



US BROADBAND COALITION
2014 P Street, NW
Suite 200
Washington, DC 20036
(202) 833-5300
www.bb4us.net

Report of the
US Broadband Coalition
on a
National Broadband Strategy

September 24, 2009

For Further Information Contact:

Jim Baller
President
US Broadband Coalition
(202) 833-1144
Jim@Baller.com

Kenneth Peres, PHD
Vice President
US Broadband Coalition
(202) 434-1185
KPeres@wva-union.org

TABLE OF CONTENTS

Forward	1
Executive Summary	2
Report of the US Broadband Coalition: A National Broadband Plan.....	8
Background and Overview.....	8
The Opportunities That Universal, Affordable Broadband Connectivity Create for America	9
Goals of a National Broadband Plan.....	15
Policy Options to Stimulate Adoption and Use	20
Policy Options to Stimulate Broadband Availability	26
Policy Options to Foster Accountability and Enable Accurate Measurement of Progress	31

Attachments

- Attachment a - Leadership of the US Broadband Coalition**
- Attachment B - Member Organizations**
- Attachment C - Call to Action**
- Attachment D - Broadband Speeds Needed to Run Specific Applications**

Supplement

The final report of the Coalition's Adoption and Use Group will be released on November 1, 2009.



FORWARD

The accompanying report of the US Broadband Coalition culminates eighteen months of intensive effort to develop a comprehensive national broadband strategy that would be worthy of our great nation.

At the time we began this effort in early 2008, very few groups were calling for a national broadband strategy. Many of the current members of the Coalition were not convinced that such a strategy was necessary, and those that were did not necessarily agree on its basic elements. Agreement on the overall framework for a national broadband strategy, much less specific policy options, seemed a long way off.

It was not until we began work on a “Call to Action for a National Broadband Strategy” that our process began to gel. We discovered that the sixty organizations in the Coalition at the time shared many goals, at least in a general sense, and we were able to develop a framework for a national broadband strategy that included federal support for the development, adoption, and use of broadband infrastructure. We also formed six internal working groups to address a large number of complex issues and further develop our work as a Coalition.

Two months after we issued our Call to Action, Congress and President Obama enacted the Stimulus Act, providing for federal support of the development, adoption, and use of broadband infrastructure and requiring the Federal Communications Commission to develop a National Broadband Plan by February 17, 2010. Our work gained added relevance.

More than 160 organizations have become members of the Coalition. For the last nine months, our issue groups have worked hard to identify key policy issues and priorities and to develop as much agreement on them as possible. We have reached consensus on many of the principles, values, and ultimate goals that are likely to underlie the National Broadband Plan. As discussed in our report, we have also generated a wealth of new ideas, many of them worthy of serious consideration and further discussion. We have not, however, reached consensus on specific policies. That is not surprising, given the magnitude of the challenge we undertook and the many different perspectives and interests represented by our group.

In the end, the main value of our effort may lie in what it has confirmed about the benefits of good-faith, constructive engagement. Individuals representing groups that have historically been at odds have had an opportunity to exchange ideas that often get lost in typical debates about broadband policy, to participate in serious discussions with a wide range of individuals whom they seldom get to know well, and to obtain a better understanding of the many sides of the important broadband-related issues confronting our nation. In particular, we have made considerable progress in understanding how and why we disagree. On at least some issues, this could lead to even more progress in the future.

Jim Baller, President, US Broadband Coalition
Kenneth Peres, Vice President, US Broadband Coalition

EXECUTIVE SUMMARY

Background and Overview

This report describes the opportunities that universal, affordable, and robust broadband connectivity will create for America; discusses national broadband goals; offers a range of policy options to stimulate broadband adoption and use and build-out, and to develop effective tools to measure progress and foster accountability in reaching the goals. It fulfills the commitment that US Broadband Coalition made in our Call to Action released last December to continue to work together to address key issues and policy priorities. Our effort was reinforced when Congress included a provision in the American Recovery and Reinvestment Act of 2009 (ARRA) requiring the Federal Communications Commission to develop and deliver to Congress within one year a report setting forth a national broadband plan (NBP). The plan was to address many of the issues that the Coalition had set forth in its Call to Action.

The Coalition represents more than 160 organizations including large and small communications providers of all kinds, high technology companies, manufacturers, labor unions, educational institutions, utilities, consumer groups, public interest organizations, units of state and local government, and many other stakeholders committed to advancing America's broadband future.

While all members of the US Broadband Coalition have had an opportunity to participate in the development of this report, we have not asked members of the Coalition to endorse or sign on to any of the policy options discussed below. Given the huge size of our group and the large number of complex issues that we addressed, obtaining consensus on detailed recommendations would have been a highly time-consuming and ultimately fruitless undertaking.

To cope with this challenge, the leadership of the Coalition decided that our report should not state or imply that it reflected a consensus on any issue, nor should it purport to make recommendations on behalf of the Coalition or any participating organization. Rather, we decided that the report would attempt to provide fair, accurate, and constructive summaries of the range of positions among members of the Coalition on the issues and policy options that we have been discussing over the last nine months. As a result, no member of the Coalition should be deemed to have endorsed any policy option discussed in this report. To the extent that members of the Coalition have participated in the FCC's proceeding to develop a National Broadband Plan, this report should not be interpreted to supersede or replace any positions or proposals they have made as participants in that proceeding.

I. OPPORTUNITIES THAT UNIVERSAL, AFFORDABLE BROADBAND CONNECTIVITY CREATE FOR AMERICA

The United States has a long and successful history of stimulating economic development and boosting competitiveness by promoting investment, and investing itself, in such key infrastructures as canals, rail lines, telephone networks, the electrical grid, and the Interstate Highway System. These national undertakings have brought our citizens closer, connected them to the global marketplace, and raised their standard of living.

Today, we live in the Internet Age. The Internet is rapidly transforming society and the global economy, becoming as essential for daily living and commerce as any other infrastructure. Thus, there is widespread agreement among members of the Coalition that America will benefit greatly

from expanding the ubiquity, capacity, and adoption and use of broadband connections to the Internet.

- **Economic Development and Job Creation.** Putting innovation and investment in broadband connections to the Internet at the center of American policy will stimulate the economy, create jobs, increase worker productivity, enable sustainable economic growth, enhance the quality of life, and help the United States remain successful in the increasingly competitive knowledge-based global marketplace.
- **Health Care and Emergency Medical Response.** High-capacity broadband connectivity can enable cost-effective health management systems focused on keeping people out of hospitals, contribute to the effective management of chronic illness, reduce waste and medical errors, enhance delivery of health care in rural areas, and facilitate effective responses to medical emergencies such as heart attacks, disasters, and pandemics.
- **Education.** Ubiquitous, affordable broadband connectivity to the Internet will ensure that all students have access to high-quality teaching and educational resources. The connections between broadband and education extend far beyond K-12 and higher education and can benefit seniors, workers, and others who are not students in the formal education system.
- **Energy and Environmental Sustainability.** Modern high-performance broadband infrastructure offers tremendous opportunities to conserve energy, enhance efficiency, and protect the environment. Smart grids, smart buildings, and automated traffic management controls can slash energy costs, increase reliability, and reduce energy losses in delivering electricity from suppliers to consumers.
- **Public Safety and Homeland Security.** Interoperable high-speed networking can transform public safety, homeland security, and emergency response by enabling rapid and coordinated communications and service delivery.
- **Democracy and Civic Engagement.** Citizens are increasingly using the Internet to inform and express their opinions on their favorite candidates and issues. Our entire society needs access to broadband-based information; equally as important, people need the skills to evaluate the credibility of information sources and to collaborate constructively.
- **People with Disabilities and Older Americans.** High-speed broadband connectivity to the Internet offers tremendous potential benefits for people with disabilities by helping to level the playing field for individuals who cannot see, hear, or get around. When these individuals can access the Internet through broadband connectivity, they can take advantage of more job opportunities, education, social engagement, commerce and recreation.

II. THE GOALS OF A NATIONAL BROADBAND PLAN

As reflected in the Call to Action, all members of the Coalition support the general principle that, within a reasonable period of time, all American consumers, businesses, and other organizations should have affordable access to sufficiently robust broadband connectivity to take advantage of

the kinds of applications described above. Similarly, there appears to be common ground on the following broad narrative goals: our national goals should be grounded in what users can do with broadband connectivity; numerical targets, standing alone, are of little value; the NBP should include policies that aggressively encourage widespread adoption and use of broadband connectivity; while there are very significant differences between wireline and wireless technologies, wireless broadband technologies should be an important component of the NBP, as consumers highly value mobility; and the NBP should seek to preserve and protect security and privacy to the maximum extent possible, particularly as financial, health, corporate, government, and other sensitive information are increasingly transmitted over broadband networks.

No consensus was reached on specific numeric goals and timetables. In order to focus the discussion, the Goals Group invited comment on a set specific download speed targets and timetables for residential households, small and medium entities, and large institutions. The targets were for 2015 and 2020 and ranged from 100 megabits per second to 1 gigabit per second, depending on the category. The discussion around this issue was quite intense. Reactions fell into four broad categories.

- Some members believe that penetration, speed, and similar measures are not helpful because they fail to consider private and public value, are based on unreliable data, are prone to endless argument, and are often unrealistic and unobtainable. Other members believe that such measures can be highly beneficial in developing policies, building public support, tracking progress, and informing critical decisions and that without numeric targets and timetables, it is difficult, if not impossible, to measure progress objectively and determine accountability if the pace of progress is too slow.
- Some members believe that 100 Mbps has become the *de facto* standard among the world's leading nations and that the United States must make at least that speed widely available and affordable by 2015 if it wants to remain competitive in the increasingly competitive knowledge-based global economy. They also say that 100 Mbps will be necessary to support many applications that many Americans will want by then, particularly as video-based applications of all kinds gain in popularity.
- Some members contend that 100 Mbps is too aggressive and that the costs of meeting such a target by 2015 would be prohibitive for our nation. They also believe that most Americans will not need so much data speed in the foreseeable future and that improvements in compression and other technologies are constantly increasing the amount of information that can be transmitted at a particular data speed.
- Some members maintain that targets of 100 Mbps to 1 Gbps by 2015 are not aggressive enough. They believe that we will need much faster speeds much sooner than most people realize, particularly in view of the growing popularity of video-based applications of all kinds, especially among America's huge population of young people. They contend that a target of anything less than widely available, one gigabit per second connections to the Internet will not enable the United States to keep pace with the leading Asian and European nations.

The discussion concerning data speeds focused primarily on wireline broadband infrastructure. As members of the Coalition also recognized, however, the NBP must also ensure that robust wireless broadband connectivity will also be widely available at affordable rates.

While this discussion reached no resolution, it was constructive and useful in clarifying some of the key issues that must be resolved if specific goals are to be made part of the NBP.

Open Access/Network Management/Competition

As reflected in the Call to Action, all members of the Coalition believe that the NBP should ensure that access to the Internet will “to the maximum feasible extent, be open to all users, service providers, content providers, and application providers;” that network owners will “have the right to manage their networks responsibly, pursuant to clear and workable guidelines and standards;” and that “the Internet and broadband marketplace should be as competitive as reasonably possible.” Discussions within the Coalition concerning such open access/network management issues will continue after the September 24th release of this report.

III. POLICIES TO STIMULATE BROADBAND ADOPTION AND USE

There is broad agreement within the US Broadband Coalition that a National Broadband Plan should include policies that encourage the adoption and use of broadband connectivity to the maximum extent possible.

Bridge the Digital Divide

There are a number of barriers preventing the United States from reaching truly universal, ubiquitous use of broadband networks and applications including a lack of relevance, literacy, training and skills, access, affordability and access to computers and other internet-enabled devices. The Coalition discussed a number of policy options that could address these barriers including investing in digital inclusion and literacy programs.

Address the Broadband Adoption Gap for People with Disabilities

In addition to experiencing the same barriers to access, affordability, training, literacy, and relevance that other traditionally underserved population groups do, people with disabilities often experience barriers of physical accessibility to broadband connectivity, to hardware and software, and to public locations that provide free access to broadband services. These various barriers, including the high costs of making computers and broadband service accessible to people with disabilities, can be prohibitive, and be enough to turn these people away from broadband services. The Coalition discussed a number of policies to increase and sustain the adoption and use of broadband connectivity by people with disabilities including better research to define and characterize the problem; better design of basic infrastructure and technologies; ensure that broadband services and equipment, as well as broadband content, accord with the Americans with Disabilities Act; and create business incentives to incorporate accessibility and affordability within broadband products and services.

