APPENDICES

APPENDIX A
BTOP PROGRESS ASSESSMENT

In addition to directing the FCC to develop a plan to ensure that all Americans have access to broadband, Congress also directed the FCC to evaluate the progress of projects supported by grants under the National Telecommunications and Information Administration (NTIA)'s Broadband Technology Opportunities Program (BTOP). This section considers the program so far and makes recommendations for future evaluation—as BTOP has only just funded some projects.

This plan acknowledges the substantial investment BTOP is making to improve connectivity and advance the adoption of broadband. Chapters 8 and 9 make specific mentions of this important program and how it likely will improve the broadband ecosystem. Careful evaluation of BTOP investments will provide valuable insights into the effectiveness of different funding mechanisms, project structures and technologies for future investments.

RECOMMENDATIONS

➤ Ensure that assessment tracks program outcomes, not only execution.
➤ Develop measures that specify outcomes to be assessed.
➤ Create a panel of experts from the academic and research community to advise on assessment approaches.
➤ Employ longitudinal design in assessing programs where possible.

Background
The American Recovery and Reinvestment Act (Recovery Act) appropriated $7.2 billion to fund programs to promote the adoption and deployment of broadband. NTIA was charged with using $4.7 billion of these funds to create BTOP which funds three types of programs:
➤ Infrastructure projects that aim to deploy broadband infrastructure in unserved and underserved areas.
➤ Projects that enhance the capacity of public computing centers (PCCs).
➤ Efforts to support the sustainable adoption of broadband service by users.

Infrastructure projects are set to receive the bulk of this funding. With regard to the latter two types of programs, Congress specifically stated that NTIA should spend $250 million on "innovative programs that encourage sustainable adoption of broadband services" and spend at least $200 million "to upgrade technology and capacity at public computing centers, including community colleges and public libraries."[1]

Funds are being disbursed in two rounds. Applications for the first round were due Aug. 14, 2009. As of mid-February 2010, the BTOP program had awarded $597 million in grants:
➤ $547 million for infrastructure projects;
➤ $42 million for PCC projects; and
➤ $8 million for sustainable adoption programs.[2]

Applications for the second round of funding were due on March 15, 2010. The Recovery Act directs that all funds be awarded by Sept. 30, 2010.

Programs Funding Infrastructure Deployment
BTOP infrastructure grants are intended to promote community and economic development by connecting community anchor institutions—such as public schools, universities, libraries, and community colleges—to high-speed infrastructure. Many funded grantees promote connectivity in the middle mile.[3] By solving the middle-mile problem, the hope is to foster investment in "last mile" facilities to provide service to individuals and institutions that need it.

Most grantees leverage in-kind or financial contributions, not relying solely on BTOP support to complete projects.

Public Computing Centers
Grants for PCCs will provide funding for additional computers for institutions such as public housing developments, typically with the goal of offering training and access for community members. The FCC recently announced a grant for the Housing Authority of San Bernardino, Calif. which aims to serve 350 additional users per week. On a larger scale, a grant awarded to the New York State Education Department intends to serve an additional 50,000 users per week system-wide and provide access to job-search resources 24 hours per day, seven days per week. Both these grants are intended to serve additional users and make a difference in their employment prospects.[4]

Sustainable Adoption Grants

Grants intended to foster and sustain adoption often focus on the community level. A grant to the West Virginia Future Generations Graduate School funds a community-based approach to promote adoption among low-income and rural residents of the state.[5] This particular project creates a partnership between fire and emergency rescue squads and the community. The squads will use computers that will also be made available to the public. At the same time, they will promote outreach about and awareness of the Internet's potential to members of the community—adopters and non-adopters alike. Training programs will build capacity and confidence with the Internet and, it is hoped, foster at-home adoption.

Assessing BTOP

BTOP was designed as a short-term investment in broadband infrastructure, broadband adoption and job creation. At the same time, Congress charged the FCC with developing a long-term plan for increasing accessibility, affordability and utilization of broadband, as well as a plan to use broadband to serve designated national purposes—a charge that led to the creation of this plan. In addition to deploying infrastructure and providing resources to communities, BTOP-funded projects can serve as testbeds. Examining projects funded under BTOP can help answer these questions:

➤ What leads individuals and communities to adopt broadband?

➤ What quantifiable difference does broadband make in communities?

➤ What is the impact of broadband on economic development in communities?

➤ How does the "broadband experience" vary by community, demographics and institutions?

Congress did not allocate funds to assess BTOP's effectiveness. It did allocate $10 million to the U.S. Department of Commerce's Office of Inspector General for oversight and auditing of the program. Such oversight and auditing activities are important, but they focus on execution of the program. Assessing program impacts on a community or on individuals or groups is different.[6]

The plan makes the following recommendations for assessing the BTOP program, some of which may require action by NTIA and some of which may require that NTIA coordinate with the research community:

RECOMMENDATION A.1: Ensure that assessment tracks program outcomes, not only execution.

