

Second Interim Progress Report on the Ten-Year Plan and Timetable



U.S. Department of Commerce

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1. Introduction

The National Telecommunications and Information Administration (NTIA) submits this Progress Report pursuant to the Presidential Memorandum issued on June 28, 2010, which directed the Department of Commerce, working with the Federal Communications Commission (FCC), to identify and make available 500 megahertz of spectrum over the next ten years for expanded wireless broadband use.¹ In February 2011, President Obama unveiled the Wireless Innovation and Infrastructure Initiative reinforcing this Administration priority.² In addition, President Obama has proposed new draft legislation called the American Jobs Act of 2011, further emphasizing the goal of making 500 megahertz of spectrum available for wireless broadband.³

Last October, NTIA, with input from the Policy and Plans Steering Group (PPSG),⁴ produced the Ten-Year Plan and Timetable (hereafter referred to as the Plan)⁵ to meet the President's 500 megahertz goal. The Plan identified over 2,200 megahertz of spectrum for evaluation, the process for evaluating candidate bands, and the steps necessary to make selected spectrum available for wireless broadband services. The Plan also took into account the critical importance of protecting vital government missions that rely on spectrum use.⁶

Simultaneously with the preparation of the Plan, NTIA and the federal agencies performed a Fast-Track Evaluation to determine if any of four selected spectrum bands could be made available for wireless broadband use within five years.⁷ The evaluation identified and recommended a total of 115 megahertz be made available for wireless broadband use, contingent upon the allocation of funds for necessary repurposing activities.

¹ Memorandum for the Heads of Executive Departments and Agencies, Unleashing the Wireless Broadband Revolution, (Presidential Memorandum), released June 28, 2010, 75 Fed. Reg. 38387 (July 1, 2010), available at <http://www.whitehouse.gov/the-press-office/presidential-memorandum-unleashing-wireless-broadband-revolution>.

² President Obama Details Plan to Win the Future through Expanded Wireless Access Fact Sheet (Feb. 10, 2011), available at <http://www.whitehouse.gov/the-press-office/2011/02/10/president-obama-details-plan-win-future-through-expanded-wireless-access>.

³ American Jobs Act (Sep. 12, 2011), available at <http://www.whitehouse.gov/sites/default/files/omb/legislative/reports/american-jobs-act.pdf>.

⁴ The Policy and Plans Steering Group (PPSG), an advisory group of senior, political-level Federal officials advising the NTIA Administrator on spectrum policy and strategic plans, serves as a forum for issue resolution and harmonization as determined by the NTIA Administrator. The PPSG advised the Assistant Secretary regarding the Fast-Track bands as well as the Ten-Year Plan and Timetable. See Presidential Memorandum, Section 1(c).

⁵ National Telecommunications and Information Administration, *Plan and Timetable to Make Available 500 MHz of Spectrum for Wireless Broadband* (Nov. 15, 2010), available at http://www.ntia.doc.gov/reports/2010/TenYearPlan_11152010.pdf.

⁶ See Presidential Memorandum at § 1(b), 75 Fed. Reg. at 38388.

⁷ National Telecommunications and Information Administration, *An Assessment of the Near-Term Viability of Accommodating Wireless Broadband Systems in the 1675-1710 MHz, 1755-1780 MHz, 3500-3650 MHz, and 4200-4220 MHz, 4380-4400 MHz Bands* (Nov. 15, 2010), available at http://www.ntia.doc.gov/reports/2010/FastTrackEvaluation_11152010.pdf. NTIA selected the 1675-1710 MHz, 1755-1780 MHz, 3500-3650 MHz, and 4200-4400 MHz bands for study in the Fast-Track Evaluation. There was insufficient time to complete the analysis of the 1755-1780 MHz band within the timeframe of the Fast-Track Evaluation.

NTIA submitted the First Interim Progress Report on the Ten-Year Plan and Timetable on April 1, 2011.⁸ Since then, NTIA, in coordination with the PPSG, ranked spectrum bands for evaluation based on band-selection factors determined by the PPSG, commenced a detailed analysis of the 1755-1850 MHz band – the highest ranked priority band for repurposing – and proposed the next bands for study.