Increase the Intensity of Use in Core Applications

The Coalition recognized that broadband connectivity is becoming increasingly important in every corner of American life and that the United States will benefit greatly when every sector of the economy takes maximum advantage of the benefits that robust broadband connectivity provides. Among the policy options discussed to increase adoption and use throughout the economy are the following:

- Economic Development: put issues of digital transformation at the forefront of economic policy; support on-line and in-person workforce development initiatives; encourage communities to invest in and leverage broadband solutions as part of their plans for strategic reinvestment and growth;
- Health Care: encourage collaboration among federal health agencies, members of the healthcare community and telecom service industry to develop an electronic health services reference framework for telemedicine services to drive solutions that put health information in the hands of professionals and in service for patients
- Education: emphasize 21st-century skills proficiency in schools, workforce training and retraining programs, libraries, and other educational and vocational resources.
- Energy: promote the use of web-based applications and devices in energy conservation and transportation efficiency such as Smart Grids, Smart Roads and automated processes.

Raise the Bar on Skills and Ease of Use

The lack of basic computer knowledge and digital literacy are barriers to adoption for many, while gaps in media and information literacy skills prevent some existing users from using broadband technology effectively in their work and lives. Accelerating Internet learning requires innovation and improvement in usability, including the development of more natural and robust interfaces and making networks easier to set up and maintain. Raising the bar on skills and increasing ease of use benefits everyone. Policy options discussed to achieve these goals include the following: ensure that information literacy standards are part of standard curriculum for all students; create incentives for commercial and private investment in next generation applications; reward and showcase best-in-class applications that use collaborative broadband tools to solve challenges in healthcare, education, energy or other core segments.

Encourage Innovation at All Levels

Given the massive change in this market in the past five years, it is difficult to predict the possibilities for the future. Policies must focus not on protecting any status quo but in continuing to create a fertile environment for US-based innovation, expansion and Adoption and Use. Some of the policy options discussed includes the following: expand investment in internet-aligned technology incubators; promote innovations that increase ease of use for broadband

IV. POLICY OPTIONS TO STIMULATE BROADBAND AVAILABILITY

The federal government, in collaboration with state and local governments and the private sector, should play an active role in stimulating broadband deployment, particularly in un-served areas. There appear to be at least two major barriers that prevent the deployment of faster broadband to areas that are un-served or underserved: high costs and technological barriers. The Coalition discussed a range of policy options that could stimulate broadband availability including such financial incentives as grants, loans, loan guarantees, tax incentives, and tax credit bonds. While there appears to be broad support for improving the universal service program, on a technologically and competitively-neutral basis, significant differences of opinion existed on exactly what reforms should be supported. Other policy options discussed included federal

support for state or regional development organizations that are working to stimulate and aggregate demand and additional spectrum and towers.

V. POLICY OPTIONS TO FOSTER ACCOUNTABILITY AND ENABLE ACCURATE MEASUREMENT OF PROGRESS

The collection and continuous updating of metrics on broadband are important components of a NBP. Broadband data are important for a variety of reasons. Perhaps the most important is to identify the amount of progress the United States and sub-national regions (states, counties, cities, and neighborhoods) are making in the deployment and adoption of broadband. Broadband data can also help consumers make better informed decisions about broadband purchases and broadband providers make better investment decisions. Better broadband data are important tools for policy makers in determining where public policy should focus its efforts and to assess the effectiveness of those policies.

The Metrics Group developed a number of policy options that might enhance the availability and quality of broadband data. These included the following: increasing funding for the Census Bureau to collect better data on broadband use; ensuring full implementation of the Broadband Data Improvement Act; making further improvements to the FCC's Form 477 data collection efforts; supporting an integrated, user-generated data system; and creating an Office of Broadband Statistics that would be responsible for establishing a National Broadband Data Warehouse. Members of the Coalition vigorously debated the need for and merits of these options.

REPORT OF THE US BROADBAND COALITION

Introduction

On December 2, 2008, the US Broadband Coalition released a Call to Action for a National Broadband Strategy at a well-attended event on Capitol Hill.¹ An unprecedented number of organizations of all kinds endorsed the Call to Action, including large and small communications providers of all kinds, high technology companies, manufacturers, labor unions, educational institutions, utilities, consumer groups, public interest organizations, units of state and local government, and many other stakeholders committed to advancing America's broadband future.

The Call to Action stated that the United States urgently needs a comprehensive national broadband strategy, and it set forth a framework for developing such a strategy. The Call enumerated five key goals, outlined policies for stimulating both the supply of and demand for broadband connectivity, and called for measures that would ensure objectivity and accountability. It also concluded with a commitment by the signatories to continue to work together to address key issues and policy priorities and to hold another event to present their recommendations.

Following the issuance of the Call to Action, Congress passed the American Recovery and Reinvestment Act of 2009 (ARRA), and it was signed into law by President Obama on February 17, 2009. In the Act, Congress included a provision requiring the Federal Communications Commission to develop and deliver to Congress within one year a report setting forth a national broadband plan (NBP). The plan was to address many of the issues the Coalition had set forth in its Call to Action. In response, the Coalition focused on making its work as helpful to the Commission as possible.

The Coalition has now grown to more than 160 organizations, which have been working for the last nine months to develop as much agreement as possible on the major components of a national broadband strategy. We have discussed and debated, agreed and disagreed, and maintained a constructive, respectful interchange of ideas and opinions for the purpose of advancing America's broadband infrastructure and usage.

This report is a summary of our efforts and progress to date. It contains five sections: (1) the opportunities that universal, affordable, and robust broadband connectivity will create for America; (2) national broadband goals; (3) a range of policy options to stimulate broadband adoption and use; (4) a range of policy options to stimulate broadband build-out; and (5) tools to measure progress and foster accountability in reaching the goals.

While all members of the US Broadband Coalition have had an opportunity to participate in the development of this report, we have not asked members of the Coalition to endorse or sign on to any of the policy options discussed below. Given the huge size of our group, the large number of complex issues that we addressed, and the wide range of opinions among members of the group on most issues, developing and negotiating language on which everyone could agree would have been a highly time-consuming and ultimately fruitless undertaking.

¹ The Leadership of the US Broadband Coalition and its Member Organizations are listed in Attachments A and B. A copy of the Call to Action is appended as Attachment C.

To cope with this challenge, the leadership of the Coalition decided that the report should not state or imply that it reflected a consensus on any issue, nor should it purport to make recommendations on behalf of the Coalition or any participating organization. Rather, we decided that the report would attempt to provide fair, accurate, and constructive summaries of the range of positions among members of the Coalition on the issues and policy options that we have been discussing over the last nine months. As a result, no member of the Coalition should be deemed to have endorsed any policy option discussed in this report. To the extent that members of the Coalition have participated in the FCC's proceeding to develop a National Broadband Plan, this report should not be interpreted to supersede or replace any positions or proposals they have made as participants in that proceeding.

In the end, this report is reflection of the group's productive dialogue and spirited debates, which generated a wide range of ideas and choices worthy of further consideration. The main value of the report is in its illumination of what good-faith, constructive engagement can achieve. We have had an opportunity to exchange ideas that often get lost in typical debates about broadband policy, to engage in in-depth discussions with a wide range of individuals whom we seldom get to know well, and to obtain a better understanding of the many sides of the important issues confronting our Nation. In particular, we have made considerable progress in understanding how and why we disagree. On at least some issues, this could lead to even more progress in the future.

I. THE OPPORTUNITIES THAT UNIVERSAL, AFFORDABLE BROADBAND CONNECTIVITY CREATE FOR AMERICA

The United States has a long and successful history of stimulating economic development and boosting competitiveness by promoting investment, and investing itself, in key infrastructures. Canals, rail lines, telephone networks, the electrical grid, the Interstate Highway System – these national undertakings have brought our citizens closer together, connected them to the global marketplace, raised their standard of living, and made their businesses more successful.

Today, we live in the Internet Age. The Internet is rapidly transforming society and the global economy, becoming as essential for daily living and commerce as highways, telephones, and other infrastructures. As a result, there is widespread agreement among members of the Coalition that America will benefit greatly from expanding the ubiquity and capacity of broadband connections to the Internet and from increasing the adoption and use of these broadband connections.

Economic Development and Job Creation. Putting innovation and investment in broadband connections to the Internet at the center of American policy will stimulate the economy, enable sustainable economic growth, and help the United States remain successful in the increasingly competitive knowledge-based global marketplace. The diffusion of information and communications technologies (ICT) and Internet access to date have had an impact on worker productivity that is many times that of non-Information Technology capital investments such as buildings and roads. Some studies indicate that, between 1995 and 2002, even when the Internet was primarily a dial-up medium, ICT was responsible for two-thirds of total growth in

productivity, and virtually all of the growth in labor productivity.² Now, broadband connections to the Internet have the potential to expand the Internet's benefits even further.

Numerous studies have shown that replacing dial-up networks with broadband connections to the Internet accelerates the productivity impact of ICT, leading many to view ICT as a form of "super capital."³ Strategic Network Group has calculated that "for every dollar invested in broadband, the economy sees a ten-fold return on that investment."⁴ Studies by Robert Crandall at the Brookings Institution and by Rob Atkinson, then-director of the Technology and New Economy Project at the Progressive Policy Institute, have come to similar conclusions.⁵

Investments in America's digital infrastructure are likely to create or retain 1 million to 2.5 million jobs in the near term, depending on the assumptions used.⁶ In turn, this can lead to more interesting and better paying jobs⁷ and result in higher productivity, increased American competitiveness, and enhanced quality of life in the moderate to long term.⁸

² Dale W. Jorgenson, Mun S. Ho, and Kevin J. Stiroh, "A Retrospective Look at the U.S. Productivity Growth Resurgence," Federal Reserve Bank of New York, February 2007.

³ Robert D. Atkinson and Howard Wial, "Boosting European Prosperity Through the Widespread Use of ICT," The Information Technology and Innovation Foundation, November 2007, at 10, <http://tinyurl.com/maq4gh>.

⁴ Strategic Network Group's research since 2003 has found significant increases in local economic activity attributable to broadband. Michael Curri, Strategic Networks Group, "The Transformative Effects of FTTP" (March 2008), <http://tinyurl.com/6m9cfw>. SNG's work is referenced in pages 18-19 of the House Report on the American Recovery and Reinvestment Act of 2009, <http://tinyurl.com/9vq95o>.

⁵ Robert Crandall, William Lehr and Robert Litan, "The Effects of Broadband Deployment on Output and Employment: A Cross-sectional Analysis of U.S. Data," Issues in Economic Policy, The Brookings Institution, July 2007, <http://tinyurl.com/2nyzeg>; Robert Atkinson, "The Past and Future of America's Economy," (Edward Elgar; UK) 2004; *see also* Jim Baller & Casey Lide, "Bigger Vision, Bolder Action, Brighter Future: Capturing the Promise of Broadband for North Carolina and America," June 2008, <http://tinyurl.com/nbffd>, which includes a discussion of 10 studies and 10 case histories linking broadband, particularly high-capacity broadband, with economic development and growth.

⁶ Robert Atkinson, Daniel Castro, Stephen Ezell, "The Digital Road to Recovery: A Stimulus Plan to Create Jobs, Boost Productivity and Revitalize America," ITIF, January 2009, <http://tinyurl.com/99z48w>. Communications Workers of America, "Broadband Investment Creates Jobs," Letter to Congress, December 2008, <http://tinyurl.com/n6ja5x>.

⁷ John Windhausen Jr., "A Blueprint for Big Broadband," EDUCAUSE, January 2008, <http://tinyurl.com/lf74r>.

⁸ Stephen D. Oliner, Danieal E. Sichel, and Kevin J. Stiroh, "Explaining a Productive Decade," Finance and Economics Discussion Series Working Paper No. 2007-63, Federal Reserve Board, Washington, DC, August 2007, <http://tinyurl.com/lequgk>.

Health Care and Emergency Medical Response. Chronic diseases such as diabetes, congestive heart failure, hypertension, obesity, and asthma are increasing and are a major cause of the explosive growth of healthcare costs in the United States. The existing healthcare system is primarily organized to deliver episodic care, rather than managing chronic diseases. Many members of the Coalition believe that our nation needs a cost-effective disease management system focused on keeping people out of hospitals and that electronic health records and that Internet-based applications can contribute greatly to the effective management of chronic illness and to the reduction of waste and medical errors.

High-capacity broadband connectivity can also significantly enhance delivery of health care services in remote and rural areas. With sufficient broadband connectivity, patients can be “seen” by distant expert health care service providers whose services would otherwise be unavailable in the local community.

Similarly, high-speed broadband connectivity can also facilitate effective responses to medical emergencies of all kinds – e.g., heart attacks, disasters, pandemics, etc. Our emergency health care system today is far less informed than it could and should be. With the proper application of software services riding on high-speed broadband networks, electronic health care information can be made available seamlessly to all responders that may come into contact with a victim of an emergency, starting with 9-1-1 and including EMS crews, hospitals, trauma centers, public health agencies, and others. Rather than dealing with patients as blank slates, as is typically the case now, health care providers can instantaneously learn far more than they do today about what occurred to create the emergency, what the victim’s medical history is, what protocols they should follow, how to interpret vital signs, what care has already given, etc. At the same time, such a broadband-based system can automatically create end-to-end records that could be used to track outcomes, study and improve procedures, facilitate billing, and serve many other useful purposes.