Recommendations for how to assess BTOP must take into account the program's multiple goals (as discussed above).

BTOP infrastructure grants have a primary goal of making broadband service more available, typically with a secondary goal of promoting economic development. Moreover, BTOP grants for sustainable adoption have the goal of bolstering adoption rates among individuals.

Any assessment should at a minimum determine whether a grantee carried out the project funded by its grant in the time horizon specified. This kind of assessment can be completed in a relatively short period of time.

Thereafter, the assessment should focus on whether the grant had a meaningful impact in the context for which funding was specified. This is a longer-term undertaking and recognizes that the proper basis to assess a program that promises to fund infrastructure is not simply to determine whether the grantee in fact built the infrastructure. The first step in this assessment must be to ascertain whether the grant itself was responsible for the new infrastructure, or whether the infrastructure would likely have been built anyway within a reasonable time period. While it is impossible to know this with any certainty, assessors could identify control groups against which to measure the potential for this result. Such control groups might include projects (or areas) that were not funded and, if possible, geographically or socioeconomically similar areas that submitted no BTOP applications.

Once control groups are identified, assessors should measure whether the infrastructure built with BTOP grant money fostered economic growth, how additional adoption impacted users' lives or other relevant metrics. Similarly, a PCC project with a goal of placing more computers at a specific site should not be considered successful simply if it increases the number of computers at a particular location. Instead, the success of a PCC project depends, instead, on its precise impacts—whether those additional computers helped more people go online for the first time, allowed computer users to spend more productive time online and materially improved a users' lives. In assessing these impacts, NTIA should develop measures that determine the grantees' cost of adding new adopters.

RECOMMENDATION A.2: Develop measures that specify outcomes to be assessed.

Assessing outcomes requires well-defined measures for programs. An infrastructure program may seek to foster economic growth or better connectivity among particular institutions. Whatever the goal, common measures across individual grants are necessary for proper evaluation of the BTOP program as a whole. The process of developing metrics should be done in coordination with other government-wide initiatives to promote broadband infrastructure and adoption.

RECOMMENDATION A.3: **Create a panel of experts from the academic and research community to advise on assessment approaches.**

The Recovery Act's funding of broadband investment and adoption promotion has prompted some academic researchers to explore how effective such investments have been in other contexts.[7] There is little empirical evidence on the impact of demand-side adoption programs, and evidence on infrastructure investments is thin as well. As researchers explore the limits of the current assessment literature, a discussion has developed about the kind of evidence, metrics and methods needed to undertake rigorous assessment. NTIA should take advantage of this discussion by convening an expert panel and having the panel coordinate with other experts within the government.

RECOMMENDATION A.4: **Employ longitudinal design in assessing programs where possible.**

When feasible, assessments should compare outcomes from the beginning of an award's life to a date in the future. Proper assessment of newly connected anchor institutions in an infrastructure grant would take a baseline reading of the institutions' characteristics at the time the grant is made and at periodic intervals time periods into the future. The characteristics to be measured will depend on specification of proper metrics.

Longitudinal design takes into account the fact that the impacts of BTOP grants are likely to unfold over a longer time horizon than the period of the grant itself. The impact of a sustainable adoption grant on an individual who may have passed through a training program can only be determined at some point *after* the individual has completed the program. Similarly, the proper way to determine the impact of an infrastructure grant is to compare conditions at some point (or several points) beyond completion of deployment of the infrastructure.

Finally, assessment approaches should take into consideration the context of programs under study. Infrastructure projects may have fewer measurement challenges than programs which more directly affect users. If so, program assessment for user-centric grants may need to study program strategies to reach users as well as outcomes for those users. This, in turn, may mean that proper assessment should employ qualitative research approaches as well as quantitative ones.

APPENDIX A ENDNOTES

1   Nat'l Telecomm. & Information Admin., Office of Telecommunications and Information Applications, http://www.ntia.doc.gov/otiahome/otiahome.html (last visited Mar. 1, 2010).

2   Nat'l Telecomm. & Information Admin. BTOP Project Information, http://www.ntia.doc.gov/broadbandgrants/projects.html (last visited Feb. 20, 2010).

3   Exec. Off. of the Pres., Nat'l Econ. Council, Recovery Act Investments in Broadband: Leveraging Federal Dollars to Create Jobs and Connect America (2009), *available at* http://www.whitehouse.gov/sites/default/files/20091217-recovery-act-investments-broadband.pdf.

4   Nat'l Telecomm. & Information Admin., *Secretary Locke Announces Recovery Act Grants to Expand Broadband Internet Access and Spur Economic Growth* (press release),

Feb. 18, 2010, *available at* http://www.ntia.doc.gov/press/2010/02182010_Locke_BTOP_Announcement.pdf.

