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SUMMARY

The national broadband plan should build on the country's record of broadband success – a record of significant investment that has led to dynamic innovation at the network, service, application, and device levels, resulting in extensive deployment and widespread adoption. Yet, as a nation, more can be done to expand broadband capabilities and extend its full benefits to all Americans and all corners of the United States. Public policy can and should play an integral role in fueling the broadband engine of growth and innovation.

As an initial matter, the term “broadband” eludes easy definition because it is not any one thing all the time in all places. Instead, broadband embodies multiple enabling technologies that provide the capability to support an unlimited and constantly growing array of services and applications. Throughput speed is but one metric in determining the value of broadband. Some users value speed above all else while others prefer mobility even at relatively slower speeds. Broadband thus involves a range of speeds and attributes, and the Commission should continue to allow stakeholders to select the technologies they feel best address their needs.

Government policy should first recognize that network investment by the private sector is the foundation of the broadband ecosystem – and the social and economic dividends it delivers. The national broadband plan should identify policies to facilitate the primary role the private sector plays in advancing broadband. Examples include identifying additional commercial spectrum for wireless broadband and eliminating unnecessarily burdensome state and local zoning delays that restrict the ability of wireless providers to deploy broadband.

In addition, the national broadband plan should avoid unwise and unnecessary regulatory intervention. For example, the Commission's *Internet Policy Statement* has succeeded in protecting the interests of broadband consumers, and there is no reason to amend it. A nondiscrimination principle would undermine the interests protected by the policy statement, which affords providers and end users the flexibility needed to respond to a rapidly changing broadband marketplace. More broadly, the Commission should reject calls to subject next-generation broadband networks to intrusive public utility regulation such as that currently applied to traditional telephony. It is not in the best interest of consumers for policymakers simply to transpose regulations designed to govern legacy telecommunications networks onto IP-based services and platforms. The broadband services and applications market is dynamic. There is no need to replicate competition, because competition itself can set prices, prevent unreasonable discrimination, and otherwise serve the objectives of economic regulation.

Where market forces alone are not meeting the nation's broadband priorities, the plan should identify appropriately tailored public investment strategies. Worthy public investments include the Recovery Act's broadband programs for “unserved,” “underserved,” and “rural” areas, Universal Service modification or adoption of some other mechanism to provide support for broadband, and enabling Public Safety broadband in the 700 MHz band.

Expanded broadband deployment will not only improve U.S. productivity in multiple areas; it will, as Alcatel-Lucent's experience shows, help to achieve important policy objectives in the health care, education and energy fields.

While encouraging deployment, the national broadband plan also should address well-known barriers to adoption of broadband – the so-called “demand side.” There is a growing body of evidence showing both the existence of, and the reasons for, gaps in broadband adoption. It is appropriate for Government to support programs designed to make broadband more affordable, make relevant content and applications more available, and increase broadband awareness and digital literacy.

widespread adoption. Yet, as a nation, more can be done to expand broadband capabilities and extend its full benefits to all Americans and all corners of the United States.

The national broadband plan first should identify policies to complement the primary role that the private sector plays in advancing broadband deployment. The foundation for the broadband ecosystem is network investment – a capital-intensive endeavor – and even with Recovery Act funding it is the private sector that will continue to make the bulwark of investment in next-generation networks and services. In today’s global marketplace, investment capital flows to opportunities, and the U.S. broadband market may suffer if the Government intervenes to dictate marketplace practices absent compelling need.

Where market forces alone are not meeting the nation’s broadband priorities, the plan should identify appropriately tailored public investment strategies. Worthy public investments include the Recovery Act’s broadband programs for “unserved,” “underserved,” and “rural” areas, Universal Service modification or adoption of some other mechanism to provide support broadband, and enabling Public Safety broadband in the 700 MHz band.

Finally, the plan should address barriers that have inhibited broadband adoption. In light of the societal and economic benefits that broadband can achieve, the plan should pursue opportunities to enhance universal broadband adoption.

Alcatel-Lucent’s market leadership and experience in broadband provides unique insight into policy prescriptions for the broadband era. Alcatel-Lucent is the leading provider of broadband access solutions worldwide, with a presence in 130 countries, and has significant experience in deploying current and next generation wired and wireless broadband under a variety of geographical, regulatory, and economic conditions, for private and public entities alike. Alcatel-Lucent USA, headquartered in New Jersey, employs more than 20,000 people in

the United States (many of them engineers), and the Company's R&D arm, Bell Labs, lies at the heart of the U.S. innovation economy.

Alcatel-Lucent Infrastructure Solutions. Alcatel-Lucent is the world leader in—

- Current Generation Broadband Access:
 - Digital Subscriber Line (DSL) wireline technology;
 - (3G) mobile wireless broadband solutions, including CDMA (EVDO Rev. A) and UMTS (HSPA+).
- Next Generation Broadband:
 - Gigabit Passive Optical Networking (GPON) solutions utilized in Fiber-to-the-Premises (FTTP) deployments;
 - Innovative DSL solutions utilized in Fiber-to-the-Node (FTTN) deployments, including VDSL, VDSL2 and ADSL2+;
 - (4G) mobile wireless solutions utilizing Long Term Evolution (LTE) technology; and
 - WiMAX fixed wireless technology.

Alcatel-Lucent's leadership is not limited to local access, however. Alcatel-Lucent is the world's leading provider of long-haul submarine optical cable solutions, as well as a leading provider of optical solutions for metro, regional, long haul and ultra-long requirements. Alcatel-Lucent is also a leading provider of IP/edge routing solutions and microwave backhaul solutions.

Alcatel-Lucent Services. Alcatel-Lucent Services is a premier network integrator, offering unique value – delivered through our combination of IT and consulting experience as well as our network expertise – which supports and transforms the most sophisticated multivendor wireline, wireless, and converged networks around the world.

Bell Labs. Finally, Alcatel-Lucent ties together all of its various roles in the telecom industry through Bell Labs innovations. As part of the innovation engine within Alcatel-Lucent, Bell Labs designs products and services that are at the forefront of communications technology,

and conducts fundamental research in fields critical to communications. Every region, product group, and business division of Alcatel-Lucent thrives as a consequence of Bell Labs, as do our customers' networks, products and services.