Education. The key to learning and job training in the 21st century is the ability to retrieve, process, and apply information. Our educational institutions must produce critical thinkers who are fully conversant in the use of modern technologies and are inquisitive, innovative, and collaborative in their ability to solve problems and develop new ideas. Ubiquitous, affordable broadband connectivity will ensure that all students have access to high-quality teaching and educational resources.

In educational institutions, broadband connectivity to the Internet affords educators and students the opportunity to extend learning beyond the classroom walls and the traditional school day. From “virtual” field trips to far-away museums or cultural resources to real-time online collaborations among students in other cities or countries, broadband connectivity offers students opportunities that are not available in the traditional classroom setting. Similarly, broadband allows educators to continue their own professional development and obtain needed credentials through online courses and conferences and to participate more easily in ongoing “learning communities.” In today’s tough economic times, cash-strapped school districts use broadband connectivity to reduce their costs and provide greater learning opportunities by sharing important resources such as teachers and materials at schools across a region. Additionally, educators increasingly rely on broadband-enabled tools to educate students when schools are closed due to emergencies or wide-spread illness.

The connections between broadband and education extend far beyond K-12 and higher education. Community colleges can use high-capacity broadband connections between campuses for classroom instruction via telepresence, to reduce overall network costs, and to enhance and expand job-training classes. Virtually every public library in the country makes public access computers available to the community for no fee, allowing the most vulnerable population segments to research job opportunities, acquire medical and health information, and complete homework assignments. Web-based applications support continuous learning and collaboration for seniors when learning new skills, for immigrants when getting news from their home countries, for workers when learning about new jobs and retraining for those positions, and for citizens when becoming informed participants in the democratic process.

Energy and Environmental Sustainability. Modern high-performance broadband infrastructure offers tremendous opportunities for businesses and consumers to conserve energy and protect the environment. In addition, broadband-enabled device-to-device communications can significantly automate processes, conserve energy, and enhance efficiency at all levels. Smart grids can slash energy costs, increase reliability, and reduce energy losses in delivering electricity from suppliers to consumers. Smart buildings can manage air conditioning and energy-intensive applications in ways that reduce demand at peak times. Automated traffic management controls that communicate across large regions can dramatically improve traffic flow, decrease congestion, and conserve fossil fuel consumption. Broadband-based applications like bike shares and car shares also result in overall increases in environmental sustainability. With all that has been developed and put in use, this field is clearly poised for far greater innovation, advancement and impact.

Public Safety and Homeland Security. Interoperable high-speed networking can transform public safety, homeland security, and emergency response by enabling rapid and coordinated communications and service delivery. Emergency communications systems need to work across the full range of modalities in which citizens now regularly communicate: text, video, advanced IP-enabled voice and data services, Twitter and comparable services, etc. Emergency service providers of all types – from law enforcement and fire fighters to medical responders – need easy access to shared information on the location and nature of events and on the specifics of victims and their medical situation.

Today, interoperability and information-sharing among emergency responders are major challenges. Emergency communications and response systems remain largely stuck in the technology and mentality of the 20th Century at a time when 21st Century broadband-enabled technologies are being deployed throughout most other sectors in the U.S. As a result, responders lack access to available and useful information, emergency communications systems are inflexible and insufficiently redundant during major disasters, and overall systems are beset by inefficiencies.

A major national emphasis on enabling emergency response agencies to obtain and use broadband connectivity more effectively offers a significant opportunity to improve emergency response in America and to facilitate broader community broadband use. The ARRA took an important step in this direction. The NBP should accelerate progress along this path.

Democracy and Civic Engagement. The Internet is rapidly changing how we engage in political and civic discourse. Citizens of our democracy are increasingly using the Internet to inform and express their opinions on their favorite candidates and issues. As the Pew Internet

and American Life Project recently found, “some 74% of internet users – representing 55% of the adult population – went online in 2008 to get involved in the political process or to get news and information about the election.⁹ Citizens are much less dependent on traditional media outlets than they used to be, as large numbers of individuals are now going to the web to obtain news and other critical information, to create and react to the content, and to share opinions with peers or affinity groups.¹⁰ Social networking sites like Facebook, Twitter, MySpace, and Gather are also helping to build communities of similar interests and galvanizing individuals around common causes.¹¹

Through next-generation web tools that include blogging, podcasting, and wikis, the Internet has the power to revitalize American democracy. The emerging connection between the Internet and television broadcasting is becoming increasingly apparent. High-speed broadband has also made it possible for people to organize and share their own opinions in the form of blogs that could be commentaries, descriptions of events, audio files, or video graphics. According to Technorati, a firm that tracks blog activities, over 175,000 new weblogs are created daily, and more than two blogs are created each second of the day.¹² Critical to our ability to leverage the Web to advance democracy, civic engagement, and community transformation are the principles of Universal Access and Digital Literacy discussed in the Adoption and Use section. Our entire society needs access to broadband-based information; equally as important, people need the skills to evaluate the credibility of information sources and to collaborate constructively.

People with Disabilities. High-speed broadband connectivity to the Internet offers tremendous potential benefits for people with disabilities by helping to level the playing field for individuals who cannot see, hear, or get around. When these individuals can access the Internet through broadband connectivity, they can take advantage of more job opportunities, education, social engagement, commerce and recreation. Unfortunately, there are a number of physical accessibility barriers that have prevented people with disabilities from accessing broadband-enabled services. For example, broadband equipment and multi-media applications often require vision and/or hearing to manipulate functions and controls, creating barriers for people who do not have one or both of these senses. Graphical interfaces and web content are sometimes not accessible to screen readers, creating problems for people who are blind or vision impaired. Similarly, website designs that fail to incorporate accepted web accessibility standards can pose difficulties for people with restricted mobility. Uncaptioned videos posted on the web can block access to people with impaired hearing.

With advances in medical science, a greater number of Americans are living longer and developing vision, hearing and other types of disabilities later in life. The needs of these older

⁹ Aaron Smith, “The Internet’s Role in Campaign 2008,” Pew Internet and American Life Project, April 15, 2008, <http://tinyurl.com/l5jceo>.

¹⁰ Aaron Smith, “The Internet as a Diversion,” Pew Internet and American Life Project, Sept. 10, 2009, <http://tinyurl.com/myoxfy>.

¹¹ For example, *Causes*, launched in 2007, has introduced over 175 million Facebook users to organizations that address social concerns.

¹² Technorati, “State of the Blogosphere,” August 2006, <http://tinyurl.com/n393st>.

Americans, as well as all Americans with disabilities, need to be considered and addressed in the development of the NBP. Employing principles of Universal Design will ensure that the Internet is available to Americans with disabilities and older Americans and that such access will strongly support their self-sufficiency, independence and full participation in society.

In short, high-speed broadband infrastructure delivers value and benefits across these and many other sectors of society.¹³

* * *

As a result of the hundreds of billions in network investment by the nation's private and public cable, telecommunications and wireless companies since 2000, some members of our Coalition, citing the latest available Federal Communications Commission statistics, maintain that more than 90% of the country's households had access to a high-speed, multi-megabit, wireline connection, as well as data compiled by industry analysts, and residential broadband adoption in the United States had grown from 3.2 million households in 2000 to as many as 70 million.¹⁴ Meanwhile, other members of the Coalition, believing that the Commission's data collection processes during this period were seriously flawed and do not support these conclusions, call for additional and better data collection and dissemination.¹⁵ Still other members of the Coalition, citing data collected by the International Telecommunications Union, the Organisation for Economic Cooperation and Development, and other international organizations, believe that broadband infrastructure in the United States is falling behind the rest of the industrialized world on a variety of critical criteria.¹⁶

¹³ In addition to the examples presented above, robust broadband connectivity can also improve and lower the costs of government services, facilitate urban revitalization, and support evolving video-based communications, particularly among America's vast population of young people. Jim Baller & Casey Lide, "Bigger Vision, Bolder Action, Brighter Future: Capturing the Promise of Broadband for North Carolina and America," June 2008, http://www.baller.com/pdfs/Baller_Herbst_eNC_6-23-08.pdf.

¹⁴ Federal Communications Commission, "High-Speed Services for Internet Access: Status as of June 30, 2008," July 2009, <http://tinyurl.com/mqdn83>; NCTA analysis of SNL Kagan and Census Bureau estimates, <http://www.ncta.com/StatsGroup/Availability.aspx>.

¹⁵ See, e.g., Scott Wallston, "Towards Effective U.S. Broadband Policies," Progress and Freedom Foundation, May 2007, <http://tinyurl.com/2lhnl6>; Scott Wallston, "Everything You Hear About Broadband in the U.S. is Wrong," Progress and Freedom Foundation, June 2007, <http://tinyurl.com/2s4fgp>

¹⁶ See, e.g., OECD Broadband Portal, <http://tinyurl.com/ywads5>; International Telecommunications Union, "Measuring the Information Society, March 2009, <http://tinyurl.com/cx53a4>; Point Topic, "U.S. Broadband Speed 18th Worldwide, September 2008, <http://tinyurl.com/n9qdss>; Robert D. Atkinson, Daniel K. Correa, Julie A. Hedlund, "Explaining International Broadband Leadership," ITIF, May 2008, <http://tinyurl.com/3jxb78>; S. Derek Turner, "Dismantling Digital Regulation: Toward a National Broadband Strategy," Free Press, May 2009, <http://tinyurl.com/qogcpp>; John Windhausen Jr., "A Blueprint for Big Broadband," EDUCAUSE, January 2008, <http://tinyurl.com/llf74r>.

Nonetheless, there is widespread agreement among members of the Coalition that the United States is not operating at its full broadband potential and that opportunities for improvement abound. In particular, the country has seen persistent pockets where broadband infrastructure has not been deployed – especially in rural communities, inner cities, among poor and non-white populations, etc. – and, at the same time, 30 to 40 million households have access to broadband connectivity have not taken advantage of it.¹⁷ In the American Recovery and Reinvestment Act of 2009 (ARRA), Congress made a welcome start in addressing such gaps in broadband access, adoption, and use by appropriating \$7.2 billion to stimulate investment in broadband infrastructure and related support services. But this investment is only one step.

As we stated in the Call to Action, our broadband connections “must be robust enough to enable our people, businesses, and public and private institutions to take full advantage of emerging and future bandwidth-intensive and quality-sensitive applications.” While this often spurs discussion of wireline options, the wireless industry notes a forward-thinking NBP must also take wireless deployment, adoption, and use into account. Given the increased productivity that mobility brings to employers and employees, the intersection of wireless with the energy sector (through smart grids), the transportation sector (through traffic management and fleet control), the health care sector (through telemedicine and mHealth), the homeland security sector (through mobile detection systems), and the farming sector (through crop and irrigation management), in addition to the myriad benefits of “wherever, whenever” communications, the NBP should also promote the deployment mobile broadband services.

As we also noted in the Call to Action, some Asian and European nations have adopted national broadband strategies and the policies to promote broadband deployment and adoption. These include grants, tax incentives, low-interest loans, subsidies, public-private partnerships, competition policy, efficient use of the spectrum, and many other forms of direct and indirect support by all levels of government. Some of these measures have led to increased broadband availability, faster speeds, lower prices, and relatively high adoption rates in these nations. The United States should study the successful policies and practices of these countries and adapt good policies ideas for the specifics of our country and markets. At the same time, conditions in the United States may differ in some important ways from those in other countries. As we develop our own NBP, we must do so in a way that is aligned with our own unique history, culture, geography, and economy.

II. THE GOALS OF A NATIONAL BROADBAND PLAN

The NBP must necessarily begin with goals. In our Call to Action, the US Broadband Coalition set forth the following five broad goals:

¹⁷ Patrick S. Brogan, “The Economic Benefits of Broadband and Information Technology,” pp 65-93, *Media Law & Policy: Broadband Policy Symposium*, Spring 2009, Volume 18, Number II., <http://tinyurl.com/qca4wk>; Jeffrey A. Eisenach, Ph.D., *The Telecom Sector and the Economy: How U.S. Broadband Policies Are Working for America*, September 2008, <http://tinyurl.com/kp97ek>; numerous company annual reports.

- Every American home, business, and public and private institution should have access to affordable high-speed broadband connections to the Internet.
- Access to the Internet should, to the maximum feasible extent, be open to all users, service providers, content providers, and application providers.
- Network operators must have the right to manage their networks responsibly, pursuant to clear and workable guidelines and standards.
- The Internet and broadband marketplace should be as competitive as reasonably possible.
- U.S. broadband networks should provide Americans with the network performance, capacity, and connections they need to compete successfully in the global marketplace.