5   Nat'l Telecomm. & Information Admin., *Secretary Locke Announces Recovery Act Grants to Expand Broadband Internet Access and Spur Economic Growth* (press release), Feb. 18, 2010.

6   Scott J. Wallsten, *Measuring the Effectiveness of the Broadband Stimulus Plan,* THE ECONOMISTS' VOICE 6:6, art. 3 (2009).

7   Janice Hauge & James Prieger, Demand-side Programs to Stimulate Adoption: What Works? (Oct. 22, 2009) (unpublished working paper), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1492342.

APPENDIX B
COMMON ABBREVIATIONS

2G	Second-generation		CCHT	Care Coordination/Home Telehealth
3G	Third-generation		CDC	Centers for Disease Control and Prevention
4G	Fourth-generation		CEDS	Comprehensive Economic Development Strategy
AIP	Administrative Incentive Pricing		CFF	Computers for Families
ALI	Automated Location Information		CIO	Chief Information Officer
AMI	Advanced Metering Infrastructure		CIP	Critical Infrastructure Protection
AMT	Aeronautical Mobile Telemetry		CIRS	Cybersecurity Information Reporting System
AP	Advanced Placement		CITI	Columbia Institute for Tele-Information
APD	Advance Planning Document		CMS	Centers for Medicare and Medicaid Services
API	Application Programming Interface		CNCS	Corporation for National and Community Service
app	Application		CPE	Customer premises equipment
ATC	Ancillary Terrestrial Component		CSEA	Commercial Spectrum Enhancement Act
AWS	Advanced Wireless Services		CT scan	Computed tomography scan
BAS	Mobile Broadcast Auxiliary Service		CVD	Cardiovascular disease
BAWG	Broadband Accessibility Working Group		DARPA	Defense Advanced Research Projects Agency
BDIA	Broadband Data Improvement Act		DHS	Department of Homeland Security
BIP	Broadband Infrastructure Program		DIA	Dedicated Internet Access
BIS	Department for Business, Innovation and Skills		DOCSIS	Data Over Cable Service Interface Specification
BLS	Bureau of Labor Statistics		DoD	Department of Defense
BMAC	Broadband Measurement Advisory Council		DOE	Department of Energy
BRS	Broadband Radio Service		DOJ	Department of Justice
BSC	Broadband Strategy Council		DOL	Department of Labor
BTOP	Broadband Technology Opportunities Program		DOT	Department of Transportation
CAF	Connect America Fund		DS1	Digital Signal 1
capex	Capital expenditures		DS3	Digital Signal 3
CARS	Mobile Cable TV Relay Service		DSL	Digital Subscriber Line
CBO	Community-based organization		DSLAM	Digital Subscriber Line Access Multiplexer

DSRC	Dedicated short-range communication	FTTN	Fiber-to-the-node
DTA	Digital Transport Adapter	FTTP	Fiber-to-the-premises
DTS	Distributed Transmission System	FY	Fiscal year
DTV	Digital television	GAO	Government Accountability Office
E911	Enhanced 911	Gbps	Gigabits per second
EAS	Emergency Alert System	GDP	Gross domestic product
EBS	Educational Broadband Service	GED	General Educational Development
EC	Enterprise Community	GPS	Global Positioning System
ECPA	Electronic Communications Privacy Act	GPT	General Purpose Technology
EDA	Economic Development Administration	GSA	General Services Administration
EHR	Electronic health record	GWU	George Washington University
EISA	Energy Independence and Security Act of 2007	HBCUs	Historically Black Colleges and Universities
EMEA	Europe, the Middle East and Asia	HD	High definition
EO	Executive Order	HHS	Health and Human Services
EPSCoR	Experimental Program to Stimulate Competitive Research	HIPAA	Health Insurance Portability and Accountability Act
ERC	Engineering Research Center	HITECH Act	Health Information Technology for Economic and Clinical Health Act
ERIC	Emergency Response Interoperability Center	HL7 CDA	Health Level 7 Clinical Document Architecture
ET	Engineering and Technology	HPSA	Gealth professional shortage area
ETC	Eligible telecommunications carrier	HSIACs	Hispanic-Serving Institutions Assisting Communities
EZ	Empowerment Zone	HSPA	High Speed Packet Access
FCC	Federal Communications Commission	HUD	Department of Housing and Urban Development
FDA	Food and Drug Administration	IAS	Interstate Access Support
FDIC	Federal Deposit Insurance Corporation	IC3	Internet Crime Complaint Center
FERC	Federal Energy Regulatory Commission	ICAM	Identity, Credential, and Access Management
FHS	Framingham Heart Study	ICC	intercarrier compensation
FISMA	Federal Information Security Management Act	ICLS	Interstate Common Line Support
FLVS	Florida Virtual Schools	ICO	Implementation Coordination Office
FOIA	Freedom of Information Act	ICT	information and communications technology
FS-ISAC	Financial Services Information Sharing and Analysis Center	IHS	Indian Health Service
		ILEC	incumbent local exchange carrier
FTC	Federal Trade Commission	IMLS	Institute of Museum and Library Services

