Speed Services for Internet Access: Status As of June 30, 2006*, Table 15 (Jan. 2007) (“*FCC June 2006 High-Speed Report*”). Although some may dispute the significance of particular data at a more granular level, these numbers clearly show a trend of increasing competition among providers.

than two percent of total high-speed lines; today, they account for several times that, and a significant percentage of high-speed lines added in the most recent tracking period.<sup>15</sup>

Competitive activity in Virginia illustrates the point. A survey that Verizon performed found that Verizon's wireline broadband service is available to 66 percent of Virginia households; that 88 percent of those households could choose cable modem service; that all of those households could subscribe to satellite broadband service; and that 71 percent could obtain fixed wireless service.<sup>16</sup> Many Virginians also have access to 3G wireless broadband, WiFi hotspots, and broadband at their workplace.

An even more comprehensive look at broadband availability by ConnectKentucky – a private-public alliance of corporations, universities, and government entities seeking to promote broadband – shows that, even in relatively rural states such as Kentucky, broadband is becoming widely available as a result of market forces. ConnectKentucky gathered data from all wireline and fixed wireless broadband providers in the state, and then worked with unserved communities to obtain information about who was interested in broadband services. ConnectKentucky then shared this information with providers who, in some cases, decided to deploy facilities in these communities to meet this demand. In other cases, where the business case for deployment was lacking, ConnectKentucky worked with communities and providers to seek assistance from the Appalachian Regional Commission, RUS loans, state sponsors, and various other sources of

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<sup>15</sup> See *FCC June 2006 High-Speed Report* at Table 1.

<sup>16</sup> See Application, *Application of Verizon Virginia Inc. and Verizon South Inc. for a Determination That Retail Services Are Competitive and Deregulating and Detariffing of the Same*, PUC-2007-00008, at 2 (Va. SCC filed Jan. 17, 2007), available at [http://scc.virginia.gov/division/puc/industry/vv\\_comp/b1\\_app/app.pdf](http://scc.virginia.gov/division/puc/industry/vv_comp/b1_app/app.pdf).

funding. As a result of these initiatives, broadband is already available to 93 percent of households in Kentucky, and by the end of this year that total will reach virtually 100 percent.<sup>17</sup>

**Rapid Deployment.** Underlying that progress is a tremendous amount of private investment in broadband infrastructure. In the three years after federal regulators began dismantling network sharing and pricing regulation of broadband networks, Verizon's total capital expenditures were more than \$45 billion, including \$12.8 billion in 2004, \$15.0 billion in 2005, and \$17.1 billion in 2006.<sup>18</sup> As the *Wall Street Journal* recently noted, broadband providers have responded to the "deregulatory environment" established by the Commission: "Verizon's capital investments since 2000 exceed \$100 billion, and such competitors as Cingular, T-Mobile, and Sprint are following suit. So are the cable companies."<sup>19</sup> "North American telecom companies are projected to spend \$70 billion on new infrastructure this year, which is up 67% from 2003."<sup>20</sup> Since 1996, cable operators have invested more than \$110 billion to upgrade their video networks with two-way broadband capabilities,<sup>21</sup> and Comcast has announced that it will invest \$5.7 billion in capital expenditures in 2007.<sup>22</sup>

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<sup>17</sup> See ConnectKentucky, *Prescription for Innovation*, <http://www.connectkentucky.org/projects/pfi/> (last visited June 13, 2007); see also ConnectKentucky, *2007 Progress Report* 4-5, [http://www.connectkentucky.org/NR/rdonlyres/40D6C8B8-DD46-4D14-9BAF-6A85A81F2FA9/99233/connectkentucky\\_2007.pdf](http://www.connectkentucky.org/NR/rdonlyres/40D6C8B8-DD46-4D14-9BAF-6A85A81F2FA9/99233/connectkentucky_2007.pdf) (last visited June 8, 2007); ConnectKentucky, *Broadband Adoption and Barriers: Results & Analysis from the ConnectKentucky Technology Assessment Study*, <http://www.connectkentucky.org/NR/rdonlyres/2F6BAAC1-A6D0-4DD7-BEDF-385030488D6C/0/CKdocSRSBroadbandAdoptionBenchmarks.pdf> (last visited June 8, 2007).

<sup>18</sup> Verizon Communications, *2006 Annual Report* at 44, [http://investor.verizon.com/financial/quarterly/pdf/06\\_annual\\_report.pdf](http://investor.verizon.com/financial/quarterly/pdf/06_annual_report.pdf).

<sup>19</sup> *Broadband Breakout*, Wall St. J., Feb. 16, 2007, at A14.

<sup>20</sup> *Id.* (quotations omitted).

<sup>21</sup> See NCTA, *2007 Industry Overview* 4 & Chart 1 (2006) (citing Kagan Research data), available at [http://i.ncta.com/ncta\\_com/PDFs/NCTA\\_Annual\\_Report\\_04.24.07.pdf](http://i.ncta.com/ncta_com/PDFs/NCTA_Annual_Report_04.24.07.pdf).

<sup>22</sup> Peter Grant, *Comcast Spending Plans Raise Concerns; Net Surges*, Wall St. J., Feb. 2, 2007, at B5.

As of the end of 2006, cable broadband service was available to 94 percent of all United States homes.<sup>23</sup> That total represents all but a small percentage of United States homes that are passed by cable networks,<sup>24</sup> which indicates that the upgrade of this plant to provide broadband is basically complete, even as investments continue to increase speeds and improve quality. Similarly, more than 82 percent of homes served by the Bell telephone companies are able to obtain DSL service.<sup>25</sup> In addition to cable and DSL broadband service, there have been impressive increases in fiber deployment, investment in wireless infrastructure, and innovation by alternative broadband providers, as described below.

*Competitive Fiber.* From March 2005 to March 2007, the number of homes passed by fiber increased from 1.6 million to 7.9 million.<sup>26</sup> Verizon, in particular, is leading the charge on fiber deployment, spending nearly \$23 billion to deploy FiOS to 18 million customer premises by the end of 2010. As of the end of first quarter 2007, the FiOS network already passed 6.8

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<sup>23</sup> NCTA, *Competition Works. Consumers Win! Competition, Choice and Value Shape Today's Communications Marketplace* 5 (Mar. 2007) (2006 data citing Kagan Research), available at [http://i.ncta.com/ncta\\_com/PDFs/Consumers\\_Win\\_03.09.07.pdf](http://i.ncta.com/ncta_com/PDFs/Consumers_Win_03.09.07.pdf).

<sup>24</sup> See NCTA, *Industry Statistics* (citing Kagan Research data for 112.6 million occupied homes passed by cable as of December 2006), <http://www.ncta.com/ContentView.aspx?contentId=66> (last viewed June 11, 2007). The Commission's own data indicate that cable modem is available to 93 percent of homes where cable systems offer cable TV service. See *FCC June 2006 High-Speed Report* at Table 14.

<sup>25</sup> See John C. Hodulik, *et al.*, UBS Investment Research, *Qwest Communications* Table 1 (Oct. 4, 2005) (weighted average). Because DSL works only on lines that are shorter than three-and-a-half miles long, it is not available in many sparsely populated areas where lines typically exceed that length. See Verizon, *Verizon DSL FAQ: Availability*, <http://www22.verizon.com/content/consumerdsl/faqs/all+faqs.htm> (last visited June 8, 2007); see also Curt Franklin, *How DSL Works*, <http://electronics.howstuffworks.com/dsl1.htm> (last visited June 8, 2007) ("The limit for ADSL service is 18,000 feet. . . though for speed and quality of service reasons many ADSL providers place a lower limit on the distances for the service.").

<sup>26</sup> RVA LLC, *FTTH/FTTP Update* 4 (Apr. 1, 2007), <http://www.ftthcouncil.org/documents/800832.pdf>.

million homes and businesses, and Verizon's goal is to reach 9 million by the end of 2007, and to add three million additional premises in each of the next three years.<sup>27</sup>

Other providers are also investing to build new fiber-based broadband networks. AT&T, for example, is spending \$6.5 billion to deploy fiber-to-the-node serving 18 million homes by the end of 2008.<sup>28</sup> In addition, a number of municipalities, particularly in rural areas, have begun deploying fiber networks to provide broadband services to their residents.<sup>29</sup> According to Commission data, competing local carriers also were serving approximately 128,000 high-speed lines over fiber as of the end of June 2006.<sup>30</sup> A study commissioned by the Fiber-to-the-Home Council reports that, in addition to Verizon and other Bell companies, fiber is being deployed by 341 other providers who currently serve more than 400,000 subscribers.<sup>31</sup>

*3G Wireless.* Current 3G wireless networks are capable of providing Internet access at speeds of 600 kbps to 1.4 Mbps, which is generally sufficient to support common Internet applications such as web surfing.<sup>32</sup> Prices for 3G services have dropped significantly, while

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<sup>27</sup> See John 'CZ' Czwartacki, Verizon, *FiOS Fact Sheet* (May 3, 2007), <http://policyblog.verizon.com/policyblog/blogs/policyblog/czblogger1/290/fios-fact-sheet.aspx>.

<sup>28</sup> See Dionne Searcey & Peter Grant, *Business Technology: AT&T Says Costs Rise for TV System's Launch*, Wall St. J., May 8, 2007, at B4; AT&T Inc. Quarterly Report (Form 10-Q), at 31 (May 4, 2007).

<sup>29</sup> See, e.g., Becky Bohrer, *Plans for Fiber-Optic Network Gaining Speed in Wyoming City*, Telegraph Herald, Aug. 20, 2006, at B13 ("At least 40 municipalities and public utility districts around the nation already offer so-called 'fiber to the home,' according to market researcher Michael Render."); TIA & FTTH Council, *U.S. Optical Fiber Communities – 2006 with Customers Served Today via Fiber-to-the-Home* (Apr. 25, 2006) (citing Render, Vanderslice & Associates data on FTTH communities, including municipal broadband systems), available at <http://www.ftthcouncil.org/documents/959055.pdf>.

<sup>30</sup> *FCC June 2006 High-Speed Report* at Table 6.

<sup>31</sup> RVA Market Research & Consulting, *FTTH/FTTP Update 11* (Apr. 1, 2007), <http://www.ftthcouncil.org/documents/800832.pdf>.

<sup>32</sup> See, e.g., Media Release, Telstra, *Telstra's Turbo-Charged, Nationwide Mobile Broadband Network Goes Live* (Oct. 6, 2006), [http://www.telstra.com.au/abouttelstra/media/mediareleases\\_article.cfm?ObjectID=38377](http://www.telstra.com.au/abouttelstra/media/mediareleases_article.cfm?ObjectID=38377) (announcing that Telstra's network in Australia provides peak network speeds of up to 3.6 Mbps, increasing up to 14.4 Mbps early next year).

subscriberhip has increased steadily.<sup>33</sup> Analysts expect that nearly a fifth of United States wireless subscribers will purchase 3G services by year-end 2008.<sup>34</sup>

Verizon Wireless is an industry leader in deploying 3G wireless broadband networks, investing more than \$3 billion to upgrade its wireless networks to 3G, using EV-DO technology, and other providers have followed suit. Verizon Wireless and Sprint each already makes 3G services available to more than 200 million people, and AT&T to more than 35 million.<sup>35</sup>

Verizon Wireless and Sprint both recently deployed EV-DO Revision A technology, enabling typical download speeds of 600 kbps to 1.4 Mbps, and typical upload speeds of 500 to 800 kbps.<sup>36</sup> Verizon Wireless already offers such services to more than 135 million people across more than 150 major markets.

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<sup>33</sup> See, e.g., Colette Fleming & John C Hodulik, UBS Investment Research, *Sprint Nextel Corporation: Where Is the Light at the End of the Tunnel?* 4 (Apr. 27, 2006) (Sprint “saw its PowerVision subscriber base triple in 1Q06 to 750K from 250K at the end of 2005. . . . we calculate that the take-rate of EV-DO in the first quarter of 2006 was an impressive 8%-9%.”).

<sup>34</sup> See Mark S. Shuper, et al., Morgan Stanley, *Cross-Industry Insights: The North American 3G Wireless Report* App. Exh. 32 (Feb. 28, 2006) (3G subscribers for Cingular, Verizon, Sprint, and T-Mobile); Timothy Horan, et al., CIBC World Markets, *3Q06 Communications and Cable Services Preview* Exh. 6 (Oct. 6, 2006) (total wireless subscribers).

<sup>35</sup> See News Release, Verizon Wireless, *Verizon Wireless Launches Faster New Wireless Broadband Network* (Feb. 1, 2007), <http://news.vzw.com/news/2007/02/pr2007-02-02-01a.html>; Sprint, *Sprint Mobile Broadband Network*, <http://powervision.sprint.com/mobilebroadband/plans/coverage.html> (last visited June 8, 2007); News Release, Cingular, *Cingular Launches 3G Network in Indianapolis* (Sept. 22, 2006). In January 2007, Cingular announced that its 3G network covers 165 cities, including 73 of the top 100 markets in the country. News Release, Cingular, *Cingular Wireless Reports Fourth-Quarter 2006 Results* (Jan. 24, 2007). See also Verizon Wireless, *BroadbandAccess Coverage & Speeds*, <http://b2b.vzw.com/broadband/coveragearea.html> (last visited June 8, 2007); AT&T, *Cities Supporting AT&T 3G/Broadband*, <http://www.wireless.att.com/coverageviewer> (follow hyperlink “View 3G/Mobile Broadband Coverage”) (last visited June 8, 2007); Sprint Nextel, *Search for Sprint Power Vision(SM) Network Coverage Areas*, <http://www.sprint.com/business/products/products/evdoEnterZip.jsp> (last visited June 8, 2007).

<sup>36</sup> See News Release, Verizon Wireless, *Verizon Wireless Launches Faster New Wireless Broadband Network* (Feb. 1, 2007); Verizon Wireless, *Facts About . . . Verizon Wireless Network* (May 1, 2007), [http://news.vzw.com/pdf/Verizon\\_Wireless\\_Press\\_Kit.pdf](http://news.vzw.com/pdf/Verizon_Wireless_Press_Kit.pdf); News Release, Sprint, *Sprint ‘Powers Up’ Largest Mobile Broadband Network with More Upgraded Markets, Faster Speeds, New Device and Integrated GPS Capabilities* (Jan. 30, 2007), [http://www2.sprint.com/mr/news\\_dtl.do?id=15260](http://www2.sprint.com/mr/news_dtl.do?id=15260).

*Fixed Wireless/WiMAX.* Fixed wireless service is a broadband alternative for many customers today and is likely to reach many more customers over the next few years. Currently, there are thousands of wireless Internet service providers (“WISPs”) that use fixed wireless technology, often to serve rural areas that other technologies do not reach.<sup>37</sup> WISP services also are being deployed in major metropolitan areas and small, rural communities alike by companies such as TowerStream and Clearwire.<sup>38</sup> Indeed, as noted, 71 percent of Virginia households already can choose fixed wireless broadband service. *See supra* p. 8.

An industry standard for fixed wireless, known as WiMAX, allows broadband Internet access at speeds up to 155 Mbps and a range of up to 30 miles. WiMAX services are capable of and are being used to provide voice services that compete with distance-insensitive wireline offerings.<sup>39</sup> Sprint has announced that by 2008 it will have constructed a nationwide WiMAX

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<sup>37</sup> *See* Wireless Broadband Access Task Force, FCC, *Connected & On the Go: Broadband Goes Wireless*, GN Docket No. 04-163, at 32 (Feb. 2005) (reporting estimates that there are between 4,000 and 8,000 WISPs), available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-257247A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-257247A1.pdf). WiMAX is being rapidly deployed, and more than 150 deployments were in use as of May 2006. *See* U.S. Gov’t Accountability Office, *Broadband Deployment Is Extensive Throughout the United States, But It Is Difficult To Assess the Extent of Deployment Gaps in Rural Areas*, GAO-06-426 at 60 (May 5, 2006) (“*May 2006 GAO Report*”).

