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The National Spectrum Strategy for Wireless Technologies: Priorities, Objectives, and Congressional Considerations

Most wireless technologies and services, including mobile communications, radionavigation systems, radar systems, satellites, and radio and television broadcasting, rely on a range of radiofrequency spectrum to transmit signals and data. The Communications Act of 1934, as amended, assigns authorities for domestic spectrum management to the Federal Communications Commission (FCC) for nonfederal spectrum users (47 U.S.C. §303) and the President for federal users (47 U.S.C. §305(a)). In October 2018, President Trump issued a memorandum directing the Secretary of Commerce, working through the National Telecommunications and Information Administration (NTIA), to develop “a long-term National Spectrum Strategy that includes legislative, regulatory, or other policy recommendations.” On November 13, 2023, President Biden revoked the 2018 memorandum and issued a new one, directing the executive branch “to modernize the usage of spectrum,” including the development of a National Spectrum Strategy (NSS). It further directs the Secretary of Commerce, acting through NTIA, in collaboration with the FCC and in coordination with other federal agencies, to publish an NSS Implementation Plan by March 12, 2024.

On November 13, 2023, the Secretary of Commerce submitted the NSS to the President. It represents a high-level roadmap for modernizing federal spectrum policy, articulating priorities for spectrum access, use, and management. The NSS describes strategic objectives and policy priorities under four “pillars.”

- Pillar One: creating and maintaining a spectrum pipeline to meet existing and near-term spectrum needs.
- Pillar Two: establishing a national collaborative framework that supports long-term spectrum planning.
- Pillar Three: facilitating research and development (R&D) on spectrum-related technologies, with an emphasis on spectrum sharing.
- Pillar Four: preparing a spectrum workforce and improving the public’s understanding of spectrum.

Federal Spectrum Authorities

The NSS reaffirms the statutory roles of the FCC and NTIA in national spectrum management, stating that its implementation “must be consistent with, and in no way limit” the FCC’s “role as an independent agency that is the exclusive regulator of nonfederal spectrum use” or NTIA’s “role as the sole agency responsible for authorizing federal spectrum use.” The NSS further recognizes the statutory roles and responsibilities of other agencies to carry out missions that rely on spectrum access.

NTIA’s authority derives from 1978 Executive Order 12046, in which the President transferred the federal spectrum authority to the Secretary of Commerce, but reserved the authority to make final disposition of appeals concerning federal frequency assignments. The Secretary of Commerce then delegated the authority to NTIA, which Congress codified in the Telecommunications Authorization Act of 1992 (P.L. 102-538), Title I, Part A (known as the NTIA Organization Act).

Pillar One: Spectrum Pipeline

The NSS identifies a “spectrum pipeline”—spectrum bands in different stages of consideration for repurposing—as a solution to meet the growing demand for spectrum. It defines *repurposing* as “allowing new or additional uses [of spectrum] through relocation and/or sharing [of a particular spectrum band].” The NSS limits consideration to bands currently with federal allocations “for more intensive federal or nonfederal use.” The NSS does not examine bands previously made available by the FCC for nonfederal use for repurposing.

The NSS identifies a total of 2,786 megahertz of spectrum bandwidth in five bands (see **Table 1**) for in-depth, near-term study to determine whether they are suitable for repurposing. The NSS notes that such a feasibility study may not ultimately result in repurposing.

Table 1. Summary of Five Bands in the NSS Pipeline

Band ^a	Current Use	Use Under Study
3.1-3.45 ^b	Primarily for DOD radar systems ^c	Expanded shared federal/nonfederal uses
5.03-5.091	Various shared federal/nonfederal uses	Federal and nonfederal UAS operations ^d
7.125-8.4	Various exclusively federal uses	Commercial wireless broadband service
18.1-18.6	Federal and nonfederal satellite operations ^e	Expanded satellite operations ^f
37.0-37.6	Various shared federal/nonfederal uses	Expanded shared federal/nonfederal uses

Sources: *The National Spectrum Strategy*; *Federal Government Spectrum Use Reports 225 MHz-7.125 GHz*; *FCC Online Table of Frequency Allocations*.

Notes:

- a. Bands are shown in units of gigahertz (GHz).
- b. For more information, see CRS In Focus IF12350, *Repurposing 3.1-3.55 GHz Spectrum: Issues for Congress*.

- c. DOD refers to the Department of Defense.
- d. UAS refers to an unmanned aircraft system.
- e. These are primarily space-to-earth operations.
- f. These would include space-to-space operations.