IP	Internet Protocol		MVPD	Multichannel video programming distributor
IPAWS	Integrated Public Alert and Warning System		NARUC	National Association of Regulatory Utility Commissioners
IPC	Informatization Promotion Committee		NASA	National Aeronautics and Space Administration
IPIA	Improper Payments Information Act		NATOA	National Association of Telecommunications Officers and Advisors
ISAC	Information Sharing and Analysis Center			
ISM	industrial, scientific and medical		NCS	National Communications System
ISO	Independent System Operator (ISO)		NECA	National Exchange Carrier Association
ISP	Internet service provider		NERC	North American Electric Reliability Corporation
IT	information technology		NG911	Next Generation 911
IT-ISAC	Information Technology Information Sharing and Analysis Center		NHTSA	National Highway Traffic Safety Administration
			NIA	National Institute on Aging
ITS	Intelligent Transportation System		NIH	National Institutes of Health
ITU	International Telecommunication Union		NIST	National Institute of Standards and Technology
JFO	Joint Field Office		NOFA	Notice of Funding Availability
K-12	Kindergarten through twelfth grade		NPR	National Public Radio
kbps	Kilobits per second		NPRM	Notice of Proposed Rulemaking
kWh	Kilowatt-hour		NS/EP	National Security/Emergency Preparedness
LEA	Local educational agency		NSF	National Science Foundation
LEC	Local exchange carrier		NTIA	National Telecommunications and Information Administration
LEED	Leadership in Energy and Environmental Design			
LMRS	Land mobile radio system		OATS	Older Adults Technology Services
LPTV	Low-power television		OEC	Office of Emergency Communications
LSTA	Library Services and Technology Act		OECD	Organisation for Economic Co-Operation and Development
LTE	Long Term Evolution			
M2M	Machine-to-machine		Ofcom	Office of Communications
Mbps	Megabits per second		OMB	Office of Management and Budget
MFN	Multi-Frequency Network		ONC	Office of the National Coordinator for Health Information Technology
mpg	Miles per gallon			
MRI	Magnetic resonance imaging		OOBE	out-of-band emission
MSA	Metropolitan service area		OSL	Online Skills Laboratory
MS-ISAC	Multi-State Information Sharing and Analysis Center		OSTP	Office of Science and Technology Policy
			PBS	Public Broadcasting Service
MSS	Mobile Satellite Services		PC	Personal computer

PCC	Public computing center		SME	Small and medium enterprise
PCS	Personal Communications Service		SMS	Short Message Service
PDF	Portable Document Format		SOAR	Specialist Optimization Access and Results
PET	Positron emission tomography		SSA	Social Security Administration
PHEV	Plug-in Hybrid Electric Vehicle		SSI	Supplemental Security Income
PISA	Programme for International Student Assessment		STEM	Science, technology, engineering and mathematics
POTS	Plain Old Telephone Service		TANF	Temporary Assistance for Needy Families
PSAP	Public safety answering point		TCUs	Tribal Colleges and Universities
PSBL	Public Safety Broadband Licensee		Telco	Telecommunications
PSTN	Public Switched Telephone Network		TLBC	Tribal Land Bidding Credit
PUC	Public utility commission		TOP	Technology Opportunity Program
R&D	Research and development		TRS	Telecommunications Relay Services
R&E	Research and Experimentation or		TSA	Transportation Security Administration
RC	Renewal Community research and education		TV	Television
RFP	Request for Proposal		UCAN	Unified Community Anchor Network
RSA	Rural service area		UHF	ultra high frequency
RUS	Rural Utilities Service		USAC	Universal Service Administrative Company
SBA	Small Business Administration		USCIS	U.S. Citizenship and Immigration Services
SBDC	Small Business Development Center		USDA	U.S. Department of Agriculture
SBTDC	Small Business Technology Development Center		USF	Universal Service Fund
SCORE	Service Corps of Retired Executives		VHA	Veterans Health Administration
SCTCA	Southern California Tribal Chairmen's Association		VHF	Very high frequency
SD	Standard definition		VoIP	Voice over Internet Protocol
SDARS	Satellite Digital Audio Radio		WBC	Women's Business Center
SDB	Small disadvantaged business		WCS	Wireless Communications Service
SDV	Switched Digital Video		WiMAX	Worldwide Interoperability for Microwave Access
SFN	Single Frequency Network		WISP	wireless Internet service provider
SIM	Subscriber Identity Module		WPS	Wireless Priority Service
SLA	Service Level Agreement		WRC	World Radiocommunication Conference
SLC	Subscriber line charge			
SMB	Small or medium-sized business			

APPENDIX C
GLOSSARY[1]

Accelerometer—An electromechanical device that measures acceleration forces or motion.