<sup>38</sup> *See* TowerStream, *Service Areas*, <http://www.towerstream.com/content.asp?serviceareas> (last visited June 8, 2007) (TowerStream offers high-speed Internet access in Boston, New York City, Seattle, San Francisco, Los Angeles, Chicago, Miami, and Providence/Newport/Westerly, Rhode Island); Press Release, Clearwire, *Clearwire Reports Record First Quarter 2007 Results* (May 8, 2007), [http://www.clearwire.com/company/news/05\\_08\\_07.pdf](http://www.clearwire.com/company/news/05_08_07.pdf) (Clearwire offers service “in 38 U.S. markets, covering approximately 9.1 million people in more than 400 municipalities in Alaska, California, Florida, Hawaii, Idaho, Minnesota, Nevada, North Carolina, Oregon, Texas, Washington and Wisconsin,” and serves approximately 258,000 subscribers in the United States and Europe); *see also* Clearwire Corp. Amendment to Registration Statement (Am. No. 5 to Form S-1), at 1 (Mar. 7, 2007) (“Our markets range from major metropolitan areas to small, rural communities, and all sizes in between.”).

<sup>39</sup> *See, e.g.*, Clearwire, *Clearwire Internet Phone Service: Features*, <http://www.clearwire.com/internet-phone-service/features.php> (last visited June 8, 2007); Clearwire, *Products: Internet Phone Service*, <http://www.clearwire.com/internet-phone-service/compare.php> (last visited June 8, 2007) (Clearwire offers unlimited local and long-distance calling, along with many basic features (including voice mail, caller ID, call forwarding, 3-way calling, call blocking, etc.), for \$29.99); Virginia Broadband, *What is VoIP*, <http://www.vabb.com/voip.htm> (last visited June 8, 2007) (Virginia Broadband advertises “Local and National telephone service for one flat rate. With your high-speed

network to provide 2-4 Mbps service to an estimated 100 million customers, with an investment of \$3 billion.<sup>40</sup>

*WiFi.* There are now more than 50,000 WiFi hot spots in the United States, which represents more than one-third of all hot spots worldwide.<sup>41</sup> T-Mobile, for example, offers more than 8,000 WiFi hotspots spanning all 50 states.<sup>42</sup> Recently, cities throughout the country have begun deploying WiFi networks to provide high-speed Internet access (typically up to 1 Mbps) and other services to businesses and residents.<sup>43</sup>

*Broadband over Powerline.* Broadband over powerline (“BPL”) uses the electric distribution network as “a ubiquitous third broadband pipe to the home.”<sup>44</sup> Because the wires needed for BPL are largely in place, BPL can be deployed rapidly and at relatively low cost in virtually any market.<sup>45</sup> BPL technology is being deployed commercially by Current

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Internet connection you can get phone service, and not have to deal with any large, cumbersome phone company.”).

<sup>40</sup> See Amol Sharma & Don Clark, *Sprint To Spend Up to \$3 Billion To Build Network Using Wimax – New Wireless-System Plan Shows Belief in Demand for Mobile Internet Services*, Wall St. J., Aug. 9, 2006, at B2; Arshad Mohammed, *Sprint Nextel To Build \$2.5 Billion Wireless Network*, Wash. Post, Aug. 9, 2006, at D4; John Markoff & Ken Belson, *Sprint Will Build an Intel Backed Network*, N.Y. Times, Aug. 8, 2006, at C7. Sprint has chosen Chicago and Washington, D.C. as initial WiMAX service areas; the company plans to launch service in initial markets by the end of 2007. See News Release, Sprint, *Sprint Nextel Cites WiMAX Network Progress for 2007* (Jan. 8, 2007), [http://www2.sprint.com/mr/news\\_dtl.do?id=15000](http://www2.sprint.com/mr/news_dtl.do?id=15000).

<sup>41</sup> See JiWire, *Wi-Fi Hotspot Directory*, <http://www.jiwire.com/search-hotspot-locations.htm> (51,761 hotspots in the United States as of June 8, 2007).

<sup>42</sup> T-Mobile, *T-Mobile HotSpot: US Locations*, <https://selfcare.hotspot.t-mobile.com/locations/viewLocationMap.do> (last visited June 8, 2007).

<sup>43</sup> According to one industry source, as of June 1, 2007, there were approximately 88 municipal WiFi networks in the United States that were providing public access, plus 39 additional networks that were being used solely for municipal purposes such as public safety. See MuniWireless.com, *List of US Cities and Regions 1-2, 4* (June 1, 2007), <http://muniwireless.com/reports/docs/June-1-2007summary.pdf>.

<sup>44</sup> Notice of Inquiry, *Inquiry Regarding Carrier Current Systems, including Broadband over Power Line Systems*, 18 FCC Rcd 8498, Separate Statement of Chairman Michael K. Powell (2003); see also *Broadband*, National Journal’s Technology Daily (Dec. 16, 2003).

<sup>45</sup> See *Cleland September 26, 2006 Presentation* at 6 (“~99% of the cost to provide BPL is already paid for to supply electricity.”).

Communications (a company backed by Google and other investors) in Ohio and Texas,<sup>46</sup> and by other providers in smaller deployments throughout the country.<sup>47</sup> BPL networks currently provide 3 Mbps of bandwidth.<sup>48</sup> Next-generation equipment will increase BPL's speed to as high as 100 Mbps.<sup>49</sup> Parks Associates has estimated that the number of United States households subscribing to BPL services will increase from 400,000 in 2007 to 2.5 million by 2011.<sup>50</sup>

*Satellite.* Multiple providers offer satellite broadband service, which is available nationwide.<sup>51</sup> HughesNet, StarBand, and WildBlue offer two-way broadband services at download speeds up to 1.5 Mbps and upload speeds up to 256 kbps,<sup>52</sup> which are comparable to

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<sup>46</sup> See Current Communications, <http://www.currentgroup.com/about/index.html> (last viewed June 11, 2007); Press Release, Current Communications, *Current Communications Group Announces Strategic Investments To Catalyze Broadband over Power Line Deployments* (July 7, 2005), [http://www.currentgroup.com/news/releases/07-07-05\\_Funding.html](http://www.currentgroup.com/news/releases/07-07-05_Funding.html); Press Release, Current Communications, *Current Communications Announces \$130 Million in Investments in Broadband over Power Line Networks* (May 4, 2006), [http://www.currentgroup.com/news/releases/05-04-06\\_New\\_Investors.html](http://www.currentgroup.com/news/releases/05-04-06_New_Investors.html).

<sup>47</sup> See, e.g., Press Release, utility.net, *utility.net Announces Commercial Broadband Rollout in Michigan with Potential To Reach One Million Customers in Coming Years* (Apr. 30, 2007), <http://www.utility.net/press02.html>; United Power Line Council, *BPL Deployment Map*, [http://uplc.utc.org/file\\_depot/0-10000000/0-10000/7966/conman/BPL+Deployment+Map+2007.pdf](http://uplc.utc.org/file_depot/0-10000000/0-10000/7966/conman/BPL+Deployment+Map+2007.pdf) (last visited June 8, 2007); BPL Co-op, *Broadband over Powerline*, <http://www.forvec.com/bplcoop/index.html> (last visited June 8, 2007) (In southwestern Virginia, a joint venture of the Central Virginia Electric Co-operative and International Broadband Electric Communications is deploying BPL service to rural customers).

<sup>48</sup> *May 2006 GAO Report* at 59.

<sup>49</sup> *Id.*

<sup>50</sup> See Press Release, Parks Associates, *Growth of Broadband over Power Line To Outpace Cable and DSL*, Business Wire (Jan. 18, 2007), [http://www.parksassociates.com/press/press\\_releases/2007/bpl1.html](http://www.parksassociates.com/press/press_releases/2007/bpl1.html).

<sup>51</sup> See, e.g., StarBand, *What is StarBand?*, <http://www.starband.com/about/> (last visited June 8, 2007) (service available throughout United States); WildBlue, *About WildBlue: Questions & Answers*, [http://www.wildblue.com/about/Wildblue/qaa.jsp#1\\_1](http://www.wildblue.com/about/Wildblue/qaa.jsp#1_1) (last visited June 8, 2007) (service available in contiguous United States); HughesNet, *For Your Home*, [http://go.gethughesnet.com/HUGHES/Rooms/DisplayPages/LayoutInitial?pageid=hughesnetc&Container=com.webridge.entity.Entity\[OID\[91908CBE85AD4C428CCD8D5CDB016B51\]\]](http://go.gethughesnet.com/HUGHES/Rooms/DisplayPages/LayoutInitial?pageid=hughesnetc&Container=com.webridge.entity.Entity[OID[91908CBE85AD4C428CCD8D5CDB016B51]]) (last visited June 8, 2007) (same).

<sup>52</sup> WildBlue, *Packages and Pricing*, <http://www.wildblue.com/forYourHome/index.jsp> (last visited June 8, 2007) (WildBlue offers residential and small business service at \$49.95/mo. for 512

the most widely purchased DSL offerings. Satellite providers report that they served more than 495,000 broadband lines at the end of June 2006, and that their subscribership was growing rapidly.<sup>53</sup> Although satellite broadband was previously considered expensive for residential customers, satellite providers' pricing is comparable to what cable modem and DSL providers charged just a few years ago.<sup>54</sup>

**New Content and Applications.** Over the past decade, the deployment of broadband has eroded once-clear boundaries among different content-and-application delivery technologies. “Old” media such as newspapers, broadcasters, cable operators, and video stores now compete directly with online news, blogs, and online video delivery. Online music downloading to PCs and devices such as iPods and wireless phones competes with radio, CDs, and record stores. Consumers can now access software and store information on remote servers, rather than on their desktop. Broadband not only makes the most common Internet applications like e-mail, instant messaging, and text-based Web surfing faster and better, but also makes it possible to provide new services that were impossible or technically impractical before – such as voice-over-IP, online video, online gaming, medical monitoring, photo-sharing, podcasts, and e-books, to name just a few.

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kbps/128 kbps, \$69.95/mo. for 1 Mbps/200 kbps, and \$79.95/mo. for 1.5 Mbps/256 kbps); HughesNet, *For Your Home: Pricing*, <http://go.gethughesnet.com/HUGHES/Rooms/DisplayPages/LayoutInitial?Container=com.webridge.entity.Entity%5BROID%5B71A9F5B422ABCE4886D9492F66B5B589%5D%5D> (last visited June 8, 2007) (HughesNet offers residential services at \$59.99/mo. for 700 kbps/128 kbps, \$69.99/mo. for 1 Mbps/200 kbps, and \$79.99/mo. for 1.5 Mbps/200 kbps); StarBand by Spacenet, *New StarBand Nova Series*, <http://www.starband.com/services/> (StarBand offers residential and small office/home office service at \$49.99/mo. for 512 kbps/128 kbps, \$129.99/mo. for 1.024 Mbps/256 kbps).

<sup>53</sup> *FCC June 2006 High-Speed Report* at Tables 1, 6.

<sup>54</sup> *See, e.g., EchoStar Launches High-Speed Service*, Multichannel Newswire (Oct. 20, 2006), <http://www.multichannel.com/eNewsletter/CA6383331/2226.html> (EchoStar began marketing high-speed Internet to rural customers starting at \$49.95/month).

But the development of new Internet applications and content will depend in part on innovation in broadband services and investments in broadband networks – innovation that some proposals for new broadband regulation would quash. A so-called “best-efforts” level of delivery – where no packets receive priority or are guaranteed to be delivered in a certain time – does not materially affect the experience of a user of applications such as e-mail, instant messaging, and the most basic Web-surfing. But many emerging types of Internet content and applications may require enormous amounts of bandwidth, and many either need to be delivered to consumers on better-than-best-efforts terms – *i.e.*, with an assurance of no latency or delay – or would greatly benefit from it. Both online gaming and video-over-IP services, for instance, are intolerant of delays, and also require enormous bandwidth (particularly for higher-definition video that matches TV-quality).<sup>55</sup> Voice-over-IP services, on the other hand, do not require a great deal of bandwidth, but are intolerant of transmission delays, which cause choppy conversations.<sup>56</sup>

Broadband providers’ ability to guarantee better than best-efforts delivery may facilitate the development of those types of content and applications. One class of services – sometimes known as “bandwidth prioritization” – would provide priority delivery services to Internet content and application providers. Other possibilities include providing users (or content

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<sup>55</sup> See Robert E. Litan & Hal J. Singer, *Unintended Consequences of Net Neutrality Regulation*, 5 J. Telecomm. & High Tech. L. 533, at \*3 (forthcoming 2007) (App. B Exh. 9) (“The most popular QoS-needy applications [*i.e.*, applications requiring a higher quality of service to function properly] include streaming multimedia, online gaming, voice over Internet protocol (VoIP), video conferencing, alarm signaling, and safety-critical applications such as remote surgery. In the future, there will be even more QoS-needy applications.”), at \*10 (“Real-time video, VoIP, and online video game traffic cannot be experienced properly by the end-user if it is subjected to jitter (unevenness in the rate of data packet delivery).”), available at <http://ssrn.com/abstract=942043>. For the Commission’s convenience, we have included this and other authoritative articles on the subject of broadband regulation as Exhibits 1 through 9 in Appendix B to these comments.

<sup>56</sup> See Blair Levin, *et al.*, Stifel Nicolaus, *Net Neutrality: Value Chain Tug of War* 21 (Mar. 2006) (“Voice is a low-bandwidth application, but it requires low latency.”).

providers) with a wider range of options for bandwidth – such as allowing them to pay to use only certain types of applications (such as e-mail); giving them the ability to obtain extra bandwidth on an as-needed basis for applications such as data back-up or online gaming; or allowing users to specify types of services or packets that they want delivered more quickly than others. Another possibility, already offered by some providers, is to allow “boosts” of speed when consumers want to access or use bandwidth-intensive content or applications –for example, to play an online video game or to download a movie – even if the consumer does not need additional speed at other times.<sup>57</sup> With that type of service, a consumer could subscribe to, for example, a 5 Mbps service, but be able to pay for (or have a willing content provider pay for) an extra 5 to 10 Mbps burst to use when accessing a particular gaming website. Broadband regulation that would mandate a best-efforts regime may prohibit network providers from meeting consumer demand by offering such differentiated services.

In addition to requiring a higher level of service to perform properly, advanced applications and content may tax network resources. Today’s telecommunications infrastructure may not support the broadband services and applications planned for the future without continuing investment and innovation.<sup>58</sup> As the availability of even more advanced applications

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<sup>57</sup> See Comcast, *Comcast High-Speed Internet*, <http://www.comcast.com/highspeedinternet/> (last visited June 14, 2007) (Comcast offers “PowerBoost” with its 6/8 Mbps internet-access plan; with “PowerBoost,” the first 10 MB of a large file downloads at up to 12 Mbps).

