

Advanced Wireless Services (AWS-3) Spectrum: Issues for Congress

May 13, 2025

Congressional Research Service

<https://crsreports.congress.gov>

R48534



R48534

May 13, 2025

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Radio spectrum is the foundation of wireless communications. It refers to the range of frequencies used to transmit and receive radio signals that carry voice and data communications from one location to another wirelessly. Technologies such as cell phones, Wi-Fi routers, radionavigation systems on ships, military radar systems, and police radios transmit on different radio frequencies. To ensure that all users have access to spectrum and their transmissions do not interfere with one another, governments regulate spectrum use. In the United States, the Federal Communications Commission (FCC) manages nonfederal spectrum use (e.g., commercial and state and local access to and use of spectrum), and the National Telecommunications and Information Administration (NTIA) manages federal spectrum use.

In the late 2000s, as smartphones were emerging and adoption was increasing, the U.S. government recognized the need for additional spectrum for mobile broadband use. In 2010, the FCC released *The National Broadband Plan*, calling on the U.S. government to make available 500 megahertz for commercial broadband use. In 2012, in Title VI of the Middle Class Tax Relief and Job Creation Act of 2012 (P.L. 112-96), Congress named several bands for reallocation from federal to nonfederal use and directed the FCC to work with NTIA to reallocate those bands for mobile broadband use. Among the bands identified were the Advanced Wireless Services (or AWS-3) band, which includes the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz bands.

The FCC auctioned the AWS-3 band in 2015. In total, 70 bidders qualified, some of which were eligible for small business bidding credits (i.e., discounts on bids). After the auction, several other bidders challenged two bidders' small business status and rights to bidding credits. Upon review, the FCC found that the two entities were under de facto control by DISH Network Corporation and denied their small business status and bidding credits. The two entities, which had won over 700 of the 1,611 licenses awarded, paid for some licenses but selectively defaulted on 197 others. The two entities challenged the FCC decision in court. The D.C. Circuit rejected the entities' challenge in 2022, and the U.S. Supreme Court denied review in June 2023. Since the FCC's auction authority expired in March 2023, the defaulted licenses remained in the FCC's inventory.

In the Servicemember Quality of Life Improvement and National Defense Authorization Act for Fiscal Year 2025 (P.L. 118-159, Title LIV), enacted December 23, 2024, Congress directed the FCC to initiate an auction of the available AWS-3 frequencies within 18 months of enactment (June 23, 2026). Congress also authorized the FCC to borrow from the Treasury \$3.08 billion for the Secure Communications Networks Act Reimbursement program (also called the "rip-and-replace" program)—a program to remove untrusted equipment from the networks of small U.S. telecommunications providers—and the Department of Commerce to borrow \$220 million for regional technology hubs. Per P.L. 118-159, proceeds from the AWS-3 auction would be used to repay the Treasury, and if the auction yields more than \$3.3 billion, Congress authorized an additional \$280 million to support regional technology hubs and the remainder to help reduce the federal deficit.

On February 27, 2025, the FCC proposed rules for the auction of the remaining AWS-3 frequencies. The FCC sought comment on criteria for small businesses, bidding credits for small businesses and rural service providers, and creation of a tribal licensing window—an opportunity for tribes to obtain spectrum licenses prior to the auction. Proponents say these provisions could "level the playing field" for small bidders, prevent consolidation of spectrum with a few large wireless providers, and expand services in rural and tribal regions. Others say that if adopted, these provisions could affect the auction timing and proceeds, including congressional directives in P.L. 118-159 to repay the \$3.08 billion in borrowed funds for the rip-and-replace program. Still others argue that the FCC lacks statutory authority for some provisions, such as the tribal window. Congress may consider whether such provisions (e.g., small business bidding credits, rural business credits, tribal window) are appropriate and should be expressly included in this and future spectrum auction legislation, or whether it should allow the FCC, an independent agency with auction expertise, to decide when such provisions are appropriate and in the public interest.

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Introduction

Radio spectrum is the foundation of wireless communications. It refers to the range of frequencies used to transmit and receive radio signals (e.g., voice and data communications) from one location to another wirelessly. Technologies such as cell phones, Wi-Fi routers, radio systems on ships, Department of Defense (DOD) radar systems, and police radios transmit on different radio frequencies. To ensure that all users have access to spectrum and their transmissions do not interfere with one another, governments regulate spectrum use. In the United States, the Federal Communications Commission (FCC) manages nonfederal spectrum use (e.g., commercial, state, and local access to and use of spectrum), and the National Telecommunications and Information Administration (NTIA) manages federal spectrum use.

Radio frequencies in the Advanced Wireless Services (AWS-3) spectrum could help address growing demand for spectrum in the United States. In the Servicemember Quality of Life Improvement and National Defense Authorization Act for Fiscal Year 2025 (P.L. 118-159, Title LIV), enacted December 23, 2024, Congress directed the FCC to initiate an auction of the available AWS-3 frequencies within 18 months of enactment (June 23, 2026).

This report provides background on AWS-3 spectrum. It discusses the initial auction of AWS-3 spectrum in 2015 and bidding issues raised during the auction that resulted in 197 licenses being returned to the FCC, the FCC's progress in implementing the auction of the returned AWS-3 frequencies required by P.L. 118-159, and issues for Congress as the FCC sets auction rules.

Background on AWS-3 Spectrum (2010-2012)

Below is brief background on the AWS-3 spectrum, how the bands were originally identified, and congressional actions to move the AWS-3 band to auction.