Pillar Two: Collaborative Framework

The NSS calls for the development of “a new collaborative framework that leverages ... existing advisory structures, identifies new groups that would aid long-term planning, and defines the interactions among them.” Existing advisory bodies, such as NTIA’s Interdepartment Radio Advisory Committee and the newly created Interagency Spectrum Advisory Council, would maintain their current interagency coordination.

The framework, once implemented, is to engage “all stakeholders”—including those in the public and private sectors; state, local, and tribal governments; rural, tribal, Native, and unserved and underserved communities—in national-level spectrum planning to incorporate “future, as well as near- and mid-term, spectrum needs into the decision-making process.” The NSS also calls for the development evidence-based methods that rely on “trustworthy” data to support spectrum allocation decisions.

Pillar Three: Technology Development

The NSS calls for federal investments and public-private collaboration on research and development (R&D) of new technologies that can expand the overall capacity or usability of spectrum, with an emphasis on dynamic spectrum sharing (DSS). DSS technologies allow users to share spectrum across frequencies, time, locations, uses, and networks. A DSS system can adjust spectrum utilization in real time to prioritize certain users or uses and respond to changing circumstances.

To advance spectrum sharing and access, the NSS directs the U.S. government to complete a “moonshot” R&D effort in collaboration with industry within 12-18 months. This includes the establishment of a national DSS testbed to assesses spectrum access technologies through experimentation across a range of possible bands.

The NSS directs agencies to improve spectrum efficiency and coexistence. For example, NTIA—in collaboration with the FCC, other agencies, and industry—is to explore modernizing regulations to facilitate DSS, assist agencies to achieve DSS compatibility, advance spectrum-sharing approaches in global standard bodies, and develop a common spectrum management platform for shared spectrum access. The White House Office of Science and Technology Policy is to develop a National Spectrum R&D Plan to identify key areas for coordinated public-private R&D based on stakeholder recommendations.

Pillar Four: Spectrum Workforce

The NSS encourages collaboration among industry stakeholders, academia, and government entities to develop a well-trained spectrum workforce. The NSS calls for the federal government (without identifying which agency) to develop and periodically update a National Spectrum Workforce Plan for “the full range of operational, technical, and policy positions involved in spectrum-related

activities.” It calls for federal agencies to assess the need to modify federal career series to retain and attract talent. Federal agencies with science, technology, engineering, and mathematics (STEM) education programs are to introduce spectrum in curricula. The NSS prioritizes training and recruiting members of underrepresented groups to enhance workforce diversity.

The NSS directs “spectrum-regulating agencies” to develop ways to enhance decisionmakers’ understanding of spectrum policy, regulation, and management; encourages agencies that rely on spectrum to ensure staff spectrum expertise; and directs the federal government to improve public awareness and understanding of spectrum.

Considerations for Congress

Some policy objectives laid out in the NSS align with existing congressional mandates. For example, Congress has directed the Secretary of Commerce, through NTIA, to identify and recommend federal spectrum for reallocation that the FCC can auction and license to the private sector (47 U.S.C. §923). Congress created the Spectrum Relocation Fund (SRF) out of FCC auction proceeds to support federal agency identification of potential spectrum to relocate, plan reallocation activities, and reconfigure equipment (47 U.S.C. §928). It is unclear whether agencies may use the SRF for general spectrum access and R&D activities to comply with NSS Pillar Three guidance.

Some Members of Congress have reacted to the NSS. At an NTIA oversight hearing on December 5, 2023, House Energy and Commerce (E&C) Committee Chair Cathy McMorris Rodgers requested information on agency studies regarding the 3.1-3.45 GHz (lower 3 GHz) band for shared use. In the context of spectrum studies highlighted in the NSS Pillar One, House E&C Ranking Member Frank Pallone stated that these studies “if done responsibly take time but minimize disputes.” House E&C Communications and Technology Subcommittee Ranking Member Doris Matsui said that the NSS should be implemented to ensure federal agencies have spectrum tools for their missions while providing commercial spectrum for innovative services. House Armed Services Committee Chair Mike Rogers in a statement asserted that any studies stemming from the NSS, especially those for the lower 3 GHz band, must ensure DOD’s mission remains paramount.

Congress may be concerned about whether the NSS addresses two long-standing congressional spectrum policy considerations: support for both federal agency missions and private sector activity, and the development of forward-looking and coordinated federal spectrum policy. If Congress chooses to codify some actionable items in the NSS or add additional directions and priorities through legislation, possible options could include setting deadlines for any studies of shared use or repurposing of bands identified in the NSS; identifying additional bands for study; directing agencies to report on spectrum sharing and repurposing activities; expanding use of the SRF for spectrum R&D; and directing NTIA and the FCC to adopt new models or processes to improve interagency spectrum policy coordination.

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