

SIGNIFICANT FCC ACTIONS AND KEY DEVELOPMENTS IN THE BROADBAND ECONOMY

Over the past four years, the FCC has taken major steps to unleash the power of wired and wireless broadband to benefit all Americans, modernizing policies, programs, and the agency itself for the 21st century. Chairman Genachowski has reoriented the agency to focus on the opportunities and challenges of broadband, executing on a strategy to promote innovation, unleash investment, foster competition, and protect and empower consumers. In doing so, the Commission has advanced President Obama's vision of a world-leading broadband ecosystem that drives economic growth, job creation, U.S. competitiveness, and improvements in the lives of the American people. Key actions are summarized below.

Today, the U.S. broadband economy is thriving. The United States has regained global leadership in key areas of broadband innovation and infrastructure. Thanks to innovative American companies and entrepreneurs – and smart government policies – the U.S. is now the envy of the world in advanced wireless networks, devices, applications, among other areas.

KEY DEVELOPMENTS IN THE BROADBAND ECONOMY OVER THE PAST FOUR YEARS INCLUDE:

Overall broadband investment

- Nearly \$250 billion in private capital has been invested in U.S. wired and wireless broadband networks since 2009. There has been more private investment in the information and communications technology (ICT) sector than in any other sector of the U.S. economy.
- More fiber has been laid in the U.S. in each of the last two years than in any year since 2000.

Mobile investment and innovation

- The U.S. is the first country deploying 4G LTE networks at scale, and in late 2012 the U.S. had as many LTE subscribers as the rest of the world combined, making us the global test bed for LTE apps and services.
- Annual investment in U.S. wireless networks grew more than 40% between 2009 and 2012, from \$21 billion to \$30 billion. By contrast, investment in European wireless networks has been flat since 2009, and wireless investment in Asia, including China, is up only 4% during that time.
- In 2013, analysts project \$35 billion in wireless investment in the U.S., over 50% more than all of Europe.
- More than 90% of smartphones sold globally in 2012 run operating systems developed by U.S. companies, up from 25% three years ago.
- The new mobile apps economy is a “made in the U.S.A.” phenomenon that has created more than 500,000 U.S. jobs.
- Investments in wireless broadband infrastructure created more than 1.6 million U.S. jobs since 2007.

Broadband investment, deployment and adoption

- On wired infrastructure, broadband networks capable of very high speeds (100 megabits per second) now reach more than 80% of U.S. homes, one of the highest percentages in the world, up from less than 20% in 2009. By contrast, networks capable of 30 megabits per second reach only 50% of EU households.
- Average U.S. broadband speeds have nearly doubled since 2009.
- 2011 and 2012 each saw more U.S. Internet venture capital investment than any year since 2001.
- Home broadband adoption increased from less than 60% in December 2008 to almost 70% today.
- Between 2009 and July 2012, U.S. smartphone adoption increased from 16% to 56%.

As Chairman Genachowski has said, this progress is not a reason to let up on the gas pedal. The U.S. faces key challenges ahead, including continuing to make more spectrum available for broadband to keep pace with growing demand; increasing broadband speed and capacity; ensuring that all Americans have affordable access to broadband where they live and work; and promoting competition and empowering consumers.

KEY FCC ACTIONS OVER THE PAST FOUR YEARS INCLUDE:

Created the Connect America Fund to advance universal broadband access. After a decade of unsuccessful reform attempts, a unanimous Commission overhauled the Universal Service Fund, an outdated and deeply inefficient program for delivering telephone service to rural America, and created the Connect America Fund to ensure broadband access to all Americans. The Connect America Fund is a public-private partnership that will use \$45 billion over 10 years to extend broadband across the country, making it the largest broadband infrastructure program ever established. These reforms not only put the country on track to connect all Americans within a decade, they also eliminated wasteful spending, harnessed market forces to drive efficiencies, and put universal service spending on a budget for the first time.

Pioneered “incentive auctions” to unleash spectrum for mobile broadband. Faced with a looming spectrum crunch that threatened to stifle our mobile economy – a key driver of U.S. economic growth and competitiveness – in 2010 the FCC developed a bold policy innovation: incentive auctions. Incentive auctions are a new paradigm in spectrum policy -- a two-sided auction that uses the power of the market to repurpose beachfront spectrum used by TV broadcasters for licensed and unlicensed wireless broadband. Faced with widespread skepticism and opposition, the FCC worked relentlessly to push the idea. In 2012 Congress passed and the President signed landmark legislation authorizing these auctions, and the FCC is on track to hold the world’s first incentive auction in 2014.