FCC Identifies AWS Bands in National Broadband Plan

With the emergence of smartphones in the mid-2000s, ownership of mobile devices and use of mobile data increased, which led to increased demand for spectrum.¹ In 2010, the FCC released *The National Broadband Plan*, which called for more spectrum to be made available for mobile broadband use.² The FCC recommended that the U.S. government make 500 megahertz of spectrum available for mobile broadband use within the next 10 years to meet consumer and business demands for broadband services and to spur U.S. innovation, economic growth, and leadership in wireless technologies.³ The FCC recommended that several bands be allocated or designated for mobile communications use and auctioned to wireless service providers. Among the bands identified in *The National Broadband Plan* was the 2155-2175 MHz band—a single band that the FCC called (at the time) “AWS-3” spectrum.⁴

¹ Thomas K. Sawanobori and Robert Roche, *Mobile Data Demand: Growth Forecasts Met*, June 22, 2015, pp. 1-5, <https://api.ctia.org/docs/default-source/default-document-library/062115mobile-data-demands-white-paper-new.pdf>.

² Federal Communications Commission (FCC), *Connecting America: The National Broadband Plan*, March 17, 2010, <https://www.fcc.gov/general/national-broadband-plan> (hereinafter FCC, *National Broadband Plan*).

³ FCC, *National Broadband Plan*, p. 29.

⁴ FCC, *National Broadband Plan*, p. 86. With the emergence of cell phones, the FCC designated several bands for advanced wireless services (AWS). Typically, these bands are paired, where one band is used for uplink (transmissions from a user device to a cell tower) and the other for downlink (transmissions from a cell tower to a user device). For a description of the bands designated for AWS, see FCC, “Advanced Wireless Services (AWS),” <https://www.fcc.gov/wireless/bureau-divisions/broadband-division/advanced-wireless-services-aws>.

The FCC said there was potential to pair the AWS-3 spectrum with certain federal bands, which would (1) align U.S. allocations with global allocations of spectrum and (2) enable providers in the United States to use the existing ecosystem of equipment already developed and operating in those bands, which could expedite service availability. Specifically, the FCC wrote

Potential synergies exist between the AWS-3 band [2155-2175 MHz] and spectrum currently allocated to federal use [in the 1700 MHz band]. There are a number of countries that have allocated spectrum in the 1710–1780 MHz band for commercial use and devices already exist in the international market for that spectrum. Consequently, pairing the AWS-3 band [2155-2175 MHz] with spectrum from the [federal] 1755–1780 MHz band has the potential to bring benefits of a global equipment ecosystem to this band.⁵

The FCC recommended that NTIA—an agency in the Department of Commerce—working with the FCC should examine whether this pairing was possible. The FCC asserted that if after studying the band, the FCC and NTIA found there was a strong possibility that the federal spectrum band (1710-1780 MHz) could be paired with the AWS-3 band (2155-2175 MHz), then the NTIA should commence reallocation proceedings—that is, to repurpose the band from federal to nonfederal use. If, however, the agencies found that pairing was not feasible, then the FCC would adopt final rules to auction the AWS-3 spectrum on a stand-alone basis.⁶

NTIA Issues 10-Year Plan to Make Spectrum Available

In June 2010, President Barack Obama issued a memorandum, “Unleashing the Wireless Broadband Revolution,” which directed the NTIA to coordinate with the FCC to make 500 megahertz of spectrum available for wireless broadband use within 10 years, among other things.⁷

In October 2010, the NTIA published a 10-year plan to make 500 megahertz of spectrum available for mobile broadband use.⁸ The NTIA identified about 20 federal bands to study for repurposing from federal to nonfederal use or for shared federal and nonfederal use. These included

- 2155-2175 MHz, the AWS-3 band;
- 1755-1780 MHz, the band that was (at the time) supporting federal use—the band that the FCC suggested be shared with the AWS-3 band; and
- 1675-1710 MHz, a band that was supporting federal and nonfederal use.⁹

In its 10-year plan, the NTIA targeted some of the 20 federal bands for study. At the request of the Office of Management and Budget (OMB), the National Economic Council, and the Office of Science and Technology Policy, NTIA conducted fast-track evaluations of several bands to make them available for commercial wireless use within five years. Among the bands identified for fast-track evaluation were

⁵ FCC, *National Broadband Plan*, p. 86.

⁶ FCC, *National Broadband Plan*, p. 87.

⁷ Executive Office of the President, “Unleashing the Wireless Broadband Revolution,” presidential memorandum, June 28, 2010, <https://obamawhitehouse.archives.gov/the-press-office/presidential-memorandum-unleashing-wireless-broadband-revolution>.

⁸ National Telecommunications and Information Administration (NTIA), *Plan and Timetable to Make Available 500 Megahertz of Spectrum for Wireless Broadband*, October 2010, <https://www.ntia.gov/report/2010/ten-year-plan-and-timetable-make-available-500-megahertz-spectrum-wireless-broadband-presidents> (hereinafter NTIA Ten-Year Plan).

⁹ NTIA, *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*, October 2010, p. vi, https://www.ntia.gov/files/ntia/publications/fasttrackevaluation_11152010.pdf.