The Coalition reaffirms these goals and believes that the NBP should address them in as much detail as possible. Toward this end, the Coalition established a working group on goals to study the relevant considerations and to build as much agreement as possible on them. The Goals Group responded by seeking to develop goals that were simultaneously ambitious and realistic, that took the bandwidth and quality requirements of known and predictable applications into account, and that provided for sufficient flexibility to accommodate unforeseeable increases in the need for bandwidth and enhanced quality. With the world growing smaller and increasingly competitive, the Goals Group also considered what other nations are doing today and are planning to do in the future. Furthermore, the Goals Group sought to strike a balance between narrative goals that stressed value-based considerations and quantitative targets and timetables that fostered objectivity in measuring progress and assigning accountability.¹⁸

Believing any single measure might be misleading and that multiple measures, taken together, would provide stronger evidence America's progress in meeting its broadband needs, the Goals Group sought to develop both narrative goals and more specific numeric targets and timetables. As shown in this section, members the Goals Group generally agreed on the narrative goals, but they could not agree on numeric targets and timetables.

A. Narrative Goals

The NBP must ensure that every American can benefit from existing and emerging applications in telemedicine, distance learning, social networking, e-commerce, and the many other important applications that will become commonplace in the years ahead. These applications will increasingly depend on two-way, high-quality video and will thus require affordable access to robust broadband connectivity. Some members of the Coalition also believe that these applications will thrive and spur innovation only if the Internet remains open, without discrimination, to all who wish to use it and to all applications, devices, and content that can be digitized.

As reflected in the Call to Action, all members of the Coalition support the general principle that, within a reasonable period of time, all American consumers, businesses, and other organizations

¹⁸ As discussed in Attachment D, the various working groups presented summaries of their work, and received feedback from other attendees, at a meeting open to all members of the Coalition on July 21, 2009.

should have affordable access to sufficiently robust broadband connectivity to take advantage of the kinds of applications described above. Similarly, there appears to be common ground on the following broad narrative goals: our national goals should be grounded in what users can do with broadband connectivity; numerical targets, standing alone, are of little value; the NBP should include policies that aggressively encourage widespread adoption and use of broadband connectivity; while there are very significant differences between wireline and wireless technologies, wireless broadband technologies should be an important component of the NBP, as consumers highly value mobility; large community anchor institutions (such as schools, health care facilities, and libraries) have a need for very high-capacity, usually fiber-based, bandwidth; and the NBP should seek to preserve and protect security and privacy to the maximum extent possible, particularly as financial, health, corporate, government, and other sensitive information are increasingly transmitted over broadband networks.

Furthermore, as reflected in the Call to Action, all members of the Coalition also believe that the NBP should ensure that access to the Internet will “to the maximum feasible extent, be open to all users, service providers, content providers, and application providers;” that network owners will “have the right to manage their networks responsibly, pursuant to clear and workable guidelines and standards;” and that “the Internet and broadband marketplace should be as competitive as reasonably possible.”

B. Numeric Targets and Timetables

For several months, members of the Goals Group debated whether the NBP should include numeric targets and timetables and, if so, what they should be. Eventually, the Group’s co-chairs presented the figures set forth in the following table. These figures did not reflect a compromise but were merely intended to focus the discussion. They stimulated much debate, but no agreement.

Data Speeds and Timetables			
	Current	2015 Target	2020 Target
Wireline			
Residential Households	90% at 3 Mbps or less	90% availability at 100 Mbps to 1 Gbps; 80% adoption	98% availability at 100 Mbps to 1 Gbps;
Small & Medium Entities	95% at 5 Mbps or less	90% availability at 100 Mbps to 1 Gbps	98% availability at 100 Mbps to 1 Gbps
Large Anchor Institutions	95% at 10 Mbps or less	90% availability at 1 Gbps to 100 Gbps	98% availability at 1 Gbps to 100 Gbps
Wireless			
	95% at 1 Mbps or less	90% availability at 1 to 10 Mbps	98% availability at 1 to 10 Mbps
NOTES: Mbps stands for Megabits per Second; Gbps stands for Gigabits per Second. See Attachment E for the applications that can be run at different speeds.			

Reactions to the targets and timetables in the chart fell into four broad categories. Some members of the Goals Group and the Coalition believe that these measures are not helpful because they do not consider private and public value; some believe that the targets and timetables are right on the mark; some believe they are too aggressive; and others believe that they are not aggressive enough.

Those who oppose the targets and timetables of the kind set forth in the chart believe that the importance of broadband connectivity is in its *value*, both public and private. Thus, they say, any meaningful numeric performance index of broadband adoption must be value-based.¹⁹ They also maintain that simplistic penetration or speed approaches lead to endless debate that is neither productive nor informative to the development of a practical NBP that will help to shape good government decision-making. Furthermore, they believe that, in a rapidly changing world, numeric targets and technology assumptions not based on value analysis can quickly become obsolete. They point out that conditions across the United States are so different, that any effort to establish numeric goals of general applicability could be more damaging than helpful for particular communities. In the absence of appropriate value analysis, they believe it is impossible to determine whether the numeric targets are too high, too little or just right. Some members also fear that numeric targets will inevitably be overly ambitious, unrealistic, and unobtainable, and will therefore result in counter-productive policies and disappointments.

Other members believe that numeric goals of the kind set forth in the chart can be highly beneficial in developing policies, building public support, tracking progress, and informing critical decisions. They note that national goals can be updated as needed to accommodate significant new circumstances and can be tailored to address particular local conditions. They do not oppose appropriately-measured value-based goals, but they believe that such measures should not be the only ones considered.²⁰ As to setting overly ambitious targets, the solution, they say, is not to reject such targets and timetables altogether, but to develop consensus on ambitious but realistic goals. Most important, these members stress that, without numeric goals, it is difficult, if not impossible, to measure progress objectively or to determine accountability if the pace of progress is too slow.

Those who believe that the figures in the chart are in the right range believe that 100 Mbps has become the *de facto* standard among the world's leading nations and that the United States must meet this standard if it wants to continue to be a leader in the increasingly competitive global economy. They also believe that the range of data speeds in the chart is essential to enabling Americans to take advantage of some of the current and emerging applications discussed above. See Appendix 3 for an illustrative, but not exhaustive, list of applications and the broadband speeds they currently require, based in part on the work of the California Broadband Task Force. They also believe that these data speeds should be well within reach within 5 years, or even

¹⁹ As an example of value-based analysis, they cite T. Randolph Beard, PhD, George S. Ford, PhD, and Lawrence J. Spiwak, "The Broadband Adoption Index: Improving Measurements and Comparisons of Broadband Deployment and Adoption," July 2009, <http://tinyurl.com/l7xpkw>.

²⁰ While not opposing consideration of appropriate value-based measures, among others, these members do not endorse the work of Beard, et al.

earlier, in view of the fiber and cable technologies that will be coming into the market in the next few years.

Those who believe that these targets are too aggressive contend that the costs of meeting these targets and timetables would be prohibitive for our nation. They also believe that most Americans will not need so much data speed in the foreseeable future and that improvements in compression and other technologies are constantly increasing the amount of information that can be transmitted at a particular data speed. Further, they believe that the United States should let the marketplace and competition dictate the high end of data speeds, so as to avoid costly overcapacity that could dampen the economy and focus government support on meeting the needs of the unserved.

Those who argue for more aggressive targets point out that residential, affordably-priced symmetrical Internet connections that run as fast as a gigabit in each direction are already available today in portions of Japan, South Korea, and Hong Kong, and that several other nations have aspirations of being at these speeds by 2015. These members maintain that much greater data speeds will be needed in the near future than anyone realizes, particularly in view of the growing popularity of video applications of all kinds, especially among America's huge population of young people. They contend that a target of anything less than widely available, one gigabit per second connections to the Internet will not enable the United States to keep pace. These members note that the difference in cost between 100 Mbps and 1 Gbps is not significant and that building gigabit broadband infrastructure now would enable the United States to make infinite, inexpensive upgrades to accommodate improvements in technology, increasingly bandwidth-rich applications, and increased Internet adoption approaching 100%. They also believe that such infrastructure would not only ensure equivalence with other economically advanced nations but would also unleash vast benefits for the American economy.

Members of the Goals Group also note that measures of speed alone do not adequately define a truly high-performance ICT infrastructure. Other performance measures, such as jitter, security, latency, packet delivery and reliability need to be considered if a progressive, strategic information and communications infrastructure is to be able to support many of the emergent high-performance business and user applications that will truly improve lives and stimulate economic growth.

The Coalition does not believe that we can resolve these differences ourselves in the near term. We are essentially a "hung jury" on goals, as our voluntary process does not lend itself well to resolving issues such as this.

C. Open Access/Network Management/Competition

The topics of "open access," "network neutrality," and "network management" have long been subjects of intensive national debate. As part of its mission, the Goals Group was assigned the task of developing as much agreement as possible on ways to implement the following three goals set forth in the Call to Action:

- Access to the Internet should, to the maximum feasible extent, be open to all users, service providers, content providers, and application providers.

- Network operators must have the right to manage their networks responsibly, pursuant to clear and workable guidelines and standards.
- The Internet and broadband marketplace should be as competitive as reasonably possible.

While the Goals Group has not completed its work on these critical issues, it has begun to make some progress, and a number of organizations within and outside the Goals Group have expressed interest in continuing to work on these issues after September 24.

III. POLICIES TO STIMULATE BROADBAND ADOPTION AND USE

There is broad consensus within the US Broadband Coalition on the point that the NBP should include policies that encourage the adoption and use of broadband connectivity to the maximum extent possible. As stated in the Call to Action:

Policies to Stimulate High-Speed Broadband Adoption and Use. The federal government, in collaboration with state and local governments and the private sector, must play an active role in stimulating adoption and use of advanced broadband connections. All Americans must have access to computers and the knowledge to use broadband technology effectively. Federal support might include loan programs, grants, subsidies, and other measures that foster broadband connectivity, computer access, education, and training.

The Adoption and Use Working Group proved to be especially dynamic, active, and productive, in part because of the Group’s strong leadership, and in part because virtually everyone in the Coalition supported the general principle that the federal government should actively stimulate greater adoption and use of broadband connectivity. At the same time, however, members of the Coalition did not agree on all of the policy options discussed below.

The Adoption and Use Group focused on five broad categories of issues: bridging the “Digital Divide;” reducing the broadband adoption gap for people with disabilities; increasing the intensity of use of broadband in six core applications, or “verticals” as they are sometimes known; raising the bar on skills; and encouraging innovation in broadband supply and use. A final report from the Adoption and Use Working Group is planned for completion on November 1st and will include more detailed analysis and recommendations in each of these areas.

A. Bridging the Digital Divide

There are a number of barriers preventing the U.S. from reaching truly universal, ubiquitous use of broadband networks and applications.

- **Relevance:** The power of internet-based applications is not clear to all. People will only invest when the benefits are clear and personally relevant.
- **Literacy:** For people with low literacy levels or those for whom English is a second language, a lack of accessible content can be a barrier to adoption and use.

- Training and skills: People need to feel comfortable with devices and applications in order to go online. Perhaps more importantly, they need a social infrastructure that supports learning and growth.
- Access: Even with huge advances in broadband penetration, many Americans live in areas where broadband networks have not yet been deployed or where choice is limited.
- Affordability: For many, it is the monthly, reoccurring cost of broadband services that prevent them from subscribing.
- Computers and other devices: A large segment of the population still doesn't own computers or another internet-enabled device.

Community practitioners understand the principles needed to drive adoption in those segments of the market that are late to adopt broadband. Successful programs are embedded in established community social and institutional networks. They are “high-touch” – i.e., based on personal interactions and relationships. They provide continuing formal and peer support to the new adopter through the critical stages of the “adoption curve.” Successful programs facilitate some form of affordable home computer and Internet access, and they integrate basic IT adoption with other strongly motivating opportunities, including employment, education, healthcare needs, civic and neighborhood improvement. In short, bridging the digital divide requires funded programs that Engage, Train, Equip, and Support new technology users.

Among the policy options available to achieve these goals are the following:

- Invest in Digital Inclusion and Digital Literacy programs that directly serve those populations that traditionally underutilize broadband connectivity: those in rural areas, seniors, those with less education, some minorities and those with low incomes.
- Develop a “digital ecosystem” in communities where broadband access is made available at public institutions (e.g., libraries, schools, park districts, hospitals) and in the home.
- Encourage a range of investment models that increase broadband options – starting first by reinforcing commercial markets that have invested billions to wire and unwire America and also supporting municipal and nonprofit models.²¹

²¹ Some members of the Coalition believe that public entities should not provide or facilitate the provision of broadband infrastructure and services in the absence of complete market failure, i.e., in areas in which no private entity is willing or able to provide broadband service. Some believe that the NBP should aggressively encourage and support public entities in developing advanced broadband networks, citing the significant contributions that thousands of municipalities made in electrifying the United States a century ago and the success of the vast majority of public fiber-to-the-home systems in operation today, Fiber to the Home Council, “Municipal Fiber to the Home Deployments: Next Generation Broadband as a Municipal Utility,” April 2008, <http://tinyurl.com/cnt7no>. Other members believe that the NBP should at least remove barriers to public entry, as there are many options and business models that would benefit both the public and private sectors.