Established the first enforceable rules of the road to preserve Internet freedom and openness. After years of fierce and divisive debate over “net neutrality,” the Commission adopted a strong and balanced framework to preserve the Internet as an open platform for innovation and expression. These rules of the road have increased certainty and predictability in the marketplace. Since they were proposed in the first months of Chairman Genachowski’s

tenure, innovation and private investment are up significantly across the broadband ecosystem, in both networks and applications, and the Internet remains a vibrant platform for speech and commerce. The FCC also vigorously enforced open Internet protections, including by:

- Launching an investigation into AT&T's blocking of VoIP applications on smartphones, which led AT&T to reverse its policy.
- Entering into a consent decree requiring Verizon to end their practice of blocking tethering apps, which allow smartphones to be used as Wi-Fi hotspots, and make a \$1.25 million payment to the Treasury.

Opposed AT&T/T-Mobile deal and took other steps to promote competition in the broadband marketplace.

In 2009, the mobile marketplace had been trending away from an earlier era of robust competition driving innovation and investment in wireless. The FCC and the Department of Justice decisions to oppose the AT&T/T-Mobile merger helped reverse that trend. That strong action, along with others like the FCC's order mandating data roaming among mobile broadband providers, and the rigorous review of a Verizon transaction in 2012 that led to the unprecedented divestiture of significant spectrum to T-Mobile, are enhancing competition and fostering major investments in the U.S. wireless industry. The FCC also advanced "special access" reform to help ensure competition in the market for dedicated communications lines for businesses, a key input for mobile carriers' cell towers.

ADDITIONAL FCC ACTIONS

Developed America's First National Broadband Plan. In March 2010, the Commission released a comprehensive national strategy to unleash the opportunities of broadband for all Americans. The bold and ambitious Plan was the world's first national broadband plan to recognize that wireless broadband is just as critical as wired broadband. The FCC's increased focus on broadband, and National Broadband Plan proposals like incentive auctions and enforceable open Internet protections prompted *Wired Magazine* to name the revitalized FCC one of the Top 7 Disruptions of the Year.

Unleashing Spectrum

Unleashing spectrum for broadband, to drive economic growth and America's global competitiveness. In an October 2009 speech, when less than one-fifth of Americans owned smartphones, Chairman Genachowski sounded the alarm about a "looming spectrum crisis" and the need to free up more airwaves for broadband to meet a surge in demand. At a time when the FCC's spectrum cupboard was largely bare, the National Broadband Plan set an ambitious goal of freeing up 300 more megahertz (MHz) for mobile broadband by 2015, and 500 MHz by 2020, roughly double the spectrum available in 2010. Using a variety of traditional strategies – including removing outdated rules and restrictions on 30 MHz in the WCS band and 40 MHz in the AWS-4 band, and preparing to auction the 10 MHz H-block and a significant amount of additional AWS spectrum – as well as new policy innovations like incentive auctions and spectrum sharing, including for 100 MHz in the 3.5 GHz band, the Commission is on track to exceed its 2015 goal and well on the way to meeting its 2020 goal.

Creating the next generation of unlicensed spectrum to maintain U.S. leadership in mobile innovation. The FCC freed up the largest amount of low-band spectrum in 25 years for unlicensed use by making available high-quality “white spaces” spectrum in between TV channels – a new American platform for wireless innovation. As part of the 2014 incentive auction, the FCC has proposed making low-band unlicensed spectrum consistently available nationwide for the first time.

Increasing capacity and easing congestion on Wi-Fi networks. The Commission has proposed to free up more unlicensed spectrum for Wi-Fi in the 5 gigahertz band, which will help alleviate Wi-Fi congestion at airports and convention centers and in homes and enable ultra-high-speed “Gigabit Wi-Fi.” As a result of these actions, no country is better positioned than the U.S. on cloud computing, machine-to-machine communications, and next-generation Wi-Fi.