- 1755-1780 MHz; and
- 1675-1710 MHz.¹⁰

Congress Expedites Spectrum Reallocation and Auction

In the Middle Class Tax Relief and Job Creation Act of 2012 (P.L. 112-96, Title VI, §6401(a)(3)), enacted February 22, 2012, Congress expedited the reallocation of spectrum from federal to nonfederal use. The act directed the Secretary of Commerce to submit, within a year of enactment, a report to the President identifying 15 megahertz of spectrum within the band of frequencies from 1675-1710 MHz for reallocation from federal to nonfederal use. Section 6401(a)(1) directed the President to withdraw or modify the assignment of spectrum for federal agency users in the band to make some or all of the band available for commercial use and to notify the FCC when the withdrawal or modification of the frequency assignment was complete. Section 6401(b)(1) directed the FCC to reallocate that spectrum to commercial use and, through a system of competitive bidding (i.e., auctions), to grant licenses making the spectrum available for commercial use within three years of enactment (February 2015).

Congress identified several other bands in the act that should be considered for commercial use, including the AWS band (2155-2180 MHz). Congress also directed the Secretary of Commerce and the FCC to each identify 15 megahertz of spectrum for commercial use. Thus, Congress gave the agencies discretion to select which bands should be reallocated from federal to nonfederal use. Pursuant to P.L. 112-96, the Department of Commerce, through NTIA, issued a report in February 2013, identifying 15 megahertz of spectrum; it selected a portion of the 1675-1710 MHz band—specifically, 1695-1710 MHz—for reallocation from federal to commercial use.¹¹

Under the Commercial Spectrum Enhancement Act (CSEA; P.L. 108-494, Title II), enacted December 23, 2004,¹² a Spectrum Relocation Fund (SRF) was established to compensate federal agencies for the costs of relocating or reconfiguring systems if their spectrum is reallocated to commercial use and their systems are affected, using spectrum auction proceeds. P.L. 112-96 amended the CSEA to allow federal agencies to use the SRF not only for costs associated with relocating from a band but also for costs associated with *sharing* a band, to incentivize sharing. In addition, agencies could use the SRF for pre-auction costs, such as planning, engineering studies, and economic analyses, as well as for replacement of technologies, alternative technologies, and state-of-the-art technologies. To receive SRF funding, agencies complete transition plans with estimates of costs and timelines, which are approved by NTIA and OMB. NTIA notifies the FCC of estimates and transition timelines.¹³ The FCC uses these estimates to set (minimum) reserve prices for auctions to ensure that auction proceeds cover 110% of agency relocation, sharing, and other related costs.

Before the reallocation process began, there were federal systems operating in the 1695-1710 MHz band; NTIA determined, with the input of agencies affected by the reallocation, that some

¹⁰ NTIA, *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*, October 2010, p. iv, https://www.ntia.gov/files/ntia/publications/fastrackevaluation_11152010.pdf.

¹¹ NTIA, *Identification of 15 Megahertz of Spectrum Between 1675 and 1710 MHz for Reallocation from Federal Use to Non-Federal Use Pursuant to Section 6401(A) Of The Middle Class Tax Relief And Job Creation Act Of 2012: Report to the President*, February 2013, https://www.ntia.doc.gov/files/ntia/publications/1675-1710_mhz_report_to_president_02192013.pdf.

¹² P.L. 112-96, Title VI, Subtitle G, extends allowable costs eligible for reimbursement as a result of relocation.

¹³ NTIA, *Commercial Spectrum Enhancement Act: Annual Progress Report For 2022*, October 2023, p. 6, <https://www.ntia.gov/sites/default/files/publications/2022-csea-report.pdf>.

of these systems would continue to operate, while others would be relocated to alternative bands.¹⁴ Where federal systems would continue to operate in the band, the FCC and NTIA developed agreements to share the spectrum, with some protection for federal systems. For example, in the 1695-1710 MHz band, the National Oceanic and Atmospheric Administration continued to operate the Polar Operational Environmental Satellites system, which transmits weather and other meteorological data to Earth station receivers. The FCC and NTIA established protection zones for 47 federal Earth stations. In these zones, federal Earth stations would operate on a coequal, primary basis with new AWS commercial operations, meaning that each user has a right to protection from interference. All other federal Earth stations would operate on a secondary basis to AWS operations, meaning that they could not cause interference and must accept interference from others.¹⁵ Any *new* base stations planned for the 1695-1710 MHz band would have to adhere to certain technical requirements to avoid interference among users and coordinate with users prior to operation.¹⁶

On May 13, 2014, NTIA informed the FCC of initial estimated relocation and sharing costs for the 1695-1710 MHz and the 1755-1780 MHz spectrum bands of \$527.1 million and \$4.576 billion, respectively.¹⁷ NTIA also provided timelines for transition, which ranged from a few months to 10 years, depending on the agency and system. To ensure that the auction would cover the relocation costs, the FCC set reserve prices—minimum amounts for which the bands must be sold—that aligned with the federal relocation costs for each band.¹⁸

First AWS-3 Auction (2014-2015)

In June 2014, pursuant to P.L. 112-96, the FCC finalized rules pertaining to the use and auction of three bands together, which it called the “AWS-3” auction:¹⁹

- 1695-1710 MHz;
- 1755-1780 MHz; and
- 2155-2180 MHz.

The 1695-1710 MHz band was auctioned as a single band (unpaired) spectrum.²⁰ The 1755-1780 MHz band was auctioned in a paired configuration with the 2155-2180 MHz band, as the FCC

¹⁴ NTIA, “1695-1710 MHz,” December 2015, p. 9, https://www.ntia.gov/files/ntia/publications/compendium/1695.00-1710.00_01DEC15.pdf. (Multiple agencies were operating in the band, including the Army; Navy; Air Force; Departments of Justice, Homeland Security, and Commerce; and National Park Service.)