Advanced Metering Infrastructure (AMI)—Digital two-way communications hardware and software between smart meters and utility systems which can transmit energy usage, price, and control signals.

Air interface—The technical protocol that ensures compatibility between mobile radio service equipment, such as handsets, and the service provider's base stations.

Ancillary Terrestrial Component (ATC)—A ground-based infrastructure in a mobile satellite system to enhance the coverage of the satellite network.

Backhaul—The telecommunications link used to transport traffic from a geographically distant point, such as a wireless base station, to a significant aggregation point in the network, such as a mobile telephone switching office or Internet peering point.

Bluetooth—An industry standard using unlicensed radio frequency spectrum for wireless connectivity over short distances to link computers, wireless handsets, and other devices.

CableCARD—A credit card-sized device that contains the video provider's security information. When this card is plugged into a set-top box, it enables customers to access the video programming and services to which they have subscribed.

Carrier of last resort—The carrier that commits (or is required by law) to provide service to any customer in a service area that requests it, even if serving that customer would not be economically viable at prevailing rates.

Census block—The smallest geographic unit for which the Census Bureau collects and tabulates decennial census data.

Census tract—A small, relatively permanent statistical subdivision of a county, designed to contain roughly 1,000 to 8,000 people who are relatively homogeneous with respect to their demographics, economic status and living conditions.

Churn—The number of customers who leave a service provider over a given period of time, usually expressed as a percentage of total customers.

Commercial Mobile Alert System—A system established by the Commission that allows wireless service providers choosing to participate to send emergency alerts as text messages to their subscribers.

Commercial Mobile Radio Service—A mobile communications service that is provided for profit and makes interconnected service available to the public, usually in the form of mobile phone service.

Common carrier—A telecommunications provider, such as a telephone company, that offers its services for a fee to the public indiscriminately.

Competitive Local Exchange Carrier—A company that offers local telephone service in competition with the legacy telephone company.

Conditional access—Encrypting digital television services (e.g. premium channels) to limit access to authorized users.

Credentialing (or certification)—The process of establishing the qualifications of licensed professionals (e.g. physicians and teachers), organizational members, or organizations, and assessing their background and legitimacy.

Dark fiber—A fiber optic cable that is laid and ready for use, but for which the service provider has not provided modulating electronics; usually contrasted to lit fiber, which is fiber optic cable in use to provide wired communications.

Data Over Cable Service Interface Specification (DOCSIS)—A standard for the transmission of data over a cable network.

Emergency Alert System (EAS)—A national public warning system that requires broadcasters, cable television systems, wireless cable systems, satellite digital audio radio service (SDARS) providers, and direct broadcast satellite (DBS) providers to provide the communications capability to the President to address the American public during a national emergency. The system also may be used by state and local authorities to deliver important emergency information, such as AMBER alerts and weather information targeted to specific areas.

Encumbered—Spectrum that is burdened with occupancy, usage or congestion limitations or licenses that are subject to obligations or restrictions.

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[1]   The National Broadband Plan provides this glossary solely as a reader aid. These definitions do not necessarily represent the views of the FCC or the United States Government on past, present, or future technology, policy, or law and thus have no interpretive or precedential value.

Ethernet—A type of digital transmission service. Traditionally, Ethernet operates at 10 megabits per second (Mbps) (also known as 10-Base-T), although 100-Base-T (100 Mbps) and Gigabit (1,000 Mbps) Ethernet are also available.

Extension arm—A support arm that extends from a telephone pole to hold communications lines at the same level as existing lines which are attached to the pole.

Gateway device—A network device that acts as an entrance to another network and often is used to connect two otherwise incompatible networks.

Grid computing—The linking of two or more computers in a way that allows efficient use of available resources. For example, grid computing could store a single database across multiple servers to allow efficient use of unused storage and parallel processing of database queries.

Independent System Operator (ISO)—An organization that coordinates, controls, and monitors the operation of the electrical power system, either within a single state or across multiple states.

Information service—The offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications.

Intelligent Transportation System (ITS)—A broad range of advanced communications technologies that, when integrated into transportation infrastructure and vehicles, relieves congestion, improves safety, and mitigates environmental impact.