- Integrate new media and social networking tools into governmental portals to ease consumer use and promote information transparency.
- Promote a digital democracy agenda that solicits, responds and acknowledges the voice of the people.
- Converge the Internet with the various forms of broadcast media and wireless technologies to allow for a seamless flow of ideas, opinions, and actions that can improve the vitality of our country.
- Conduct cost/benefit analysis that measure the cost to connect people to applications in health, energy, education, social services versus the cost savings or increased outcomes achieved through moving services on-line.
- Reward and spotlight innovative inclusion programs and look to further expand and replicate those programs. This should include commercial, nonprofit and government models.

B. Address the Broadband Adoption Gap for People with Disabilities

People with disabilities (15 percent of U.S. adults) can benefit greatly from increased adoption and use of broadband connectivity and services. In addition to experiencing the same barriers to access, affordability, training, literacy, and relevance that other traditionally underserved population groups do, these individuals often experience barriers of physical accessibility to broadband connectivity, to hardware and software, and to public locations that provide free access to broadband services. These various barriers, including the high costs of making computers and broadband service accessible to people with disabilities, can be prohibitive, and be enough to turn these people away from broadband services.

To increase and sustain the adoption and use of broadband connectivity by people with disabilities, the NBP could include the following range of policy options:

- Conduct research to better define and characterize the problem;
- Promote broadband access by people with disabilities through universal design by addressing the barriers by people with disabilities in the design of basic infrastructure and technologies
- Ensure that people with disabilities have full access to broadband services and equipment, as well as broadband content, in accordance with the Americans with Disabilities Act and other federal nondiscrimination laws
- Create discount rate schemes and other financial incentives for persons with disabilities to use broadband services
- Include requirements in all investments and applications that web sites meet standards for accessibility
- Create business incentives to incorporate accessibility and affordability within broadband products and services

- Foster and fund collaborative efforts for marketing, consumer education, training and broadband learning initiatives.

C. Increase the Intensity of Use in Core Applications

The Adoption and Use Group did not just focus on ways to increase adoption and use by traditionally vulnerable groups of Americans. Rather, the Group recognized that broadband connectivity is becoming increasingly important in every corner of American life and that the United States will benefit greatly when every sector of the economy takes maximum advantage of the benefits that robust broadband connectivity provides. To illustrate this point, the Group explored the challenges and benefits of accelerating adoption and use of high-capacity broadband connectivity in six “verticals” – economic development, health care, education, energy, the environment, public safety and homeland security, and democracy and civic engagement. These issues will be discussed at considerably greater length in the forthcoming Adoption and Use Final Report.

Among the policy options discussed to increase adoption and use throughout the American economy are the following:

- Put issues of digital transformation at the forefront of economic policy, coordinating multi-disciplinary approaches that make information and communications technology a core element of everything that the nation does to meet its great challenges. This could include supporting tele-centers or broadband-connected business incubators, directly targeting grants for Internet innovation to small businesses, and including robust connectivity and access considerations in all investments, policies and projects.
- Support on-line and in-person workforce development initiatives and especially those that increase technology literacy and IT proficiency throughout the workforce. Provide training and programs to address the employment dislocations that can result from digital transformation
- Reinforce local economic development initiatives with policies that encourage communities to invest in and leveraging broadband solutions as part of plans for strategic reinvestment and growth.
- Encourage collaboration among federal health agencies, members of the healthcare community and telecom service industry to develop an electronic health services reference framework for telemedicine services to drive solutions that put health information in the hands of professionals and in service for patients.
- Promote learning communities that lead rather than follow the use of technology in education. Promote collaborative learning, content creation, constructivist thinking and critical evaluation of the myriad of data sources that confront each of us.
- Emphasize 21st-century skills proficiency in schools, workforce training and retraining programs, libraries, and other educational and vocational resources. Increase standards for skills and ensure that our schools are preparing students for a world that increasingly relies on technology and information. Increase focus on STEM (Science, Technology, Engineering and Math) at all levels of the curriculum and culture.

- Increase funding for the Universal Service Schools and Libraries Program (known as the E-Rate), which is focused on providing greater broadband connectivity in schools and libraries, to better meet increasing demand and keep pace with inflation. Review policies related to these funds to ensure that those policies are forward looking and designed to create the greatest amount of value.²²
- Strengthen standards for educational uses of technology into the development of education policies and standards.
- Deploy next-generation emergency information and communications technology, starting with broadband access for all 9-1-1 and emergency response agencies, broadband backbone networks connecting them, and, most important, key shared services and applications using broadband to enable interoperable information sharing.
- Promote the use of web-based applications and devices in energy conservation and transportation efficiency such as Smart Grids, Smart Roads and automated processes.
- Promote collaborative applications that reduce consumption and promote recycling and conservation.
- Consider broadband and technology implications and opportunities in ALL areas of investment – from roads to military to energy and healthcare – and use the full power of government policy and investment to increase broadband utilization broadly across all sectors of the economy.
- Protect consumer safety and privacy while ensuring markets are as open as possible to entry and online competition

D. Raise the Bar on Skills and Ease of Use

Basic computer knowledge and digital literacy remain adoption barriers for many, while gaps in media and information literacy skills prevent some existing users from using broadband technology effectively in their work and lives. Some people and organizations lack the financial, educational, and technical resources to manage and maintain hardware and software, particularly computer set-up, networking and combating viruses and spam. Among the core skills needed for adoption and use of broadband connectivity are basic and advanced lessons in computer safety, privacy, and fraud as well as training in information literacy – including conducting proper searches, validating information content and sources, and citing sources.

Accelerating Internet learning requires innovation and improvement in usability, including developing more natural and robust interfaces and making networks easier to set up and maintain. This will support a wider spectrum of users and reduce training needs and costs. Creating applications and interfaces that are natural and intuitive, that are flexible and adaptive to specific uses and users, and that are robust and fault-tolerant will not only contribute substantially to bridging the digital divide, but will also improve productivity and enhance value for all users. These principles are as relevant to new users learning basic computing as they are

²² Some members of the Coalition oppose expansion of the E-Rate program and others are unwilling to support doing so without more information about how the expanded program would work and who would pay for it.

to physicians accessing electronic medical records; to activists finding ways to mobilize people in support of a cause; and to artists collaborating across the globe on new work. Raising the bar on skills and increasing ease of use benefits everyone.

Policy options discussed to achieve these goals include the following:

- Ensure that information literacy standards are part of standard curriculum for all students. These are the standards that help people discern the validity of sources and to manage intellectual property appropriately.
- Mobilize school and public libraries along with community technology and media centers to take leadership in raising the bar on media and information literacy skills.
- Leverage the collaborative aspects of the web to create government applications that further civic discourse and a participatory democracy.
- Develop policy and investment plans that promote collaborative applications among sectors and create incentives for commercial and private investment in next generation applications.
- Reward and showcase best-in-class applications that use collaborative broadband tools to solve challenges in healthcare, education, energy or other core segments.

E. Encourage Innovation at All Levels

A rapidly growing segment of the US economy is tied directly or indirectly to information and communications technologies. This includes industries that develop, deploy, finance, operate, and maintain communications networks and the equipment that runs them; industries that focus on devices that interconnect with the communications networks, including computers, Netbooks and PDAs; industries that develop, operate, and service the applications that run over the networks, including Google, Amazon, Flickr, Facebook or eBay, etc.; industries that conduct business of all kinds over the Internet, and so on.

Given the massive change in this market in the past five years, it is difficult to predict the possibilities for the future. Policies must focus not on protecting any status quo but in continuing to create a fertile environment for US based innovation, expansion and Adoption and Use. Policy options that encourage innovation could include:

- Expand investment in internet-aligned technology incubators.
- Encourage cross-application or cross-segment synergies, investments that use broadband to bring benefits in healthcare and public safety, projects that invest in roads and fiber, etc.
- Promote innovations that increase ease of use for broadband applications – both by people or by systems, through standards and interoperability.
- Build on successful models/best practices of new broadband applications developed with ARRA funding.

- Invest in Internet-based innovation through the National Science Foundation, Health policy, Transportation Policy and every other segment of the government programs.
- Review all policy recommendations in the light of a robust evolving market where the critical Internet drivers in the next ten years are barely on the horizon today. Plan not to regulate what is but to create the policy foundation that will enable even greater innovation in the future.

IV. POLICY OPTIONS TO STIMULATE BROADBAND AVAILABILITY

In our Call to Action, the US Broadband Coalition addressed availability of broadband connectivity as follows:

The United States vies in an increasingly competitive global marketplace with Asian, European, and other nations that have recognized the transformative significance and competitive advantages of broadband. Many nations have implemented national strategies that treat advanced communications networks as strategic infrastructure, and they are using a variety of policies and practices to promote broadband deployment and adoption. These include tax incentives, low-interest loans, subsidies, public-private partnerships, competition policy, and many other forms of direct and indirect support by all levels of government. Such measures have led to increased broadband availability, faster speeds, lower prices, and high adoption rates. The United States should not ignore successful policies and practices from other countries, as it pursues a National Broadband Strategy that is aligned with our own unique history, culture, geography, and economy.

...

Policies to Stimulate High-Speed Broadband Investment. The federal government, in collaboration with state and local governments and the private sector, should play an active role in stimulating broadband deployment, particularly in unserved areas. Such support might include tax incentives, grants, low cost loans, loan guarantees, universal service subsidies, efficient use of spectrum, and other approaches.

Any particular business or residential consumer can be said to be in one of four categories with respect to broadband availability: (1) adequately served in terms of user value, taking into account both quality of service and price; (2) unserved; (3) underserved relative to US standards for quality and price; and (4) underserved relative to the standards in the nations offering the highest quality of service and lowest price. There is considerable disagreement among members of the Availability Group, and among members of the Coalition as a whole, as to how these terms should be defined.

Broadband availability can also be addressed by geographic area. Here, again, a wide range of opinion exists. For example, should an area be considered unserved if 10 percent of homes and businesses are unserved? Or 90 percent?

High-capacity broadband availability is also critically important to community anchor institutions. Many libraries, schools, and health care providers may have low-speed broadband capabilities today that are woefully inadequate for the future. Libraries and schools may have tens or even hundreds of computers in use simultaneously. Hospitals and health clinics may

need very high-bandwidth capabilities to transmit detailed medical images, to engage in real-time monitoring of patient conditions, or even to perform remote surgery. A NBP should consider strategies to promote fiber-based and high-bandwidth wireless services to enhance the ability of these institutions to provide essential services to their communities. These high-capacity broadband “pipes” can also be made available for interconnection with other broadband providers, so that the “pipes” can be shared efficiently with public safety, commercial and residential users.

There appear to be at least two major barriers that prevent the deployment of faster broadband to areas that are unserved or underserved:

- **High Costs:** Cost is an issue in “unserved” and “underserved” areas, depending on how these terms are defined. Most unserved areas pose higher costs than revenues for communications service providers, at least given the current demands and willingness of consumers in these areas to pay for broadband services. In addition to the direct costs of broadband services, payment terms, service bundles, tiered pricing, credit requirements and pre-pay options all play a role in the affordability of service.
- **Technological barriers.** As technologies improve, particularly wireless and satellite technologies, some deployment challenges will get easier. Next generation satellite will be rolling out in 2011 and will provide approximately 3 Mbps for prices now charged for 600 kbps.²³ WiMax and LTE are also being deployed and could provide substantial bandwidth capacity.²⁴ Wireless and improved, affordable satellite services might provide levels of connectivity that may be satisfactory to some consumers in sparsely populated rural areas where it is now too expensive to deploy fiber or coaxial cable. If these technologies provide reasonable substitutes for fast, wired broadband, then the cost of connecting rural America will be significantly reduced.

The Coalition did not reach agreement on specific policy recommendations to deal with availability during the timeframes proposed by the Goals group – 2015 and 2020. This was due, in part, to the broad range of competing interests, perspectives, and goals of the participants in Availability Group and in the Coalition as a whole. Moreover, as stated above, there was no agreement in the Coalition over the numeric goals proposed by some members of the Goals group. It was also due, in part, to the absence of reliable information about where the United States would likely be in 2015 and 2020 in the absence of government involvement of some kind. We had no way of obtaining such information, as many providers have traditionally considered it highly confidential.