¹⁵ NTIA, “1695-1710 MHz,” December 2015, p. 9, https://www.ntia.gov/files/ntia/publications/compendium/1695.00-1710.00_01DEC15.pdf.

¹⁶ FCC, “Joint Public Notice Announcing AWS-3 Coordination Details,” July 18, 2014, <https://www.fcc.gov/document/joint-public-notice-announcing-aws-3-coordination-details>.

¹⁷ Letter from Lawrence E. Strickling, Assistant Secretary for Communications and Information, NTIA, to Tom Wheeler, Chairman, FCC, May 13, 2014, Attachments, https://www.ntia.gov/sites/default/files/publications/notification_to_fcc_re_est_costs_for_1695_and_1755_bands_05132014_0.pdf.

¹⁸ FCC, “Auction 97: Advanced Wireless Services (AWS-3),” <https://www.fcc.gov/auction/97>.

¹⁹ FCC, *In the Matter of Amendment of the Commission’s Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands*, March 31, 2014, <https://docs.fcc.gov/public/attachments/FCC-14-31A1.pdf>.

²⁰ Under AWS-3 rules, the unpaired 1695-1710 MHz band could be used for low-power mobile transmit (uplink), from end user to base station. Unpaired spectrum was typically used for broadcasting (i.e., one-way communications); some new technologies were emerging that could use unpaired spectrum for two-way communications. Some experts asserted that if the 1695-1710 MHz band were paired, it could have yielded greater value at auction. Michael O’Rielly, (continued...)

suggested in *The National Broadband Plan*. The FCC offered 1,614 AWS-3 licenses, granted for 12 years with a renewal term of 10 years.

The FCC offered bidding credits to small businesses, allowing them a discount on their winning bids.²¹ Per FCC rules

- a “small business” bidder—a business “with attributable average annual gross revenues that do not exceed \$40 million for the preceding three years”—could receive a 15% discount on its winning bid and
- a “very small business” bidder—a business “with attributable average annual gross revenues that do not exceed \$15 million for the preceding three years”—could receive a 25% discount on its winning bid.²²

The FCC also offered a tribal bidding credit for winning bidders that intended to use their licenses to serve federally recognized tribal lands that were unserved by any telecommunications carrier or that had a wireline penetration rate below 85%.²³

The FCC began the AWS-3 auction on November 13, 2014, and closed the auction on January 29, 2015. At the close, 31 bidders had won 1,611 of 1,614 licenses, generating over \$41 billion, which, at the time, was the largest in net proceeds generated by an FCC auction.

Dispute Over Small Business Bidding Credits

Before the first AWS-3 auction began, the FCC invited applications from potential bidders. The FCC received 80 initial or “short-form” applications from bidders, of which 70 were qualified to participate in the auction.²⁴ Among those approved was DISH Network Corporation (DISH), bidding through its wholly owned subsidiary American AWS-3 Wireless I LLC. Also approved were Northstar Wireless, LLC (Northstar), and SNR WirelessCo, LLC (SNR), which both reported associations with DISH and DISH affiliates but certified their gross revenues at \$15 million for the previous three years, indicating they were “very small businesses” eligible for the 25% bidding credit.²⁵

At the auction’s closing, Northstar and SNR won in total over 40% of the licenses (702 licenses).

FCC Denies Two Bidders Small Business Bidding Credits

After the auction, Northstar and SNR filed “long-form applications” to obtain their licenses and requested the 25% bidding credit, which would reduce their payment from over \$13 billion to

“AWS-3: Lessons Learned,” March 27, 2015, <https://www.fcc.gov/news-events/blog/2015/03/27/aws-3-auction-lessons-learned>.

²¹ See “Small Business Credit” on the FCC AWS-3 auction page at FCC, “Auction 97: Advanced Wireless Services (AWS-3),” <https://www.fcc.gov/auction/97>. The size of the bidding credit depended on “the average annual gross revenues for the preceding three years for the applicant, its affiliates, its controlling interests, and the affiliates of its controlling interest, as well as the average annual gross revenues of any entity with which the applicant has an attributable material relationship” (see “Fact Sheet” tab).

²² FCC, “Auction 97: Advanced Wireless Services (AWS-3),” <https://www.fcc.gov/auction/97>.

²³ The bidding credit is based on a formula driven by square miles of tribal land served (47 C.F.R. §1.2110(f)(3)).

²⁴ FCC, “Auction of Advanced Wireless Services (AWS-3) Licenses: 70 Bidders Qualified to Participate in Auction 97,” October 30, 2014, <https://docs.fcc.gov/public/attachments/DA-14-1564A2.pdf>.

