The National Telecommunications and Information Administration (NTIA): Policies, Programs, and Funding

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October 22, 2012

Congressional Research Service
7-....
www.crs.gov
R42052

Summary

The National Telecommunications and Information Administration (NTIA), an agency of the Department of Commerce, is the executive branch's principal advisory office on domestic and international telecommunications and information policies. Its mandate is to provide greater access for all Americans to telecommunications services, support U.S. attempts to open foreign markets, advise on international telecommunications negotiations, and fund research for new technologies and their applications. NTIA also manages the distribution of funds for several key grant programs. Its role in federal spectrum management includes acting as a facilitator and mediator in negotiations among the various federal agencies regarding usage, priority access, causes of interference, and other radio spectrum questions.

The 112th Congress, with the passage of the Middle Class Tax Relief and Job Creation Act of 2012 (P.L. 112-96), in February 2012, has given the NTIA new responsibilities in spectrum management and the support of public safety initiatives.

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Introduction

The National Telecommunications and Information Administration (NTIA) is an agency in the U.S. Department of Commerce (DOC) that serves as the executive branch's principal advisory office on domestic and international telecommunications and information technology policies.

The NTIA frequently works with other executive branch agencies to develop and present the Administration's position on key policy matters. It represents the executive branch in both domestic and international telecommunications and information policy activities. Policy areas in which NTIA acts as the representative of the Administration include international negotiations regarding global agreements on spectrum management and domestic use of spectrum resources by federal agencies. In recent years, one of the responsibilities of NTIA has been to oversee the transfer of some radio frequencies from the federal domain to the commercial domain. Many of these frequencies have subsequently been auctioned to the commercial sector and the proceeds paid into the U.S. Treasury.

The NTIA administers some grants programs, including—at present—the Broadband Technology Opportunities Program (BTOP)[1] and the Public Safety Interoperable Communications (PSIC) grant program.[2] As required by the Middle Class Tax Relief and Job Creation Act of 2012 (P.L. 112-96), the NTIA is in the process of establishing requirements for a $135 million grant program to help states plan for participation in a new, nationwide public safety broadband network. To deploy the new network, the act established the First Responder Network Authority, or FirstNet, within the NTIA and assigned the agency various responsibilities to support FirstNet.[3]

Programs

The NTIA fulfills many responsibilities for different constituencies. Its role in federal spectrum management includes acting as a facilitator and mediator in negotiations among the various federal agencies regarding usage, priority access, causes of interference, and other radio spectrum questions. As the agency responsible for managing spectrum used by federal agencies, the NTIA often works in consultation with the Federal Communications Commission (FCC) on matters concerning spectrum access, technology, and policy. The FCC regulates private sector, state, local, and tribal spectrum use. Because many spectrum issues are international in scope and negotiated through treaty-making, the NTIA and the FCC collaborate with the Department of State in representing American interests. NTIA leads and participates in interagency efforts to develop Internet policy. It plays a lead role in the DOC's Internet Policy Task Force.[4] The NTIA and the National Institute of Standards (NIST) have adjoining facilities on the Department of

[1] For a discussion of BTOP grants, see CRS Report R41775, *Background and Issues for Congressional Oversight of ARRA Broadband Awards*, by (name redacted).

[2] Federal grants for emergency communications is discussed in CRS Report R41842, *Funding Emergency Communications: Technology and Policy Considerations*, by (name redacted).

[3] Measures in the act that apply to public safety are covered in CRS Report R42543, *The First Responder Network and Next-Generation Communications for Public Safety: Issues for Congress*, by (name redacted).

[4] For background information on NTIA's role in U.S. Internet policy, see CRS Report 97-868, *Internet Domain Names: Background and Policy Issues*, by (name redacted).

Commerce campus in Boulder, CO, where they collaborate on research projects with each other and with other federal agencies, such as the FCC.

The NTIA works with the Rural Utilities Service in coordinating loans and grants made through BTOP and with the Department of Homeland Security (DHS) in overseeing grants made through the PSIC grants program. NTIA collaborates with NIST, DHS, and the FCC in providing expertise and guidance to public safety agencies who are using PSIC or BTOP funds to build new wireless networks for broadband communications.