Alcatel-Lucent is thus exceedingly well-positioned to provide insight into broadband policy in light of its experience in deploying broadband networks of all kinds, under all circumstances, for all types of entities in the United States and abroad, including leading for-profit service providers in urban and rural communities, governments systems, and public safety agencies.

II. THE DEFINITION OF “BROADBAND” SHOULD NOT BE DEFINED BY ANY PARTICULAR METRIC OF THROUGHPUT SPEED BUT INSTEAD SHOULD FOCUS ON THE UTILITY OF THE SERVICE TO THE USER.

In crafting Federal policy in the broadband arena, the Commission must take care not to adopt definitions or standards that unintentionally constrain broadband's potential. The term “broadband” eludes easy definition because it is not any one thing all the time in all places. Instead, broadband embodies multiple enabling technologies that provide the capability to support an unlimited and constantly growing array of services and applications, from voice to data, from sound to video, from location-based to global communications services, delivered via fixed or mobile platforms to a variety of devices.

The broadband ecosystem is a vibrant marketplace in which investment and innovation abound. Service providers, network equipment manufacturers, application designers, content providers, CPE vendors, web server companies, web design agencies and many more are driven to provide consumers, businesses and government with more, faster, better broadband. Yet the true measure of broadband's impact is the effect that this technology has on communities, businesses and governments that use the broadband platform and the new services and applications that ride on it to achieve economic and social growth.

As the Commission recognized in the *Notice of Inquiry*, wider availability of broadband technologies has fundamentally transformed the way Americans live their lives.⁴ Broadband users go online for a wide variety of reasons – to be educated and entertained, to conduct commerce and research, and to care for themselves and communicate with others – and they do so at home, at work, and while moving from place to place. New broadband applications are being developed every day to meet these evolving consumer and business demands, and the broadband ecosystem is constantly challenged to innovate so that customers can be provided with the applications they desire.

Faster broadband technology makes these new applications possible, but it is overly simplistic to say that broadband is the Internet made faster. Throughput speed is one important metric in determining the value of broadband, but it is not the only one. Some users value speed above all else and will accept limitations in other areas (*e.g.*, mobility) in order to ensure the fastest speeds, while others prefer mobility even at relatively slower speeds. It therefore would be unwise for judgments regarding the accessibility of broadband to be based solely on whether a particular speed threshold is met.

The Commission asked “whether a definition of ‘broadband’ should be tethered to a numerical definition or, instead, an ‘experiential’ metric based on the consumer’s ability to access sufficiently robust data for certain identifiable broadband services.”⁵ The Commission should avoid any “one-size-fits-all” speed metric and instead rely on a definition of broadband that considers primarily the user’s perspective. The Commission has identified broadband as

⁴ See *Notice of Inquiry* at ¶¶ 1-4.

⁵ *Id* at ¶ 17.

including a range of speeds, and it should continue to allow stakeholders to select the technologies they feel best address their needs.⁶

The national broadband plan should recognize “broadband” for what it is: a set of technologies that enables users to make connections with sufficient bandwidth for the services and applications they want. In other words, Federal broadband policy should recognize that, because different types of applications and services can be supported by various types of broadband connections, the sufficiency of a broadband connection to a user will depend on that user’s needs and desires, and will not solely be a function of the speed of the broadband connection.

III. THE NATIONAL BROADBAND PLAN MUST ENHANCE DEPLOYMENT.

In today’s dynamic broadband marketplace, network investment lays the foundation for innovation at all levels of the broadband ecosystem, advancing consumer welfare with new capabilities, new applications, and new devices. Indeed, network investment and consumer welfare are inextricably intertwined. Among the many lines of inquiry raised in this proceeding, the Commission asks two questions in particular that are essential for the development of a forward-looking national plan – it asks for “the best way to attract risk capital to broadband infrastructure projects”⁷ and, citing the Recovery Act, seeks input on “the use of broadband infrastructure and services in advancing consumer welfare.”⁸

⁶ See Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, *Report and Order and Further Notice of Proposed Rulemaking*, 23 FCC Rcd 9691, 9700-01 (2008).

⁷ *Notice of Inquiry* at ¶ 37.

⁸ *Id.* at ¶ 64 (quoting Recovery Act § 6001(k)(2)(D)).

A. Investment and Innovation Fuel the U.S. Broadband Market.

The United States is making significant strides forward in broadband investment and deployment. The Telecommunications Industry Association estimates that service providers undertook about \$52 billion in capital expenditure spending in 2008, and predicts that they will undertake another \$45 billion in capital expenditure spending in 2009.⁹ Since 2005, landline service providers have spent over \$145 billion in capital expenditures.¹⁰ The United States, moreover, has shown significant growth in fiber deployment since the FCC lifted overly burdensome regulatory restrictions.¹¹ Meanwhile, in the first six months of 2007, the wireless industry's incremental capital expenditure totaled more than \$9.71 billion, resulting in a cumulative capital expenditure total of more than \$233 billion in operational systems.¹² Moreover, as of December 2008, there were 242,130 cell sites - an increase of more than 350 percent from ten years before.¹³

The Commission's recent *Rural Broadband Strategy Report* lauded "American ingenuity" in broadband technology and resources and went on to summarize the various forms of commercial broadband platforms available in the United States:

⁹ See TELECOMMUNICATIONS INDUSTRY ASSOCIATION, ICT MARKET REVIEW AND FORECAST 2009, at 9 (May 2009), http://www.tiaonline.org/market_intelligence/documents/Market_Review_Presentation_5-21_press_conference.pdf.

¹⁰ See *id.*

¹¹ See IDATE, FTTX YEARBOOK 2009 (presented at the 2009 FTTH Council Europe Conference). IDATE found an FTTx subscriber growth rate in the U.S. of 47% between the end of 2007 and June 2008, for an additional 1.15 million subscribers. In the FTTH/B market alone, 851,000 new subscribers signed up in the span of 6 months, marking a 38 percent increase over the end of 2007 which makes the United States the world's fastest growing FTTH/B market – its share of the world market having gone from 4.8 percent to 5.2 percent.

¹² See CTIA – The Wireless Association®, Ex Parte Communication, PS Dkt. No. 06-229 , WT Dkt. Nos. 96-86, 05-194, 06-150, 06-169, 07-71, at 2 (Jan. 23, 2008).