Internet gateway—The closest peering point between a broadband provider and the public Internet for a given consumer connection. See diagram below.
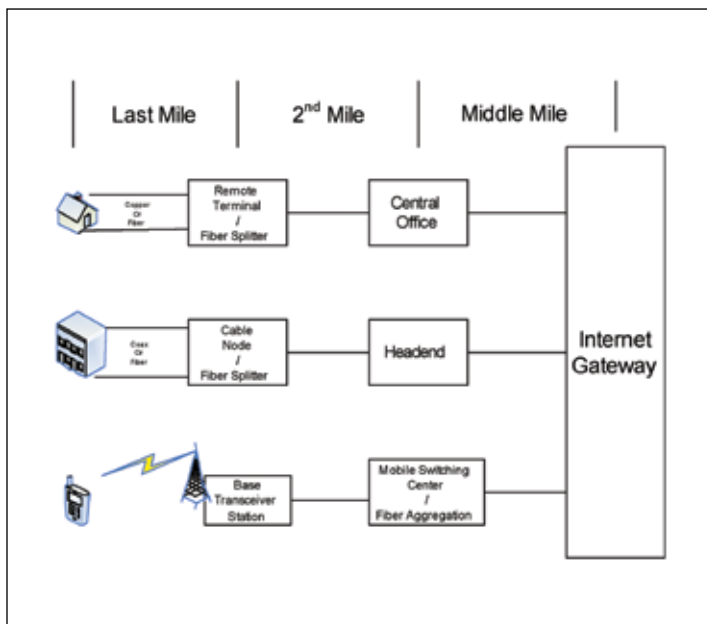
Linear channel—Video content that is delivered in a scheduled mode, such as through broadcast or cable network channels. Internet video (and other platforms such as Video On Demand, or VOD), on the other hand, delivers content upon request and often with pause/rewind/fast-forward capability.

Loop—The connection from the network central office to the customers' premises.

Microcell—Cell sites with extremely limited, but targeted, coverage. Microcells may provide indoor coverage in skyscrapers or may be placed in fire trucks, police cars and ambulances.

Mobile Earth Station—An earth station in the mobile-satellite service intended to be used while in motion or during halts at unspecified points.

Modem—A piece of customer premise equipment typically managed by a broadband provider as the last connection point to the managed network.

Multicast—Simultanous transmission of information/data to multiple receipients.

Multichannel Video Programming Distributor (MVPD)—An entity that makes available for purchase, by subscribers or customers, multiple channels of video programming.

Multi-Frequency Network (MFN)—A network in which multiple stations consolidate their capacity and broadcast over different channels at different sites and times, similar to a frequency re-use pattern employed by mobile operators to avoid interference between cell sites.

Must-carry—A requirement that cable operators cablecast the broadcast signals of local commercial television stations that request carriage.

Near-Field communications device—A short-range high frequency wireless communication technology which enables simple two-way data interactions between devices.

Next Generation 911 (NG911)—An emergency response system that integrates the core functionalities of the E911 system and also supports multimedia communications (such as texting, e-mail, and video) to the PSAP and to emergency personnel on the ground.

Notice of Inquiry—A proceeding initiated by a federal agency to gather facts and public comment on an issue within the responsibility of the agency, which may lead to a Notice of Proposed Rulemaking.

Notice of Proposed Rulemaking (NPRM)—A notice containing a proposal for adoption of new rules. The Administrative Procedure Act (APA) requires that an agency, before

promulgating a binding rule, must publish general notice of its proposal in the Federal Register.

Offload—Shifting telecommunications traffic from one network to another to relieve network congestion.

Open source—A software development model by which the source code to a computer program is made available publicly under a license that gives users the right to modify and redistribute the program.

Out-of-band emission (OOBE)—Any frequency outside of the frequency ranges covered by the adjacent channel power tables found in section 27.53 of the Commission's rules.

Over-builder—A facilities-based provider of cable service, telecommunications, or broadband that builds in an area already served by another facilities-based provider.

Overlay auction—An auction for licenses to unused portions of the spectrum already assigned to incumbent users.

Payload capacity—The amount of throughput possible using a given technology at certain specifications.

Penetration—The homes that are connected to a network, usually provided as a percentage of homes passed.

Point of Presence—A physical location where a communications carrier allows other carriers to access its network.

Pole attachment—Any attachment by a cable television system or provider of communications service to a pole, duct, conduit, or right-of-way owned or controlled by a utility.

Private Branch Exchange—Privately owned switch. A commercial building may have a PBX to route calls within the building.

Privileging—The process health care organizations (predominantly hospitals) employ to authorize practitioners to provide specific services and procedures for their patients.

Protocol stack—The ordered set of protocol types used in communications networks. At the lowest level, the protocol defines the physical interaction of the network components; at the highest level, the protocol defines the applications interacting with users. A protocol stack is designed so that protocols in each layer of the stack are substitutable for each other without affecting protocols higher up the stack.

Public Safety Answering Point (PSAP)—A call center responsible for answering emergency calls and dispatching emergency services.

Public Switched Telephone Network (PSTN)—The legacy circuit-switched telephone network.

Radiodetermination—The determination of the position, velocity or other characteristics of an object, or the obtaining of information relating to these parameters, by means of the propagation of radio waves.

Reband—To reconfigure the assignment of spectrum licenses regarding either who controls the license or how a licensee may use its spectrum.

Remote patient monitoring—Using devices and communications networks to remotely collect and send diagnostic data to a monitoring station for interpretation. For example, measuring blood pressure when a patient is at home.