NTIA policies and programs are administered through

- The Office of Spectrum Management (OSM), which formulates and establishes plans and policies that ensure the effective, efficient, and equitable use of the spectrum both nationally and internationally. Through the development of long range spectrum plans, the OSM works to address future federal government spectrum requirements, including public safety operations and the coordination and registration of federal government satellite networks. The OSM also handles the frequency assignment needs of the federal agencies and provides spectrum certification for new federal agency radio communication systems.
- The Office of Policy Analysis and Development (OPAD), which is the domestic policy division of NTIA. OPAD supports NTIA's role as principal adviser to the Executive Branch and the Secretary of Commerce on telecommunications and information policies by conducting research and analysis and preparing policy recommendations.
- The Office of International Affairs (OIA), which develops and implements policies to enhance U.S. companies' ability to compete globally in the information technology and communications (ICT) sectors. In consultation with other U.S. agencies and the U.S. private sector, OIA participates in international and regional fora to promote policies that open ICT markets and encourage competition.
- The Institute for Telecommunication Sciences (ITS), which is the research and engineering laboratory of NTIA. ITS provides technical support to NTIA in advancing telecommunications and information infrastructure development, enhancing domestic competition, improving U.S. telecommunications trade opportunities, and promoting more efficient and effective use of the radio spectrum.
- The Office of Telecommunications and Information Applications (OTIA), which administers grant programs that further the deployment and use of technology in America, and the advancement of other national priorities.

Many decisions regarding the use of federal spectrum are also made through the Interdepartmental Radio Access Committee, IRAC.[5] IRAC membership comprises representatives of all branches of the U.S. military and a number of federal department agencies affected by spectrum management decisions.[6]

[5] See http://www.ntia.doc.gov/category/irac.

[6] Members are listed at http://www.ntia.doc.gov/page/irac-functions-and-responsibilities.

Funding

Enacted legislation for FY2012 has provided $45.6 million to the NTIA for salaries and expenses, an increase over the previous year of 9.6% but 18.4% less than requested by the Administration. The Administration had requested $55.8 million for Salaries and Expenses for FY2012, an increase of $14.3 million over FY2011-enacted appropriations of $41.6 million. The Administration request represented a significant increase over the $21.8 million requested for Salaries and Expenses for FY2011 and the $19.999 million appropriated for that category in FY2010. The increase is largely attributable to the costs of administration and oversight of the $4.4 billion Recovery Act program for broadband technologies and deployment mapping, as required by the American Recovery and Reinvestment Act of 2009 (P.L. 111-5). Total requests for all oversight programs administered by the NTIA totaled $32.3 million for FY2012. In addition, the Administration requested new funding for the NTIA of $1.7 million to support efforts to foster new wireless broadband technologies and of $1.0 million for its Internet Innovation initiative to address Internet-based privacy principles.

In the past, the OTIA has awarded grants from the Public Telecommunications Facilities Program, which was terminated by Congress in FY2011. This program has helped public broadcasting stations and other organizations construct facilities to bring educational and cultural programs to the American public. Funding for the program, Public Telecommunications Facilities, Planning and Construction (PTFPC), was not reauthorized and has been discontinued.

Table 1. NTIA: Fiscal Year Funding 2007-2012

(in millions of dollars)

Funding	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012
NTIA Total	$39.8	$36.3	$39.2	$40.0	$41.6	$45.6
Administration, salaries and expenses	$19.8	$17.5	$19.2	$20.0	$41.6	$45.6
PTFPC	$20.0	$18.8	$20.0	$20.0	0	0

Source: Annual Reports, Department of Commerce and Congressional Appropriations, as Enacted. Appropriations for grant programs are not included.

For FY2013, the Administration proposes $46.9 million for NTIA salaries and expenses. This is an increase of 2.9% over the enacted FY2012 budget amount of $45.6 million. An FY2013 Continuing Resolution (P.L. 112-175) for appropriations is in effect until March 27, 2013.