Since the last progress report, the FCC has sought public comment on several spectrum bands, including one on the Fast-Track Evaluation recommendations.⁹ Further, the Administration provided input to draft legislation that supports adequate funding, incentives, and assistance to enable executive branch agencies or other affected entities to complete the actions specified in the Plan.¹⁰

This Second Interim Progress report summarizes activities from April 1, 2011 through September 30, 2011. As described in more detail in the report, the key activity for this period has been the evaluation of the 1755-1850 MHz spectrum band.

⁸ National Telecommunications and Information Administration, *First Interim Progress Report on Ten-Year Plan and Timetable*, (Apr. 1, 2011), available at <http://www.ntia.doc.gov/report/2011/first-interim-progress-report-ten-year-plan-and-timetable>.

⁹ Spectrum Task Force Requests Information on Frequency Bands Identified by NTIA as Potential Broadband Spectrum, Jun 4, 2011, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-10-1035A1.doc.

¹⁰ Plan and Timetable to Make Available 500 MHz of Spectrum for Wireless Broadband, *supra* n. 5.

2. Activities

Since April 1, 2011, NTIA and the participant federal agencies of the PPSG have endeavored to achieve the President’s goal of making 500 megahertz of spectrum available in ten years for wireless broadband according to the Plan. NTIA chaired eight meetings with PPSG and Spectrum Working Group (SWG) members through September 30, 2011.¹¹ These meetings culminated in NTIA prioritizing 1,500 megahertz of federal exclusive use and shared spectrum for evaluation. Table 2-1 shows these spectrum bands.

Table 2-1 Federal and Shared Spectrum Bands Under Investigation		
Frequency Band (MHz)	Amount (megahertz)	Current allocation/usage (federal, non-federal, shared)
406.1-420**	13.9	federal
1300-1390**	90	federal
1675-1710*	35	federal/non-federal shared
1755-1780*	25	federal
1780-1850	70	federal
2200-2290	90	federal
2700-2900**	200	federal
2900-3100	200	federal/non-federal shared
3100-3500	400	federal/non-federal shared
3500-3650*	150	federal
4200-4400**	200	federal/non-federal shared
[4200-4220 & 4380-4400]*		federal/non-federal shared
Total	1473.9	

* Bands selected for Fast-Track Evaluation. For purposes of future analysis, 1755-1850 MHz – consisting of 1755-1780 MHz and 1780-1850 MHz - will be assessed as a single block.

** Band obligated by U.S.-Canada or U.S.-Mexico bilateral agreement(s).

Later, at the June 17, 2011 meeting, the PPSG SWG chair noted industry interest in the 5350-5470 MHz band for expanded Wi-Fi access. Unlicensed Wi-Fi has become a significant component of commercial wireless services by allowing the offloading of data, thus saving capacity on commercial wireless network. The PPSG, during the September 16, 2011 meeting, recommended adding this band to the bands under consideration.

1755-1850 MHz Band Study Progress

NTIA formulated a two-phase approach to evaluate the first block of spectrum chosen for detailed evaluation: the 1755-1850 MHz band. First, agencies completed a 30-day investigation, providing a prioritization of comparable band preferences supported by a rationale and a gross preliminary estimate of the total costs of relocation. All affected federal agencies submitted initial reports by April 2011. After

¹¹ The Spectrum Working Group is a working group of the PPSG.

reviewing the agencies' submissions, NTIA provided a summary of comparable bands from the initial study, and finalized guidance to the agencies to conduct the second phase of study in May 2011. For this phase, the agencies assessed if their operations could be relocated to the selected comparable bands while ensuring continuity of critical operations. They also developed estimated timelines and costs to relocate. NTIA and the FCC provided characteristics of industry systems and wireless broadband to the agencies for their analysis; NTIA also used characteristics of federal systems, industry systems, and wireless broadband to determine compatibility and sharing possibilities both in the comparable bands and in the 1755-1850 MHz band.