Accelerating Broadband Deployment and Adoption

Modernized all four universal service programs. In addition to replacing the old “high-cost fund” with the Connect America Fund, the Commission modernized and reformed each of the other components of the Universal Service Fund for the 21st century:

- The Commission established access to mobile broadband as a universal service goal for the first time, creating the **Mobility Fund** to spur deployment of advanced wireless infrastructure. The Mobility Fund will provide \$500 million annually in ongoing support to close gaps in mobile network coverage, using market-based reverse auctions to ensure funding is spent wisely and efficiently.
- The Commission built on the success of its health care pilot initiative by creating the up to \$400-million-per-year **Healthcare Connect Fund**, which will connect thousands of health care providers across the country to broadband, enabling them to improve patient outcomes and dramatically cut costs.
- The Commission also reformed **E-Rate**, which helps connect America’s schools and libraries to the Internet, cutting red tape, giving schools and libraries flexibility to get higher-capacity and more cost-effective broadband services, removing barriers that kept schools from opening their computer labs as hot spots for community Internet use, and creating a Learning-on-the-Go pilot project to test the use of E-rate funding for off-campus mobile connectivity. The new E-Rate investments and the Healthcare Connect Fund are helping the Commission realize the National Broadband Plan goal of delivering 1-gigabit-per-second, ultra-high-speed broadband to anchor institutions like schools and hospitals.
- The Commission comprehensively reformed the **Lifeline** program, which ensures the neediest Americans can access modern communications services. By cracking down on widespread waste, fraud, and abuse in the program, e.g., eliminating more than 270,000 duplicate subscriptions, the Commission is on track to save \$2 billion by the end of 2014. A portion of these savings is being used to transition the program to support broadband adoption, the biggest connectivity challenge facing low-income Americans.
- Also as part of its universal service reform, the Commission fundamentally modernized the **intercarrier compensation system** – an antiquated, byzantine set of rules requiring price-regulated payments among carriers for carrying phone calls. This overhaul is removing outdated regulations, accelerating the transition to Internet technology by aligning incentives

for the broadband world, and providing billions of dollars in consumer benefits by eliminating hidden subsidies paid for through consumers' phone bills.

Helping close the broadband divide. The FCC convened the cable industry, technology companies, and nonprofit organizations to connect low-income families to broadband at home. Under the Connect2Compete program, these partners made an unprecedented commitment to provide \$9.95/month broadband, \$150 refurbished computers, and digital literacy training to families throughout the country with children in the National School Lunch Program. As part of the Comcast/NBC Universal and CenturyLink/Qwest transaction reviews, the Commission secured commitments from carriers to offer discounted broadband service to millions of low-income Americans. In December 2012, the Commission launched 14 broadband adoption pilot projects serving 74,000 consumers to understand how its Lifeline program could best be re-structured to promote broadband adoption.

Removing barriers to broadband infrastructure deployment. The FCC launched the Broadband Acceleration Initiative to lower the costs and speed the pace of wired and wireless broadband deployment. Key actions include reducing the cost and significantly shortening the time to attach communications equipment to utility poles, and establishing a 90-day “shot clock” to speed approval by municipalities of new wireless tower and antenna siting, both of which have been upheld by the courts. In 2012 President Obama issued an Executive Order, based on ideas developed by the FCC, to further reduce barriers to broadband buildout by implementing policies like “Dig Once,” which encourages laying fiber conduit any time roads are being constructed or repaired.

Pushed for the deployment of ultra-fast networks. To ensure the U.S. maintains its global leadership in Internet-enabled innovation, in 2013 Chairman Genachowski issued the Gigabit Cities Challenge, which challenges broadband providers and state and municipal community leaders to create at least one community with a critical mass of ultra-fast, affordable broadband connections in every state by 2015. In addition to the Broadband Acceleration Initiative, which is lowering the costs to roll out gigabit networks, the Commission is working with private and public sector entities to help them meet this challenge.

Protecting & Empowering Consumers and Promoting Competition

Protecting and empowering consumers. Since 2009, the Commission's Enforcement Bureau has conducted thousands of investigations, issuing over 3,700 decisions and levying more than \$155 million in penalties, voluntary contributions, and recoveries. In particular, the Commission cracked down on “mystery fees,” levying a \$25 million fine – the largest in FCC history – against Verizon for charging consumers for services they hadn't used. As part of the settlement, Verizon also repaid consumers more than \$50 million in overcharges. The Commission also cracked down on practices like cramming, consumer ID spoofing, and deceptive marketing for prepaid calling cards. To help empower consumers, the Commission developed a number of online tools including the National Broadband Map and the Broadband Speed Test, which has been used more than 1 million times. The FCC also forged a series of technology-based public-private initiatives to safeguard and empower consumers, including:

- **Preventing bill shock:** Working with Consumers Union, the FCC obtained commitments from the four largest wireless carriers to send consumers free text message alerts when they are about to incur overage charges to prevent unexpected penalties, or “bill shock,” which had been affecting 30 million consumers annually.
- **Preventing smartphone theft:** In 2012 the FCC catalyzed the creation of a database to prevent use of stolen smartphones and tablets, working with police chiefs, Congressional leaders, and the wireless industry. This database will enable carriers to disable stolen smartphones and tablets, dramatically reducing their value on the black market. Six months later, Chairman Genachowski signed an agreement with Mexico to extend the program internationally, combatting cross-border trafficking in stolen devices.
- **Measuring Broadband America:** To give consumers the tools they need to understand their choices and hold broadband providers accountable for their promises, the Commission issued the first-ever comprehensive, rigorous report on actual U.S. broadband speed and performance, with detailed information on performance of each major U.S. ISP. This report improved transparency and drove competition and investment, including significant network upgrades by poor performers to improve their showing in the next report.