¹³ See CTIA – The Wireless Association®, Semi-Annual Wireless Industry Survey Top Line Results, at 2 http://files.ctia.org/pdf/CTIA_Survey_Year-End_2008_Graphics.pdf.

High-capacity fiber networks – once found only in dense urban cores – have been redesigned for residential use, and their performance continues to increase. Cable networks are being upgraded to a platform that will support data rates of up to 160 megabits per second (Mbps). While issues remain, broadband over power lines (BPL) continues to emerge as a viable technology option. Wireless technologies are extending broadband into areas unreachable by cables and wires, and enabling consumer to be connected while on the move. Many wireless Internet services providers (ISPs) have used the IEEE 802.11 wireless local area network technologies (commonly known as Wi-Fi) to offer fixed wireless broadband services in areas not reached by wireline technologies. Wireless providers have been launching new broadband technologies that allow subscribers to access the Internet, while mobile, at speeds that are beginning to rival those on landline networks. We expect to see further advancements on the wireless broadband front as wireless service providers begin to build networks using advanced technologies – such as Long Term Evolution (LTE) or Worldwide Interoperability for Microwave Access (WiMAX) – that support data rates that may exceed 100 Mbps. Finally, satellite broadband, with its near ubiquitous coverage and downstream data rates between 512 kbps and 5 Mbps, can provide a much-needed connection in rural areas....¹⁴

As a result of this diverse multi-platform approach, broadband has by any metric experienced tremendous growth in America during the past decade. Today, the Commission estimates that mobile broadband networks cover 95.6 percent of the total U.S. population,¹⁵ and the vast majority of American consumers have real choices with respect to broadband services. The FCC’s data supports this assessment. Between December 2002 and December 2007, the number of high speed lines (over 200 kbps in at least one direction) grew over 600 percent from 19.44 million to 121.17 million.¹⁶ During that same time period, the number of advanced services lines (over 200 kbps in both directions) experienced similar growth – rising from 11.91

¹⁴ Michael J. Copps, Acting Chairman, Federal Communications Commission, *Bringing Broadband to Rural America, Report on a Rural Broadband Strategy*, ¶ 10 (rel. May 22, 2009) (“*Rural Broadband Strategy Report*”).

¹⁵ *Id.* at ¶ 27.

¹⁶ Wireline Competition Bureau, Industry Analysis and Technology Division, *HIGH SPEED SERVICES FOR INTERNET ACCESS: STATUS AS OF DECEMBER 31, 2007*, at Table 1 (2009).

million lines to 80.23 million lines.¹⁷ This general trend of access line growth is likely to continue, particularly as 4G wireless deployments commence.

The growth in broadband investment and use brings real benefits to consumers as mass market broadband has flourished and delivered new and expanded services at lower prices. According to the ITU, the United States enjoys the lowest price for fixed broadband Internet service as a percentage of gross national income.¹⁸ Moreover broadband prices in the United States have fallen. One study found that broadband users reported an average monthly bill that was 4% lower in May 2008 than at the end of 2005.¹⁹

Of course, the American people benefit from this robust competition not only in terms of lower prices for broadband services, but also in terms of other economic and social dividends. Broadband has been linked to job creation, productivity increases, and opportunities to help the environment, healthcare, education and consumer welfare generally.²⁰

¹⁷ *Id.* at Table 2.

¹⁸ See International Telecommunication Union, MEASURING THE INFORMATION SOCIETY: THE ICT DEVELOPMENT INDEX 2009, at 66-67 (2009), available at http://www.itu.int/ITU-D/ict/publications/idi/2009/material/IDI2009_w5.pdf.

¹⁹ John B. Horrigan, PEW INTERNET & AMERICAN LIFE PROJECT, HOME BROADBAND ADOPTION 2008, at 7 (July 2008) (“*Pew Study*”).

²⁰ See Joseph P. Fuhr Jr. and Stephen B. Pociask, BROADBAND SERVICES: ECONOMIC AND ENVIRONMENTAL BENEFITS (2007), <http://www.theamericanconsumer.org/2007/10/31/broadband-services-economic-and-environmental-benefits/> (finding that widespread adoption and use of broadband applications can achieve a net reduction of 1 billion tons of greenhouse gases over the next 10 years.); Robert Crandall et al., THE EFFECTS OF BROADBAND DEPLOYMENT ON OUTPUT AND EMPLOYMENT: A CROSS-SECTIONAL ANALYSIS OF U.S. DATA, at 2 (2007), available at http://www.brookings.edu/~media/Files/rc/papers/2007/06labor_crandall/06labor_crandall.pdf (finding that for every one percentage point increase in broadband penetration in a state, employment is projected to increase by 0.2 to 0.3 percent per year.); Kristin Van Gaasbeck et al., SACRAMENTO REGIONAL RESEARCH INSTITUTE, ECONOMIC EFFECTS OF BROADBAND USE IN CALIFORNIA, at iii (2007) (finding that between 2002-2005, broadband resulted in a total cumulative contribution of 198,000 jobs and \$11.6 billion to California’s payroll.).

B. Government Policy Must Facilitate Conditions for New Investment and Rapid Deployment of Commercial Broadband Platforms.

The Government's role in achieving effective and widespread broadband deployment entails two elements: an appropriately calibrated regulatory framework that oversees broadband networks; and, where the marketplace is failing to meet the nation's broadband goals, targeted public investment to expand or enhance broadband offerings.

1. Enable Expanded and Expedited Private Sector Wireless Deployment.

The Commission should pursue the initiatives below to facilitate investment and clear away unnecessary regulatory hurdles and uncertainties that impede realization of the nation's broadband opportunity. The Commission can take two important steps to facilitate additional wireless broadband investment: impose a "shot clock" for state and local zoning authorities to act on wireless infrastructure investments; and work with NTIA to identify new spectrum for wireless broadband over the longer term.

The *Rural Broadband Strategy Report* acknowledged, as the Commission has previously done, "the critical role" of spectrum-based services in broadband deployment.²¹ Wireless and satellite-based broadband offer users mobility and portability, enabling connectivity without the tether of a fixed solution. Moreover, infrastructure costs of spectrum-based services are frequently less significant than wired solutions.²² While the future is very promising, the industry and Government alike must remain cognizant that continued wireless broadband growth necessarily depends on expanding network capabilities and spectrum opportunities:

We are witnessing the culmination of massive network investment, technology innovation and development, spectrum deployment, and user sophistication.