²⁵ FCC, *In the Matter of Northstar Wireless, LLC and SNR Wireless LicenseCo, LLC*, August 17, 2015, p. 7, <https://docs.fcc.gov/public/attachments/FCC-15-104A1.pdf>.

about \$10 billion.²⁶ As part of their long-form applications, they were required to include details about their corporation, including their business agreements with DISH. In response to the publicly filed long-form applications, eight entities (i.e., other bidders) filed petitions with the FCC, arguing that Northstar and SNR were not “very small businesses,” that DISH had de facto control of the entities, and that DISH’s gross revenues should be attributed to both Northstar and SNR. The complainants asked FCC to deny Northstar’s and SNR’s requests for bidding credits.²⁷

In its review, the FCC found that DISH had provided equity contributions and loans to the entities, which accounted for approximately 98% of their winning bid amounts, held an 85% equity interest in each of the companies, had provided the majority of their capital, and had contracted to manage the build-out and operation of their networks.²⁸ Thus, in an August 2015 opinion, the FCC found that Northstar and SNR were not eligible for the approximate \$3.3 billion in bidding credits. The FCC determined that under its rules, Northstar and SNR could retain the licenses won but were liable for the gross amounts of their winning bids; failure to pay would result in a default, and the entities would be liable for the default payment under FCC rules.²⁹

Bidders Selectively Default and Relinquish Some AWS-3 Licenses to the FCC

After the FCC’s decision, Northstar and SNR notified the FCC that they would pay the full bid amount for some of the licenses they won—\$9.8 billion for about 500 licenses—but would default on the rest (197 licenses).³⁰ Combined, the entities relinquished about one-third of their licenses, worth about \$3.4 billion;³¹ this included potentially high-value licenses,³² such as

- New York I Block license (1765-1770/2165-2170 MHz) bid for \$1.3 billion;
- Chicago G Block license (1755-1760/2155-2160 MHz) bid for \$509 million;
- Chicago H Block license (1760-1765/2160-2165 MHz) bid for \$583 million; and
- Boston G Block license (1755-1760/2155-2160 MHz) bid for \$166 million.

For defaulting on the bands, the FCC ordered the entities to pay an interim default penalty of 15% of their winning bids—\$333,919,350 for Northstar and \$181,635,840 for SNR—and held them

²⁶ FCC, “FCC Reaffirms That SNR Wireless and Northstar Wireless Are Ineligible for \$3.3 Billion in Bidding Credits,” press release, November 23, 2020, <https://docs.fcc.gov/public/attachments/DOC-368321A1.pdf>.

²⁷ FCC, *In the Matter of Northstar Wireless, LLC and SNR Wireless LicenseCo, LLC*, November 17, 2020, pp. 2, 6, <https://docs.fcc.gov/public/attachments/FCC-20-160A1.pdf>.

²⁸ FCC, *In the Matter of Northstar Wireless, LLC and SNR Wireless LicenseCo, LLC*, November 17, 2020, pp. 5-6.

²⁹ 47 C.F.R. §1.2104(g). The default payment is to be deducted from any upfront payments or down payments that the defaulting bidder has deposited with the FCC.

³⁰ FCC, *In the Matter of Northstar Wireless, LLC and SNR Wireless LicenseCo, LLC*, November 17, 2020, p. 8. Northstar selectively defaulted on 84 licenses, for which it bid \$2,226,129,000. SNR selectively defaulted on 113 licenses, for which it bid \$1,210,905,600.

³¹ The FCC required the entities to pay 15% of their winning bids. The interim default payment of \$181,635,840 is 15% of a \$1,210,905,600 winning bid. The interim default payment of \$333,919,350 is 15% of a \$2,226,129,000 winning bid. The sum of the winning bids (\$1,210,905,600 and \$2,226,129,000) is approximately \$3.4 billion.

³² Kim Randolph, “Tuning in to Spectrum Valuation,” *Stout* (blog), May 1, 2017, <https://www.stout.com/en/insights/article/sj17-tuning-in-to-spectrum-valuation>. Randolph notes that “location is a key value driver for two reasons, both of which relate to the size of the market. The population coverage of the license is one of the largest value drivers, as a licensee’s ability to generate cash flow is typically correlated with the size of the population ... within the coverage area. Generally speaking, more densely populated markets have greater value.”

accountable for compensating the FCC for the difference between their total winning bid and the amount the FCC receives when it reauctions the spectrum.³³

Bidders Challenge FCC Decisions in Court, Supreme Court Denies Review

SNR and Northstar sought judicial review of the FCC’s denial of bidding credits. In 2017, the U.S. Court of Appeals for the D.C. Circuit (D.C. Circuit) held that the denial was reasonable but remanded to the FCC to give the entities an opportunity to cure the DISH-control issue that caused the denial.³⁴ The companies restructured their business agreements with DISH (which included DISH guarantees for the default payments); however, the FCC determined that the companies remained under de facto control by DISH and denied the credits on remand.³⁵ The entities sought D.C. Circuit review of the remand order. In 2022, the D.C. Circuit rejected the entities’ challenge.³⁶ Northstar then sought Supreme Court review.³⁷ In July 2023, the Supreme Court denied review.³⁸ During the legal challenge, the spectrum remained in the FCC’s inventory.

With legal remedies exhausted, the FCC could auction the remaining AWS-3 frequencies. The two entities would be responsible for the difference between the total winning bid and the amount the FCC receives when it reauctions the spectrum.³⁹

Expiration of FCC Auction Authority (2023)

On March 9, 2023, a few months before the Supreme Court decision, the FCC’s general auction authority expired.⁴⁰ The FCC no longer had authority to auction the spectrum, and the licenses remained in the FCC’s inventory.

Congress Directs FCC to Auction Available AWS-3 Spectrum

In the Servicemember Quality of Life Improvement and National Defense Authorization Act for Fiscal Year 2025 (P.L. 118-159), enacted December 23, 2024, Congress included as Title LIV the Spectrum and Secure Technology and Innovation Act of 2024 (Innovation Act). Section 5403 of

³³ *Northstar Wireless, LLC and SNR Wireless LicenseCo, LLC vs. Federal Communications Commission and United States of America*, No. 22-672 (Supreme Court 2023).