The following federal agencies utilize over 3,000 frequency assignments in the 1755-1850 MHz band:¹²

- Department of Commerce (DOC)
- Department of Defense (DOD)
- Department of Energy (DOE)
- Department of Homeland Security (DHS)
- Department of Interior (DOI)
- Department of Justice (DOJ)
- Department of Veterans' Affairs (VA)
- Federal Aviation Administration (FAA)
- Department of Housing and Urban Development (HUD)
- National Aeronautics and Space Administration (NASA)
- Office of Personnel Management (OPM)
- U.S. Agency for International Development (USAID)
- U.S. Capitol Police (USCP)
- U.S. Department of the Treasury
- U.S. Coast Guard (USCG)
- U.S. Postal Service (USPS)

The 1755-1850 MHz band supports many federal functions. The systems on the following list represent the types of federal agency operations that take place in the band.

- Fixed Point-to-Point Microwave
- Military Tactical Radio Relay (TRR) systems
- Air Combat Training Systems (ACTS)
- Precision Guided Munitions (PGM)
- Law Enforcement Mobile Video Surveillance
- High Resolution Video Data Links Telemetry, Tracking, and Command(ing) (TT&C) for federal government space systems
- Air-to-Ground Telemetry (A/G TLM)
- Land mobile robotic video functions such as explosive ordnance disposal

¹² NTIA Government Master File as of September 2011.

- Unmanned Aerial Systems (UASs), Unmanned Aerial Vehicles (UAVs), and Remotely Piloted Vehicles (RPVs)
- Other
 - Electronic Warfare (EW)
 - Software Defined Radio Systems (SDR)
 - Tactical Targeting Networking Technology (TTNT)

By September 9, 2011, agencies submitted reports providing timelines, estimated costs, and prerequisites to accommodate relocation of their operations. NTIA will summarize the results of its analysis of the 1755-1850 MHz band study and provide recommendations in a separate report this fall.

FCC Activity on Making Spectrum Available for Wireless Broadband

In response to NTIA's formal recommendation¹³ that the FCC repurpose the 1695-1710 MHz and 3550-3650 MHz bands for wireless broadband use on a shared basis, the FCC issued a Public Notice in March 2011 seeking comment on the steps it could take to best promote wireless broadband deployment for these bands.¹⁴ The FCC received initial responses on April 22, 2011 and released another notice asking for reply comments in June 2011.¹⁵ The FCC is in the process of reviewing those comments. Further FCC action on Fast-Track bands will await outcome of the 1755-1850 MHz band study.

The FCC's focus during this reporting period has been to implement the spectrum recommendations of the National Broadband Plan.¹⁶ This has included technical support for Congressional consideration of providing the Commission authority to conduct incentive auctions particularly with regard to the TV broadcast and Mobile Satellite Service spectrum currently held by commercial licensees. Congress has proposed draft legislation to give FCC the authorization for conducting these incentive auctions. Consistent with the National Broadband Plan, the Commission also added Fixed and Mobile allocations to the 2 GHz Mobile Satellite band¹⁷ and adopted rule changes to increase the flexibility of wireless backhaul services operating in several spectrum bands.¹⁸

¹³ See Letter from Karl B. Nebbia, Associate Administrator Office of Spectrum Management, National Telecommunications and Information Administration, to Julius Knapp, Chief, Office of Engineering and Technology, Federal Communications Commission (Jan. 19, 2011), available at <http://www.ntia.doc.gov/fcc-filing/2011/letter-regarding-reallocation-115-mhz-spectrum>.

¹⁴ Spectrum Task Force Requests Information on Frequency Bands Identified by NTIA as Potential Broadband Spectrum, March 8, 2011, available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2011/db0308/DA-11-444A1.pdf.

¹⁵ Spectrum Task Force Requests Information on Frequency Bands Identified by NTIA as Potential Broadband Spectrum, *supra* n. 9.

¹⁶ See Connecting America: The National Broadband Plan (Chapter 5: Spectrum), March 16, 2010, available at <http://www.broadband.gov/plan/5-spectrum/>.