Right-of-way—The right to pass over or occupy a particular piece of land. For example, utilities generally receive rights-of-way from municipalities to erect and wire poles to carry electricity, telecommunications services, and cable service.

Secondary market (for spectrum)—A mechanism for reapportioning allocated spectrum based on economic demand. The secondary market for spectrum enables licensees to lease their spectrum to third parties, which permits spectrum to flow more freely among users to the extent consistent with the Commission's public interest objectives.

Service Level Agreement (SLA)—An agreement between a user and a service provider defining the nature of the service provided and establishing metrics for that service, trouble reporting procedures and penalties if the service provider fails to perform.

Set-top box—A stand-alone device that receives and decodes programming so that it may be displayed on a television. Set-top boxes may be used to receive broadcast, cable, and satellite programming.

Side lobe—Distribution of microwave energy outside the main beam. Side lobes are measured in both the horizontal (E-plane) and the vertical (H-plane) directions. Normally, the E-plane has higher sidelobes, i.e., more energy distributed outside the main beam.

Single Frequency Network (SFN)—A network used in distributed transmission and differing from a cellular telephone system by using the same frequency in all adjacent cells.

Smart Grid—The electric delivery network, from electrical generation to end-use customer, integrated with sensors, software, and two-way communications technologies to improve grid reliability, security, and efficiency.

Smart meter—A digital meter (typically electric) located on the customer premises that records energy usage and has two-way communications capabilities with utility systems.

Spatial reuse—An efficiency measure that allows use of the same spectral link at the same time.

Subscriber Line Charge (SLC)—A federally regulated monthly service charge assessed by telephone companies to pay for a portion of the local telephone wires, poles and other facilities used to connect a local telephone exchange.

Substantially Underserved Trust Area—A community on land held in trust by the United States for Native Americans (or on certain other trust lands), which the Secretary of the Interior has determined has a high need for the benefits of certain federal programs.

Sufferance basis—The use of spectrum with no legal claim to tenancy. Using spectrum on a sufferance basis means that the use is subject to preemption at any time by the licensee.

Switched Digital Video (SDV)—A method of delivering video programming to subscribers in a given area only when at least one subscriber in that area actively requests that programming.

Switching—The process of connecting the transmission path that allows the calling party to connect to the called party.

Table of Allotments—A list of which television stations may broadcast a digital or analog signal over a given band of spectrum in a given community. The tables may be found in sections 73.606(b) and 73.622(b) of the Commission's rules.

Telecommunications Relay Service (TRS)— A telephone service that enables persons with TTYs, individuals who use sign language and people who have speech and hearing disabilities to use telephone services by having a third party transmit and translate a call. Consumers can access these services by using, for example, video phones, computers, web-enabled devices, captioned telephones, and TTYs.

Teletype or telephone typewriter—A type of machine that allows people with hearing or speech disabilities to communicate over the phone using a keyboard and a viewing screen.

Transcoding—The process of directly converting a digital media file or object from one format to another allowing one to view media that is otherwise not supported by his/her device.

Transport—The transmission facilities between the wire center or switch of an incumbent local exchange carrier and the wire center or switch of another carrier.

Use case—In software engineering and systems analysis, a methodology used to identify, clarify, and organize system requirements as it responds to a request that originates from outside of that system.

Video description—The insertion of audio-narrated descriptions of a television program's key visual elements into natural pauses between the program's dialogue so that the critical details of the information are accessible to persons with visual disabilities.

Video navigation device—A piece of equipment used by consumers within their premises to receive multichannel video programming and other services offered over multichannel video programming systems Converter boxes, interactive equipment, and other.

Wireless Priority Service (WPS)—A federal program that authorizes cellular communications service providers to prioritize calls over wireless networks. Participating service providers typically deploy WPS in stages until service is available in most coverage areas and functionality has reached full operating capability.

APPENDIX D
LIST OF WORKSHOPS AND FIELD HEARINGS

The FCC held 36 public workshops in Washington, D.C. and nine field hearings across the country as part of an extensive effort to engage the public in crafting the National Broadband Plan. These workshops and hearings attracted more than 10,000 in-person and online attendees. The panelists for the workshops and hearings included FCC staff and commissioners, other government officials and representatives from consumer groups, service providers, broadcasters, manufacturers, application providers and many other companies and organizations. The transcripts and videos for these events are all part of the National Broadband Plan record and are available at www.broadband.gov.