³⁴ *SNR Wireless LicenseCo, LLC v. Federal Communications Commission*, No. 15-330 (D.C. Circuit 2017).

³⁵ FCC, *In the Matter of Northstar Wireless, LLC and SNR Wireless LicenseCo, LLC*, November 17, 2020, pp. 1-3.

³⁶ *Northstar Wireless, LLC v. Federal Communications Commission*, No. 18-1209 (D.C. Circuit 2022).

³⁷ SNR Wireless did not join the petition for writ of certiorari. “SNR shareholders exercised their right to sell the company to DISH” while the company’s second petition for review was before the D.C. Circuit. *Northstar Wireless, LLC v. Federal Communications Commission*, No. 18-1209 (D.C. Circuit 2022), p. 17.

³⁸ *Northstar Wireless, LLC and SNR Wireless LicenseCo, LLC vs. Federal Communications Commission and United States of America*, No. 22-672 (Supreme Court 2023).

³⁹ Ownership interests in the companies have changed since the auction. See *Northstar Wireless, LLC v. Federal Communications Commission*, No. 18-1209 (D.C. Circuit 2022). (Indicating that ownership interests in the companies changed. “In late 2020, DISH acquired all but three percent of Northstar’s outstanding common shares from Northstar’s managing shareholders. The following year, SNR shareholders exercised their right to sell the company to DISH.”) See also FCC, *Applications Granted for the Transfer of Control of Dish Network Corp. and Its Subsidiaries to EchoStar Corp.*, December 6, 2023, <https://docs.fcc.gov/public/attachments/DA-23-1137A1.pdf>. The FCC approved the transfer of control to EchoStar of the licenses held by DISH and its subsidiaries (including Northstar and SNR).

⁴⁰ CRS Report R47578, *The Federal Communications Commission’s Spectrum Auction Authority: History and Options for Reinstatement*, by Patricia Moloney Figliola and Jill C. Gallagher.

the Innovation Act directs the FCC to initiate an auction for available radio frequencies in the AWS-3 band no later than 18 months after the date of enactment (June 23, 2026). Congress granted the FCC authority to auction available frequencies in the AWS-3 band only; it did not restore the FCC's general auction authority (i.e., authority to auction any band).

The Innovation Act grants certain agencies authority to borrow funds from the Treasury, with the expectation that the proceeds from the future AWS-3 spectrum auction would be used to repay the borrowed funds.⁴¹ Section 5404(c)(1) of the Innovation Act grants the FCC authority to borrow an amount not to exceed \$3.08 billion to fully fund the Secure and Trusted Communications Networks Reimbursement Program (also called the “rip-and-replace” program), authorized in P.L. 116-124.⁴² The program was established to reimburse small wireless carriers for costs to replace certain untrusted equipment (i.e., equipment from China-based manufacturers Huawei Technologies Co., Ltd., and ZTE Corporation) from their networks. Section 5404(d)(1) grants the Secretary of Commerce authority to borrow an amount not to exceed \$220 million for regional technology and innovation hubs.⁴³ Section 5404(b)(4) stipulates that after the amounts borrowed are repaid to the Treasury, any remaining amount up to \$280 million shall be made available to the Commerce Secretary for additional regional technology and innovation hub funding. Any remaining funds must be deposited in the Treasury's general fund for deficit reduction.

FCC to Auction Available AWS-3 Spectrum

On February 5, 2025, FCC released a notice of proposed rulemaking (NPRM) for the AWS-3 auction.⁴⁴ In the NPRM, the FCC reiterated that by law, it “must ensure that small businesses, rural telephone companies, and businesses owned by members of minority groups and women are given the opportunity to participate in the provision of spectrum-based services, and, for such purposes, consider the use of ... bidding preferences, and other procedures.”⁴⁵ On February 27, 2025, the FCC adopted the NPRM, which included proposed changes that would redefine criteria for small businesses, bidding credits for small businesses and rural service providers, and creation of a tribal licensing window.⁴⁶ The comment period closed on April 14, 2025. The FCC may decide to refine the rules and seek additional comments, or to adopt final rules for the auction.⁴⁷

⁴¹ Section 5404(a) of the Innovation Act establishes a Spectrum Auction Trust Fund (Fund) in the U.S. Treasury. Section 5404(b)(2)(A) requires that proceeds from the AWS-3 auction be deposited in the Fund and that 50% of proceeds but not more than \$3.08 billion shall be transferred to the general fund of the Treasury to reimburse the amount borrowed for the “rip-and-replace” program; Section 5404(b)(2)(B) requires that 50% but not more than \$220 million shall be transferred to the general fund of the Treasury to reimburse the amount borrowed for regional technology and innovation hubs.

⁴² In 2020, in P.L. 116-260, Congress appropriated \$1.895 billion for the rip-and-replace program. Actual costs exceeded appropriated funds by \$3.08 billion. Proceeds from the AWS-3 auction would be used to fully fund carriers' costs to rip and replace untrusted equipment. For more information on the rip-and-replace program, see CRS Insight IN11663, *Secure and Trusted Communications Networks Reimbursement Program: Frequently Asked Questions*, by Jill C. Gallagher.

⁴³ For more information on regional tech hubs, see Economic Development Administration, “Regional Technology and Innovation Hubs,” <https://www.eda.gov/funding/programs/regional-technology-and-innovation-hubs>.