²¹ *Rural Broadband Strategy Report* at ¶ 142.

²² *See id.*

Continued growth, however, depends on operators' ability to keep providing users with satisfying network performance. If networks become overloaded, the result is slower and more erratic throughput speeds, packet delays, unreliable application behavior, and disconnects.²³

The Commission must act now to ensure that Government policy does not stymie continued network investment to address the growing demand for wireless broadband. The first order of business should be to remove needless restraints on investment in broadband deployment by clearing away delays and obstacles that exist in today's state and local tower siting process. In 2008 CTIA-The Wireless Association® submitted survey data results showing that, of 3,300 tower and antenna applications pending in the Spring of 2008, 760 were pending for more than one year and 180 were pending for more than three years – and 135 of the 180 were collocation applications.²⁴ Eliminating unreasonable delay would remove a significant barrier to deployment of new broadband facilities and the expansion of broadband capabilities on existing structures. These applications represent private sector-funded, “shovel ready” projects. The Commission should act quickly to ensure that the siting process fulfills Federal policy goals to avoid unnecessary impediments and achieve timely resolution of wireless facility siting applications.²⁵

In the longer term, the Government (the Commission and NTIA) must stay ahead of the game and initiate a process to identify new spectrum for commercial wireless broadband service. It is only a matter of time before the growth in subscribers using more bandwidth-intensive

²³ Peter Rysavy, *Mobile Broadband Spectrum Demand*, at 8 (Dec. 2008), http://www.rysavy.com/Articles/2008_12_Rysavy_Spectrum_Demand_.pdf.

²⁴ See CTIA—The Wireless Association® Petition for Declaratory Ruling to Clarify Provisions of Section 332(c)(7)(B) to Ensure Timely Siting Review and to Preempt Under Section 253 State and Local Ordinances that Classify All Wireless Siting Proposals as Requiring a Variance, WT Docket No. 08-165, at 15 (filed July 11, 2008).

²⁵ 47 U.S.C. § 332(c)(7).

applications exhausts today's commercial wireless spectrum capabilities – even with new opportunities provided by the AWS and 700 MHz bands and the spectrum efficiencies of next-generation technologies. The Government should examine both Federal Government and commercial spectrum usage and reallocate spectrum for commercial wireless uses including broadband. To that end, Alcatel-Lucent supports a spectrum inventory of both Government and non-Government holdings, as well as an inquiry into innovative solutions such as allowing Federal users to lease spectrum to the public.²⁶

2. Avoid Unwise and Unnecessary Regulatory Intervention for All Platforms.

a. The Internet Policy Statement Is Working and Does Not Require Modification.

Alcatel-Lucent has long supported the principles underlying the *Internet Policy Statement*.²⁷ The company's predecessors participated in the drafting the 2003 High-Tech Broadband Coalition's "connectivity principles,"²⁸ which closely resemble the *Internet Policy Statement*. Since its adoption in 2005, the *Internet Policy Statement* has provided for the interests of broadband consumers, enabling their access to the content and applications of their choosing, on the devices and platforms of their choosing, subject to meaningful competition virtually throughout the United States.

The *Internet Policy Statement* has succeeded for three principal reasons, and there is no reason to amend it at this time. First, even in the absence of enforcement action, the *Internet*

²⁶ See COMMERCE SPECTRUM MANAGEMENT ADVISORY COMMITTEE, TRANSITION REPORT, at 34 (rel. Dec. 13, 2008).

²⁷ Appropriate Access for Broadband Access to the Internet Over Wireline Facilities, *Policy Statement*, 20 FCC Rcd 14986 (2005) ("*Internet Policy Statement*").

²⁸ High Tech Broadband Coalition, Letter to Chairman Michael Powell, CS Dkt. No. 02-52; GN Dkt. No. 00-185; CC Dkt. Nos. 02-33, 95-20 & 98-10 (filed Sept. 25, 2003).

Policy Statement shapes the behavior of broadband providers. The Commission has on multiple occasions asserted that it enjoys “ancillary jurisdiction” to adopt rules governing the provision of Internet access.²⁹ Providers seeking to avoid burdensome prophylactic regulation have responded by field-testing proposed network management plans on discrete groups of end users and obtaining extensive feedback before moving forward with network-wide policy shifts.³⁰ In short, the *Internet Policy Statement* has promoted self-regulation, permitting providers and their customers to evaluate emerging strategies for managing traffic and to reach reasonable outcomes that balance technological and other needs.

Second, the *Internet Policy Statement* polices the market by informing end users of their reasonable expectations with respect to their broadband services. By advising customers of their rights to access the content and applications of their choice, it deters providers from taking steps that would limit such access. Informed users will be more likely to notice inappropriate network practices, and to complain to the offending provider – or to the Commission. Moreover, the *Internet Policy Statement* helps ensure that discontent end users will seek out – and find – competing ISPs that more effectively meet their needs. This competitive threat minimizes the prospect that an ISP will impose even subjectively unreasonable restrictions in the first place. In fact, the small number of minor incidents relating to the *Internet Policy Statement* since its

²⁹ See *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Report and Order and Notice of Proposed Rulemaking*, 20 FCC Rcd 14853, 14913 ¶ 109 (2005) (“*Wireline Broadband Order*”); *Broadband Industry Practices, Notice of Inquiry*, 22 FCC Rcd 7894, 7896 ¶ 4 (2007); *Formal Complaint of Free Press and Public Knowledge Against Comcast Corporation for Secretly Degrading Peer-to-Peer Applications, Memorandum Opinion and Order*, 23 FCC Rcd 13028, 13033-44 ¶¶ 12-27 (2008) (“*Comcast Order*”).

³⁰ See, e.g., *Cox Network Management Trial Spurs Concern Over What’s “Time-Sensitive”*, COMMUNICATIONS DAILY (Jan. 29, 2009) (describing Cox Communications network management trial).

adoption strongly suggests that this consumer-awareness function has been extremely successful in deterring unreasonable conduct.