Spectrum Policy

The Administration and Congress have taken steps to increase the amount of radio frequency spectrum available for mobile services such as access to the Internet. The increasingly popular smart phones and tablets require greater spectrum capacity (broadband) than the services of earlier generations of cell phones. Proposals from policy makers to use federal spectrum to provide commercial mobile broadband services include:

- Clearing federal users from designated frequencies for transfer to the commercial sector through a competitive bidding system.
- Sharing federal frequencies with specific commercial users.
- Improving the efficiency of federal spectrum use and management.[7]
- Using emerging technologies for network management to allow multiple users to share spectrum as needed.

The NTIA supports the Administration's policy goal of increasing spectrum capacity for mobile broadband by 500 MHz.[8] To this purpose, NTIA, with input from the Policy and Plans Steering Group (PPSG),[9] has produced a 10-year plan and timetable that identifies bands of spectrum that might be available for commercial wireless broadband service. As part of its planning efforts, the NTIA prepared a "Fast Track Evaluation" of spectrum that might be made available in the near future. Specific recommendations were to make available 15 MHz of spectrum from frequencies between 1695 MHz and 1710 MHz, and 100 MHz of spectrum within bands from 3550 MHz to 3650 MHz. The fast track evaluation also recommended studying two 20 MHz bands to be identified within 4200-4400 MHz for possible repurposing, and placement for consideration of this proposal on the agenda of the World Radio Conference (WRC-2015) scheduled for 2015-2016.

The NTIA also lead an evaluation process regarding commercial use of 95MHz of spectrum in the 1755-1850 MHz band, currently used by federal agencies. These frequencies are valued for commercial use in part because they are among those designated for international harmonization of advanced wireless technology. Harmonization enables important economies of scale in the production of wireless mobile equipment by providing global markets for standardized products. Federal users are completing the transfer of spectrum to commercial license-holders in the 1710-1755 MHz band, also designated for harmonization.[10]

Working through the PPSG, the NTIA studied federal spectrum use by more than 20 agencies with over 3,100 separate frequency assignments in the 1755-1850 MHz band.[11] After evaluating the multiple steps involved in transferring current uses and users to other frequency locations, the NTIA concluded that it would cost $18,098 million to clear federal users from all 95 MHz of the band. Based on this assessment, the report included recommendations for seeking ways for federal and commercial users to share many of the frequencies, although some frequencies were identified to be cleared for auction to the private sector. The assumptions for the estimates of the

[7] The Government Accountability Office (GAO) issued a report: *Spectrum Management: NTIA Planning and Processes Need Strengthening to Promote the Efficient Us Use of Spectrum by Federal Agencies,* April 2011, GAO-11-352.

[8] Spectrum is segmented into bands of radio frequencies and typically measured in cycles per second, or hertz. Standard abbreviations for measuring frequencies include kHz—kilohertz or thousands of hertz; MHz—megahertz, or millions of hertz; and GHz—gigahertz, or billions of hertz.

[9] Created in response to Department of Commerce recommendations to improve spectrum efficiency through better management, see http://www.ntia.doc.gov/legacy/reports/specpolini/factsheetspecpolini_06242004.htm.

[10] Following procedures required by the Commercial Spectrum Enhancement Act of 2004 (P.L. 108-494, Title II), the FCC auctioned licenses for these frequencies in 2006. The auction attracted nearly $13.9 billion in completed bids. The cost to move federal agencies to new spectrum locations was set at almost $936 million. Additional information is in CRS Report RS21508, *Spectrum Management and Special Funds*, by (name redacted).

[11] U.S. Department of Commerce, *An Assessment of the Viability of Accommodating Wireless Broadband in the 1755–1850 MHz Band,* March 2012, at http://www.ntia.doc.gov/report/2012/assessment-viability-accommodating-wireless-broadband-1755-1850-mhz-band.

cost were challenged in a congressional hearing, leading to a request to the General Accountability Office (GAO) to examine the process.[12] The GAO provided testimony at the hearing regarding its preliminary findings on spectrum sharing.[13]

Middle Class Tax Relief and Job Creation Act of 2012

The most recent legislative action to provide more spectrum for commercial services were provisions included in Title VI of the Middle Class Tax Relief and Job Creation Act of 2012 (P.L. 112-96).[14] The act has updated existing and specified new procedures for spectrum to be reallocated from federal government to commercial use. Under the act, the NTIA is required to work with the FCC to identify specific bands for auction.