⁴⁴ FCC, “February 2025 Open Commission Meeting,” February 27, 2025, <https://www.fcc.gov/February2025>. (There was an earlier notice of proposed rulemaking, circulated to the commissioners on January 6, 2025, under then-FCC Chairwoman Jessica Rosenworcel. On January 20, 2025, with the change in Administration, Chairwoman Rosenworcel resigned, and President Donald J. Trump named FCC Commissioner Brendan Carr as Chairman.)

⁴⁵ 47 U.S.C. §309(j)(4)(D).

⁴⁶ The rules on bidding credits for the AWS-3 auction held in 2015 can be found at 47 C.F.R. Part 1 (defining small businesses) and 47 C.F.R. §27.1106 (defining small businesses and bidding credits for the AWS-3 auction specifically).

⁴⁷ FCC, “Rulemaking Process,” <https://www.fcc.gov/about-fcc/rulemaking-process>.

The February 2025 NPRM proposes to extend bidding credits (i.e., discounts) to small businesses and very small businesses, and to rural service providers. In the 2025 NPRM, the FCC notes that, after the 2015 AWS-3 auction (which concluded in January 2015), the FCC updated its bidding rules in response to issues stemming from 2015 auction. The rules, amended in September 2015, set eligibility requirements for small businesses, a 15% bidding credit for a new category of recipients—rural service providers—and established a process to implement a reasonable cap on the total amount of bidding credits that an eligible entity may be awarded in an auction.⁴⁸ The FCC also noted that in the Small Business Runway Extension Act of 2018 (P.L. 115-324), Congress directs federal agencies proposing to set a size standard for small businesses to use the average annual gross receipts from at least the previous *five* years, instead of the previous three years.⁴⁹ The proposed 2025 rules reflect this mandate. The proposed rules for bidding credits for the 2025 AWS-3 auction are provided in **Table 1**.⁵⁰

Table 1. FCC's Competitive Bidding Credits Rules

Comparison of Competitive Bidding Rules for the First AWS-3 Auction (Adopted July 2014), Amended Rules (Adopted September 2015), and Proposed Rules for Auction of Remaining Frequencies (2025)

Entity	Competitive Bidding Rules for First AWS-3 Auction (Adopted July 2014) ^a	Competitive Bidding Rules Amended After First AWS-3 Auction (Adopted Sept. 2015) ^b	Proposed Rules for the Second AWS-3 Auction (Proposed January 2025) ^c
Small business	An entity, together with its affiliates, controlling interests, and affiliates of its controlling interests, with average gross revenues not exceeding \$40 million for the preceding three years would be eligible for a 15% small business bidding credit.	A winning bidder that qualifies as a small business and has not claimed a rural service provider bidding credit may receive • 35% credit if it has average gross revenues not exceeding \$4 million for the preceding three years, • 25% credit if it has average gross revenues not exceeding \$20 million for the preceding three years, or • 15% credit if it has average gross revenues not exceeding \$55 million for the preceding three years. Instituted a cap on credits.	An entity that, together with its affiliates, controlling interests, and affiliates of its controlling interests, has average gross revenues not exceeding \$55 million for the preceding five years would be eligible for a 15% bidding credit, with a cap.

⁴⁸ FCC, "Updating Competitive Bidding Rules," 80 *Federal Register* 56764, September 18, 2015.

⁴⁹ For more information about the Small Business Runway Extension Act, see CRS Report R40860, *Small Business Size Standards: A Historical Analysis of Contemporary Issues*, by R. Corinne Blackford and Anthony A. Cilluffo.

⁵⁰ 47 C.F.R. §1.2110.

Very small business	An entity, together with its affiliates, controlling interests, and affiliates of its controlling interests, that has average gross revenues not exceeding \$15 million for the preceding three years would be eligible for a 25% very small business bidding credit.	Competitive bidding rules for three tiers of small businesses are reflected in the cell above, and all include a cap on bidding credits.	An entity that, together with its affiliates, controlling interests, and affiliates of its controlling interests, has average gross revenues not exceeding \$20 million for the preceding five years would be eligible for a 25% bidding credit, with a cap.
Tribes	A tribal entity that intended to use its license to serve federally recognized tribal lands that had a wireline penetration rate below 85% could receive a bidding credit; the credit was based on square miles served.	A tribal entity that intended to use its license to serve federally recognized tribal lands that had a wireline penetration rate below 85% could receive a bidding credit. The credit was based on square miles served.	The proposed rules sought comment on creating a tribal priority window that would allow tribes to directly access unassigned spectrum over their tribal lands, subject to build-out requirements.
Rural service providers		A winning bidder that qualifies as a rural service provider (fewer than 250,000 subscribers and serving a rural area) and has not claimed a small business bidding credit will be eligible to receive a 15% credit, with a cap.	Offers a 15% bidding credit to qualifying rural service providers, with a cap.

Sources:

- For original AWS-3 auction rules, see FCC, “Auction 97: Advanced Wireless Services (AWS-3),” <https://www.fcc.gov/auction/97>.
- For rules amended in 2015, see 47 C.F.R. §1.2110.
- For rules proposed in 2025 pertaining to auction of remaining AWS-3 frequencies, see FCC, “February 2025 Open Commission Meeting,” February 27, 2025, <https://www.fcc.gov/February2025>.