¹⁷ See In the Matter of Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz, *Report and Order*, ET Docket No. 10-142, 26 FCC Rcd 5710 (2011).

¹⁸ See Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees; Petition for Rulemaking filed by Fixed Wireless Communications Coalition to Amend Part 101 of the Commission's Rules to Authorize 60 and 80 MHz Channels in Certain Bands for Broadband Communications, *Report and Order, Further Notice of Proposed Rulemaking, and Memorandum Opinion and Order*, WT Docket No. 10-153, RM-11602, 26 FCC Rcd 11614 (2011).

Additionally, the FCC also released a Public Notice inviting technical input on approaches to maximize broadband use of mixed/mobile spectrum allocations in the 2 GHz band range.¹⁹ Possible follow-on FCC actions include conducting further rulemakings; modifying the U.S. National Table of Frequency Allocations; and promulgating incumbent relocation policy, requirements, and auction rules where appropriate.

International Activities

NTIA worked with other agencies and the FCC to draft a proposal for a broadband wireless access agenda item and provided it to the Department of State to submit as a U.S. proposal to the International Telecommunication Union (ITU) World Radiocommunication Conference (WRC)-2015 to make additional international allocations of spectrum for wireless broadband. The U.S. proposal seeks additional allocations to the mobile service on a primary basis and places no limitations on the frequency bands to be considered. The U.S. proposal has four basic objectives:

- flexibility in terms of frequency bands to be considered;
- harmonization through common spectrum allocations to the mobile service;
- joint study effort to ensure consideration of all critical incumbent services; and
- timely action at WRC-15.

NTIA, in collaboration with the Department of State,²⁰ the FCC, and federal agencies is actively promoting these objectives at regional and bilateral meetings leading up to WRC-12 and is seeking adoption by the Inter-American Telecommunications Commission (CITEL)²¹ as an Inter-American Proposal to the conference.

FAA Analysis on 4200-4400 MHz Band

Since April 2011, the FAA has been conducting a technical analysis of the 4200-4400 MHz band and preparing for testing altimeters with assistance from the affected federal agencies. To date, the FAA has acquired all test hardware, developed test plans and schedules, and worked with industry partners. Next, the FAA plans to prepare test plans and conduct testing.

¹⁹ Spectrum Task Force Public Notice inviting Technical Input on Approaches to Maximize Broadband use of Fixed Mobile Allocations in the 2 GHz range, May 11, 2011 *available at* <http://www.fcc.gov/document/spectrum-task-force-invites-technical-input-approaches-maximize-broadband-use-fixedmobile-s>.

²⁰ Other issues affecting repurposing spectrum to wireless broadband, include border issues, these require the United States to work with bordering countries. At Mexico's request, the Department of State, in collaboration with the FCC, NTIA, and other federal agencies, held discussions regarding future use of the 1755-1850 MHz band along the border area in May and August of 2011.

²¹ Comisión Interamericana de Telecomunicaciones (Inter-American Telecommunications Commission), also known as CITEL, is an entity of the Organization of American States (OAS). It coordinates telecommunications related mandates of the OAS General Assembly and those enacted during the Summit of the Americas.

Band Evaluation and Prioritization and Next Bands for Study

NTIA, in coordination with the PPSG-SWG, developed a methodology for prioritizing the bands for repurposing, the band selection factors, and their associated descriptors. NTIA, with assistance from the federal agencies in the PPSG-SWG, evaluated the bands identified in Table 2-1 and developed an overall ranking based on the band-selection factors enumerated in Table 2-2.

Table 2-2 Band-Selection Repurposing Factors for Non-Federal Exclusive Use and Shared Use	
Non-federal exclusive use	Non-federal/federal shared use
<ul style="list-style-type: none"> • Available bandwidth • Estimated revenue potential • Technology • Comparable spectrum • Relocation costs • Relocation achievable within ten years • Level of difficulty of required international agreements 	<ul style="list-style-type: none"> • Shared bandwidth • Geographical coverage • Estimated revenue potential • Technological complexity • Relocation achievable within ten years • Level of difficulty of required international agreements • Sharing cost

From the bands listed in Table 2-1, NTIA prioritized twelve blocks of spectrum to consider for repurposing to wireless broadband systems for FCC-licensed non-federal use and non-federal (licensed or unlicensed)/federal sharing use.²² Table 2-3 lists the bands in priority order.