Finally, in the *Wireline Broadband Order*, adopted alongside the *Internet Policy Statement*, the Commission declared that “should we see evidence that providers of telecommunications for Internet access or IP-enabled services are violating [the *Policy Statement*’s] principles, we will not hesitate to take action to address that conduct.”³¹ Since then, the Commission has taken such action, finding that even absent prescriptive rules mandating specific behavior, its “ancillary authority to enforce federal policy is quite clear.”³²

Contrary to the assertions of “net neutrality” proponents, the adoption of bright-line nondiscrimination rules would undermine, not bolster, the interests protected by the *Internet Policy Statement*. The *Internet Policy Statement*’s reliance on general principles addressed on a case-specific basis, rather than on rigid mandates that by definition cannot evolve to reflect current technological and market conditions, affords providers and end users the flexibility needed to respond to a rapidly changing broadband marketplace. That marketplace is characterized by constant change in network capabilities, application needs, and traffic patterns – not to mention evolving business arrangements among network operators, applications providers, and users. In this environment, activities considered “unreasonable” one month may become reasonable, or even *necessary*, the next. Specific prescriptions and proscriptions do not represent prudent policymaking; only a case-by-case assessment of alleged harms will protect consumer interests, maximize broadband investment, and advance the public interest.

³¹ *Wireline Broadband Order*, 20 FCC Rcd at 14904 ¶ 96.

³² *Comcast Order*, 23 FCC Rcd at 13035 ¶ 15.

If anything, the harms imposed by a nondiscrimination mandate would be even more acute with regard to wireless broadband. For such platforms, where providers have access to a defined amount of spectrum and bandwidth is a shared resource among subscribers, appropriate network management specific to bandwidth sharing must be employed to ensure that all end users receive reliable service. Otherwise, the provider runs the risk that any one end user's application or service impacts the level of service for all end users within a given area.

It should be noted however, that as a general matter anticompetitive blocking and degradation of Internet traffic is unwarranted, and the *Internet Policy Statement* provides the ideal mechanism to address such practices on a case-by-case basis. At the same time, innovation and the offering of new IP-enabled services and products benefitting all stakeholders in the broadband market must be protected from regulatory interference. As Alcatel-Lucent has previously submitted to the FCC, preserving best efforts Internet access while simultaneously promoting the development of new IP-enabled services are not mutually exclusive concepts.³³ A network provider can pursue both, and neither the *Internet Policy Statement* nor any "as-yet-to-be-defined" nondiscrimination obligations need upset this important balance.

b. Public Utility Regulation is Unwarranted.

More broadly, the Commission should reject calls to subject next-generation broadband networks to intrusive public utility regulation such as that currently applied to traditional telephony.³⁴ Such regulation – which, for example, seeks to prescribe the terms under which

³³ Comments of Alcatel-Lucent, GN Docket No. 09-40, at 7 (filed Apr. 13, 2009); Reply Comments of Alcatel-Lucent, WC Docket No. 07-52, at 1-13 (filed July 16, 2007).

³⁴ See, e.g., S. DEREK TURNER, FREE PRESS, DISMANTLING DIGITAL DEREGULATION: TOWARD A NATIONAL BROADBAND STRATEGY (2009) available at http://www.freepress.net/files/Dismantling_Digital_Deregulation.pdf.

wholesalers, retailers, and end users transact with one another – is designed principally to counter-act market power borne of the natural monopolies once believed to have characterized certain communications platforms. As the Commission has explained, “much of the telecommunications regulation [historically] implemented by the Commission had its roots in seeking to control monopoly ownership of the PSTN.”³⁵ Under these monopoly conditions, economic regulation was deemed necessary as a means of replicating, as closely as possible, the results that would arise in a competitive market.

In the broadband world, however, such rationales for economic regulation evaporate, and this is becoming more the case every day. In 1934, when the Communications Act imposed common carrier requirements on communications providers, virtually no American consumer had a choice between (much less “among”) telephone carriers. Even in 1996, such competition was just beginning to emerge in the local markets. In sharp contrast, competition in the broadband market is significant and growing, with wireline, cable, terrestrial wireless and satellite providers fighting for end-user subscriptions and enterprise customers, all the while facing challenges from next-generation upstarts. “As communications migrate from networks relying on incumbent providers enjoying monopoly ownership of underlying transmission facilities to an environment relying on numerous competing applications traversing numerous competing platforms, power over the prices and terms of service necessarily shifts from the provider to the end user.”³⁶

The Commission has before it two IP-related proceedings that have been pending for years, resulting in uncertainty regarding the regulatory treatment of some innovative services and

³⁵ IP-Enabled Services, *Notice of Proposed Rulemaking*, 19 FCC Rcd 4863, 4867 ¶ 5 (2004).

³⁶ *Id.* at 4886 ¶ 36.

applications.³⁷ While Alcatel-Lucent commends the Commission's jurisdictional decision in the *IP-Enabled Services* proceeding, other elements of that rulemaking remain pending, as does the *Consumers in a Broadband Era* proceeding. Alcatel-Lucent supports Commission action to clarify this uncertainty with a minimal regulatory framework.

It is not in the best interest of consumers for policymakers simply to transpose regulations designed to govern legacy telecommunications networks onto IP-based services and platforms. The broadband services and applications market is dynamic. There is no need to replicate competition, because competition itself can set prices, prevent unreasonable discrimination, and otherwise serve the objectives of economic regulation. If anything, the imposition of utility regulation under these circumstances is likely to *harm* the public interest. Such regulation will constrict the activities of providers and end users, preventing both from taking actions that maximize the value of the service. As one report found, restrictions on private business arrangements between Internet service providers and content providers could well *increase* consumer price, reduce service provider profit, and even reduce sales by Internet content and applications providers.³⁸ There is no basis for subjecting consumers and providers to these harms, particularly in the absence of any alleged market failure.

C. Public Investment Must Be Targeted to Maximize Impact.

As the *Notice of Inquiry* recognizes, market forces alone may not deliver broadband to all Americans or to all corners of our nation with sufficient speed and robustness to achieve public policy goals. In some circumstances, the economics of service cannot support the cost of

³⁷ See *Wireline Broadband Order*, *supra* note 29.