The NTIA will also be responsible for collecting auction proceeds and making distributions from a Public Safety Trust Fund that remains in effect through FY2022. Most of the proceeds from auctions of licenses in designated spectrum as specified in the act are to be deposited directly into the Public Safety Trust Fund, with these proceeds appropriated for purposes defined in the act.[15]

The act has also given the NTIA responsibilities to create and support FirstNet in planning, building, and managing a new, nationwide, broadband network for public safety communications.[16] The act requires the NTIA, in consultation with FirstNet, to establish grant program requirements for a State and Local Implementation Fund. The NTIA is also to facilitate payments to states that participate in the deployment of the network. Separately, the NTIA will administer grants and spectrum access for states that do not participate directly in the national network and that receive permission from the FCC to build the state's part of the FirstNet network. In compliance with the act's deadline for setting up the Fund, the NTIA has published initial programmatic requirements under which it will award grants.[17]

The act has addressed how spectrum resources might be repurposed from federal to commercial use through auction or sharing, and how the cost of such reassignment would be defined and compensated, among other provisions.[18] Although spectrum sharing to facilitate the transition from federal to commercial use is supported in the act's provisions, the NTIA has been required

[12] Hearing, House of Representatives, Committee on Energy and Commerce, Subcommittee on Communications and Technology, "Creating Opportunities Through Improved Government Spectrum Efficiency," September 13, 2012.

[13] GAO, *Spectrum Management: Federal Government's Use of Spectrum and Preliminary Information on Spectrum Sharing,* September 13, 2012, GAO-12-1018T.

[14] Provisions in Title VI of the act are discussed in CRS Report R40674, *Spectrum Policy in the Age of Broadband: Issues for Congress*, by (name redacted).

[15] P.L. 112-96, §6413.

[16] Actions taken by the NTIA in establishing and assisting FirstNet are documented at http://www.ntia.doc.gov/category/public-safety.

[17] *Federal Register*, Vol. 77, No. 162, August 21, 2012, Notice, http://www.ntia.doc.gov/federal-register-notice/2012/development-programmatic-requirements-state-and-local-implementation-gr.

[18] P.L. 112-96, §6701 (a) (1) (D) "(3).

to give priority to reallocation options that assign spectrum for exclusive, non-federal uses through competitive bidding.[19]

The act has required the establishment of a Technical Panel within the NTIA to review transition plans that each federal agency must prepare in accordance with provisions in the act.[20] The Technical Panel is required to have three members qualified as a radio engineer or technical expert. The Director of the Office of Management and Budget, the Assistant Secretary of Commerce for Communications and Information, and the Chairman of the FCC have been required to appoint one member each.[21] A full discussion and interpretation of provisions of the act as regards the technical panel and related procedural requirements such as dispute resolution have been published by the NTIA as part of the rulemaking process.[22]

Research

The Institute for Telecommunication Sciences, located in Boulder, CO, is the research and engineering arm of NTIA. ITS provides core telecommunications research and engineering services to promote: enhanced domestic competition and new technology deployment; advanced telecommunications and information services; foreign trade opportunities for American telecommunication firms; and more efficient use of spectrum. Current areas of focus include:

- Research, development, testing, and evaluation to foster nationwide public safety communications interoperability;
- Test and Demonstration Networks to facilitate accelerated development of standards for emerging communications devices;
- Analysis and resolution of interference issues; and
- Development and testing of secure federal electronic record repositories.

There are a number of works in progress that could benefit public safety communications. One example is the development and acceptance of international standards for public safety communications. Like the commercial sector, public safety could benefit from global economies of scale if there are international standards. ITS and NIST are providing important leadership in developing global standards for public safety.

World Radio Conference

Spectrum allocation and assignment is not uniquely domestic. Some spectrum allocations are governed by international treaty. Additionally, there is a trend to harmonize spectrum allocations for commercial use across countries through international agreements. Harmonization of radio frequencies is achieved by designating specific bands for the same category of use worldwide.

[19] P.L. 112-96, §6701 (a) (3) "(j).

[20] P.L. 112-96, §6701 (a) (3) "(h).