<sup>58</sup> See, e.g., Bruce Mehlman & Larry Irving, *Bring On The Exaflood!*, Wash. Post, May 24, 2007, at A31 (May 24, 2007) (“All sides agree that we need ongoing investment in content, massive upgrades of infrastructure and relentless innovation to handle the phenomenal growth in data traffic. We need advancements in how we build and operate networks, including new file compression technologies, upgraded traffic management software, better spam and virus filters, and new delivery platforms. And we need substantial investments in short-haul bandwidth through fiber to homes, broadband over power lines, satellites and fourth-generation wireless networks.”); Testimony of Craig E. Moffett, Vice President and Senior Analyst, Sanford C. Bernstein and Co., LLC, Before the S. Subcomm. on Communications 2 (Mar. 14, 2006) (“[O]ur telecommunications infrastructure is woefully unprepared for widespread delivery of advanced services, especially video, over the Internet. Downloading a single half hour TV show on the Web consumes more bandwidth than does receiving 200 emails a day for a full year. Downloading a

like online video increases, so will the pressure on network capacity.<sup>59</sup> For example, it is estimated that peer-to-peer file sharing services like BitTorrent already consume more than one-half of Internet bandwidth,<sup>60</sup> and the video-sharing website YouTube alone consumes as much bandwidth today as the entire Internet consumed in 2000.<sup>61</sup> In 1999, the total volume of information generated equaled one exabyte – or 1.074 billion gigabytes.<sup>62</sup> Today, the Internet handles one exabyte of data each hour.<sup>63</sup> Tomorrow’s Internet will handle an exponentially greater amount of traffic with the proliferation of advanced online video offerings – “from high definition TV and future iterations of YouTube-type video-sharing sites to sophisticated online gaming and video phone calls” – that have the potential quickly to turn “your average U.S. home into a 50Mbps bandwidth hog.”<sup>64</sup> Regulators should not impede network providers’ ability to meet that growing diversity of network traffic by prohibiting efficient network-management practices or by imposing regulations that inhibit investment in broadband infrastructure capable of handling these increasing demands.<sup>65</sup> Instead, they should continue procompetitive policies

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single high definition movie consumes more bandwidth than does the downloading of 35,000 Web pages; it’s the equivalent of downloading 2,300 songs over Apple’s iTunes Web site. Today’s networks simply aren’t scaled for that.”).

<sup>59</sup> See Christopher S. Yoo, *Would Mandating Broadband Network Neutrality Help or Hurt Competition? A Comment on the End-to End Debate* 35 (Vanderbilt University Law School Law & Economics Working Paper No. 04-04, 2004) (“Bandwidth-hungry applications, such as music downloads, on-line gaming, and streaming video, are placing increasing pressure on network capacity, as has the growth in telecommuting and home networking.”)

<sup>60</sup> See *The Dumb Pipe Paradox, Part II*, at 3 (“By some accounts, video file sharing sites like *BitTorrent* account for as much as half of all web traffic.”); CacheLogic, *P2P in 2005*, [http://www.cachelogic.com/home/pages/studies/2005\\_07.php](http://www.cachelogic.com/home/pages/studies/2005_07.php) (last visited June 11, 2007) (“P2P still Represented 60% of Internet Traffic as of year-end 2004.”).

<sup>61</sup> See Mehlman & Irving, *Bring On The Exaflood!*, Wash. Post, at A31.

<sup>62</sup> *Id.*

<sup>63</sup> *Id.*

<sup>64</sup> Hesseldahl, *More Bandwidth Than You Can Use?*

<sup>65</sup> See Alfred E. Kahn, *Network Neutrality*, AEI-Brookings Joint Center for Regulatory Studies 4 (Mar. 2007) (“The only way to avoid unacceptable congestion and degradation of service is to give

that encourage entrepreneurs to build diverse new networks by allowing them to innovate, to differentiate, and to earn an adequate return on their investments. In addition, the availability of efficient network-management strategies, such as bandwidth prioritization, will permit broadband providers to enable entire new markets of content and applications to meet consumers' demands.

## **II. THE COMMISSION'S PROCOMPETITIVE POLICIES FOSTER BROADBAND COMPETITION AND INVESTMENT, AND INCREASE CONSUMER WELFARE**

The Commission's procompetitive, pro-investment policies have permitted competition, investment, and innovation in markets for broadband services to thrive. Empirical evidence demonstrates the following: (1) the Commission's lifting of unbundling mandates on phone companies' broadband networks has allowed them to compete more effectively with competitors; and (2) deregulation in the wireless industry has permitted competition in that sector to flourish.

### **A. Empirical Evidence Demonstrates That the Commission's Policies Have Spurred Competition and Investment In Wireline Broadband Services**

Four years ago, cable had a wide lead over DSL, in large part due to uneven regulation that hampered DSL's ability to compete. Since that time, the Commission's deregulatory policies have leveled the playing field, which has enabled DSL providers to improve the competitiveness of their offerings and close the gap with cable operators.

Professor Thomas Hazlett has shown a statistically significant increase in DSL subscribership directly following the Commission's August 2005 decision<sup>66</sup> to treat DSL Internet

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operators the ability to manage traffic on their networks, expediting some data (phone calls, streaming video, or remote medical monitoring, diagnoses and treatment) over less time-sensitive data (such as ordinary e-mail).").

<sup>66</sup> See Report and Order and Notice of Proposed Rulemaking, *Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities*, 20 FCC Rcd 14853 (2005) ("Wireline

access as an information service, and the underlying broadband transmission services as private carriage service, both under Title I of the Communications Act.<sup>67</sup> After that decision, the number of DSL households increased 12 percent faster than the historical trend – accounting for an additional 2.6 million broadband households – while cable modem services grew only 1 percent faster.<sup>68</sup> Professor Hazlett also has demonstrated that, in the four years after the Commission eliminated regulated line sharing,<sup>69</sup> DSL grew much more rapidly than the trend in years prior would have suggested. Following deregulation, DSL services grew 65 percent faster than the historical trend – leading to an additional 9.9 million broadband subscribers; cable modem services grew only 11 percent faster.<sup>70</sup> Further, the elimination of line sharing is associated with an incremental increase in investment of more than \$800 million.<sup>71</sup>

Professor Hazlett also has quantified the dramatic social-welfare benefits of the increase in subscribers and the additional \$800 million in investment attributable to DSL deregulation – increases in consumer surplus, national income (gross domestic product, or GDP), and jobs.<sup>72</sup> He has estimated that the Commission’s pro-investment policies were followed by increases of

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*Broadband Order*”) (freeing providers of wireline broadband Internet access services from common-carrier and *Computer Inquiry* non-discrimination requirements), *petitions for review pending, Time Warner Telecom Inc. v. FCC*, Nos. 05-4769 *et al.* (3d Cir).

<sup>67</sup> See Thomas W. Hazlett, *Broadband Regulation in the United States: An Empirical Assessment* 15-17 (June 14, 2007). For the Commission’s convenience, Professor Hazlett’s study is included in Appendix A to these comments.

<sup>68</sup> See *id.* at 16.

<sup>69</sup> See Report and Order and Order on Remand and Further Notice of Proposed Rulemaking, *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, 18 FCC Rcd 16978, ¶ 255 (2003), *vacated in part and remanded, United States Telecom Ass’n v. FCC*, 359 F.3d 554 (D.C. Cir. 2004).

<sup>70</sup> See Hazlett, *Broadband Regulation in the United States: An Empirical Assessment* at 2, 14.

<sup>71</sup> See *id.* at 21.

<sup>72</sup> See *id.* at 19-22.

more than \$2 billion in annual consumer surplus; more than \$1.2 billion in annual GDP; and nearly 7,900 jobs from 2003 to 2006.<sup>73</sup>

Similarly, in 2003 and 2004, the Commission substantially removed the threat of unbundling obligations on fiber networks,<sup>74</sup> leading to massive investments by phone companies in competitive fiber. Fiber reached just 189,000 homes in March 2004. By the end of March 2007 – just three years later – Verizon alone passed nearly 7 million homes with its all-fiber network. Approximately 14,000 households subscribed to broadband service provided by fiber in December 2002. After the Commission’s clarification that those networks would not be subject to network-sharing or open-access requirements, between June 2004 and June 2006, fiber providers gained 420,000 subscribers.<sup>75</sup> As Professor Hazlett explains, the Commission’s procompetitive decisions drove that dramatic increase in fiber investment and subscribership.<sup>76</sup>

## **B. Experience in the Wireless Industry Demonstrates That Procompetitive Policies Foster Competition, Innovation, and Investment**

Experience in the wireless industry also demonstrates the procompetitive benefits of the Commission’s deregulatory policies. In the decade after the first commercial wireless services were deployed, the wireless industry was heavily regulated. For example, the Commission mandated that all cellular carriers adopt the same analog standard<sup>77</sup>; it sharply restricted the

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<sup>73</sup> *See id.* at 20-22.

<sup>74</sup> *See* Report and Order and Order on Remand and Further Notice of Proposed Rulemaking, *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, 18 FCC Rcd 16978, ¶¶ 272-277 (2003); Memorandum Opinion and Order, *Petition for Forbearance of the Verizon Telephone Companies Pursuant to 47 U.S.C. § 160(c)*, 19 FCC Rcd 21496, ¶ 19 (2004).

<sup>75</sup> *See* Hazlett, *Broadband Regulation in the United States: An Empirical Assessment* at 18.

<sup>76</sup> *See id.* at 18-19.

<sup>77</sup> *See* Memorandum Opinion and Order, *Year 2000 Biennial Regulatory Review – Amendment of Part 22 of the Commission’s Rules To Modify or Eliminate Outdated Rules Affecting the Cellular Radiotelephone Service and Other Commercial Mobile Radio Services*, Report and Order, 17 FCC Rcd 18401, ¶ 5 (2002) (“*Year 2000 Biennial Regulatory Review*”) (citing Office of Eng’g & Tech. Bull. No. 53 (Apr. 1981)).

amount of spectrum that each wireless carrier could hold in a given market<sup>78</sup>; it required wireless carriers to resell their service to other licensed wireless carriers<sup>79</sup>; and it required carriers to file tariffs.<sup>80</sup> Other rules prohibited the Bell companies – which were awarded half of the initial cellular licenses – from providing long-distance services with their wireless networks.<sup>81</sup> These policies forced carriers to deploy networks that did not take advantage of more advanced and efficient technologies.

Following enactment of the Omnibus Budget Reconciliation Act of 1993, the Commission licensed multiple new wireless carriers in each market, and declined to mandate a technological standard for these new networks.<sup>82</sup> The 1996 Act eliminated the restriction prohibiting the Bell companies from providing wireless long distance services<sup>83</sup> and expanded the Commission’s forbearance authority. Pursuant to that authority the Commission lifted its rule limiting the amount of spectrum a single provider could own in each market,<sup>84</sup> and agreed to phase out its requirement that wireless carriers maintain the analog capabilities of their systems.<sup>85</sup> The Commission also allowed its requirement that carriers resell their services to

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<sup>78</sup> Report and Order, *Inquiry into the Use of the Bands 825-845 MHz and 870-890 MHz for Cellular Communications Systems*, 86 FCC 2d 469, 480, ¶ 22 (1981).

<sup>79</sup> *See id.* at 511, ¶¶ 105, 107.

<sup>80</sup> Fifth Report and Order, *Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor*, 98 FCC 2d 1191, 1204, ¶ 18, n.41 (1984).

<sup>81</sup> *See United States v. Western Elec. Co.*, 578 F. Supp. 643, 645-46, 647 (D.D.C. 1983).

<sup>82</sup> *See* Thomas W. Hazlett, *Saved from Common Standards*, FT.com (Nov. 27, 2002) (“The FCC had previously set a mandatory analogue standard for cellular phones, for instance. This, one of the great technology mistakes of the twentieth century, was largely repealed in 1988 – after major market cellphone systems had been built with antiquated technology.”).

<sup>83</sup> *See* 47 U.S.C. § 271(b)(3), (g)(3) (permitting Bell operating companies to provide “incidental interLATA services” which includes “commercial mobile services”).

<sup>84</sup> Report and Order, *2000 Biennial Regulatory Review Spectrum Aggregation Limits for Commercial Mobile Radio Services*, WT Docket No. 01-14, FCC 01-328 (rel. Dec. 18, 2001).

<sup>85</sup> *See Year 2000 Biennial Regulatory Review* (modifying §§ 22.901 and 22.933).

sunset, ensuring that all licensees would build their own networks rather than rely exclusively on resale,<sup>86</sup> and it eliminated its tariffing requirement.<sup>87</sup>

For the last decade, deregulation has given wireless carriers the freedom to design their networks, to determine whether and how to interconnect with each other, to structure and price their services, to contract with content and application providers, and to make various handsets and other devices available for use on their networks. The Commission's procompetitive decisions have allowed competition and innovation to thrive. There were 11 million wireless subscribers in 1992, the year before wireless deregulation, compared to more than 230 million at the end of 2006.<sup>88</sup> Total cumulative investment in the wireless industry stood at approximately \$9 billion in the year before wireless deregulation, compared to more than \$223 billion at the end of 2006.<sup>89</sup> Before wireless deregulation there were at most two facilities-based competitors in each market, the largest of which were at most regional in scope. Today, there are four national wireless carriers (Verizon Wireless, AT&T, Sprint Nextel, and T-Mobile) in virtually every geographic area, plus at least one (and in some cases more) additional regional or local carriers, such as Alltel, U.S. Cellular, and Dobson.<sup>90</sup> There is also a robust wholesale market in which

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<sup>86</sup> See Report and Order, *Petitions for Rule Making Concerning Proposed Changes to the Commission's Cellular Resale Policies*, 7 FCC Rcd 4006, ¶ 20 (1992); First Report and Order, *Interconnection and Resale Obligations Pertaining to Commercial Mobile Radio Services*, 11 FCC Rcd 18455, ¶ 28 (1996), *aff'd sub nom. Cellnet Communications v. FCC*, 149 F.3d 429 (6th Cir. 1998).

<sup>87</sup> Second Report and Order, *Implementation of Sections 3(n) and 332 of the Communications Act*, 9 FCC Rcd 1411, ¶¶ 173-182 (1994).

<sup>88</sup> CTIA, *CTIA's Semi-Annual Wireless Industry Survey Results 2* (2006), [http://files.ctia.org/pdf/CTIA\\_Survey\\_Year\\_End\\_2006\\_Graphics.pdf](http://files.ctia.org/pdf/CTIA_Survey_Year_End_2006_Graphics.pdf).

<sup>89</sup> CTIA, *CTIA – The Wireless Association's Annualized Wireless Industry Survey Results, December 1985-December 2004* (2005); CTIA, *Wireless Quick Facts* (Dec. 2006), [http://www.ctia.org/media/industry\\_info/index.cfm/AID/10323](http://www.ctia.org/media/industry_info/index.cfm/AID/10323).

<sup>90</sup> See, e.g., Philip Cusick, *et al.*, Bear Stearns, *4Q06 Big-4 and Wireless Industry Preview; Early Look at 2007* 12-13 (Jan. 19, 2007) (estimating shares of regional and national carriers); Michael Rollins, *et al.*, Citigroup, *Teleconomy 2007*, Fig. 5 (Jan. 5, 2007) (covered pops).

wireless network operators sell access to their networks to dozens of Mobile Virtual Network Operators, which resell service together with their own unique content and devices. For example, AMP'd Mobile resells Verizon Wireless's service with unique video and gaming content; its investors include Viacom's MTV unit and Universal Music Group.<sup>91</sup>

According to the Commission's most recent data, approximately 94 percent of the United States population lives in a county with four or more competing wireless providers; more than 50 percent live in a county with five or more.<sup>92</sup> All major wireless carriers are now in the process of deploying next-generation (or 3G) wireless networks to consumers. Regulators,<sup>93</sup> courts,<sup>94</sup> and independent analysts<sup>95</sup> have all found that the wireless industry is competitive. And, according

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<sup>91</sup> Tom Watts & Jennifer Adams, Cowen and Company, *Mobile Content Delivery – The Next Wave of Wireless Growth* 6 (June 28, 2006).

<sup>92</sup> Eleventh Report, *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, 21 FCC Rcd 10947, App. A at Table 6 (2006).

<sup>93</sup> See, e.g., Opinion, *Proceeding on Motion of the Commission To Examine Issues Related to the Transition to Intermodal Competition in the Provision of Telecommunications Services*, Case No. 05-C-0616, at 11-12 (N.Y. P.S.C. June 29, 2005) (“Wireless services are almost ubiquitously available in New York and exhibit very high subscription rates. . . . Because of existing competition within the wireless sector, we have witnessed ongoing efforts by the wireless industry to respond to consumer demands for improved quality of wireless service.”); Opinion and Order, *Shafizadeh v. Cingular Wireless*, Case No. 2003-00400, at 10 (Ky. P.S.C. Mar. 23, 2005) (“[T]he wireless telecommunications industry is highly competitive. If Complainant is dissatisfied with areas of Cingular's business practice over which the Commission has no jurisdiction, he may select another wireless carrier.”).