³⁸ See George S. Ford, Thomas M. Koutsky & Lawrence J. Spiwak, *Network Neutrality and Foreclosing Market Exchange: A Transaction Cost Analysis*, PHOENIX CENTER POLICY PAPER No. 28 (March 2007), available at <http://www.phoenix-center.org/pcpp/PCPP28Final.pdf>.

deployment; in other instances, consumers may lack the means to subscribe to service. And for our first responders, eight years after September 11, interoperable public safety broadband capability remains a goal and not a reality. Government can and should mobilize policy and resources to achieve these goals.

1. The Recovery Act Can Serve as a Down Payment Where Economic Factors Have Not Yet Led to Broadband Deployment.

Alcatel-Lucent strongly supports the Recovery Act's broadband initiatives, which represent the Government's largest commitment to accelerating the availability of broadband technology for rural and underserved markets, as well as for public safety. Alcatel-Lucent has actively participated in the NTIA/RUS and FCC Recovery Act proceedings³⁹ and has initiated a "Broadband for All" advisory program to assist telecom providers, municipalities, and developers with technology solutions as well as the application process.⁴⁰

Providers and municipalities across the nation are preparing applications that, if funded, will provide innovative broadband solutions in the communities they serve. Yet funding is limited. With only \$7.2 billion available for broadband initiatives, NTIA and RUS should focus on infrastructure deployment projects that demonstrate sustainability far beyond the conclusion of federal funding. In this way, the Recovery Act's investment in broadband will have lasting impact. However, there will undoubtedly be more to do. As Susan Crawford, President Obama's Special Assistant for Science, Technology and Innovation Policy, has said, the

³⁹ See Comments of Alcatel-Lucent, NTIA/RUS Docket No. 090309298-9299-01 (filed Apr. 13, 2009); Comments of Alcatel-Lucent, GN Docket No. 09-40 (filed Apr. 13, 2009).

⁴⁰ For more information, visit <http://broadband4all.com/alu/>.

broadband stimulus funding in the Recovery Act is merely a “down payment” toward meeting broadband deployment goals.⁴¹

2. Universal Service or Some Other Mechanism Should Provide Support for Broadband Across All Platforms.

Alcatel-Lucent shares the view expressed in the *Rural Broadband Report* that “it is time for universal service to meet the communications challenge of the 21st century – broadband deployment – just as it did the communications challenge of the 20th century – telephone service.”⁴² Last year the Commission issued a further notice of proposed rulemaking seeking comment on comprehensive reform the federal universal service fund. In light of technological developments and consumer preferences, it is important that all Americans – whether residing in high cost areas or unable to afford service – have an opportunity to benefit from the promise of broadband across all platforms, whether through universal service reform or some other mechanism. Alcatel-Lucent urges the Commission to take this matter up and find a way to put broadband into the hands of all Americans.

3. Public Safety Broadband Opportunities in the 700 MHz Band Must Be Realized.

The *Notice of Inquiry* observed, as the Commission has found in the past, that “wireless broadband services will play an essential role in the ability of public safety entities, especially first responders, to fulfill their mission to protect the health, welfare and property of the public.”⁴³ Despite the Commission’s best efforts, Auction 73 did not result in a winning bidder

⁴¹ See Susan Crawford, Special Assistant to President Obama, Remarks at the Media Access Project Conference, “Mapping Change” (April 29, 2009) (transcript available at <http://www.mediaaccess.org/mapping-change/susan-crawford>).

⁴² *Rural Broadband Strategy Report* at ¶ 13.

⁴³ *Notice of Inquiry* at ¶ 77.

for the Upper 700 MHz D Block license. While the timeline for nationwide deployment of a next-generation shared broadband network may be years away, the urgent need to provide wireless broadband to our first responders remains. Uncertainty and delay in the 700 MHz band, moreover, is having long term, more costly impacts as some jurisdictions are deploying non-broadband, proprietary data solutions elsewhere.

State and local jurisdictions stand ready to put this critical 700 MHz spectrum to use and deploy interoperable public safety broadband systems immediately.⁴⁴ The Commission should seize this opportunity to harness precious resources by modifying its current 700 MHz early build-out rules to enable early deployments in places where the resources are available and the network can ultimately be integrated into a nationwide network.⁴⁵ In addition, the Commission should support additional public investment in public safety broadband networks by all levels of government. Such investment, moreover, can provide multiple benefits as public safety networks' backhaul facilities may contain excess capacity that can be used to expand the broadband capabilities of other governmental entities such as municipalities and state government activities, schools and libraries, and even commercial networks in unserved and underserved areas.

⁴⁴ See, e.g., Request for Waiver filed in PS Docket No. 06-229 by Mayor Thomas M. Menino, The City of Boston, December 11, 2008; Request for Waiver filed in PS Docket No. 06-229 by the City and County of San Francisco, the City of Oakland, and the City of San Jose, March 24, 2009; and Petition filed in PS Docket No. 06-229 by the State of New Jersey, April 23, 2009; Request for Waiver filed in PS Docket No. 06-229 by the City of New York, June 8, 2009.

⁴⁵ Service Rules for the 698-746, 747-762 and 777-792 MHz Bands; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band, *Third Further Notice of Proposed Rulemaking*, 23 FCC Rcd 14301, 14398-99 ¶¶ 301-04 (2008).

D. Facilitating Broadband Deployment Will Advance Other Important Governmental Goals.

The Recovery Act requires that the Commission's plan include use of broadband infrastructure to advance several national policy goals, including improving health care delivery, education, and energy independence and efficiency. There is no doubt that enhanced broadband deployment can serve these laudable goals.

1. Additional Deployment of IP-based Broadband Infrastructure Will Improve Health Care Delivery in the United States.

Health care organizations must have access to reliable communications networks to seamlessly connect emergency medical technicians and hospital staff so as to enhance patient care. It is no exaggeration that seconds can literally mean the difference between life and death in a medical emergency. Even in non-emergency situations, inadequate communications capabilities can compromise response, collaboration and clinician accessibility, creating inefficiencies and contributing to increased costs and a lower quality of patient care. The benefits of reliable communications have been recognized by Congress and the President through their electronic health records initiative in the Recovery Act and their commitment to connectivity as part of broader health care reform. To the extent that the national broadband plan encourages the deployment of broadband to health care facilities, public health will benefit.