[21] P.L. 112-96, §6701 (a) (3) "(h) "(3) "(B).

[22] NTIA, Notice of Proposed Rulemaking, July 17, 2012, and replies, docket no. 110627357-2209-03 at http://www.ntia.doc.gov/federal-register-notice/2012/technical-panel-and-dispute-resolution-board-nprm.

With harmonization, consumers and businesses are able to benefit from the convenience and efficiency of having common frequencies for similar uses, thus promoting development of a seamless, global communications market. Spectrum allocation at the national level, therefore, is sometimes coordinated with international spectrum allocation agreements. The Advanced Wireless Services (AWS) auction in the United States, completed in 2006,[23] was the conclusion of a process initiated by an agreement for international harmonization of spectrum bands.[24]

The International Telecommunications Union (ITU), the lead United Nations agency for information and communication technologies, has been vested with responsibility to ensure interference-free operations of wireless communication through implementation of international agreements.[25] The ITU adopts an international table of frequency allocations that shows agreed spectrum uses worldwide, and includes—directly or indirectly—conditions for the use of the allocated spectrum.[26] There are 39 internationally defined wireless services that include broadcasting, meteorological satellite, and mobile services. There is also a domestic table for each country. The United States Table of Allocations is maintained by NTIA.

The World Radio Conference (WRC), held approximately every four years, is the primary forum for negotiating international treaties on spectrum use. Each WRC provides an opportunity to revise the International Radio Regulations and International Table of Frequency Allocations in response to changes in technology and other factors. Modifications to rules from one WRC to the next are part of an ongoing process of technical review and negotiations.

Separate tracks of preparations to develop the U.S. positions on WRC agenda items are handled by the FCC and the NTIA. The Office of Spectrum Management of NTIA, in consultation with federal agencies, reviews the WRC agenda and prepares its comments for the U.S. position. NTIA and the FCC solicit input from the private sector and create working groups to address specific agenda items. NTIA and the FCC submit recommendations to the Department of State. The Department of State coordinates and mediates the development of the U.S. position for each WRC and leads the U.S. delegation at each conference. All three agencies use committees and other means to interact with the private sector. Preparation for each WRC is a collaborative process that includes opportunities for affected parties to comment on and participate in the formation of U.S. policy. The U.S. delegation to each WRC includes representatives from the federal government and the private sector. Each WRC delegation is led by an Ambassador appointed for that purpose by the President.[27]

[23] FCC News, "FCC's Advanced Wireless Services (AWS) Spectrum Auction Concludes," September 18, 2006.

[24] The WRC-2000 agreed on spectrum bands to be harmonized for advanced wireless services, referred to as IMT 2000. See FCC News, "International Bureau Reports on Success of the 2000 World Radio Communications Conference," June 8, 2000, http://www.fcc.gov/Bureaus/International/News_Releases/2000/nrin0009.html.

[25] The GAO notes that "The federal government considers ITU the principal, competent, and appropriate international organization for the purpose of formulating international treaties and understandings regarding certain telecommunications matters*." Better Coordination and Enhanced Accountability Needed to Improve Spectrum Management*, GAO-02-906, September 2003, p. 19, fn. 26.

[26] Description of ITU-R functions are at http://www.itu.int/ITU-R/index.asp?category=information&rlink=rhome&lang=en.

[27] Documentation of preparations is available at each agency's website. NTIA site is http://www.ntia.doc.gov/page/2011/ntia-preparation-world-radiocommunication-conferences. The FCC website is http://www.fcc.gov/encyclopedia/world-radiocommunication-conference-wrc-15.

The most recent conference (WRC-12) concluded on February 17, 2012, with the signing of a new treaty covering accords on technical and regulatory matters and other issues.[28] As is customary, the preliminary agenda for the next WRC meeting was approved during WRC-12.[29] WRC-15 will be held in 2015-2016.

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[28] A summary is provided in a International Telecommunications Union Press Release, " World Radiocommunications Conference Sets Future Course," February 17, 2012 at http://www.itu.int/net/pressoffice/press_releases/2012/10.aspx.

[29] Resolution 805 at http://apps.ero.dk/cpg/.