<sup>94</sup> See, e.g., *In re Wireless Tel. Svcs. Antitrust Litig.*, 385 F. Supp. 2d 403, 417 (S.D.N.Y. 2005) (“*Wireless Antitrust Opinion*”) (“None of the defendants [including Verizon Wireless, Cingular, T-Mobile, and Sprint] enjoys a market share that would, standing alone, permit an inference of market power to be drawn. . . . The defendants compete against each other in terms of service and price, and the high churn rate is striking evidence of their respective lack of control over the market and the impediments each of them faces to any effort to control price.”); *Orloff v. FCC*, 352 F.3d 415, 421 (D.C. Cir. 2003) (“[N]either Verizon nor any other CMRS provider is dominant. Customers dissatisfied with Verizon's charges or service may simply switch to another provider. . . . Haggling is a normal feature of many competitive markets. It allows consumers to get the full benefit of competition by playing competitors against each other. Here Verizon has adopted the practice as a competitive marketing strategy.”).

<sup>95</sup> See, e.g., Simon Flannery, et al., Morgan Stanley, *Telecom Services; 4Q06 Preview/2007 Outlook: Is Telecom Back for Good?* 28 (Jan. 24, 2007) (“The wireless industry is intensely competitive, with heavy advertising, substantial handset subsidies and declining per-minute yields.”); Michael Rollins, et al., Citigroup, *Sprint Nextel (S): Marketing Hurdles Remain, As Integration and 4G Activities*

to one estimate, wireless carriers had created \$900 billion in consumer welfare benefits as of 2004.<sup>96</sup>

### **C. The Commission's Procompetitive Policies Drive Investment In Next-Generation Broadband Networks**

As a result of the Commission's pro-competitive policies, Verizon and other broadband providers are investing substantial capital to deploy next-generation broadband networks. *See supra* Part I. Unlike most historic infrastructure projects of this scale, builders are not being granted exclusive franchises, insulating them from competition and offering a relatively safe return. They are deploying advanced broadband networks in the face of fierce competition and extraordinary technological risk. Companies make these large and risky investments for the opportunity to earn a return commensurate with the risk. And they do it only if they have the freedom to innovate, differentiate, and make commercially sensible decisions needed to compete effectively in the marketplace. In light of the ever increasing demands for bandwidth and interactive services, both this investment and providers' freedom to innovate are crucial to the future of the Internet and its ability to achieve its potential as a platform for innovation and growth.

### **III. COMPETITIVE CONDITIONS IN THE BROADBAND MARKETPLACE MAKE BROADBAND REGULATION UNNECESSARY AND UNWISE**

Although the evidence demonstrates that the Commission's current policies have allowed competition and innovation in broadband services and content to thrive, some have called for new restrictions on broadband network and access providers. Such proposals vary depending on

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*Progress – Maintain Hold Rating 9* (Dec. 4, 2006) (“Sprint’s wireless business faces general industry risks such as the high level of competition with as many as six carriers per market, the capital intensity of network buildouts, and the high level of financial leverage in the industry.”).

<sup>96</sup> *See* Thomas W. Hazlett & Matthew L. Spitzer, *Advanced Wireless Services, Spectrum Sharing, and the Economics of an “Interference Temperature,”* ET Docket No. 03-237, at 33 (FCC filed Apr. 5, 2004).

the advocate and they have changed over time, even though they all are unhelpfully lumped together under the single term “net neutrality,” as if that term were self-defining.<sup>97</sup> The inability of various proponents of “net neutrality” to adhere to a single, consistent definition of that term demonstrates that it is a label rather than a concrete proposal. In all events, whatever form such regulation would take, proponents bear a heavy burden to justify it – a burden that they cannot carry. Economic regulation – and especially blanket prohibitions on certain business practices – is warranted only in clear cases of demonstrated market failure, and, even then, only when the benefits of government intervention outweigh the costs.<sup>98</sup> When those conditions are absent, directing markets is a job best left to competitive forces, which consistently prove themselves better than regulators at maximizing consumer welfare.<sup>99</sup> In nascent industries that are

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<sup>97</sup> Christopher S. Yoo, *Beyond Network Neutrality*, 19 Harv. J.L. & Tech. 1, 3 (2005) (App. B Exh. 5) (“Some call for mandating interconnection of broadband networks along standardized interfaces such as TCP/IP. Others argue in favor of a presumption that any discriminatory access agreements are anticompetitive, leaving the precise regulatory requirements to be developed over time through case-by-case adjudications. Although these proposals vary considerably both in their terminology and details, they can comfortably be aggregated within the broad rubric of ‘network ‘neutrality.’”) (footnotes omitted).

<sup>98</sup> See, e.g., Statement of Commissioner Robert M. McDowell, FCC, Before the H. Subcomm. on Telecommunications and the Internet, H. Comm. on Energy and Commerce 3 (Mar. 14, 2007) (“*McDowell March 14, 2007 Statement*”) (“There are circumstances, however, when the government should address market failure to further the public interest so new entrepreneurial ideas have a chance to compete in the marketplace . . . . Any remedies applied to market failure should be narrowly-tailored, and sunsetted, to maximize freedom for all market players.”), available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-271487A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-271487A1.pdf); Deborah Lathen, Cable Services Bureau, *Broadband Today: A Staff Report to William E. Kennard, Chairman, Federal Communications Commission, on Industry Monitoring Sessions Convened by Cable Services Bureau* 41 (Oct. 1999), <http://www.fcc.gov/Bureaus/Cable/Reports/broadbandtoday.pdf> (“The Commission’s public interest mandate requires it to forbear from regulation and allow market forces to flourish, but to intervene in the event of market failure.”); Jerry Hausman, *Internet-Related Services: The Results of Asymmetric Regulation, in Broadband: Should We Regulate High-Speed Internet Access?* 139 (Robert Crandall & James Alleman, eds., Dec. 2002) (“Regulation should be used only in the situation of market failure”).

<sup>99</sup> See, e.g., *McDowell March 14, 2007 Statement* at 3 (“Overall, I trust free people acting within free markets to make better decisions for themselves than those of us in government. Government should not adversely interfere with the relationships between consumers and entrepreneurs.”), [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-271487A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-271487A1.pdf); Kathleen Q. Abernathy, Commissioner, FCC, A Regulatory Framework for Convergence and Competition, an address to The India Television Summit 2005, at 5 (Sept. 29, 2005),

undergoing rapid technological change, it is particularly difficult for even the most capable regulator to keep up with the market's evolution.<sup>100</sup>

Under those settled regulatory principles, there is no basis for broadband regulation. There is no history of problems that require regulatory intervention, much less a radical remedy like broadband regulation.<sup>101</sup> And because competition in the provision of broadband access services is growing ever more intense, it is even less likely that prophylactic regulation – and not the workings of the free market – will be needed to protect consumers in the future.

#### **A. There Is No Evidence Of Anticompetitive Discrimination**

The absence of problems in lightly regulated broadband markets establishes that regulation is not needed. For several years, cable operators, telephone companies, and other broadband providers have been offering their broadband services under Commission decisions that increasingly rely on competition, rather than regulatory non-discrimination and network-

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[http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-261501A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-261501A1.pdf) (“The first of these [regulators’] responsibilities is to replace extrinsic regulation with trust in the market. Why, because a fully-competitive market is the best protection against harm to consumers and providers.”).

<sup>100</sup> See Yoo, *Beyond Network Neutrality*, 19 Harv. J.L. & Tech. at 67 (“[S]cholars from across the political spectrum have warned of the dangers of regulatory lag in industries that are technologically dynamic”); Stephen Breyer, *Regulation and Its Reform* 286-87 (1982) (“[B]ecause regulation, once in place, is hard to dismantle, one would like to know whether future technological change is likely to transform an industry that is now a natural monopoly, making it structurally suited to competition.”); Alfred E. Kahn, *The Economics of Regulation* 127 (1971) (“In the presence of such rapid change, the natural monopoly of yesterday may be transformed into a natural arena of competition today; and vice versa.”); Richard A. Posner, *Natural Monopoly and Its Regulation*, 21 Stan. L. Rev. 548, 636 (1969) (“Communications is a contemporary example of an industry undergoing rapid technological changes that are apparently opening up a host of new competitive opportunities. . . . The most pernicious feature of regulation would appear to be precisely its impact on change – its tendency to retard the growth of competition that would erode the power of regulated monopolists.”).

<sup>101</sup> See generally Howard A. Shelanski, *Adjusting Regulation to Competition: Toward A New Model for U.S. Telecommunications Policy*, 24 Yale J. on Reg. 55, 103 (2007) (App. B Exh. 7) (“[T]he mere possibility of vertical discrimination does not automatically imply the need for ex ante network neutrality rules. In the absence of evidence that harmful economic discrimination is occurring and without a clearer understanding of the implications of placing all internet access charges on end-user consumers, the better policy may be to enforce ex post against specific conduct that is discriminatory and that is harmful to competition and to consumers.”).

access mandates, to protect consumers. Congress charted that deregulatory course for broadband services a decade ago. In the Telecommunications Act of 1996, Congress directed the Commission and state public utility commissions to “encourage the deployment . . . of advanced telecommunications capability to all Americans” by, among other things, “methods that remove barriers to infrastructure investment.”<sup>102</sup> Congress also declared that it is the policy of the United States “to preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services, unfettered by Federal or State regulation.”<sup>103</sup>

Carrying out Congress’s mandate, the Commission encourages a “minimal regulatory environment” with respect to broadband Internet services, in order “to benefit American consumers and promote innovative and efficient communications.”<sup>104</sup> Since 2002, the Commission – consistently upheld by the courts – has implemented its policy of minimum regulation through a series of decisions that first protected cable modem providers against new regulatory burdens, and then freed telephone companies from legacy requirements that were drafted with embedded, narrowband networks in mind.<sup>105</sup> The Commission also refrained from taking steps that would subject any emerging broadband technologies – such as satellite, wireless, or BPL – to regulation.

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<sup>102</sup> Telecommunications Act of 1996 § 706(a), 110 Stat. 153, *reprinted at* 47 U.S.C. § 157 note.

<sup>103</sup> 47 U.S.C. § 230(b)(2).

<sup>104</sup> *Wireline Broadband Order* ¶ 1.

<sup>105</sup> *See National Cable & Telecomms. Ass’n v. Brand X Internet Servs.*, 125 S. Ct. 2688 (2005) (upholding Commission’s classification, in 2002, of cable modem service as an information service under the Communications Act, rather than a telecommunications service subject to common-carriage requirements); *United States Telecom Ass’n v. FCC*, 359 F.3d at 578-85 (upholding Commission’s decision, in 2003, not to require incumbent telephone companies to provide competitors “unbundled access” to broadband facilities under 47 U.S.C. § 251); *EarthLink, Inc.*, 462 F.3d 1 (upholding Commission’s decision, in 2004, to forbear from requiring the Bell companies to provide unbundled access to broadband facilities under 47 U.S.C. § 271); *Wireline Broadband Order*, 20 FCC Rcd 14853 (freeing providers of wireline broadband Internet access services from common-carrier and *Computer Inquiry* non-discrimination requirements).

Thus, broadband providers – and cable modem and DSL providers in particular – have been free of laws imposing the requirements that proponents of broadband regulation say should be adopted. If there were a genuine need for such regulation, actual events in the lightly regulated markets should provide evidence of that need. But there is no such evidence. Indeed, there is not a single documented example of a major United States broadband provider engaging in anticompetitive conduct against an Internet content or application provider.

Far from demonstrating a desire to engage in anticompetitive practices, broadband providers have committed to providing consumers with all of the benefits of the legal content and services available on the public Internet.<sup>106</sup> Verizon does not block or degrade packets traveling over the public Internet; in particular, it does not deprioritize or block traffic traveling over the Internet based on the senders' affiliation with Verizon (or lack thereof) or because that traffic may be considered harmful (or beneficial) to Verizon's commercial interests. Each of the major broadband providers has indicated that it has no intention of blocking the ability of users to access the sites of their choice.<sup>107</sup> In addition, the Commission has committed to monitoring the broadband marketplace and addressing any market failures that may arise.

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<sup>106</sup> Of course, as explained below, network security, network management, subscriber-selected service tiers and bandwidth availability, among other factors, may require differentiated treatment for certain packets and transmissions – for example, to protect the network from harmful packets, ensure a good user experience and maintain a fair allocation of resources. *See infra* Part III.B. For example, as Verizon Wireless has described in other proceedings, wireless broadband networks may impose certain conditions on subscriber transmissions because wireless networks are more sensitive to variations in usage and user devices as users share the radiofrequency bandwidth and the user device is deemed part of the spectrum licensee's network under the Commission's rules. *See* Comments of Verizon Wireless, *In re Skype Communications S.A.R.L.*, RM-11361 (filed Apr. 30, 2007).

<sup>107</sup> *See* Jim Barthold, *Verizon's Captain Charts Slow, Steady Course*, Telecommunications Online (Feb. 9, 2006), [http://www.telecommagazine.com/archives/article.asp?HH\\_ID=AR\\_1713](http://www.telecommagazine.com/archives/article.asp?HH_ID=AR_1713) (Verizon CEO Ivan Seidenberg: "We don't block anything; never have, never will. It's not part of what we do."); Jim Duffy, *Carrier CEOs: We Won't Block 'Net*, Network World (Mar. 27, 2006), <http://www.networkworld.com/news/2006/032706-net-neutrality.html> ("AT&T will not block access to the public Internet or degrade service [of content providers], period," said AT&T Chairman Ed Whitacre."); *Notebaert: Qwest Won't Block Content, But It Will Charge*, Xchange Online (Mar. 16,

Moreover, broadband providers have a strong market incentive to allow their customers to access all lawful content and applications available on the Internet – and to maximize the diversity of those applications and content – because doing so increases the value of the providers’ networks and of the access services that they sell. Consumers will not purchase broadband services unless they offer greater value than existing alternatives. That means not only greater speeds, but also new forms of content and application that take advantage of such speeds. The greater the variety of such content and applications, the more consumers are likely to find purchasing broadband connections worthwhile.<sup>108</sup> In sum, access providers’ economic

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2006), <http://www.xchangemag.com/tdhotnews/63h1614143172779.html> (Qwest CEO Richard Notebaert stated that Qwest “will not block anything on the Internet.”); Testimony of Kyle McSlarrow, President and CEO, National Cable & Telecommunications, Hearing on “Net Neutrality,” Before the S. Comm. on Commerce, Science & Transportation, 109th Cong. (Feb. 7, 2006) (“NCTA’s members have not, and will not, block the ability of their high speed Internet service customers to access any lawful content, application, or services available over the public Internet.”), <http://commerce.senate.gov/pdf/mcslarrow-020706.pdf>; Jason Anders, *Comcast’s Neutral Take on Net Neutrality*, Wall S. J. Online, D:Notebook (May 31, 2006), <http://blogs.wsj.com/dnotebook/2006/05/31/comcasts-neutral-take-on-net-neutrality/> (“‘Right now, we’re going as fast as we can to make our services good for our customers on any site they go to, and we have no intention of changing that,’ [Comcast COO Stephen Burke] said[.]”); *Cable Modem Service: The Cablevision Experience*, Cablevision Ex Parte, *Appropriate Regulatory Treatment for Broadband Access to the Internet over Cable Facilities*, CS Docket No. 02-52, at 3 (May 28, 2003), [http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=6514149226](http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6514149226) (“Optimum Online does not block access to any content[.]”); Statement of Michael S. Willner, President and CEO Insight Communications, on behalf of National Cable Television Association, On the Discussion Draft of “BITS” Legislation, Before the H. Comm. on Energy and Commerce, Subcomm. on Telecommunications and the Internet, 13 (Nov. 9, 2005) (“Cable operators are not blocking consumers’ access to Internet content, applications, or services[.]”), available at <http://www.ncta.com/DocumentBinary.aspx?id=15>; Charter Ex Parte, *Appropriate Regulatory Treatment for Broadband Access to the Internet over Cable Facilities*, CS Docket No. 02-52 (June 17, 2002) (“Charter Communications firmly believes in the rights of consumers to have access to legal content and we continue to provide such a service.”).