Created Technology Transitions Policy Task Force. Communications networks are increasingly migrating from special purpose to general purpose, from circuit-switched to packet-switched, and from copper to fiber and wireless-based networks, which is driving changes in markets and competition. In 2012 Chairman Genachowski established the Technology Transitions Policy Task Force to conduct a data-driven review and provide recommendations to modernize the Commission’s policies to encourage these technological transitions, protect and empower consumers, promote competition, and ensure network resiliency and reliability.

Advanced competition in the media marketplace. As part of a set of unprecedented protections for consumers and competition in its order reviewing the Comcast/NBC Universal transaction, the Commission imposed strong conditions preserving the ability of online video competitors to innovate and compete. Separately, the Commission closed the so-called “terrestrial loophole,” promoting competition in the pay-TV market.

Strengthening Public Safety

Protecting and enhancing public safety. The Commission worked closely with FEMA, state agencies, and communications providers during and in the aftermath of Superstorm Sandy, the June 2012 “derecho,” Hurricane Irene, and other natural disasters to assess and accelerate efforts to repair damage to our nation’s communications infrastructure. In the wake of these disasters, the FCC launched a series of field hearings to identify smart actions to improve network resiliency, accelerate the restoration of communications services, and protect and empower consumers. The Commission strengthened its outage reporting requirements to cover VoIP service, enabling the Commission to track and promote the reliability of IP networks. The FCC’s National Broadband Plan recommended that Congress create a nationwide interoperable public safety broadband network, the FCC worked with Congress to make that recommendation a reality in landmark 2012 legislation, and since then the FCC has taken all necessary steps to help FirstNet stand up its network.

Strengthening and modernizing 9-1-1. The Commission has accelerated the modernization of 9-1-1 to harness the power of wireless technology and the Internet. As part of a comprehensive strategy for enabling Next Generation 9-1-1, the FCC obtained commitments from the four largest wireless carriers to rapidly deploy text-to-911 on mobile phones. The Commission helped improve location accuracy for mobile 9-1-1 so emergency personnel can more quickly find people in need, and helped launch Wireless Emergency Alerts to enable local authorities to send warnings and other texts to people in affected areas. After issuing a report on the extensive 9-1-1 failures during and after the 2012 derecho, the Commission proposed rules to ensure those failures never happen again.

Enhanced cybersecurity. Broadband providers serving over 90% of U.S. subscribers adopted recommendations – developed through an FCC-led multistakeholder process – to combat three major cybersecurity threats: botnets, Domain Name System fraud, and Internet route hijacking. Working with the Small Business Administration, the Chamber of Commerce, the National Urban League, and many private technology companies, the Commission also developed and released a Cybersecurity Tip Sheet for small businesses, providing a number of commonsense steps small businesses can take to increase their cybersecurity. Working with its partners, the FCC released the Small Biz Cyber Planner – an easy-to-use tool to help small businesses develop a customized cyber plan. The Commission also developed the “Smartphone Security Checker,” a free app that walks consumers through steps they can take to better secure their mobile devices.

Broadband for Job Creation, Health Care & Education

Promoting job creation through public-private partnerships. To drive greater collaboration among government, nonprofit, and private-sector entities on broadband-related goals, Chairman Genachowski created the Public Private Initiative. As part of this effort, the Commission worked with leaders of the customer contact center industry to launch Jobs4America in 2011 – a project to create 100,000 contact center jobs in the U.S. within two years. More than 75,000 U.S. jobs were created in the first 14 months after the announcement.

Advancing the power of broadband and mobile technologies to improve health outcomes and lower costs. In addition to creating the Healthcare Connect Fund, the FCC entered a first-of-its-kind partnership with the FDA to cut red tape and get wireless medical devices to market more quickly. The Commission also allocated spectrum for technologies that can help restore movement for veterans and other victims of paralysis, and enabled Medical Body Area Networks, wireless sensor networks that un-tether patients at hospitals and at home from devices that monitor their vital signs.