The FCC has engaged Columbia Institute for Tele-Information to forecast broadband deployment over the next 3-5 years based on announced broadband network upgrade plans, to

²³ See “Demo of Next Generation Satellite Broadband Service with Highest Speeds Ever at Satellite 2009,” ViaSat, March 24, 2009, <http://tinyurl.com/kvfxzb>.

²⁴ See Robert Syputa, “Sizing Up the Competitive Opportunities for Verizon (LTE) and Clearwire (WiMAX),” Maravedis Telecom Market Research & Analysis, April 2009, <http://tinyurl.com/ks2pjy>.

establish a base case for the NBP.²⁵ If this research proves fruitful, the FCC may be better able to determine what needs to be done to ensure that America's broadband networks of the future will be sufficient to meet our national goals. Should certain supply-side incentives be necessary, the FCC will have a number of options at its disposal. To these we now turn.

A. Policy Options

The Coalition discussed a range of policy options could stimulate broadband availability.

1. Financial incentives

- **Grants, Loans, and Loan Guarantees.** The broadband stimulus program fits here, but \$7.2 billion is not enough to provide robust broadband connectivity to all unserved or underserved homes, businesses, and institutions. Additional funding for broadband programs could be appropriated to the National Telecommunications and Information Administration, the Rural Utility Service, or some other agency. One challenge with grants is that if the level of the subsidy is set at a particular level (e.g., 80 percent) then by definition some projects may receive more than they need and others may not receive enough.
- **Tax Incentives.** Given that costs of broadband deployment are high in many unserved and underserved areas, another option is to provide tax incentives (including tax credits, accelerated depreciation, lower tax rates, etc.) to entities that are willing to invest in broadband infrastructure in such areas. Tax incentives can also be designed to provide successively higher incentives for entities that invest in successively higher-capacity broadband networks. One significant shortcoming of tax incentives is that they do not work for entities that do not need or cannot use them – including public entities, non-profits, and entities (such as start-ups) that do not have substantial profits to offset with the incentives. Another problem is that, if the incentives are not designed carefully, they may subsidize investments that would have been made anyway.
- **Tax Credit Bonds.** Tax credit bonds are another form of tax incentive that can stimulate investment in broadband infrastructure. The main difference between the tax incentives discussed above and tax revenue bonds is that the bondholders of tax revenue bonds, rather than to the providers, receive the direct tax benefits. The providers benefit indirectly, as the bondholders are willing to accept lower interest rates, thereby lowering the overall financing costs of the project. As a result, tax revenue bonds can help entities with low or even no tax obligations. They can, however, be more difficult to administer.
- **Universal Service Support.** While there appears to be broad support for improving the universal service program, on a technologically and competitively-neutral basis, significant differences of opinion exist on how this should be done. The following are some of the policy options discussed:
 - The High Cost Universal Service Program. The High Cost Program currently allocates funds on the basis of factors such as carrier type and the state in which a

²⁵ John Eggerton, "Columbia Institute for Tele-Info Tapped by FCC for Broadband Vetting," *Broadcasting & Cable*, August 6, 2009, <http://tinyurl.com/n6uxn9>.

carrier operates. While supported by some, these factors are seen as problematic by others. Differences of opinion also exist about the relative efficiency of current distribution methodologies. For example, some believe that the program should place greater emphasis on need and focus on the most cost-efficient solutions, while others believe that the current distribution criteria are adequate. In addition, individual states may or may not have their own universal support mechanisms that interact with the federal program to varying degrees and in complex ways.

- One possible option for improving the program is to shift funds gradually from telephony to broadband, allowing enough time to minimize service disruptions and market distortions.
 - Another possibility is to allocate funds to carriers, but base the level of support on the type (and cost) of the area served and the service provided.
 - A third possibility is to make allocations through reverse auctions. Under this approach, broadband carriers would serve currently unserved households in return for government subsidies. Winning bids would be those requesting the lowest subsidy, while guaranteeing minimum speeds and quality of service. The one-time auctions would cover higher capital costs and higher capitalized operating costs. Any provider (public or private, incumbent or competitor) using any technology would be eligible.
- The Low Income Universal Service Program. Opportunities also exist to improve the Low Income Program, which today focuses on subsidizing costs of telephone service and equipment for low income consumers. One possibility is to use Lifeline and Link-up funds to subsidize computers and broadband connectivity for consumers who qualify for these programs.
 - The E-Rate Program. There are also a variety of potential improvements to the E-Rate program, which has played an instrumental role in bringing broadband and online resources to America's schools and libraries over the last dozen years. These include the following:
 - Some members of the Coalition believe that, for the E-Rate program to continue to meet the needs of schools and libraries, its annual cap must be raised to meet increasing demand and to keep pace with inflation. Among other things, this would encourage eligible schools and libraries that have never received an award due to funding shortfalls to continue applying for the E-Rate program. As noted previously, other members of the Coalition do not support expansion of the E-Rate program or are unwilling to support expansion without more information about how the expanded program would work and who would pay for it.
 - Another possible improvement is to prevent funding interruptions by permanently exempting all universal service programs from the Anti Deficiency Act. Schools and libraries would be incentivized to apply for E-Rate funds because they would have the assurance that their services

will not be delayed or cut-off.

- There has been discussion over the years of ways to simplify and streamline the E-rate program. This is a major issue for libraries; program complexity is the most oft-cited reason for program non-participation. The Commission should consider this issue again.
- **Support for Regional and State Organizations.** Provide federal support for state or regional development organizations that are working to stimulate and aggregate demand. This encourages providers to invest in areas that might not otherwise be profitable.
- **Additional Spectrum and Towers.** Members of the wireless industry suggest that the NBP should identify and make available significant amounts of additional spectrum for reallocation to licensed commercial mobile use, to accommodate wireless broadband demand that is rapidly outstripping the capacity available on wireless broadband networks. To ensure timely deployment of additional wireless tower facilities, which they consider critical to ensuring consumers' access to wireless broadband services, the wireless industry also suggests that the FCC act to lower barriers to infrastructure deployment by clarifying the process for review of wireless facility siting and by enacting requirements that would give wireless providers reasonable, timely and nondiscriminatory access to pole attachments. Other members believe that no such barriers exist and oppose any changes to the current tower and pole attachment rules.
- **Other Regulatory Options.** In addition to the options discussed by the Availability Group, some members of the Coalition believe that there are also several regulatory options available to increase broadband availability and deserve serious study and discussion in the NBP. For example, one option is to strengthen the pro-competition policies envisioned by the Telecom Act of 1996 by adopting market concentration tests based on the Herfindahl-Hirschman Index. Another option is to take a "layers" approach to regulation, as envisioned by Richard Whitt and Vint Cerf when they were at MCI in 2004 (both are now with Google). According to these members, some of the regulatory policies adopted by other nations could also work well here. Other members of the Coalition vigorously oppose new regulations of any kind and insist that existing regulations should be removed or substantially cut back.

2. Comparing Global Best Practices

Some members of the Coalition believe that the United States is a world leader in broadband deployment because it has followed a policy preference for infrastructure competition over resale competition, resulting competition between the telecommunications and cable industries. Other members of the Coalition believe that the telecommunications and cable industries in the United States do not compete with each other aggressively in many markets and that this lack of vigorous competition has contributed to America's declining global ranking compared to the leading Asian and European nations on many measures of success in the broadband area. For present purposes, it is unnecessary to resolve these issues. As reflected in our Call to Action, all members of the Coalition agree that the United States would benefit from a thorough understanding of the practices of the nations that have succeeded in spurring the deployment of robust broadband networks.

For example, the Japanese government, among other things, allowed incumbent provider NTT to rapidly write off the cost of its new fiber broadband networks, encouraged the banking system to view broadband networks as long-term investments, mounted a massive public education campaign, offered low-cost or no-cost loans, provided municipalities grants-in-aid of up to a third of network costs, used the national government's purchasing power to stimulate investments in particularly areas, and reinforced its policies with various regulatory measures. The South Korean government used many of the same techniques to encourage investments in fiber. Among its most successful programs, Sweden offered employers tax incentives to provide home computers to their employees. Sweden also stimulated broadband deployment outside major population centers by working closely with local utilities.

In addition, some members of the Coalition point out that structural separation, as envisioned by the Office of Information Society and Media of the European Commission, or functional separation, as envisioned by the United Kingdom's OFCOM and implemented by British Telecom, are explicitly aimed at increasing broadband availability. These members also point out that Australia and (independently) New Zealand have recently announced national build-outs of their broadband infrastructures, and they urge a closer look at these initiatives.

While there may be valuable lessons to be learned from other nations, conditions in the United States are not the same as those in any other country. As a result, the Coalition stated in its Call to Action, and continues to believe, that the NBP should reflect America's own unique circumstances.

V. POLICY OPTIONS TO FOSTER ACCOUNTABILITY AND ENABLE ACCURATE MEASUREMENT OF PROGRESS

The collection and continuous updating of key metrics on broadband are important components of a NBP. Broadband data are important for a variety of reasons. Perhaps the most important is to identify the amount of progress the United States and sub-national regions (states, counties, cities, and neighborhoods) are making in the deployment and adoption of broadband. Broadband data can also help consumers make better informed decisions about broadband purchases and broadband providers make better investment decisions. Finally, better broadband data are important tools for policymakers to use in determining where public policy should focus its efforts and to determine the effectiveness of those policies.

The Metrics Working Group discussed at considerable length the tension between more granular collection and dissemination of provider data and the proprietary interests of the providers. Some members of the Coalition say that policymakers must be sensitive to the confidential nature of much of the broadband data at issue and to the burdens that extensive data requests impose on the limited resources of providers -- resources that they believe might otherwise be used to expand or improve broadband service. Some also say that disclosing the location of key equipment might pose national security risks. Other members say that such concerns are overstated and that the public interest requires resolving these issues on the side of greater disclosure. They also say that disclosure of basic broadband information, such as broadband speeds, prices, availability, reliability, and competitors, poses no national security threat because mapping out broadband data need not disclose the location of key telecommunications equipment.

Here is a review of the current status of broadband data collection in the United States.

- Prior to June 2008, the FCC used its Form 477 to collect data on availability of a particular carrier’s provision of broadband at the ZIP code level.²⁶ The Commission has now adopted a new approach – it will use the Form 477 to collect data at the census tract level. The FCC will also publish more data, including information about the number of connections (by technology, advertised speed, and customer type) within each Census tract. Members of the Coalition differ on how valuable this additional information will be. Some believe that it will be “exponentially” better. Others believe that it will only be “marginally” better.
- A number of states, including California, Massachusetts and Virginia, have produced state-wide broadband maps on their own, and Connected Nation has mapped several states, including Minnesota, Kentucky, Ohio, South Carolina, Tennessee, and West Virginia. Link America Alliance has mapping initiatives in Alabama and Wyoming. BroadbandCensus.com has released a beta map of the availability, technologies, speed and providers within each Census block in Columbia, South Carolina, which is available at BroadbandCensusMaps.com. Currently, however, there is no standardization of broadband mapping among the states. The National Telecommunications and Information Administration (NTIA) has issued requirements under the ARRA broadband mapping program that might foster more standardized reporting, including broadband availability data at a more granular census block level. But members of the Coalition differ on how effective these requirements are likely to be.
- The NTIA has significantly changed its policy with regard to the confidentiality of carrier-level data. In a Federal Register notice issued on August 7, 2009, the agency changed the definition of “confidential information” in the broadband data and mapping Notice of Funds Availability to require the identification of carriers providing broadband service to individual census blocks.²⁷ Previously, information about the carriers that serve a particular census block had been considered proprietary and confidential. According to the NTIA, the purpose of the change was to facilitate its decision “to identify all broadband providers by name on the broadband map, rather than leaving such identification to the discretion of the provider. Thus, an

²⁶ Although the Form 477 measures the availability of broadband from a particular carrier, the names of the carriers are not released to the public, only the number of broadband providers within a particular ZIP code (provided that the number is not between 1 and 3).

²⁷ 74 Fed. Reg. 40569, 40570 (August 7, 2009) (“In light of the clarification regarding reporting of availability data at a census block or street segment level rather than street address level, the definition of “Confidential Information” in section III of the Notice published on July 8, 2009, shall no longer include the identification of a service provider’s specific Service Area. A service provider’s “footprint” will likewise no longer be included in the definition of “Confidential Information.” Notice, 74 FR at 32549”).

address-specific search of the map shall identify the names of all providers whose service is available in the corresponding census block or street segment.”²⁸

- Data on delivered speeds also is not standardized and comes from a variety of sources. The open-source Internet2 speed test offered through Virginia Tech’s eCorridors Program, through Broadband Census.com, and through the Measurement Lab initiative of the New America Foundation, provide a transparent way to assess current speeds realized by consumers. A number of other organizations, including Broadband Census.com, the Communications Workers of America’s Speed Matters web site, plus speedtest.net and DSL Reports, have also been gathering speed information for some period of time.
- Publicly available aggregated pricing data are generally limited, data at the geographic level are especially lacking; such measures are generally available only through fee-based proprietary research, or through individual address-level web site searches of a particular carrier’s web site.