<sup>108</sup> See Litan & Singer, *Unintended Consequences of Net Neutrality Regulation* at \*17 (“[P]roponents of net neutrality fail to grasp the nexus that compelling content drives the demand for broadband access. If real-time applications fail to emerge, then access providers will not be able to sell faster and more expensive (such as fiber-to-the-home) connections to end-users.”); Thomas M. Lenard & David T. Scheffman, *Distribution, Vertical Integration and the Net Neutrality Debate*, in *Net Neutrality or Net Neutering: Should Broadband Internet Service Be Regulated* 16-17 (The Progress & Freedom Foundation 2006) (“[U]nder any market structure, the platform provider has a strong incentive to maximize the value of the platform to consumers. . . . [B]roadband providers benefit from having applications and content markets that maximize value to their customers. Anything that detracts from user value will also reduce the demand (and hence the price that can be charged) for the platform.”); Joseph Farrell & Phillip J. Weiser, *Modularity, Vertical Integration, and Open Access Policies: Toward*

self-interest motivates them to maximize their customers' ability to reach valuable content and services on the Internet.

When given an opportunity to present their strongest case to the United States Senate, two of the most prominent advocates of broadband regulation could only express "concerns" about a "risk" that network operators might block or "tax" other providers' online content and applications.<sup>109</sup> Together, they were able to muster just one concrete example of a network operator that, nearly two years ago, supposedly did what the proponents of broadband regulation fear – a small local telephone company called Madison River Communications.<sup>110</sup>

Madison River is a rural telephone company that serves approximately 190,000 lines in Illinois, North Carolina, Georgia, and Alabama.<sup>111</sup> In early 2005, the company apparently blocked calls originating with Vonage, a VoIP provider, because Vonage refused to pay Madison River's high charges for completing calls placed by Vonage customers.<sup>112</sup> Vonage complained to the Commission.<sup>113</sup> The Commission's Staff quickly reached an agreement with Madison

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*a Convergence of Antitrust Regulation in the Internet Age*, 17 Harv. J. L. & Tech 85, 104 (2003) ("the platform monopolist gains from an efficient applications market – whether that be unbridled competition, integration without independents, licensing of a limited set of independents, or some attempt to combine these other structures.").

<sup>109</sup> Prepared Statement of Vinton G. Cerf, Vice President and Chief Internet Evangelist, Google Inc., Hearing on "Network Neutrality," Before the S. Comm. on Commerce, Science, and Transportation, (Feb. 7, 2006) ("*Cerf February 7, 2006 Testimony*"); Prepared Testimony of Lawrence Lessig, Professor, Stanford Law School, Hearing on "Net Neutrality," Before the S. Comm. on Commerce, Science and Transportation 7 (Feb. 7, 2006) ("*Lessig February 7, 2006 Testimony*").

<sup>110</sup> *Cerf February 7, 2006 Testimony* at 5; *Lessig February 7, 2006 Testimony* at 7.

<sup>111</sup> See Madison River Communications Corp. Registration Statement (Form S-1), at 1 (Oct. 17, 2006).

<sup>112</sup> See J. Gregory Sidak, *A Consumer-Welfare Approach to Network Neutrality Regulation of the Internet*, 2 J. Competition L. & Econ. 349, 420-22 (2006) (App. B Exh. 8).

<sup>113</sup> See Ben Charny, *Vonage Says Broadband Provider Blocks Its Calls*, CNET News.com (Feb. 14, 2005), [http://news.com.com/Vonage+says+broadband+provider+blocks+its+calls/2100-7352\\_3-5576234.html?tag=nl](http://news.com.com/Vonage+says+broadband+provider+blocks+its+calls/2100-7352_3-5576234.html?tag=nl); Declan McCullagh, *Telco Agrees To Stop Blocking VoIP Calls*, CNET News.com (Mar. 3, 2005), [http://news.com.com/Telco+agrees+to+stop+blocking+VoIP+calls/2100-7352\\_3-5598633.html](http://news.com.com/Telco+agrees+to+stop+blocking+VoIP+calls/2100-7352_3-5598633.html).

River under which Madison River agreed to cease blocking and to pay \$15,000 as part of a consent decree.<sup>114</sup> Emboldened by the Madison River episode, many VoIP providers have refused to pay telephone companies' charges for call completion, but telephone companies and other broadband providers have nonetheless continued to complete the VoIP providers' calls. (The other examples of supposed blocking that proponents of broadband regulation sometimes invoke took place outside the United States, where the relevant markets and market participants are different, and where broadband regulation would have no effect.<sup>115</sup>)

Regulation advocates' inability to field a better poster child is telling. The Madison River incident does not appear to have been an example of the kind of "discrimination" that regulation proponents claim to fear – namely, a broad anticompetitive scheme by network providers to favor preferred content or applications. Rather, it appears to have been a simple commercial dispute between a rural telephone company and a VoIP provider over the compensation that the VoIP provider owed the telephone company for delivering its customers' calls.

## **B. Differentiation in the Internet Industry Is Not a New Phenomenon**

Moreover, providers at every level of the Internet have long offered different services to different customers, and broadband regulation could jeopardize their continued ability to do so.

In addition, prohibiting differentiation would not be "neutral" because it would disadvantage

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<sup>114</sup> Consent Decree, *Madison River Communications, LLC and Affiliated Companies*, 20 FCC Rcd 4295, ¶¶ 4, 19 (E.B. 2005).

<sup>115</sup> In any event, it is not clear that in every instance, the foreign network operator acted unreasonably. For instance, advocates of broadband regulation sometimes claim that a Canadian ISP, TELUS, blocked access to a website that TELUS believed contained illegal material that threatened or intimidated workers who broke a strike against TELUS. A Canadian court ultimately agreed with TELUS and enjoined the website from posting the content; the website ultimately removed the content in question. See News Release, TELUS, *Alberta Court Grants Interim Injunction Against Posting TELUS Employee Photos* (July 28, 2005), [http://about.telus.com/cgi-bin/media\\_news\\_viewer.cgi?news\\_id=605&mode=288news\\_Year=2005](http://about.telus.com/cgi-bin/media_news_viewer.cgi?news_id=605&mode=288news_Year=2005); Sidak, *A Consumer-Welfare Approach to Network Neutrality Regulation*, 2 J. Competition L. & Econ. at 439-40.

users of applications and services that require a higher quality of service to function properly. It is precisely this discriminatory impact inherent in the TCP/IP transportation protocol that has prompted providers to take steps to improve or enable services that do not function as well, if at all, in the best-efforts Internet environment.

Very large content-and-application providers such as Google have built their own data centers and servers that connect directly to – or even bypass – the largest Internet backbones, thereby ensuring rapid access to their services.<sup>116</sup> Because those large providers route as much of their traffic as possible on their own private network, they have more control over the speed, reliability, and quality of service than providers that must rely on the public Internet. In addition, those providers move data faster “by strategically placing remote (or edge) servers around the globe to reduce traffic congestion and increase distribution and availability.”<sup>117</sup> Delivering content from servers closer to the user, rather than sending it from the content provider’s home server, results in the content carried over those private lines potentially being delivered more quickly than general Internet traffic traveling over the public Internet backbones. Private networks “minimize[s] the required investment in distribution infrastructure for content owners, bypass Internet congestion by reducing route distances and peering points, and reduce origin or local server loads and related costs, all contributing to an improved user experience.”<sup>118</sup>

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<sup>116</sup> See Stephen E. Arnold, *The Google Legacy: How Google’s Internet Search Is Transforming Application Software* 57 n.6, 75 (Infonortics Ltd. 2005) (estimating that Google operates 60 data centers); Robert S. Peck, *et al.*, Bear Stearns, *The Google Ecosystem – Raising the Ratings to Outperform* 28 (Jan. 4, 2006) (according to a conference call with Google’s Bob Cringley on December 19, 2005, Google has 150,000-165,000 servers and 24 data centers); John Markoff & Saul Hansell, *Hiding in Plain Sight, Google Seeks An Exansion of Power*, N.Y. Times, June 14, 2006, at A1 (Google is developing a new data center in The Dalles, Or. that is as big as two football fields).

<sup>117</sup> Mike McCormack, *et al.*, Bear Stearns, *May Broadband Buzz* 2 (June 4, 2007).

<sup>118</sup> *Id.*

Other large Internet content-and-application providers are able to buy edge-server capabilities from providers of Content Delivery Networks (CDNs). For example, CDN provider Akamai – which delivers 10 to 20 percent of *all* Internet traffic<sup>119</sup> – distributes content for Apple’s iTunes service using its network of more than 20,000 servers in 70 countries,<sup>120</sup> and World Wrestling Entertainment, Inc. hired Akamai to deliver live and on-demand video streams from its WrestleMania 23 event in April 2007.<sup>121</sup> Service and application providers, as well as end users, also use techniques such as multi-homing, direct connections, or peer-to-peer data transmission to increase delivery speeds.<sup>122</sup>

In the absence of regulatory interference, attempts to differentiate have been tested in the market. Some, like the examples of Google and Akamai described above, have worked, and some have failed. For example, AOL sought to create a “walled garden” of exclusive content available only to subscribers of its Internet access service, but its effort “met with unmitigated disaster.”<sup>123</sup> And Earthlink’s PeoplePC for a time bundled a personal computer with prepaid

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<sup>119</sup> Akamai, *Facts & Figures*, [http://www.akamai.com/html/about/facts\\_figures.html](http://www.akamai.com/html/about/facts_figures.html) (last viewed June 11, 2007).

<sup>120</sup> See William C. Symonds, *Traffic Cops of the Net*, BusinessWeek (Sept. 25, 2006), [http://www.businessweek.com/magazine/content/06\\_39/b4002094.htm?chan=top+news\\_top+news+index\\_technology](http://www.businessweek.com/magazine/content/06_39/b4002094.htm?chan=top+news_top+news+index_technology).

<sup>121</sup> See Press Release, Akamai, *Akamai Exclusive Streaming Delivery Provider for WWE®’s WrestleMania® 23* (Mar. 30, 2007), [http://www.akamai.com/html/about/press/releases/2007/press\\_033007.html](http://www.akamai.com/html/about/press/releases/2007/press_033007.html); see also *Your Television Is Ringing: A Survey of Telecoms Convergence* 14, The Economist (Oct. 14, 2006) (“As well as buying fast pipes and building huge ‘server farms’, big companies such as Google and eBay also pay extra for specialist ‘content delivery’ services, such as Akamai, to make their websites download even faster.”).

<sup>122</sup> See, e.g., Carolyn Duffy Marsan, *When Speed Rules*, Network World 1 (Dec. 19, 2005) (“the latest crop of online games . . . are pushing top-tier carriers to meet even higher requirements for bandwidth and speedy response times. . . . AT&T has set up a special network operations center in Bridgeton, Mo., to focus on meeting the performance and bandwidth needs of its online gaming customers. . . . AT&T provides managed Web hosting services to several online gaming companies, including Blizzard (maker of World of Warcraft), Turbine (maker of Asheron’s Call) and Konami (maker of Yu-Gi-Oh).”).

<sup>123</sup> Litan & Singer, *Unintended Consequences of Net Neutrality Regulation* at \*18.

Internet access service for one price; the company discontinued the experiment, however, because it did not meaningfully increase subscribership.<sup>124</sup>

Verizon presently offers a number of beneficial services that involve some level of differentiation. For example, Verizon Business (which is one of three major operating units of Verizon Communications Inc.) offers a variety of customized data services to business and government customers. Among other things, Verizon Business, like other service providers, offers private networks, which afford network security and bandwidth prioritization to its customers.<sup>125</sup> Such arrangements permit a business to decide the relative priority of the data, including Internet traffic, traveling over its connection. Verizon Business also sells larger and faster connections direct to the Internet backbone for businesses that desire a higher quality of service than businesses that obtain Internet access by other means. Verizon Business currently enjoys a significant degree of flexibility to tailor service offerings to particular customer requirements, including requirements for broadband connectivity to small office/residential locations and home office environments to support telecommuting or distributed work arrangements (such as virtual call centers).<sup>126</sup>

Verizon also markets products that increase the security of a user's Internet experience – by, for example, filtering or blocking harmful traffic. For subscribers with a Verizon Online

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<sup>124</sup> *Q4 2003 EarthLink Earnings Conference Call*, FD (Fair Disclosure) Wire, Tr. 012704ap.713 (Jan. 27, 2004) (statement by EarthLink CFO, EVP and CAO Lee Adrean).

<sup>125</sup> See Litan & Singer, *Unintended Consequences of Net Neutrality Regulation* at \*9 (“A [private network] allows a [customer] to communicate confidentially over a publicly accessible network” and permits the customer to “obtain [an] enhanced [quality of service]”); Robert W. Hahn and Robert E. Litan, *The Myth of Network Neutrality and What We Should Do About It* Table 1 (Nov. 2006) (listing private-network services offering by several providers).

<sup>126</sup> Litan & Singer, *Unintended Consequences of Net Neutrality Regulation* at \*9 (“[M]edium and large businesses or ‘enterprise customers’ want intranet (to allow employees to gain access to secured corporate information), extranet (to support business-to-business communications), and remote access (to provide traveling workers the same level of connectivity as individuals who work in branch offices).”).

e-mail account, Verizon screens e-mails containing spam or viruses using an application that identifies harmful e-mail based on both the IP address and the presence of key words in the message. Verizon Online also offers parental-control software, as do many other access providers. Similarly, Verizon Business offers its business customers managed firewall services that allows them to choose what content and applications can be accessed inside their local network; for example, a business may choose to prohibit its employees from viewing certain websites while at work. Verizon Business also will terminate the account of a customer that ignores multiple warnings to cease sending “spam” e-mails. These types of security services often can be provided either through applications or network services. To the extent that it is more efficient (or technically necessary) to provide such services at the network level, regulation should not prohibit network providers from doing so.

In addition, some wireless carriers in the United States, including Verizon Wireless, permit only approved devices and applications on their networks. Some regulation advocates demand rules that would require wireless carriers to permit any handset or device on their networks.<sup>127</sup> But adopting such a rule would be a mistake. As Verizon Wireless has explained more fully in other proceedings,<sup>128</sup> permitting only approved devices benefits consumers by reducing costs, improving security, and ensuring efficient functioning of shared resources. As a technological matter, wireless handsets are an integral part of the network and require much more coordinated interaction with fixed network infrastructure than is the case with the wireline

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<sup>127</sup> See Tim Wu, *Wireless Net Neutrality: Cellular Carterfone on Mobile Networks* 30-32 (New America Foundation Wireless Future Program, Working Paper #17, Feb. 2007), available at <http://ssrn.com/abstract=962027>.

<sup>128</sup> Comments of Verizon Wireless, *In re Skype Communications S.A.R.L.*, RM-11361 (filed Apr. 30, 2007), available at [http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native\\_or\\_pdf=pdf&id\\_document=6519408104](http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6519408104).

network.<sup>129</sup> Because wireless devices use a shared spectrum resource, every device and every cell site operating on the network has a specific and calculable impact on the aggregate resources available to all users attempting to access a given carrier's network in a given geographical area. Should any component of the network environment – e.g., an unapproved device – fail to operate as planned, that failure impacts not only the component, but also the network, potentially reducing the quality of service to other subscribers. Some applications can essentially occupy the entire bandwidth resource of wireless networks, precluding other users from running applications of their choice. Without the ability to manage the devices and applications used on their networks, wireless carriers would have no means of ensuring that unapproved devices and applications do not interfere with the quality of service to other customers.