Our experience shows that the benefits of telehealth and telemedicine applications are real and achievable. Alcatel-Lucent has been working with the University of Pittsburgh Medical Center (UPMC), one of the leading non-profit health systems in the country, to lead an IP network transformation project that will upgrade its data infrastructure, enterprise telephony system, contact center platforms and applications over a next-generation converged network. Beyond delivering this integrated network, the two organizations are creating a joint venture focused on developing applications for the healthcare industry – allowing patients, first

responders and healthcare providers to benefit from continued research and innovation delivered through this powerful partnership.

By seamlessly connecting a clinician with patients, peers and medical records, irrespective of location, UPMC strives to deliver “unbound healthcare” and transform its business in the process. This transformation will create a single network infrastructure allowing for efficient and effective utilization of resources, and enabling real-time communication both within UPMC and among key stakeholders, and will reengineer all aspects of the existing voice, video and data networks.

As the American Hospital Association recently noted in comments regarding the Recovery Act’s broadband stimulus provisions, “[w]ith the right information at the right time, we can improve patient safety and increase efficiency by removing duplicative testing and unnecessary costs from the equation. Easy patient access to their records and medical information improves the health care experience, and enables better care coordination. Broadband connectivity plays a critical and expanding role in achieving these benefits, especially in rural America.”⁴⁶ By fully implementing the Rural Telehealth Universal Service fund and serving as a catalyst for future health care deployments, the Commission can play an important role in fostering improvements in health care in America.

⁴⁶ Letter from Rick Pollack, Executive Vice President, American Hospital Association, to Gary Locke, Commerce Secretary, Tom Vilsack, Agriculture Secretary, Anna Gomez, Acting NTIA Administrator and James Newby, Acting RUS Administrator (May 22, 2009), *available at* <http://www.ntia.doc.gov/broadbandgrants/comment.cfm?e=DDD3B728-9D05-4CC3-B6A6-C75B5418BC65>.

2. Broadband’s Ability To Improve Educational and Distance Learning Opportunities Is Obvious.

It is indisputable that where broadband services exist, educational opportunities are greater. As recognized in the FCC’s e-rate program, connection to the Internet has long afforded a teaching environment to students who are not in the same classroom, city, or continent as their teachers. Distance learning is used in all areas of education, including pre-kindergarten through grade 12, higher education, home school education, continuing education, and business, military and government training. American Indian Tribal Colleges frequently use distance learning to encourage student access and retention. Distance learning capabilities allow them to offer courses at many satellite locations, within the reservation, or on other reservations in the same state. To the extent that the deployment of broadband is expanded, on-line distance learning programs also will be able to expand their reach, offering opportunities for educational advancement to populations who have been denied those opportunities for far too long.

3. Broadband Will Advance the National Goal of Energy Independence By Enabling “Smart Grid” Technologies.

Congress also intends that the national broadband plan will complement other Recovery Act provisions that provide significant levels of funding to encourage the development of so-called “smart grid” technologies.⁴⁷ Broadband-enabled smart grid applications can monitor and manage electricity use, among other things, advancing energy independence and efficiency.

Alcatel-Lucent has been working with Bristol Tennessee Essential Services (“BTES”), a utility with over 33,000 electric meters over a 280 square mile area, to expand its communications capabilities over a fiber network that passes 99 percent of its customers. Using

⁴⁷ See Recovery Act at § 6001(k)(2)(D).

the Alcatel Passive Optical Network System to achieve wide-area communications and distributed computing, BTES has made improvements in real-time energy data collection, transfer and management for current and future smart grid applications. In addition, BTES has upgraded its efficiency by adding demand response and distribution automation, enabling it to reduce the number of customer minutes in power outages. Advanced communications capabilities also have enabled BTES to use real-time communications to improve its pricing schedules through Time-of-Use, Real-Time Pricing and Critical Peak Pricing, and to increase its responsiveness to customer service issues and better educate its consumers.

The BTES experience demonstrates that, as broadband capabilities are expanded and they become more widely available to electric utilities in the United States, we will come closer to achieving the important national goal of achieving energy independence. The Commission's plan for broadband should promote broadband's role in improving energy efficiency and achieving energy independence.

E. Data Collection Efforts Should Rely on Existing Regimes So As Not To Detract From Deployment Goals.

The Commission appropriately asks how it can best measure progress toward the Recovery Act's goal of ensuring that every American has access to broadband capability.⁴⁸ While the collection of data is an important element in measuring the progress of broadband deployment, the Commission should take care to ensure that reporting requirements do not impose new and unnecessary burdens on providers whose resources should be put toward advancing deployment efforts. Just last year the Commission revised the Form 477 broadband data requirements to require more granular data with respect to geographic service coverage and

⁴⁸ *Notice of Inquiry* at ¶¶ 29-34.

data speeds, among other things. The Commission therefore should limit any new reporting requirements and in any event should use data already tracked and collected. In so doing, broadband service providers will be able to focus their efforts on helping to achieve the primary goal – making broadband services and applications accessible to as many Americans as possible – and will avoid having to create new reporting regimes that will divert resources from that ultimate goal. In addition, by causing less disruption in the data reporting regime, the Commission will better ensure the longer term accuracy and comparability of the data it collects.

IV. THE NATIONAL BROADBAND PLAN SHOULD ADDRESS BARRIERS TO BROADBAND ADOPTION.

As Congress and the Obama Administration have recognized, expanding the scope and adoption of broadband services and applications can be a key driver for social and economic growth. Government policy in this arena must not only encourage deployment (the supply side) but also address the key barriers to adoption of broadband (the demand side) – affordability, availability of relevant content and applications, and broadband awareness and digital literacy.

The United States has witnessed substantial growth in broadband deployment over the past several years, and these gains have been accompanied by increases in the adoption of broadband services.⁴⁹ However, the recent research on broadband adoption in the United States shows that significant gaps remain. The Commission has the opportunity, through the national broadband plan, to meaningfully address gaps in broadband adoption. Closing the gap is an

⁴⁹ According to one study, between 2002 and 2007, broadband penetration in the United States increased more than 300 percent. *See* Press Release, Scarborough Research, The Need for Internet Speed: Broadband Penetration Increased More than 300 Percent Since 2002 (Apr. 15, 2008), available at http://www.scarborough.com/press_releases/Broadband%20FINAL%204%2015%2008.pdf. In addition, the Pew Internet & American Life Project found that year-to-year growth in home broadband adoption since 2004 has consistently been in the double digits, with a growth rate of 17 percent from 2007 to 2008. *See* Pew Study at i.

important element in realizing the economic, educational and cultural potential of a 21st Century broadband infrastructure.