A. Policy Options

There are a number of policy options that might enhance the availability and quality of broadband data. We outline below the primary options discussed by the Metrics Group.

1. Increase funding for the Census Bureau to collect better data on broadband use.

Under this option, the Census Bureau would add questions on broadband to the monthly Current Population Survey at least once a year. These questions would include whether the respondent subscribes to broadband and, if so, what they do with it. This would allow a host of data, including income, race, neighborhood, education levels, computer ownership, age, disability and other factors to be collected and analyzed. Second, the Census Bureau would significantly expand its E-stats efforts, which are currently limited to collecting data on e-commerce sales and some data on e-commerce use by manufacturing. Some in the Metrics Working Group also believe that the Census Bureau should also collect much better data on broadband use by businesses and non-profit organizations in all sectors, and all levels of government.

²⁸ *Id.*, 74 Fed. Reg. at 40570 n.5 (footnote omitted). In its Report to Congress dated August 17, 2009, NTIA reiterated that “it intends to identify all broadband providers by name on the broadband map rather than leaving such identification to the discretion of the provider. These clarifications will help enable NTIA to build a robust, accurate broadband map for the benefit of consumers and policymakers.” Broadband Technology Opportunities Program (BTOP) Quarterly Program Status Report to Congress, August 17, 2009, <http://tinyurl.com/mcg76k>. The agency further reiterated its position in favor of disclosing carrier data on September 10: “The national broadband map will publicly display the geographic areas where broadband service is available; the technology used to provide the service; the speeds of the service; and broadband service availability at public schools, libraries, hospitals, colleges, universities, and public buildings. The national map will also be searchable by address and show the broadband providers offering service in the corresponding census block or street segment.” <http://tinyurl.com/le6s7b>.

2. Implement the Broadband Data Improvement Act (BDIA)

Early on, the Metrics Group discussed implementation of the BDIA as an option to improve data collection and dissemination. Since then, the NTIA has launched a state-driven data collection and mapping program pursuant to the ARRA and all states have elected to participate in the program. Some members of the Group noted that there may be significant methodological differences in the approaches used by the states. The NTIA will have to ensure that all states meet at least the statutory requirements of the BDIA.

3. Further Improvements and Refinements to the FCC's Form 477 Process

As indicated above, the FCC has already revised its Form 477 process to collect and disseminate more granular broadband data. Some members of the Metrics Group believe that the agency should now move towards even greater granularity, by collecting data at the census block level. Other members believe that such a step is premature, as the FCC has yet to analyze and publish the new data they have obtained. Some say that wireless providers will have different capabilities to generate accurate geographical data coverage than wired providers. Some say that smaller carriers might have more of a burden under the census block approach, in part because it may be more difficult for them to locate addresses precisely. Some suggest that, in all cases, carriers should not be required to do any extra work to determine the location of a subscriber.

The Metrics Group also discussed the possibility of the FCC funding the development of appropriate software tools to help aid providers in complying with the FCC's Form 477 process. For example, an Application Programming Interface could help offset some of the cost and burden of more detailed mapping. Such a free software tool could enable providers to enter raw address data on their subscribers and automatically generate a 477 form at the census block level. This system could be designed to be integrated with the different software systems that carriers use for managing their customer data.

4. Support for an integrated, user-generated data system

As mapping becomes more advanced, input from users could become a key part of mapping. Some members of the Metrics Working Group support establishing a system that allows for consumer reviews and speed tests that measure actual upstream and downstream speeds would allow the FCC, and others, to make better informed decisions about the state of broadband in an area. Moving beyond the binary decision of "yes, they have broadband," or "no, broadband is not available," these members say that policymakers must be able to parse out the problems in a particular area. Some raised an issue that if speeds are highly asymmetrical, with upload speeds being very low, the geographical area in question may have problems attracting businesses that need to be upload large files quickly. They say that accurate user-generated data will be able to illustrate problems such as these, and allow policymakers, both local and national, to look for individual solutions to their individual problems. Finally, they note that it could also provide an additional tool for determining where broadband is available.

5. Create an Office of Broadband Statistics that would be responsible for creating a National Broadband Data Warehouse, based on common standards and interoperable formats.

Some members of the Metrics Group recommend that the NTIA create a Bureau of Broadband Statistics under the office of Policy Development and Management. Under this proposal, the Bureau would be in charge of overall national broadband data collection, analysis, and reporting and to ensure the most cost-effective use of broadband data resources. The Bureau would bring a greater degree of coordination, comparability, and quality standards to broadband data, and facilitates in the closing of important data gaps. Among other duties it would be in charge of establishing the broadband data warehouse where all data can be uploaded into a common database for use by anyone interesting in analyzing it. This data would be able to be presented graphically, including in geographic mapping format. These members believe that it should also be able to have queries run on it (e.g. what share of homes in neighborhoods with more than 50 percent of households being African-Americans and with average incomes below the state median income subscribe to broadband). Finally, some have noted that raw data should be available to anyone requesting it, so that individual analysis for a wide variety of data activities, and data mash ups, can be performed. The Bureau would also work with relevant parties, develop a metrics data vocabulary so that all similar data means the same thing and can be shared. Finally, the Bureau would produce annual reports on the state of broadband deployment and adoption.

6. The NTIA and RUS should require that as a condition of getting federal funds for data collection that the data be collected in an interoperable form and uploaded on a regular basis to a common data warehouse

In addition, some members of the Metrics Working Group believe that the FCC should ensure that Form 477 data are integrated to the data warehouse, providing a useful cross-check on the data to be provided via the NTIA mapping program, and subject to any legitimate claims for protection of confidential information. In addition, some members suggest that other providers of data, including user-generated systems, should be encouraged to provide their raw data to the data warehouse. They encourage the coordination of data collection efforts so that providers of data need not be compelled to source different data in different formats at different times to different data stores.

VI. NEXT STEPS

At a minimum, the US Broadband Coalition is planning to continue its work in two areas. We will continue to seek Coalition-wide consensus on a variety of Adoption and Use issues, to be reflected in the final report that we will release on November 1, 2009. We will also continue our work on open access/interconnection/network neutrality issues, seeking to reach consensus or narrow our differences on these issues.

In other areas, the time has come for the Coalition to step aside and let the Federal Communications Commission do its work on the NBP. The Coalition and its members will gladly respond to requests by the Commission for additional assistance. Otherwise, we will review the Commission's proposals with great interest, and we may respond either as a whole, as sub-groups, or as individual entities.

ATTACHMENTS

Attachment A - Leadership of the US Broadband Coalition

Attachment B - Member Organizations

Attachment C - Call to Action

Attachment E - Broadband Speeds Needed to Run Specific Applications



**LEADERSHIP OF THE
US BROADBAND COALITION**

DIRECTORS AND OFFICERS

President

Jim Baller (Baller Herbst)

Secretary

Wendy Wigen (EDUCAUSE)

Vice-President

Kenneth Peres (Communications Workers of America,
Alliance for Public Technology)

Treasurer

Carolyn Brandon (Georgetown University)

MANAGEMENT COMMITTEE

Chair

Wendy Wigen (EDUCAUSE)

Members

Jim Baller (Baller Herbst)

Gary Bolles (XiGi)

Carolyn Brandon (Georgetown University)

Geoff Daily (App-Rising)

Diane Duffy (Telcordia)

Mark Hewitt (MetroCore)

Terry Huval (Lafayette Utilities System)

David Isenberg (isen.com)

Casey Lide (Baller Herbst)

Bill Moroney (UTC)

Kenneth Peres (Communications Workers of
America, Alliance for Public Technology)

Tom Rieman (The Broadband Group)

NEEDS WORKING GROUP

Co-Chairs

Jeff Campbell (Cisco)
Jonathan Rintels (Center for Creative Voices in the Media)

Management Committee Liaison

Casey Lide (Baller Herbst)

Members

Sheryl Abshire (Consortium for School Networking)	John Eger (San Diego State Univ. Int'l Center for Communications/World Foundation for Smart Communities)
Garn Anderson (Knight Center of Digital Excellence)	Bruce Hahn (American Homeowners Alliance)
Pete Ashdown (XMission Internet)	Jason Friedrich (Motorola)
Carolyn Brandon (CTIA)	Kevin Krufky (Alcatel-Lucent)
David Chaffee (Chaffee Fiber Optics)	Greg Landeman (Rural Telecom. Congress)
Danielle Coffey (Telecommunications Industry Association)	Steve Pastorkovich (OPASTCO)
	Eric Peterson (Rural Cellular Alliance)
	Otha Rice (Rice Group)

GOALS WORKING GROUP

Co-Chairs

Rick Cimerman (National Cable and Telecommunications Association)
John Windhausen (Telepoly, EDUCAUSE, American Library Association)

Management Committee Liaison

Jim Baller (Baller Herbst)

Members

Mark Ansboury (OneCommunity/Knight Center)	Derek Khlopin (Nokia/Nokia Siemens Networks)
Mark Berejka (Microsoft)	Kevin Krufky (Alcatel-Lucent)
Carolyn Brandon (Georgetown University)	Don Means (Community Telestructure Initiative)
Danielle Coffey (Telecommunications Industry Association)	Sascha Meinrath (New America Foundation)
Geoff Daily (App-Rising)	Tony Perez (NATOA)
Debbie Goldman (Communications Workers of America)	Catharine Rice (SEATOA)
Lev Gonick (Case Western Reserve University)	Graham Richard (Graham Richard Associates)
Alan Hill (XO Communications)	Joe Savage (FTTH Council)
James Jones (Mid-Pacific ITC Center)	Steve Sharkey (Motorola)
Ken Ikeda (Bay Area Video Coalition)	Jason Wakefield (Covad Communications)
Tim Lance (NYSERNet, Inc.)	Rick Whitt (Google)
	Lisa Youngers (XO)

METRICS WORKING GROUP

Co-Chairs

Robert Atkinson (Information Technology and Innovation Foundation)
Drew Clark (Broadband Census)

Management Committee Liaison

Gary Bolles (XiGi)

Members

Garn Anderson (Knight Center of Digital Excellence)
Kenneth Austin (Broadband Census)
Brandon Bullis (Clearwire)
Pat Brogan (USTA)
David Chaffee (Chaffee Fiber Optics)
Rich Clarke (AT&T)
Andrew Cohill (Design Nine)
Michael Curri (Strategic Networks Group)
Mark Hewitt (MetroCore)
David Hoover (CTIA)
Joanne Hovis (NATOA)
Karen Jackson (Virginia Office of Telework Promotion and Broadband Assistance)

Eric Lampland (Lookout Point)
Daniel Lubar (IEEE)
Jim Krammen (Motorola)
Sherri McCuller (Peregrine Management Partners)
Raquel Noriega (Connected Nation)
Jim Partridge (NCTA)
Jane Smith Patterson (e-NC Authority of NC)
Chris Perlitz (Municipal Services Group)
Jean Plymale (EDUCAUSE and Virginia Tech)
Mitch Shapiro (Broadband Market Analysis)
Esme Vos (MuniWireless)
Ted Woodward (Telcordia)

AVAILABILITY WORKING GROUP

Co-Chairs

Brent Olson (AT&T)
Ben Scott (Free Press)

Management Committee Liaison

David Isenberg (isen.com, LLC)

Members

David Bartlett (Embarq)
Marc Berejka (Microsoft)
Erin Boone (Clearwire)
Carolyn Brandon (CTIA)
Art Brodsky (Public Knowledge)
Danielle Coffey (TIA)
Pete Collins (Illinois Municipal Broadband Communications Association)
Matt Connolly (YourTel America)
Mary Evslyn (Vermont Broadband Authority)
Jason Friedrich (Motorola)
John Goodman (Broadband Service Providers Association)

Steve Gorski (Nat'l Educational Broadband Services Ass'n)
Bruce Hahn (American Homeowners Alliance)
Rick Harnish (Wireless Internet Service Providers Association)
Alan Hill (XO Communications)
Joanne Hovis (NATOA)
Chris Huckleberry (Qwest)
Karen Jackson (Virginia Office of Telework Promotion and Broadband Assistance)
Sanford Jewett (Reliance WiMAX World)
Brett Kilbourne (Utilities Telecom Council)
Derek Khlopin (Nokia/Nokia Siemens Networks)
Frank Schultz (Airewire)

ADOPTION AND USE WORKING GROUP

Co-Chairs

Charles Benton (Benton Foundation)

Link Hoewing (Verizon)

Karen Perry (Knight Center)

Management Committee Liaison

Kenneth Peres, PhD. (Communications Workers of America /

Alliance for Public Technology)

Members

David Aylward (COMCare Emergency
Response Alliance)

Carolyn Brandon (Georgetown University)

Art Brodsky (Public Knowledge)

Matt Connolly (YourTel America)

Kathy Franco (AT&T)

Steve Gorski (Nat'l Educational Broadband
Services Ass'n)

Bruce Hahn (American Homeowners Alliance)

Chris Huckleberry (Qwest)

Michael Johnston (Jackson Energy Authority)

John Kemp (Half the World Foundation)

Don Kent (Net Literacy Corp.)