	Event	Date	Location
1	E-Gov/Civic Engagement Workshop	8/6/2009	Federal Communications Commission
2	Deployment: Wired-General Workshop	8/12/2009	Federal Communications Commission
3	Deployment: Wireless-General Workshop	8/12/2009	Federal Communications Commission
4	Deployment: Unserved-Underserved Workshop	8/12/2009	Federal Communications Commission
5	Technology/Fixed Broadband Workshop	8/13/2010	Federal Communications Commission
6	Technology/Wireless Workshop	8/13/2009	Federal Communications Commission
7	International Lessons Workshop	8/18/2009	Federal Communications Commission
8	Opportunities for Small and Disadvantaged Businesses Workshop	8/18/2009	Federal Communications Commission
9	Building the Fact Base: The State of Broadband Adoption and Utilization Workshop	8/19/2009	Federal Communications Commission
10	Low Adoption and Utilization: Importance of Broadband and Applications Workshop	8/19/2009	Federal Communications Commission
11	Programmatic Efforts to Increase Broadband Adoption and Usage: What Works and What Doesn't Workshop	8/19/2009	Federal Communications Commission
12	Broadband Opportunities for People with Disabilities Workshop	8/20/2009	Federal Communications Commission
13	Education Workshop	8/20/2009	Federal Communications Commission
14	Public Safety and Homeland Security Workshop	8/25/2009	Federal Communications Commission
15	Smart Grid, Broadband and Climate Change Workshop	8/25/2009	Federal Communications Commission
16	Economic Growth, Job Creation and Private Investment Workshop	8/26/2009	Federal Communications Commission
17	Job Training Workshop	8/26/2009	Federal Communications Commission
18	Technology/Applications and Devices Workshop	8/27/2009	Federal Communications Commission
19	State and Local Governments: Toolkits and Best Practices Workshop	9/1/2009	Federal Communications Commission
20	Benchmarks Workshop	9/2/2009	Federal Communications Commission
21	Big Ideas with Potential to Substantially Change the Internet Workshop	9/3/2009	Federal Communications Commission
22	Broadband Consumer Context Workshop	9/9/2009	Federal Communications Commission
23	Health Care Workshop	9/15/2009	Federal Communications Commission
24	The Role of Content in the Broadband Ecosystem	9/17/2009	Federal Communications Commission
25	Spectrum Workshop	9/17/2009	Federal Communications Commission
26	Public Field Hearing, National Broadband Plan, FCC Commissioner Meredith Atwell Baker	9/21/2009	The Thompson Conference Center, TCC 3.108 2405 Robert Dedman Drive Austin, Texas

	Event	Date	Location
27	Cybersecurity Workshop	9/30/2009	Federal Communications Commission
28	FCC Hearing on Capital Formation in the Broadband Sector	10/1/2009	Federal Communications Commission
29	Diversity and Civil Rights Issues In Broadband Deployment and Adoption Workshop	10/2/2009	Federal Communications Commission
30	FCC Hearing on Broadband Adoption, Commissioners Mignon Clyburn and Michael Copps	10/6/2009	Trident Technical College Palmer Campus 66 Columbus St. Charleston, S.C.
31	FCC Field Hearing: Mobile Applications and Spectrum	10/8/2009	Univ. of San Diego 5998 Alcala Park San Diego, Calif.
32	Economic Issues in Broadband Competition Workshop	10/9/2009	Federal Communications Commission
33	Broadband Accessibility for People with Disabilities II: Barriers, Opportunities and Policy Recommendations Workshop	10/20/2009	Federal Communications Commission
34	FCC Field Hearing on Broadband Access for People with Disabilities	11/6/2009	Gallaudet University Kellogg Conference Center 800 Florida Ave. N.E. Washington, D.C.
35	FCC Broadband Field Hearing on Improving Public Safety Communications and Emergency Response	11/12/2009	Georgetown University Leavey Center 3800 Reservoir Road N.W. Washington, D.C.
36	Capitalization Strategies for Small and Disadvantaged Businesses Workshop	11/12/2009	Federal Communications Commission
37	Future Fiber Architectures and Local Deployment Choices Workshop	11/19/2009	Federal Communications Commission
38	Research Recommendations for the Broadband Taskforce Workshop	11/23/2009	Federal Communications Commission
39	FCC Field Hearing on Energy and the Environment	11/30/2009	MIT Stratton Student Center Twenty Chimneys 84 Massachusetts Ave. Cambridge, Mass.
40	Lessons for the National Broadband Plan from Local Officials Representing Underserved Communities Workshop	12/9/2009	Federal Communications Commission
41	Global Broadband Connects America and the World: Infrastructure, Services and Applications Workshop	12/10/2009	Federal Communications Commission
42	Review and Discussion of Broadband Deployment Research Workshop	12/10/2009	Federal Communications Commission
43	FCC Field Hearing on Digital Inclusion	12/14/2009	National Civil Rights Museum Rose Room 450 Mulberry St. Memphis, Tenn.
44	FCC Broadband Field Hearing on Small Business	12/21/2009	Univ. of Chicago Gleacher Center 450 N. Cityfront Plaza Drive Chicago, Ill.
45	Broadband and New Media Strategies for Minority Radio Workshop	1/26/2010	Federal Communications Commission

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