Table 2-3 Prioritization Results for Repurposing Federal and Shared Spectrum Bands	
Licensed non-federal exclusive use bands	Non-federal/federal shared use bands
1. 1755-1850 MHz	1. 1300-1370 MHz
2. 1695-1710 MHz	2. 1675-1695 MHz
3. 406.1-420 MHz	3. 2700-2900 MHz
4. 1370-1390 MHz	4. 2900-3100 MHz
5. 4200-4400 MHz	5. 3100-3500 MHz
6. 3500-3650 MHz	6. 2200-2290 MHz

NTIA staff also reviewed the list of priority bands in Table 2-3 during this reporting period, and noted that other bands and solutions may have the potential to provide benefits to commercial users with less disruption to federal operations. The PPSG will consider the below possibilities in conjunction with the PPSG prioritized bands in Table 2-3 as they determine the next band to study.

Specifically, the 5350-5470 MHz band may provide expanded opportunities for unlicensed Wi-Fi users. Wi-Fi technologies currently operate in surrounding bands and must comply with existing rules in order to protect co-channel and adjacent operations. To implement this, NTIA, FCC, federal agencies, and industry would need to determine the feasibility of expanding similar Wi-Fi operations into the 5350-5470 MHz band.

²² Bands repurposed for non-federal exclusive use may have some residual federal operations at specific locations.

The Fast-Track Evaluation study for geographic sharing of the 3550-3650 MHz band with wireless broadband resulted in exclusion zones along coastal areas of the United States, reducing wireless coverage in those areas.²³ NTIA, FCC, and the impacted federal agencies could re-evaluate the 3550-3650 MHz band to determine the feasibility of implementing appropriate technical, regulatory, and enforcement measures that would allow industry to take responsibility for their own interference protection to increase wireless broadband coverage areas around specified exclusion zones. For the 2700-2900 MHz band, the NTIA in conjunction with the PPSG may consider determining the feasibility of re-packing radars so that they operate closer in frequency to open up a portion of the band for commercial use.

Additionally, the PPSG listed the 1300-1370 MHz band to study for sharing and the 1370-1390 MHz band for potential relocation. Sharing the entire 90 megahertz of spectrum across these two bands may achieve greater benefits; however, there are differences in use of the 1300-1370 MHz and the 1370-1390 MHz bands that the PPSG must take into account if they prioritize these two bands as one for the next band to study for sharing.

²³ Fast-Track Evaluation, *supra* n. 7.

Actions Completed

Of the planned actions described in the Ten-Year Plan and Timetable, Table 2-4 shows the completed actions.²⁴

Table 2-4 Completed Actions to Date	
First Interim Progress Report on the Ten-Year Plan and Timetable	April 1, 2011
FCC released a Report and Order on Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz and 2000-2020 MHz and 2180-2200 MHz	April 6, 2011
Updated guidance to federal agencies on comparable spectrum for bands for relocation to PPSG and PPSG-SWG	April 14, 2011
Chaired eight meetings with PPSG-SWG	April 8 - September 16, 2011
FCC received industry response on Spectrum Task Force Requests Information on Fast-Track Bands ²⁵	April 22, 2011
Finalized U.S. Proposal for submission to CITELE to add new agenda items for WRC-2015 to PPSG-SWG ²⁶	April 27, 2011
Federal agencies' reports on comparable band(s) – initial	May 6, 2011
FCC Spectrum Task Force Public Notice inviting Technical Input on Approaches to Maximize Broadband Use of Fixed/Mobile Spectrum Allocations in the 2 GHz Range	May 20, 2011
Federal agencies provided verbal status on their evaluation of the priority band at the PPSG Meetings	June 17 and July 15, 2011
Evaluated and prioritized bands for sharing	July 29, 2011
Federal agencies' final reports on priority band 1755-1850 MHz	September 9, 2011
Agencies' preliminary estimates of costs on priority band 1755-1850 MHz	September 9, 2011
PPSG recommendation on priority band 1755-1850 MHz	September 16, 2011
Determination of strategy for next bands to study	September 16, 2011
Detailed analysis exit evaluation	September 30, 2011
NTIA draft detailed analysis report for 1755-1850 MHz band	September 30, 2011

²⁴ Table 8-1, Ten-Year Plan and Timetable.