Indeed, to deliver new features and functionality to consumers, it is often necessary for Verizon Wireless to implement parallel engineering changes in network infrastructure, handsets, and applications. The introduction of innovations such as Short Messaging Service (“SMS”), EV-DO, network-supplied games, multimedia messaging, wireless Internet access, push-to-talk services, and geo-location all required changes to both network infrastructure and handsets.<sup>130</sup> So did the implementation of Commission rules requiring wireless carriers to deploy certain 911

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<sup>129</sup> See Charles L. Jackson, *Wireless Handsets Are Part of the Network* 3 (Feb. 27, 2007), originally presented at the ITS Biennial Conference, Beijing China, June 2006 (“Handsets are part of the wireless network, and the performance of handsets has substantial static and dynamic efficiency implications for the operation of the network as a whole.”).

<sup>130</sup> See *id.* at 4-5, 26-28; Puneet Gupta, *Short Message Service: What, How, and Where?*, Wireless Developer Network, <http://www.wirelessdevnet.com/channels/sms/features/sms.html> (last visited June 8, 2007) (“Enhanced Messaging Service (EMS) is a mechanism by which you can send a comparatively richer message that are combination of text, simple melodies, pictures (simple, black and white) and animations to an EMS compliant handset. . . . The handsets however need to be EMS compliant. . . . The next step in the evolution of SMS, which requires substantial changes in the network infrastructure, is the Multimedia Messaging Service (MMS) that allows a combination of text, sounds, images and video. MMS will support pictures and interactive video.”).

capabilities, such as providing the location of wireless callers to the public safety agency receiving a wireless 911 call.<sup>131</sup>

Requiring the use of authorized handsets or devices is particularly important in the wireless industry, given the substantial spectrum-management concerns. For example, many technological attributes of a wireless handset affect how efficiently that device uses spectrum.<sup>132</sup> These include the handset's power, its antenna, and its voice compression system (known as a voice coder or vocoder). If one handset requires twice as much power to perform acceptably, it eats up twice as much signal power from a wireless base station, and reduces the number of simultaneous conversations that that base station may host. Handsets that use spectrum efficiently enable wireless carriers to serve more customers with a given parcel of spectrum and associated infrastructure, thereby reducing costs and improving service for all consumers.

Internet backbone providers also have long treated different traffic differently, with practices like peering and transit that have been fundamental to the efficient functioning of the Internet. As the Commission has recognized, Internet backbone services are “both competitive and dynamic”; “interconnection between Internet backbone providers has never been subject to government regulation”; and “settlement-free peering and degradation-free transit arrangements

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<sup>131</sup> See Jackson, *Wireless Handsets* at 28-30.

<sup>132</sup> See *Wireless Antitrust Opinion*, 385 F. Supp. 2d at 409 (“Because wireless service providers cannot implement more efficient service unless subscribers are using handsets that operate on their respective networks, handsets sold for use in the U.S. wireless services market are developed by manufacturers in collaboration with the wireless service providers. The quality of handsets available to subscribers is particularly important to the service providers because the use of ‘outmoded’ handsets not only affects the quality of that subscriber's service, but also diminishes the quality of service to other subscribers. As a result, at least two of the defendants, Verizon Wireless and AT & T Wireless, subject or have subjected handset models to an approval process involving testing and maintain a list of models approved for use with their respective services.”); Jackson, *Wireless Handsets* at 12-20.

have thrived.”<sup>133</sup> Internet backbones operate using a tiered system under which certain providers with relatively even traffic volumes, such as Tier 1 backbone providers, engage in settlement-free peering with each other, while other providers are required to pay transit fees to get their traffic on the Internet backbone.<sup>134</sup> Imposing fees on networks that do not offer equal exchanges of value to the networks with which they interconnect “yields incentives to construct larger and better facilities, improving bargaining power to obtain superior rates.”<sup>135</sup> Within the backbone, most providers do not currently engage in any form of prioritization or differentiation. For example, Verizon Business, which is an Internet backbone provider, does not currently prioritize any traffic traveling on its backbone. As use and demands evolve, however, some prioritization within the Internet backbone may be appropriate in order to better enable applications that are latency-sensitive or bandwidth-intensive, or both. Prioritization would allow those applications to function properly during times of congestion, when there otherwise might be unacceptable delay or insufficient bandwidth to enable proper functioning.

Finally, a regime in which broadband providers were prohibited from offering anything other than a best-efforts level of delivery would itself not be “neutral.” The current TCP/IP protocol suite treats all packets the same.<sup>136</sup> While that approach may be sufficient for many

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<sup>133</sup> Memorandum Opinion and Order, *Verizon Communications Inc. and MCI Inc., Applications for Approval of Transfer of Control*, 20 FCC Rcd 18433, ¶¶ 125, 133 (2005) (“*Verizon/MCI Order*”).

<sup>134</sup> See Yoo, *Would Mandating Network Neutrality Help or Hurt Competition?* At 36 (“So long as the traffic initiated and terminated by each backbone is roughly equal in value, peering allows backbones to forego the costs of metering and billing these termination costs without suffering any adverse economic impact. Peering is not economical, however, in cases where the value of the traffic being terminated is not reciprocal. As a result, smaller-volume backbones are often required to enter into ‘transit’ arrangements in which they must pay larger backbones compensation for terminating their traffic.”); see also *Verizon/MCI Order* ¶¶ 111-112; Memorandum Opinion and Order, *SBC Communications Inc. and AT&T Corp., Applications for Approval of Transfer of Control*, 20 FCC Rcd 18290, ¶¶ 110-111 (2005).

<sup>135</sup> Thomas W. Hazlett, *Thomas W. Hazlett: Neutering the net*, Fin. Times, Mar. 20, 2006.

<sup>136</sup> See Yoo, *Beyond Network Neutrality*, 19 Harv. J.L. & Tech. at 8 (“For example, TCP/IP routes packets anonymously on a ‘first come, first served’ and ‘best efforts’ basis. Thus, it is poorly

Internet activities, such “equal” treatment in fact discriminates against providers and users of more advanced Internet applications like online video and VoIP. That is because providers and users of advanced applications and content are harmed when latency or bandwidth shortages interfere with their ability to provide and use those applications. Services have begun to emerge to minimize those discriminatory impacts of the best-efforts regime, including private networks and CDNs. Regulation should not prohibit network operators from offering an additional option to meet the demand for higher quality service. Furthermore, mandating a best-efforts level of service would mean that “the average consumer, who uses the least bandwidth, could be forced to subsidize the relatively few who consume the most bandwidth.”<sup>137</sup> That is because a network provider must make additional network investments to carry applications and content that demand more bandwidth or require faster delivery.

#### **IV. BROADBAND REGULATION WOULD HINDER NEEDED INVESTMENTS AND INNOVATION IN BROADBAND NETWORKS AND SERVICES**

In the absence of intrusive new regulation, efficient and procompetitive new business models may develop in the market for broadband services. Regulation that would prohibit those developments – in particular, regulation that would impose a so-called “nondiscrimination” obligation – is unjustified. Inefficient new regulation of broadband services would impede the emergence of innovative new network services; would needlessly prohibit broadband providers

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suited to applications that are less tolerant of variations in throughput rates, such as streaming media and VoIP, and is biased against network-based security features that protect e-commerce and ward off viruses and spam.”).

<sup>137</sup> *Cleland September 26, 2006 Presentation* at 21; see Jon M. Peha, Carnegie Mellon University, *The Benefits and Risks of Mandating Network Neutrality, and the Quest for a Balanced Policy*, 34th Telecommunications Policy Research Conference 7 (Sept. 2006) (“The ready availability of high-capacity always-on connections to the network has made it possible for a small number of users to generate the vast majority of network traffic on many commercial broadband networks, while filling some communications links to capacity. Today, peer-to-peer file transfers are the primary cause, but other applications may have a similar impact in the future.”) *available at* [http://www.ece.cmu.edu/~peha/balanced\\_net\\_neutrality\\_policy.pdf](http://www.ece.cmu.edu/~peha/balanced_net_neutrality_policy.pdf).

from competing with content and application providers by offering competitive content and applications; would limit the ability of wireless carriers to efficiently manage their networks to ensure optimal performance that better serves consumers; and would preclude providers from effectively satisfying the growing demands of enterprise customers for enhanced network services. Furthermore, any such regulation would in fact be discriminatory because it would harm users of services and applications that require faster speeds or limited latency and would unfairly hinder network providers' ability to recover their substantial investments in broadband networks.

**A. The Commission Should Encourage the Development of New Business Models**

In the absence of restrictions, new business models that free the end user from having to pay the entire cost of service may develop. Broadband is a classic “two-sided market” – one in which the demand that one party (the consumer) has for the product (Internet access) is complementary to the demand the other party (the Internet content provider) has for that product.<sup>138</sup> For example, consider the market for express delivery, served by providers such as FedEx and UPS. There are times when consumers are willing to pay more for faster delivery and the merchant is indifferent (for example, when the customer orders an item of clothing needed for an upcoming event). At other times, the sender is willing to pay for faster delivery and the recipient is indifferent (for example, when a law firm sends a brief to a court). In light of this fact, alternative business models to the current “consumer-pays-all” approach may be efficient.

For example, in the context of the broadband marketplace, an online movie service may be willing to pay for extra bandwidth that its customers need to obtain a high quality of service –

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<sup>138</sup> See Sidak, *A Consumer-Welfare Approach to Network Neutrality Regulation*, 2 J. Competition L. & Econ. at 361-62.

achieving a similar result as iTunes does now through Akamai. *See supra* Part III.B.<sup>139</sup> It may also be the case that the customers of that movie service are willing to pay for more bandwidth. And retailers may be willing to pay for advertisements that would help to offset the cost of providing that bandwidth. Thus, network providers may desire to try business models that recoup a portion of their network investments by selling advertising, as occurs in the newspaper, radio, and broadcast television industries. Some municipalities, for example, offer broadband Internet access over WiFi networks for free, supported by advertising.<sup>140</sup> The Commission should encourage these types of innovation and experimentation, not preempt them with anticipatory regulation.

To the extent that broadband network operators are able either to sell advertising or to develop services for which Internet content and application providers are willing to pay, that would not only help recoup the costs of network investment, but also could help reduce costs for consumers. By spreading the costs of network investment over a broader base, consumers will

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<sup>139</sup> *See generally* Robert Hahn & Scott Wallsten, AEI-Brookings Joint Center, *The Economics of Net Neutrality*, *The Economists' Voice* 3 (June 2006) (“Yet we know a demand for this general type of service [*i.e.*, bandwidth prioritization] exists. This is one reason people and businesses are willing to pay more for faster Internet connections now.”).

<sup>140</sup> *See* Press Release, MetroFi, *MetroFi Rolls Out Free Wireless Network in Concord, CA* (Apr. 12, 2007), [http://64.156.212.17/press\\_releases-30.html](http://64.156.212.17/press_releases-30.html) (“MetroFi – the leading provider of free consumer wireless Internet access and municipal services – today announced the initial roll-out of a citywide, Wi-Fi network in Concord, California. . . . MetroFi’s free consumer Wi-Fi service in Concord is made possible by the sponsorship of local and national advertisers.”); Press Release, MetroFi, *MetroFi Brings Free, Wireless Internet Access to Santa Clara CA* (Jan. 30, 2006), [http://www.metrofi.com/press\\_releases-12.html](http://www.metrofi.com/press_releases-12.html) (“MetroFi . . . today announced free, wireless Internet access for residents and visitors in Santa Clara California. . . . The MetroFi network also brings a new opportunity for local businesses to reach the community through a truly local internet advertising medium. Customers that are accessing the network will be shown a banner advertisement in the frame of the browser. Local businesses can take advantage of the local and regional nature of the network by providing links to their website, coupons or announcements to those that are guaranteed to be near their establishment.”); *see also* CNNMoney.com, *Peek-a-Boo, Google Sees You* (Apr. 7, 2006), [http://money.cnn.com/2006/04/06/technology/googsf\\_reut/](http://money.cnn.com/2006/04/06/technology/googsf_reut/) (“Internet search leader Google Inc. and service provider EarthLink were selected to provide a basic free wi-fi Internet service covering the entire city of San Francisco. Google, which gets for 99 percent of its revenues from advertising, hopes to defray the costs of offering a free service through contextual advertising.”).

not have to foot the entire bill for broadband network deployment. Reducing costs to consumers will have the effect of stimulating demand for broadband services and, in turn, Internet content.

On the other hand, limiting ways in which providers can recoup their investments in broadband networks would discourage those investments.<sup>141</sup> And it would do so at a time when continued large investments in network infrastructure are needed to process traffic generated by new bandwidth-intensive services like streaming video. Indeed, a premise of many arguments for broadband regulation is that network resources are or will be scarce. But imposing new regulation that deters investments in network resources would only heighten the risk of network scarcity.

Furthermore, broadband regulation need not actually be imposed to chill investment and innovation. An uncertain regulatory climate in which ill-defined and shifting proposals for new regulation are under consideration also serves to discourage capital spending and the introduction of new services that could potentially draw the attention of regulation proponents. Such regulatory uncertainty stifles investment and innovation because market participants do not know whether their freedom to operate will be constrained by regulation, nor can they predict what such regulation would look like or how it might be applied. During this time of rapid technological evolution, the Commission should make clear, as it has in the past, that network providers can make infrastructure investments and experiment with innovative business models

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<sup>141</sup> See Larry F. Darby, *Consumer Welfare, Capital Formation and Net Neutrality: Paying for Next Generation Broadband Networks* 8 (June 6, 2006) (“[T]he higher subscriber prices and lower take rates associated with requiring end users only to bear all costs of constructing new broadband networks a) make investment in network infrastructure more risky, b) reduce expected earnings for risk taking shareholders and c) reduce expected growth of cash flow from broadband network services.”); William J. Baumol *et al.*, *Economists’ Statement on Network Neutrality Policy* 2 (Mar. 2007) (App. B Exh. 2) (“One advantage of giving Internet service providers pricing flexibility is that it will give them incentives to make new investments in next-generation Internet services. Without such incentives, investment may be discouraged, and the Internet may develop more slowly than would be optimal.”), *available at* <http://ssrn.com/abstract=976889>.

to meet consumers' evolving demands with certainty that later regulatory intervention will not undermine those efforts.<sup>142</sup> As the empirical evidence discussed above demonstrates, when the Commission removed the threat of regulation of fiber networks, investment in those networks increased significantly. *See supra* Part II.A.

Allowing the development of new business models also would promote competition between Internet content and application providers and would foster the development of whole new markets for services that depend on faster delivery and greater bandwidth.<sup>143</sup> Differentiation and innovation by network providers may well enable the next Google, by allowing it to overcome limitations with the current Internet. Furthermore, differentiated offerings, such as the bandwidth prioritization services that some network operators may offer, would provide a competitive alternative to other technologies and suppliers (such as CDNs) that currently serve the demand of providers and users for faster, uninterrupted delivery. By prohibiting or restricting network services, broadband regulation would have the effect of limiting, or raising the costs of, broadband services that depend on faster access to consumers, and would therefore hinder the development of markets for next-generation content and applications.

In addition to promoting competition and investment, allowing the emergence of new business models premised on network-management services offers ways to manage possible network congestion. Services like bandwidth prioritization may help to prevent bandwidth-intensive applications from creating unacceptable congestion and degrading the quality of

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<sup>142</sup> *See Triennial Review Order* ¶ 272 (“[W]ith 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.”).