Roy Lathrop (National Cable and Telecom-
munications Association)

Greg Laudeman (Rural Telecommunications
Congress)

Howard Lowe (CBN Connect)

Richard Lowenberg (1st-Mile Institute)

Cathy Massey (Clearwire)

Cynthia Miller (Alliance for Digital Equality)

Raquel Noriega (Connected Nation)

Martha Pultar (Int'l Brotherhood of Electrical
Workers)

Sylvia Rosenthal (Alliance for Public
Technology)

Marie Royce (Alcatel-Lucent)

Frank Schultz (AireWire)

Catherine Settanni (Digital Access Project)

Catherine Sloan (Computer & Communications
Industry Association)

Karen Peltz Strauss (Communication Service
for the Deaf)

Nicol Turner-Lee (One Economy)

IMPLEMENTATION WORKING GROUP

Co-Chairs

Diane Duffy (Telcordia)
Geoff Daily (App-Rising)

Management Committee Liaison

Jim Baller (Baller Herbst)

Members

Mark Ansboury (OneCommunity)
Pete Ashdown (XMission Internet)
David Bartlett (Embarq)
Jerry Baxley (Digital Storage)
Carolyn Brandon (Georgetown University)
David Chaffee (Chaffee Fiber Optics)
Ed DaVersa (NetLogix)
Natalie Fonesca (Tech Policy Central)
Anthony Hansel (Covad Communications)
Walt Henley (AireWire, Inc.)
Alan Hill (XO Communications)
Michael Johnston (Jackson Energy Authority)
Roy Lathrop (National Cable and
Telecommunication Association)
Richard Lowenberg (1st-Mile Institute)

Sheldon Moss (Crown Castle)
Tim Nulty (East Central VT Community
Fiber Network)
Daniel O'Connor (Computer &
Communications Industry Ass'n)
Jane Patterson (e-NC Authority of
North Carolina)
Tony Perez (NATOA)
John Reynolds (Stratum Broadband)
Greg Richardson (Civitium)
Al Schneider (Charles Street Partners)
Julie West (CBN Connect)
Christopher White (NJ Division Ratepayer
Counsel)



US BROADBAND COALITION

MEMBER ORGANIZATIONS

ACUTA: The Association for Information
Communications Technology
Professionals
in Higher Education
Adesta, LLC
Afterimage GIS, LLC
AirBand, Inc.
AireWire, Inc.
Alcatel-Lucent
Alliance for Community Media
Alliance for Digital Equality
Alliance for Public Technology
American Cable Association
American Homeowners Foundation
American Homeowners Grassroots Alliance
American Library Association
American Public Power Association
App-Rising.com
Aspen Wireless Technologies
Association of Public Television Stations
ATCi
Atlantic Engineering Group
AT&T
Axis Network Solutions
The Bayne Street Project
Bay Area Video Coalition
Benton Foundation
Blandin Found. Broadband Strategy Board
Broadband Census
The Broadband Group
Broadband Market Analysis
Broadband Service Providers Association
California Emerging Technology Fund
CBN Network, Inc.
Center for Creative Voices in the Media
Cisco Systems, Inc.
City of Wilson, North Carolina
Chaffee Fiber Optics
Civitium
Clearwire Corporation
COMCARE Emergency Response Alliance
Communication Service for the Deaf
Communications Workers of America
Community Telestructure Initiative
CompTel
Computer and Communications Industry
Ass'n
Connected Nation
Consortium for School Networking
Corporation for Public Broadcasting
Crown Castle Corporation
CTIA - The Wireless Association
Covad Communications Company
DesignNine, Inc.
Digital Access Project
East Central Vermont Community
Fiber Network
EcoSystem Partners
EDUCAUSE
Embarq
Enablence Technology Inc.
e-NC Authority of North Carolina
FiberTower Corporation
Fiber to the Home Council
Fiberutilities Group, LLC
Finger Lakes Regional Development
Corporation
1st-Mile Institute
FirstMile.us
Free Press

Google, Inc.
Graham Richard Associates, LLC
Half the World Foundation
IEEE-USA
Illinois Municipal Broadband
Communications Association
Information Technology and Innovation
Foundation
Inspire Marketing, LLC
Int'l Brotherhood of Electrical Workers
International Broadband Electric
Communications, Inc.
International Society for Technology in
Education
Internet2
Internet Texoma, Inc.
isen.com, LLC
iSolon.org
Jackson Energy Authority (Tennessee)
JDSU
Knight Center of Digital Excellence
Lookout Point Communications
MasTech North America
Meridian Design Associates
Microsoft Corporation
Minnesota Broadband Coalition
Mobile Commons
Motorola, Inc.
Municipal Services Group
MuniWireless
National Association of Development
Organizations
National Association of Telecom-
munications Officers and Advisors
National Education Association
National Educational Broadband Services
Association

National Cable & Telecommunications
Association
National Lambda Rail, Inc.
National Public Broadband
Task Force for Digital Inclusion
Foundation, Inc.
New America Foundation
NetLogix
Net Literacy Corporation
New Jersey Division of Rate Counsel
NextBend, Inc.
Next Generation Development
& Infrastructures Consortium
NI Solutions
Nokia Inc.
Nokia Siemens Networks
North American Council for Online
Learning
Northwest Arctic Broadband Task Force
Northwest Open Access Network (NOANet)
NYSERNet, Inc.
OneCommunity
One Economy Corporation
OPASTCO: Organization for the Promotion
and Advancement of Small
Telecommunications Companies
OpenCape Corporation
Optical Networks, Inc.
Organizations Concerned about Rural
Education
OSHEAN: Ocean State Higher
Education Administrative Network
Peregrine Management Partners, LLC
Public Broadcasting Service (PBS)
Public Technology Institute
Public Knowledge

Qwest
San Diego State University International
Center for Communications
The Sannine Group
Southeastern Association of
Telecommunications|
Officers and Advisors
Starbridge Networks, LLC
STG Municipal Services
Reliance WiMAX World
Rice Group
Rural Cellular Association
Rural Telecommunications Congress
Stratum Broadband
Tech Policy Central
Telcordia Technologies, Inc.
Telecommunications Industry Association
Teletruth
Telework Exchange
Time Warner Cable

TracFone Wireless, Inc.
United States Telecommunications
Association
Utilities Telecom Council
UTOPIA
Verizon Corporation
Vermont Broadband Authority
Virginia Office of Telework Promotion and
Broadband Assistance
Washington Public Utility District
Association
Wireless Communications Association
International
Wireless Internet Service Providers
Association
Wireless LINC of NH and VT
World Foundations for Smart Communities
XMission Internet
XO Communications
YourTel America, Inc.



A CALL TO ACTION FOR A NATIONAL BROADBAND STRATEGY

The undersigned, representing a diverse array of America's communications providers, high technology companies, manufacturers, consumers, labor unions, public interest groups, educators, state and local governments, utilities, content creators, foundations, and many other stakeholders in America's broadband future, call on President-elect Barack Obama and the next Congress to make the development and initial implementation of a comprehensive National Broadband Strategy a high national priority in 2009.

Advanced Communications Capabilities are Essential for the 21st Century

The broadband-enabled Internet is rapidly changing the world. It has become a catalyst for innovation, economic growth, job creation, educational opportunity and global competitiveness. It enhances public safety, homeland security, health care, energy efficiency, environmental sustainability and the worldwide distribution of millions of products, processes and services. It aids in revitalizing depressed urban and rural economies and addressing the special needs of senior citizens, individuals with disabilities, and young people. It creates a vehicle for enhancing the level of civic participation and discourse so important to a functioning democracy. Yet broadband as an enabling technology is still growing out of its infancy. It has unlimited potential that remains to be fully realized.

The United States Urgently Needs a Comprehensive National Broadband Strategy

The United States is at a critical juncture. Too many Americans still do not have access to affordable broadband or lack the equipment or knowledge to use it effectively. If the United States is to remain a leader in the global economy, our broadband networks must also be robust enough to enable our people, businesses, and public and private institutions to take full advantage of emerging and future bandwidth-intensive and quality-sensitive applications.

The United States vies in an increasingly competitive global marketplace with Asian, European, and other nations that have recognized the transformative significance and competitive advantages of broadband. Many nations have implemented national strategies that treat advanced communications networks as strategic infrastructure, and they are using a variety of policies and practices to promote broadband deployment and adoption. These include tax incentives, low-interest loans, subsidies, public-private partnerships, competition policy, and many other forms of direct and indirect support by all levels of government. Such measures have led to increased broadband availability, faster speeds, lower prices, and high adoption rates. The United States should not ignore successful policies and practices from other countries, as it pursues a National Broadband Strategy that is aligned with our own unique history, culture, geography, and economy.

The Framework for a Comprehensive National Broadband Strategy

Throughout our history, the United States has adopted policies to maximize the benefits of major technological advances. In the 19th century, we promoted the development of canals, railroads, and electric power. In the 20th century, we instituted policies to expand electric power and national telephone and highway systems, and we transported people to the moon and back. Now, in the 21st century, it is time to adopt a National Broadband Strategy that builds on this tradition and that is worthy of our great nation. The framework for our National Broadband Strategy should include the following:

Goals. The National Broadband Strategy should set out several clear, forward-looking, and attainable goals that take into account the ability of broadband to generate huge benefits in education, environmental protection, scientific research, medicine, health care, energy efficiency, transportation, and overall economic vitality. These goals should include the following:

- a. Every American home, business, and public and private institution should have access to affordable high-speed broadband connections to the Internet.
- b. Access to the Internet should, to the maximum feasible extent, be open to all users, service providers, content providers, and application providers.
- c. Network operators must have the right to manage their networks responsibly, pursuant to clear and workable guidelines and standards.
- d. The Internet and broadband marketplace should be as competitive as reasonably possible.
- e. U.S. broadband networks should provide Americans with the network performance, capacity, and connections they need to compete successfully in the global marketplace.

Policies to Stimulate High-Speed Broadband Investment. The federal government, in collaboration with state and local governments and the private sector, should play an active role in stimulating broadband deployment, particularly in unserved areas. Such support might include tax incentives, grants, low cost loans, loan guarantees, universal service subsidies, efficient use of spectrum, and other approaches.

Policies to Stimulate High-Speed Broadband Adoption and Use. The federal government, in collaboration with state and local governments and the private sector, must play an active role in stimulating adoption and use of advanced broadband connections. All Americans must have access to computers and the knowledge to use broadband technology effectively. Federal support might include programs, grants, subsidies, and other measures that foster broadband connectivity, computer access, education, and training.

Assessment and Accountability. Specific timetables and benchmarks should be established to help encourage successful implementation and advancement of national broadband policies, incentives or programs. A system for regular and timely collection and publication of data concerning the deployment, adoption, and use of high-speed broadband should also be instituted to ensure that our national goals and timetables are being met.

Our Next Steps

While we urge policy makers and other citizens to adopt the framework presented above, it is only a first step in the process of developing a National Broadband Strategy. Representatives of the undersigned entities will continue to work together to address key issues and policy priorities. In the Spring of 2009, we will hold an event to present more specific policy recommendations to President Obama, Congress, and the American people.

Broadband Speeds and Capabilities	
Broadband Speed Ranges	Applications
500 kbps – 1 Mbps	Voice over IP Basic Email Web browsing (simple sites) Streaming Music (cached) Low Quality Video (highly compressed)
1 Mbps – 5 Mbps	Web Browsing (complex sites) Email (larger attachments) IPTV – SD (1-3 channels) File Sharing (small/medium) Digital broadcast video (1 channel) Streaming Music
5 Mbps – 10 Mbps	File Sharing (large) IPTV-SD (multiple channels) Switched Digital Video Video on Demand SD Broadcast SD Video Video Streaming (2-3 channels) HD Video Downloading Low Definition Telepresence Gaming Medical File Sharing (basic) Remote Diagnosis (basic) Remote Education Building Control & Management
10 Mbps – 100 Mbps	Telemedicine Educational Services Broadcast Video SD and some HD IPTV-High Definition Gaming (complex) High Quality Telepresence HD Surveillance Smart/Intelligent Building Control
Source: California Broadband Task Force, “The State of Connectivity: Building Innovation Through Broadband,” Jan. 2008 (available at http://tinyurl.com/38nrnv)	