²⁵ Spectrum Task Force Requests Information on Frequency Bands Identified by NTIA as Potential Broadband Spectrum, *supra* n. 8.

²⁶ NTIA consulted with the FCC and federal agencies on draft proposed agenda items.

Planned and Ongoing Actions

NTIA, FCC, the PPSG, the PPSG-SWG, and the federal agencies continue to work together to achieve the objectives and timetable set out by the President and to identify and analyze spectrum bands for repurposing and specific exclusive use. Table 2-5 summarizes the status and plans of the remaining actions.²⁷

²⁷ Table 8-1, Ten-Year Plan and Timetable.

Table 2-5 Planned and Ongoing Actions	
NTIA	Status
Execution/Implementation of Ten-Year Plan and Timetable	Ongoing
Assess and identify international implications	Ongoing
Selection(s) – additional band(s) for analysis as needed ²⁸	As needed
Conduct technical analysis of bands	Ongoing
Second Interim Progress Report on the Ten-Year Plan and Timetable	Scheduled for October 1, 2011
Decision #1 – High Priority Band(s) to be Repurposed (1755-1850 MHz)	Scheduled for October 1, 2011 ²⁹
Consolidated NTIA analysis report for 1755-1850 MHz band	Scheduled for November 2011
Identify next band(s) for study	Scheduled for January 2012
Decision #2 – Next Priority Band(s) to be Repurposed	Scheduled for September 2012
Develop transition plan (regulatory) ³⁰	Ongoing
First Annual Progress Report on the Ten-Year Plan and Timetable	Scheduled for October 1, 2012
Second Annual Progress Report on the Ten-Year Plan and Timetable	Scheduled for October 1, 2013
Decision Point(s) – additional bands to be repurposed (as needed)	Scheduled for January 2014
FCC Actions	Status
Identify candidate bands and seek input from public (technical and operational)	Ongoing
Provide data on non-federal systems	Ongoing
Initiate allocation rulemaking in order of priority	Ongoing
Initiate service rulemaking in order of priority	Ongoing
Issue authorizations for wireless broadband (via auction as appropriate)	TBD
Transition to non-federal entities	TBD
Federal Agencies	Status
Provide data on federal systems	Ongoing
FAA technical analysis on the 4200-4400 MHz band with assistance from the affected federal agencies	Ongoing
Federal agency study of selected bands for repurposing ³¹	As needed
Federal agency feedback on selected bands for repurposing ³²	As needed
Start developing detailed transition plans	Scheduled for October 1, 2011 ³³
Submit detailed cost estimates based upon decision for repurposing	Scheduled for August 2012 ³⁴

²⁸ The next band(s) for repurposing may be depend on the outcome of priority band 1755-1850 MHz and/or pending legislation.

²⁹ Recommendation under interagency review.

³⁰ Prior to completion of detailed transition plans and detailed cost estimates, Federal law prescribes particular procedures in connection with the identification of spectrum with comparable technical characteristics. *See, e.g.*, National Defense Authorization Act (NDAA), Pub. L. No. 106-65 (2000).

³¹ The next band(s) for repurposing may be depend on the outcome of priority band 1755-1850 MHz and/or pending legislation. Prior to completion of detailed transition plans and detailed cost estimates, Federal law prescribes particular procedures in connection with the identification of spectrum with comparable technical characteristics. *See, e.g.*, National Defense Authorization Act (NDAA), Pub. L. No. 106-65 (2000). Agency relocation of equipment is contingent upon allocation of funds necessary for repurposing activities.

³² *Id.*

³³ *Id.*

³⁴ *Id.*