<sup>143</sup> Litan & Singer, *Unintended Consequences of Net Neutrality Regulation* at \*28 (“the net neutrality bills would effectively eliminate a market” for content that depends on high-quality service).

service for everyone.<sup>144</sup> In addition, requiring those that consume a greater share of network resources to internalize the costs of their usage would not be inappropriate discrimination; instead, it is a means of ensuring that the market sends accurate pricing signals.<sup>145</sup> Tiered pricing schemes are frequently used to help solve resource allocation problems in many other contexts, including dining at restaurants (early-bird specials), commuting (higher rush-hour subway prices), and generating electricity (lower off-peak rates). It would be a mistake to “criminalize good network management and business practices,” “[i]n the name of opening up the Internet for big content”<sup>146</sup> because doing so would result in higher prices across the board.<sup>147</sup>

Finally, providing better quality to some does not necessarily entail inferior service for others – particularly where the freedom to offer differentiated services spurs investment in higher-capacity infrastructure. Network operators have strong incentives to ensure that consumers and content providers can connect with each other at the speeds each side desires.

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<sup>144</sup> See Kahn, *Network Neutrality* at 4 (“The only way to avoid unacceptable congestion and degradation of service is to give operators the ability to manage traffic on their networks, expediting some data (phone calls, streaming video, or remote medical monitoring, diagnoses and treatment) over less time-sensitive data (such as ordinary e-mail.)”); Peha, *The Benefits and Risks of Mandating Network Neutrality, and the Quest for a Balanced Policy* at 7 (“The ready availability of high-capacity always-on connections to the network has made it possible for a small number of users to generate the vast majority of network traffic on many commercial broadband networks, while filling some communications links to capacity. Today, peer-to-peer file transfers are the primary cause, but other applications may have a similar impact in the future.”).

<sup>145</sup> Alfred E. Kahn, AEI-Brookings Joint Center for Regulatory Studies, *Telecommunications, the Transition from Regulation to Antitrust* 19 (July 2006, rev. Aug. 14, 2006) (App. B Exh. 4) (“The opposition to ‘tiering’ . . . is economically ignorant. The costs – both short-run (the opportunity costs of giving priority to the higher-speed uses) and long-run (the costs of the investments to provide additional broadband capacity) – are, presumably, higher for the users requiring the ‘express lane’; and it is therefore not discriminatory for them to be levied on the services requiring their incurrence.”).

<sup>146</sup> Andrew Orlowski, *How ‘Saving The Net’ May Kill It*, *The Register* (July 17, 2006), [http://www.theregister.co.uk/2006/07/17/net\\_neut\\_slow\\_death/](http://www.theregister.co.uk/2006/07/17/net_neut_slow_death/) (interview with Richard Bennett).

<sup>147</sup> See Litan & Singer, *Unintended Consequences of Net Neutrality Regulation* at \*24 (“[T]he cost per customer of providing basic Internet access (and thus the price) would increase significantly if access providers were prohibited from using intelligent traffic control . . . to meet the demand for Internet traffic.”).

Doing so will make broadband connections more valuable to consumers and content providers alike. The greatest threat to consumer quality on the Internet is not differentiation; it is the possibility that regulation will discourage the network investment that is required to ensure that the Internet can carry the growing amount of new traffic and enable more advanced applications and services.

**B. A Nondiscrimination Obligation Would Lead to Intrusive Common-Carrier Regulation**

Many proposals for new broadband regulation would restrict broadband providers' ability to manage bandwidth and control traffic on their network – for example, to offer different levels of service for content and application providers to reach their customers. Some proponents of regulation – including big content providers with a vested interest in the current Internet business model – seek to prevent network providers from “discriminating” by letting certain content and application providers access new features or services, such as prioritized delivery, that meet their particular needs.

The imposition of a so-called “non-discrimination” obligation on broadband providers would be inappropriate and would almost inevitably lead to an intrusive regulatory regime. In the context of commercial agreements, “non-discrimination” obligations are the exception, rather than the rule.<sup>148</sup> That is because most commercial contracts “discriminate” in one form or

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<sup>148</sup> See *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2004) (“[A]s a general matter, the Sherman Act ‘does not restrict the long recognized right of [a] trader or manufacturer engaged in an entirely private business, freely to exercise his own independent discretion as to parties with whom he will deal.’”) (quoting *United States v. Colgate & Co.*, 250 U.S. 300, 307 (1919)); Restatement (First) of Torts § 762 (1939) (“One who causes intended or unintended harm to another merely by refusing to enter into a business relation with the other or to continue a business relation terminable at his will is not liable for that harm if the refusal is not (a) a breach of the actor’s duty to the other arising from the nature of the actor’s business or from a legislative enactment, or (b) a means of accomplishing an illegal effect on competition, or (c) part of a concerted refusal by a combination of persons of which he is a member.”).

another,<sup>149</sup> and that discrimination often has procompetitive benefits. Indeed, today’s Internet marketplace offers numerous examples of procompetitive discrimination, such as settlement-free peering between backbone providers that receive an equal exchange of value from the traffic they exchange with each other. *See supra* Part III.B.

The Commission ordinarily does not compel a provider to “serve the public indifferently”<sup>150</sup> unless “the public interest requires common carrier operation of the proposed facility.”<sup>151</sup> In assessing whether the public interest demands the imposition of common-carrier obligations, the Commission has “focused its inquiry on whether the provider has sufficient market power to warrant regulatory treatment as a common carrier.”<sup>152</sup> No such finding could be made here, considering the vigorous intermodal competition that exists in the market for broadband access services. *See supra* Part I.<sup>153</sup> As the Commission recognized in a substantially similar context less than two years ago, “the public interest is best served if [the Commission] permit[s] competitive marketplace conditions to guide the evolution of broadband Internet access service.”<sup>154</sup> The Commission is currently defending that ruling before the Third Circuit, and proponents of net regulation offer no reason for the Commission to abandon its conclusion that

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<sup>149</sup> *Cf. Barry Wright Corp. v. ITT Grinnell Corp.*, 724 F.2d 227, 236 (1st Cir. 1983) (Breyer, J.) (“Virtually every contract to buy ‘forecloses’ or ‘excludes’ alternative sellers from some portion of the market, namely the portion consisting of what was bought.”).

<sup>150</sup> *Wireline Broadband Order* ¶ 103 n.317.

<sup>151</sup> *Virgin Islands Tel. Corp. v. FCC*, 198 F.3d 921, 924 (D.C. Cir. 1999) (internal quotation marks omitted).

<sup>152</sup> *Id.* at 925 (internal quotation marks omitted).

<sup>153</sup> *See also Wireline Broadband Order* ¶ 3 (“[T]he broadband Internet access market today is characterized by several emerging platforms and providers, both intermodal and intramodal, in most areas of the country.”); Litan & Singer, *Unintended Consequences of Net Neutrality Regulation* at \*16 (“access providers lack *significant* power over prices” or “the ability to exclude rivals”).

<sup>154</sup> *Wireline Broadband Order* ¶ 85.

there is no public interest reason to compel provision of broadband Internet access service on a common carrier basis.

Moreover, adopting a “non-discrimination” obligation brings with it a host of administrative burdens – inevitably leading to intrusive, common carriage-like regulation, with regulatory oversight of the physical and economic terms of arrangements including regulatory determinations of rates and costs.<sup>155</sup> For example, courts have held that, to find a violation of the nondiscrimination obligation in § 202(a) of the Communications Act, 47 U.S.C. § 202(a), the Commission must find (1) that “the services are ‘like’”; (2) if they are, that “there is a . . . difference between them”; and (3) “if there is, . . . that [the] difference is [un]reasonable.”<sup>156</sup> Thus, regulators would be required to determine, among other things, which upstream providers are similarly situated and account for all variations between different types of content and application providers or different types of deals. For example, a regulator would have to decide whether a provider could offer higher priority to medical monitoring or online video-streaming than music downloads or peer-to-peer file sharing. Ultimately, a nondiscrimination obligation could dissolve into a regime of regulated rates – a regime that would impose significant restrictions on innovation by limiting the ability of network providers to recoup a fair return on their investments. Furthermore, such a regime would discriminate against network providers by hindering their ability to earn the level of return necessary to justify their decision to build the network in the first place.

In addition, given the global demand for Internet content and services, no last-mile Internet access provider would have the power, as some regulation advocates contend, to harm

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<sup>155</sup> Cf. *Trinko*, 540 U.S. at 408 (“Enforced sharing [of network facilities] requires antitrust courts to act as central planners, identifying the proper price, quantity, and other terms of dealing – a role for which they are ill suited.”)

<sup>156</sup> *Competitive Telecomms. Ass’n v. FCC*, 998 F.2d 1058, 1061 (D.C. Cir. 1993).

the upstream markets for Internet content and applications. The theory of harm that regulation proponents posit is that network providers will bar content-and-applications providers from reaching end users, injuring competition in the content-and-applications market.<sup>157</sup> But the market for content and applications is global, not local.<sup>158</sup> Search engines, for example, aim to reach users around the world. Indeed, Google, MSN and Yahoo! only get about a fourth or a fifth of their traffic from users in the United States; the rest of their traffic comes from overseas.<sup>159</sup> That is true not only for search engines with universal appeal, but also for online buyers and sellers with geographically dispersed niche audiences that the Internet has aggregated in a new virtual marketplace.<sup>160</sup> If the concern is that content and applications providers will

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<sup>157</sup> See, e.g., *Lessig February 7, 2006 Testimony* at 4-6 (arguing that concentration in broadband access market threatens competition and innovation in the content-and-applications market).

<sup>158</sup> The Commission has reached this conclusion with the roughly analogous market for video programming content. See *Implementation of Section 11 of the Cable Television Consumer Protection and Competition Act of 1992*, Further Notice of Proposed Rulemaking, 16 FCC Rcd 17312, ¶ 9 (2001) (“The relevant geographic market for general entertainment programming is at least national, and, to some extent, international. The geographic market for certain types of niche programming may also be national or international in scope. An example would be programming that appeals to a narrowly defined interest group across a broad geographic area such as golf fans (e.g., the Golf Channel).”); see also Hal Singer, *Net Neutrality: A Radical Form of Non-Discrimination*, Speech Delivered at the William Pitt Debating Union, Univ. of Pittsburgh 4-6 (Feb. 23, 2007).

<sup>159</sup> See Fig. 1. Google derives more than 45 percent of its revenues from outside the United States, where its share of the search-engine market is even larger than it is in the United States. See Press Release, Google, *Google Announces First Quarter 2007 Results* (Apr. 19, 2007) (47 percent of total 1Q07 revenues from outside the United States), [http://www.google.com/intl/en/pressrel/revenues\\_q306.pdf](http://www.google.com/intl/en/pressrel/revenues_q306.pdf); Thomas Crampton, *European Search Engines Take on Google*, Int’l Herald Trib. (Dec. 17, 2006), <http://www.iht.com/articles/2006/12/17/business/search.php?page=1> (“For Europe as a whole, as in much of the world, Google leads in Internet search. Of all those who visited search and navigation sites in Europe [in October 2006], 86 percent went to Google at least once, compared with 30 percent for Microsoft’s search sites and 21 percent for Yahoo, according to comScore, an online market research firm.”). See also News Release, comScore Networks, *More Than Half of Top 25 U.S. Web Properties Generate More Traffic from Outside the U.S. Than from Within* (Nov. 9, 2006), <http://www.prnewswire.co.uk/cgi/news/release?id=183856> (“14 of the top 25 U.S. Web properties attract more traffic from people outside the U.S. than from within. Among them are the Top 5 Web properties in the U.S. – Yahoo! Sites, Time Warner Network, Microsoft Sites, Google Sites and eBay.”).

<sup>160</sup> Blair Levin, et al., Stifel Nicolas, *Quadruple Plays from the Edge: The Long Tail of Voice and Video* 5 (Oct. 6, 2006) (“In the recent business best-seller *The Long Tail*, author Chris Anderson

lose access to their audiences around the world (and hence lose the incentive to develop innovative content or services), then only a network provider with market power over that global market could (as broadband regulation advocates fear) deprive content-and-applications providers of access to their global audiences.

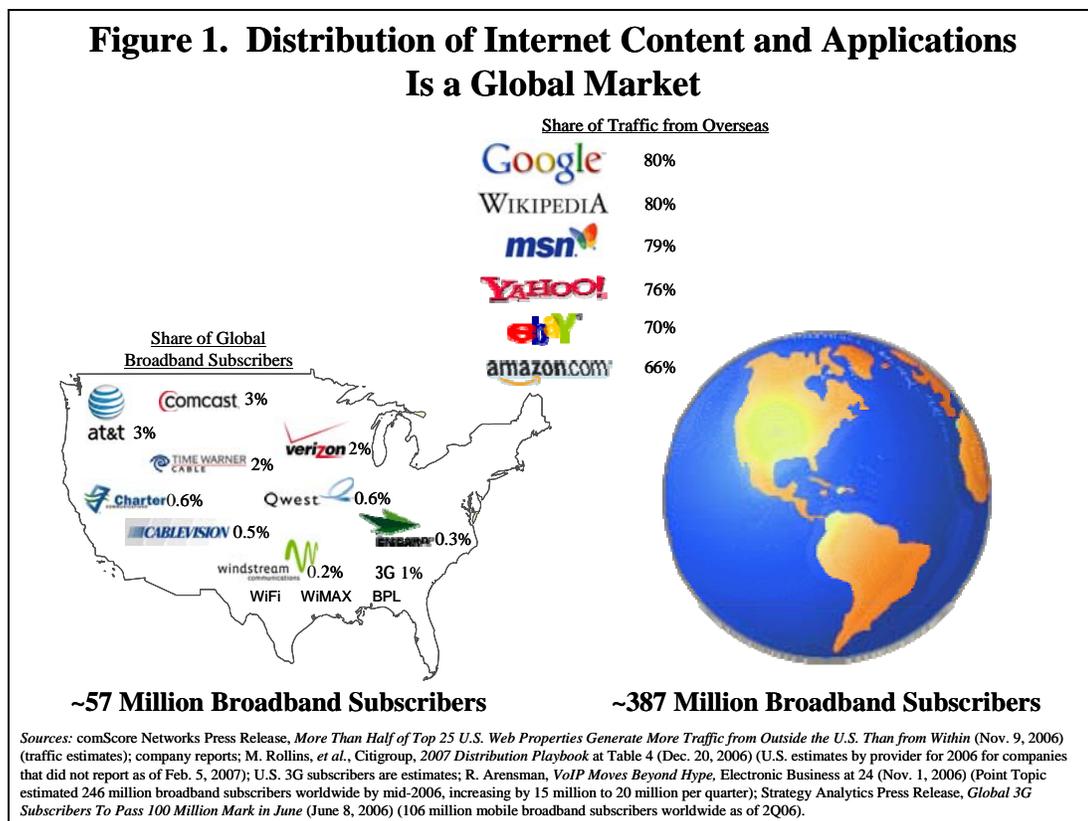
Yet no United States network provider serves more than a small fraction of users in the content and applications providers' global markets. No single broadband provider in the United States serves more than 22 percent of United States broadband subscribers or more than 3 percent of global subscribers.<sup>161</sup> Verizon serves approximately 12 percent and 2 percent, respectively, of the national and global broadband connections.<sup>162</sup> Thus, no single broadband provider has the ability to displace online content that consumers want. *See* Fig. 1.

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makes the case that the big economic impact of the Internet is that it enables a 'long tail' of markets: the aggregation of many niche, geographically dispersed, small markets.”).

<sup>161</sup> *See* sources cited in Figure 1. AT&T is estimated to be the largest broadband provider following its acquisition of BellSouth, with approximately 12 million broadband subscribers at the end of 2006. *Id.*

<sup>162</sup> *See* sources cited in Figure 1; Russ Arensman, *VoIP Moves Beyond Hype*, *Electronic Business* 24 (Nov. 1, 2006), <http://www.edn.com/article/CA385666.html> (“Point Topic estimates there were 246 million broadband subscribers worldwide by mid-2006, a total that’s increasing by 15 million to 20 million per quarter.”).