A. The Data Demonstrate the Need to Address Gaps in Broadband Adoption.

The United States has by far the largest broadband market in the world with over 80 million subscribers,⁵⁰ but it is clear that the percentage of Americans accessing the Internet through a broadband connection is much lower in certain populations – such as low-income Americans, some minority groups and those living in rural areas – than in others. Pew notes that low-income Americans (those earning less than \$20,000 per year) enjoy only a 25 percent broadband adoption rate.⁵¹ Only 43 percent of African Americans maintain a broadband connection in the home, according to the Pew research, and the broadband adoption rate for this group experienced little to no growth between 2007 and 2008.⁵² Many Native Americans lack even basic telephone service let alone broadband service, and the broadband subscription rate among Native Americans stands at only 30 percent.⁵³ Finally, there are below-average broadband adoption rates for those living in rural areas, with studies reporting less than 40 percent subscription levels.⁵⁴

Interestingly, only 14 percent of Pew Study respondents who do not subscribe to broadband (*i.e.*, who use dial-up or are not online) cited a lack of availability as the reason they

⁵⁰ See OECD Broadband Statistics, Total Number of Broadband Subscribers by Country, December 2008, <http://www.oecd.org/dataoecd/22/15/39574806.xls>.

⁵¹ Pew Study at 2. Pew recorded an eleven percent drop in broadband adoption between 2007-2008 in this group. *Id.* at 5.

⁵² See *id.* at 2.

⁵³ *Rural Broadband Strategy Report* at ¶ 30.

⁵⁴ See *Rural Broadband Strategy Report* at ¶ 27 (citing Pew Study at 3, and NTIA, HOUSEHOLDS USING THE INTERNET IN AND OUTSIDE OF THE HOME, BY SELECTED CHARACTERISTICS, 2007, Table 3 at p. 5 (2008), http://www.ntia.doc.gov/reports/2008/table_householdinternet2007.pdf).

do not subscribe to broadband at home, while far more cited demand-related reasons.⁵⁵ By far the largest group (51 percent) stated that they felt no need or interest in having a broadband connection. These results indicate that, with some additional efforts by providers and government, many of the key gaps in adoption levels can be closed.

B. The National Broadband Plan Should Address Major Demand Issues That Inhibit the Growth of Broadband.

Affordability. The Recovery Act directs the Commission to include in the national broadband plan “a detailed strategy for achieving affordability of [broadband] service and maximum utilization of broadband infrastructure”⁵⁶ and it includes in the BTOP funding “not less than \$250,000,000 shall be available for competitive grants for innovative programs to encourage sustainable adoption of broadband service.”⁵⁷ In so doing, Congress recognized that, especially in low-income populations, the cost of computer hardware necessary to access the Internet and the recurring cost of Internet access prevent many people from subscribing to broadband service. In rural areas, the high up-front costs associated with deploying infrastructure contribute to the pricing of broadband services out of the reach of those with lower disposable income. Finally, the total cost of a broadband subscription is raised by the higher-than-average taxes that are imposed on communications services in the United States.

To meaningfully address the issue of affordability, and to develop a “strategy” for achieving it as called for by the Recovery Act, the national broadband plan should encourage public and private sector initiatives that foster distribution of low-cost Internet access hardware

⁵⁵ See John B. Horrigan, *Obama’s Online Opportunities II*, Pew Internet & American Life Project, (January 2009), available at www.pewinternet.org/~media/Files/Reports/2009/PIP_Broadband%20Barriers.pdf.

⁵⁶ Recovery Act at § 6001(k)(2)(b).

⁵⁷ *Id.* at Division A, Title II.

to populations otherwise unable to afford standard computer equipment. Efforts such as the One Laptop per Child initiative – which seeks to place \$100 laptops in the hands of every child who needs one – should have the Government’s support, either through direct public investment, public-private partnerships or other means.

The plan also should consider ways to provide means-tested support to make broadband more affordable, whether through Lifeline and Link-Up programs or some other means.

Availability of Relevant Content and Applications. Those who regard a broadband connection as something they have no need for or no interest in likely are not aware that content and applications relevant to their lives are available through broadband. For example, low-income populations may require targeted, local information on education, jobs and entrepreneurship in order to value a broadband connection, while Native Americans may require specific content relevant to Indian nations. Local content adapted to local needs can be a key driver for broadband adoption, so an effective national broadband policy should support the development of locally-produced content. Federal, state and local governments can play a key role here by creating their own content, which can also serve social goals by focusing on community issues and addressing cultural and language diversity challenges. The national broadband plan should recognize the important role of local and governmental content and applications and seek ways to promote their development.

Broadband Awareness and Digital Literacy. In America in the 21st Century, the benefits of being connected via broadband are obvious to most, but some communities are still unaware of these benefits, or if aware, unable to take advantage. It is these individuals, however, who have the most to gain educationally and economically from developing the knowledge and skills needed to capitalize on the opportunities offered by access to the Internet.

Broadband adoption rates tend to be low wherever end-user awareness and digital skills are also low. The national broadband plan therefore should seek to ensure that the benefits of broadband applications and services are made more widely known in low-adoption populations. The plan should include the development of “best practices” outreach that is targeted at populations whose broadband awareness is low, and also should provide support to programs that enhance “digital literacy.” For example, encouragement should be provided for programs that teach how to obtain and use computers, that disseminate information regarding the broad range of relevant and useful information that is available online at no charge, and that increase awareness of online education and skills development programs provided by local governments, communities and the private sector. All levels of government should be enlisted in the effort to ensure that no one in our society is left behind on the wrong side of the “digital divide.”

V. CONCLUSION

For the foregoing reasons, Alcatel-Lucent supports the Commission’s commitment to a national broadband plan and urges consideration of the role that network investment and deployment must play to expand the broadband experience to all Americans and all corners of the nation. The plan should facilitate new investment and, where appropriate, target public investment to maximize impact.

Respectfully submitted,

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