Seizing the opportunities of broadband to improve education. The FCC modernized and expanded E-Rate funding for schools and libraries to support faster and lower cost Internet connections. Together with Secretary of Education Arne Duncan, Chairman Genachowski serves as an honorary Chair of the Leading Education by Advancing Digital (LEAD) Commission, a blue ribbon commission developing a comprehensive proposal to maximize the power of technology to improve American education, and challenged states and the private sector to ensure that every U.S. K-12 student has a digital textbook within five years.

Open Government, Open Data

Re-tooled agency operations for the information age. In 2009, Chairman Genachowski appointed a special counsel for FCC reform, and set the goal of making the FCC a model of excellence in government. The Commission has eliminated more than 200 outdated rules, eliminated unnecessary data collections, reduced backlogs, and sped processing times, e.g., the time to review routine wireless transaction was cut by more than half. Streamlined operations have saved millions in operating costs, and a 2010 employee survey by the Office of Personnel Management identified the FCC as the Most Improved Agency in the federal government. To make the agency more open, efficient, and effective, the Commission increased the transparency of agency proceedings, slashed backlogs, and repealed dozens of antiquated regulations. The Commission launched a re-imagined FCC.gov, and now streams online all Commission meetings, hearings, and workshops. Chairman Genachowski also tasked the Office of Strategic Planning and Policy Analysis with the Commission’s first-ever, top-to-bottom review of its data collection practices to ensure agency proceedings are fact-based and data-driven. As a result of this review, the Commission hired its first Chief Data Officer and launched the Data Innovation Initiative.

Improving the transparency of political advertising. To substantially increase transparency for citizens, journalists, and others, the Commission required television stations to move their “public files” – statutorily required records of political advertising expenditures and other key information – from file cabinets to the Internet. This is part of the Commission's broader efforts to open up government and data, and move processes and documents from paper to online.

Promoting Media Diversity and Journalism

Enabling the largest ever expansion of community radio. In 2012 the Commission created opportunities for non-profit organizations to launch thousands of new low-power FM radio stations, with the application window opening in fall 2013.

Promoted diversity in media and communications. The FCC established the Office of Native Affairs and Policy, proposed improving the use of spectrum over Tribal lands, and expanded opportunities for Tribal entities to provide broadcast radio services to Tribal communities. During its review of major transactions like Comcast/NBC Universal, the Commission secured unprecedented commitments to promote diversity in the media marketplace. The FCC has significantly improved data collection about minority broadcast ownership, which will help develop smarter policies. The FCC’s Office of Communications Business Opportunities (OCBO) and Office of General Counsel have launched a major investigation into barriers to market entry for minorities and women in the telecom industry. And OCBO has connected minority- and women-owned media and communications businesses with banks, other lending institutions, and financial experts, including through access-to-capital seminars.

Updating media policy for the digital age. The Commission issued an in-depth study of the current media environment and how to meet the information needs of communities in a broadband world. The Information Needs of Communities report sparked a national discussion on the future of media and journalism, its recommendation to move the broadcast TV “public

file” has been implemented, and the state of North Carolina has begun establishing a state-level C-SPAN – another recommendation of the report.

Advancing Broadband and Internet Freedom and Openness Internationally

Advanced Internet freedom and openness and broadband goals internationally. The FCC helped develop a landmark 2011 agreement among OECD members and stakeholder groups on core principles for Internet policy-making, which strongly support Internet freedom and openness. The FCC has also worked in international fora, including as the 2012 World Conference on International Telecommunications in Dubai to preserve and advance the international multi-stakeholder model of Internet governance and eliminate global barriers to Internet freedom and openness. The Commission successfully negotiated major spectrum agreements with Canada and Mexico, which enable operators to deploy 4G wireless broadband services near the U.S.-Canadian and U.S.-Mexican border.

Promoting Digital Inclusion & Responsible Use of Technology

Harnessing power of broadband to aid persons with disabilities. The Commission implemented the 21st Century Communications and Video Accessibility Act to enhance communications access for those with disabilities, established the Accessibility and Innovation Forum, and improved hearing aid compatibility with mobile devices. The FCC also preserved a vital communications link for deaf and hard-of-hearing people and saved taxpayers \$275 million by reforming the Video Relay Service and IP Captioned Telephone Service programs to eliminate waste and fraud.

Promoting safe and responsible use of technology by kids and teens. The Commission developed educational initiatives and held events to educate kids and parents about safe and responsible use of technology, including addressing cyberbullying and texting while driving.