By the same token, even if a broadband provider were to promote its own Internet content or applications at the expense of others', it could favor that content for only a small minority of the nation's subscribers – and other broadband providers in the same local market invariably would feature any desirable content disfavored by their rival.<sup>163</sup> Thus, no broadband provider (regardless of its share of any regional or local market) is in a position meaningfully to influence the global or nationwide market for content or applications. The best policy for continuing the current competitive environment in the national broadband access market is to eschew intrusive new regulations that discourage investment in new broadband networks.

Moreover, examination of the market realities further belies the claim that broadband providers are positioned to disadvantage content-and-applications providers. Indeed, many large

<sup>163</sup> See IIA Phillip E. Areeda, *Antitrust Law* ¶ 535c, at 221 (2d ed. 2002) (A provider cannot “reduce[] output when its rivals have a large volume of efficient excess capacity that can quickly generate additional and readily saleable output.”).

content providers have significant economic power. For example, ESPN “is charging Internet-service providers for the right to offer its broadband Web site, ESPN360.”<sup>164</sup> And if, for instance, an access provider were to block the website of Google, which offers (among other services) a search engine that is estimated to have a market share of approximately 50 percent,<sup>165</sup> that access provider would almost certainly lose customers to its rivals that did offer access to Google.<sup>166</sup> Nor is Google’s market position in search – which is “[p]erhaps the most important submarket among the larger Internet content market” – likely to be challenged anytime soon, given the significant barriers to entry in that market, including the high cost of data centers.<sup>167</sup>

In addition, beyond being factually inaccurate (*see supra* Part I), claims that “an effective duopoly” of cable modem and DSL providers currently “controls access to high speed Internet” and that there is no “near-term prospect for meaningful competition from alternative platforms”<sup>168</sup> fail to consider the nascent characteristics of the broadband market, in which providers are still competing for potential customers who do not yet use broadband.<sup>169</sup> Even

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<sup>164</sup> Sarah Nassauer, *ESPN Charges Net Providers for Right to Offer Broadband Web Site*, Wall St. J., Aug. 1, 2006, at B2; *see also* Kenneth Hein, *Carriers Locked in Content Land Grab*, Brandweek.com (Mar. 12, 2007), [http://www.brandweek.com/bw/news/tech/article\\_display.jsp?vnu\\_content\\_id=1003556832](http://www.brandweek.com/bw/news/tech/article_display.jsp?vnu_content_id=1003556832) (“Looking to help retain and attract customers, each of the major [wireless carriers] is avidly inking exclusive content deals with sports and entertainment properties.”).

<sup>165</sup> *See* Litan & Singer, *Unintended Consequences of Net Neutrality Regulation* at \*18.

<sup>166</sup> *See* Baumol *et al.*, *Economists’ Statement on Network Neutrality Policy* at 2 (“the multi-sided nature of the [broadband services] market means that [service providers] have powerful incentives not to block content. In particular, providers need content in order to attract subscribers. If a provider restricted access, its product would be less valuable and attract fewer subscribers.”).

<sup>167</sup> *See* Litan & Singer, *Unintended Consequences of Net Neutrality Regulation* at \*17-18.

<sup>168</sup> *Lessig February 7, 2006 Testimony* at 5; *Cerf February 7, 2006 Testimony* at 2; *see also* Testimony of Tim Wu, Professor, Columbia Law School, Hearing on “Network Neutrality: Competition, Innovation, and Nondiscriminatory Access,” Before the H. Comm. on the Judiciary, Telecom & Antitrust Task Force, at 1 (Apr. 24, 2006); SavetheInternet.com, *F.A.Q.*, <http://www.savetheinternet.com/=faq>.

<sup>169</sup> As the Commission has explained, “an emerging market, like the one for broadband Internet access, is more appropriately analyzed in view of larger trends in the marketplace, rather than exclusively

with broadband providers' great success over the past few years, only about 53 percent of homes have a broadband connection; customer surveys show that a majority of the remaining potential users are interested in subscribing to broadband services.<sup>170</sup> Thus, no provider or group of providers has a dominant share in any economically meaningful sense because many consumers have yet to be captured by *any* provider or technology – wireline, mobile wireless, fixed wireless, WiMAX, WiFi, BPL, or satellite.<sup>171</sup> Furthermore, as bandwidth-intensive applications – such as online video, multiplayer gaming, and media-rich websites – proliferate and attract new users to broadband, competitors will vie to provide greater bandwidth through continued investment and technological innovations. It is far too early to predict winners and losers in the upcoming races to provide faster speeds and new services.<sup>172</sup>

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through the snapshot data that may quickly and predictably be rendered obsolete as this market continues to evolve.” *Wireline Broadband Order* ¶ 50.

<sup>170</sup> See, e.g., Nicole Klein, Yankee Group, *As Broadband Moves Into the Mass Market BSPs Will Be Challenged by Late Adopters* 3 (Jan. 2007) (According to a Yankee Group customer survey, “nearly 60% of those who do not have broadband are interested in subscribing to broadband.”).

<sup>171</sup> See *Wireline Broadband Order* ¶ 55 (“[W]hile cable modem and DSL clearly have exhibited significant growth over the last few years, market penetration for these two technologies still is far below the size of the potential market. . . . [B]roadband services stand[] in marked contrast to other, more mature markets the Commission has examined and regulated to varying degrees.”); Christopher S. Yoo, *Vertical Integration and Media Regulation in the New Economy*, 19 *Yale J. on Reg.* 171, 280 (2002) (“As Stan Liebowitz and Stephen Margolis have observed, ‘If a market is growing rapidly, the number of users who have made commitments to any standard is small relative to the number of future users.’ In such cases, the fact that a particular firm may currently dominate a market is of little consequence. People concerned about lock-in will focus on the size of the network that will exist in the future, not the size of the one that exists today.”) (quoting S.J. Liebowitz & Stephen E. Margolis, *Should Technology Choice Be a Concern of Antitrust Policy*, 9 *Harv. J.L. & Tech.* 283, 310, 312 (1996)) (footnotes omitted); see also *id.* (“[E]xplosive growth of the kind that the broadband transport industry is currently undergoing can render the network externalities largely irrelevant,” and enable new entrants to make rapid gains in the market); Michael Katz & Carl Shapiro, *Product Introduction with Network Externalities*, 40 *J. Indus. Econ.* 55, 73 (1992) (concluding that exponential market growth effectively prevents excess inertia).

<sup>172</sup> See *Wireline Broadband Order* ¶ 61 (“As the Internet and related applications mature and continue to evolve, the demand for broadband Internet access services will likely grow. The presence of more content available through the Internet and the enhanced means of presenting the content, together with growth in broadband-related applications, such as streaming video, will lead more subscribers to seek broadband Internet access service. As the number of subscribers grows, so does the opportunity for alternative technologies and their respective providers. As any provider increases its market share or

New technologies have repeatedly upset concentrated markets in the past. For example, the early wireless providers could not sustain a duopoly once new providers were allowed into the market in large part because those new providers were able to use new digital technology that offered significant benefits over the analog-based incumbents – forcing the incumbents to innovate as well.<sup>173</sup> The wireless sector is transforming again with the race to deploy 3G broadband capabilities. Similarly, AT&T lost its monopoly in long distance when the advent of microwave, and then fiber, enabled competitors to overcome AT&T’s scale advantages.<sup>174</sup> Subsequently, the emergence of IP technology that dramatically lowered costs undermined the market position of AT&T, MCI, and Sprint.<sup>175</sup>

Moreover, the relationship between major telecommunications and cable firms is far from “cozy.” Both sets of providers are investing heavily in their networks and competing aggressively on price and quality. *See supra* Part I. In particular, cable companies have responded to competition from Verizon’s FiOS service by deploying faster cable modem services in targeted geographic markets. When Verizon rolled out FiOS service in northeast Indiana, Comcast responded by doubling the speed of its fastest cable modem service. A Comcast spokesman noted that the FiOS deployment was a factor in Comcast’s decision to

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upgrades its broadband Internet access service, other providers are likely to mount competitive challenges, which likely will lead to wider deployment of broadband Internet access service, more choices, and better terms.”).

<sup>173</sup> *See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, Second Report, 12 FCC Rcd 11266, 11269-70 (1997) (“[T]he imminent availability of [digital] PCS in many markets appears to be accelerating the conversion of cellular systems from analog to digital technology, a change that will facilitate the offering of a broader array of wireless services by cellular licensees and that will help ensure the privacy of cellular calls.”).

<sup>174</sup> *See* James Nelson, *The Telecommunications Act of 1996: How It Failed, and How It Succeeded (But Not As Expected)*, 31 S. Ill. U. L.J. 1, 6-7, 15 (2006); Bart Stuck & Michael Weingarten, *AT&T: The Path Not Taken*, Business Communications Review (Mar. 17, 2005), [http://www.bcr.com/market\\_trends/breifing/at&t\\_path\\_not\\_taken\\_2005031739.htm](http://www.bcr.com/market_trends/breifing/at&t_path_not_taken_2005031739.htm).

<sup>175</sup> *See, e.g.*, David Rohde, *Carriers Raise a Challenge*, Network World (Jan. 4, 1999).

launch the service there.<sup>176</sup> The Comcast spokesman only admitted the obvious, since Comcast first launched its faster modem service in four markets – all four of which had Verizon’s FiOS service. As one article noted, “Comcast is increasing the speed of its broadband service in what looks like an attempt to keep pace with Verizon Communications’ Fios service . . . The cities selected for the initial upgrade also happen to be those where Verizon Communications is offering its fiber to the home service, called Fios.”<sup>177</sup>

Other cable companies similarly raised cable modem speeds to compete with FiOS. Cox and Adelphia cranked up speeds in Northern Virginia where FiOS was deployed.<sup>178</sup> Time Warner did the same in Syracuse, New York, where, “[n]ot so coincidentally,” Verizon had been offering FiOS “for over a year.”<sup>179</sup> Cablevision, which is most directly affected by FiOS because it is clustered in the New York area, raised speeds across its footprint in 2006 to “up to 15 Mbps downstream and 2 Mbps upstream, at no additional charge.”<sup>180</sup>

### **C. Broadband Regulation Would Impede Innovation and Competition in Network Services**

To meet the varied needs of broadband applications and content and to satisfy consumer demand for those services, broadband providers have begun developing or considering a wide range of new, enhanced network services. As two of the country’s pioneers in helping to create the Internet – engineers David Farber and Robert Kahn – have explained, “[t]he Internet needs a

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<sup>176</sup> Jenni Glenn, *Comcast to Double Download Speeds*, Fort Wayne Journal Gazette (Indiana), Mar. 28, 2006, at B8.

<sup>177</sup> Marguerite Reardon, *Comcast Matches Verizon Fios Speeds*, CNET News.com (Mar. 28, 2006), [http://news.com.com/Comcast+matches+Verizon+Fios+speeds/2100-1034\\_3-6055095.html](http://news.com.com/Comcast+matches+Verizon+Fios+speeds/2100-1034_3-6055095.html).

<sup>178</sup> *Id.*

<sup>179</sup> Marguerite Reardon, *Time Warner Increases Speeds to 10 Mbps/1 Mbps in Fios Territory*, CNET News.com (Aug. 30, 2006), [http://news.com.com/2061-10785\\_3-6111101.html](http://news.com.com/2061-10785_3-6111101.html).

<sup>180</sup> News Release, Cablevision, *Cablevision’s Optimum Online Surpasses 2 Million Customers* (Dec. 14, 2006).

makeover”<sup>181</sup> to support next-generation services, and it would therefore be a mistake “to mandat[e] that nothing interesting can happen inside the net.”<sup>182</sup>

Restricting the emergence of customized network services – either by prohibiting such offerings or requiring providers to make them available only on a non-discriminatory basis – would limit opportunities for broadband providers to differentiate themselves. Cable and DSL providers already compete by offering customers different mixes of quality (e.g., speed) and price. But the new generation of broadband services – which is being driven by the new generation of broadband content and applications – will allow broadband providers to compete along many more dimensions. Some providers may choose to offer unlimited, best-efforts service, while others may seek to vary charges depending on the amount of bandwidth used. Some may offer 10 Mbps that can be used only for online gaming, while others may offer a pipe with no limitations. For emerging providers, being able to differentiate their services from larger providers is one of the key ways to help overcome the disadvantages such providers might face due to their size or other factors.<sup>183</sup> Moreover, given that many new technologies are only just

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<sup>181</sup> David Farber, Gerald Faulhaber, Michael L. Katz & Christopher S. Yoo, *Common Sense About Network Neutrality* (June 2006), available at <http://www.interesting-people.org/archives/interesting-people/200606/msg00014.html>; see David Farber, Michael Katz, Gerald Faulhaber & Christopher S. Yoo, *Hold Off On Net Neutrality*, Wash. Post, Jan. 19, 2007, at A19 (App. B Exh. 1).

<sup>182</sup> Andrew Orłowski, *Father of the Internet Warns Against New Neutrality*, The Register (Jan. 18, 2007), [http://www.theregister.co.uk/2007/01/18/kahn\\_net\\_neutrality\\_warning/](http://www.theregister.co.uk/2007/01/18/kahn_net_neutrality_warning/) (App. B Exh. 3) (quoting Robert Kahn).

<sup>183</sup> See, e.g., Christopher S. Yoo, *Promoting Broadband Through Network Diversity* 4 (Feb. 6, 2006) (App. B Exh. 6) (by restricting the ability of broadband providers to differentiate their service offerings, net neutrality regulation would “reinforce the sources of market failure in telecommunications markets by exacerbating the impact of up-front, fixed costs and by network economic effects. . . . [E]conomic theory shows how allowing network owners to differentiate the service they offer can allow smaller producers to survive despite having lower sales volumes and higher per-unit costs by differentiating their offerings to appeal to a subsegment of the larger market.”); Carl Shapiro & Hal R. Varian, *Information Rules: A Strategic Guide to the Network Economy* 24-25 (Harvard Bus. School Press 1999) (“The high sunk cost, low marginal cost feature of information markets has significant implications for the market structure of information industries. In the final analysis, there are only two sustainable

emerging, now is an especially critical time to ensure that all market participants have the flexibility to respond to market forces.<sup>184</sup>

## CONCLUSION

The best way for the Commission to promote consumer welfare is to continue procompetitive, deregulatory policies that encourage investment and deployment of broadband infrastructure, and continued innovation at all levels of the Internet.

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structures for an information market. 1. The *dominant firm* model . . . . 2. In a *differentiated product* market we have a number of firms producing the same “kind” of information, but with many different varieties. This is the most common market structure for information goods”) (emphasis in original); William Lehr & Lee McKnight, *A Broadband Access Market Framework: Towards Consumer Service Level Agreements* 16 (Sept. 2000) (“multiple tiers of SLAs will provide a mechanism for both users and firms to segregate themselves into service quality groupings that better accounts for heterogeneous willingness-to-pay for service and the costs of supporting higher quality service. A number of analyses have shown how differentiated pricing can result in improved welfare for customers in all quality tiers relative to a ‘one size fits all’ approach.”).

<sup>184</sup> See Baumol *et al.*, *Economists’ Statement on Network Neutrality Policy* at 1 (“introducing price regulation [into the broadband services market] risks discouraging the healthy process of risk-taking innovation – which is especially important in telecommunications”); Broadband Working Group, MIT Communications Futures Program (CFP), Cambridge Univ. Communications Research Network, *The Broadband Incentive Problem* 4 (Sept. 2005) (“Stakeholders in these markets have the opportunity to establish sustainable user expectations regarding pricing and usage, at an earlier stage of market development. The incentive problem may be more easily dealt with in newer markets, if stakeholders do not follow the initial ‘all you can eat’ pricing policies employed in leading fixed broadband markets.”).

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