The 2025 NPRM also solicited comment on creating a window that would give tribal nations an opportunity to obtain licenses for unassigned spectrum over tribal lands.⁵¹ Comments were due on April 14, 2025. The FCC is considering the comments in preparation for the auction, which, per P.L. 118-159, is due to start within 18 months of enactment, or June 23, 2026.

Issues for Congress

There are several issues of potential interest to Congress as the FCC prepares for the AWS-3 auction, including the value of the AWS-3 band, supply and demand of mid-band spectrum, time and money required for federal agency transition, spectrum sharing, funding for the rip-and-replace program, and spectrum access for small businesses, rural entities, and tribes.

Value of the AWS-3 Spectrum

The Congressional Budget Office (CBO) prepared an estimate of the AWS-3 licenses in July 2024, when it scored a bill (S. 2238) that proposed to, among other things, auction the available

⁵¹ FCC, *In the Matter of Enhancing National Security Through the Auction of AWS-3 Spectrum Licenses Applying New Average Annual Gross Revenue Benchmarks for Small Business Bidding Credits*, February 27, 2025, pp. 6-7, <https://docs.fcc.gov/public/attachments/FCC-25-12A1.pdf>.

AWS-3 spectrum. CBO estimated that based on past auctions and industry demand, the relinquished AWS-3 licenses would generate \$3.3 billion in offsetting receipts over the 2025-2034 period.⁵² Other analysts have projected proceeds in the range of \$3 billion to \$4.5 billion.⁵³

Under FCC rules, if an entity defaults on its bid, it is responsible for the difference between its net defaulted bid and the subsequent net winning bid, or the difference between the bidder's gross defaulted bid and the subsequent gross winning bid, whichever is less.⁵⁴ The defaulted bids from the 2015 AWS-3 auction totaled around \$3.4 billion. Assuming the FCC adopts final rules that adhere to this rule, the total proceeds from the reauction of the returned licenses from Northstar and SNR should be at least \$3.4 billion.⁵⁵ These expected profits would exceed the amounts authorized to be borrowed in P.L. 118-159, including \$3.08 billion to fully fund the rip-and-replace program and \$220 million for regional technology and innovation hubs. If the AWS-3 auction generates more than \$3.4 billion, the proceeds could be used for other items named in P.L. 118-159, including an additional \$280 million for regional technology and innovation hubs, with remaining amounts deposited in the Treasury's general fund and used for deficit reduction.

An issue that may be of interest to Congress is the level of demand for the AWS-3 spectrum, valuable mid-band spectrum—frequencies with characteristics that are suited for mobile broadband use.⁵⁶ In the 2015 auction, wireless carriers paid over \$41 billion for AWS-3 licenses. Since the auction, carriers have also acquired AWS-3 spectrum through the secondary market.⁵⁷ And, during the COVID-19 pandemic, a few carriers were granted permission by the FCC to use the AWS-3 licenses in the FCC's inventory to meet demands for wireless services.⁵⁸ Since then, the U.S. government has made additional mid-band segments available for commercial use for 5G mobile technologies through auctions that have generated over \$100 billion.⁵⁹

⁵² Congressional Budget Office, "At a Glance: S. 2238, PLAN for Broadband Act," December 2, 2024, <https://www.cbo.gov/system/files/2024-12/s2238.pdf> (cost estimate for S. 2238 as ordered reported by the Senate Committee on Commerce, Science, and Transportation on July 31, 2024).

⁵³ Kirk R. Arner and Harold Furchtgott-Roth, "Estimated Value of Potential Spectrum Auction Receipts in the Next Five-Year Window," *Hudson Institute*, July 18, 2024, <https://www.hudson.org/technology/estimated-value-potential-spectrum-auction-receipts-next-five-year-window-kirk-arnet-harold-furchtgott-roth>.

⁵⁴ 47 C.F.R. §1.2104(g)(2). The FCC detailed the interim payments in (1) letter from Roger C. Sherman, Chief, Wireless Telecommunications Bureau, FCC, to Mark F. Dever, Esq., Drinker Biddle & Reath LLP, October 1, 2015, https://docs.fcc.gov/public/attachments/DA-15-1108A1_Rcd.pdf (Northstar), and (2) letter from Roger C. Sherman, Chief, Wireless Telecommunications Bureau, FCC, to Ari Q. Fitzgerald, Esq., Hogan Lovells US LLP, October 1, 2015, <https://docs.fcc.gov/public/attachments/DA-15-1109A1.pdf> (SNR).

⁵⁵ In December 2023, DISH was acquired by EchoStar Corporation; thus, EchoStar is responsible for the difference between the net defaulted bid and the subsequent net winning bid, or the difference between the bidder's gross defaulted bid and the subsequent gross winning bid, whichever is less.

⁵⁶ For a description of mid-band spectrum, see Nokia, "5G Spectrum Bands Explained—Low, Mid and High Band," <https://www.nokia.com/thought-leadership/articles/spectrum-bands-5g-world/>. (Noting that "mid-band spectrum (1 GHz-6 GHz) is considered perfect for 5G because it can carry plenty of data while traveling significant distances.")

⁵⁷ Mike Dano, "Verizon to Acquire More AWS-3, mmWave Spectrum," *Light Reading*, October 18, 2019, <https://www.lightreading.com/5g/verizon-to-acquire-more-aws-3-mmwave-spectrum>.

⁵⁸ FCC, "FCC Grants AT&T and Verizon Further Temporary Spectrum Access to Keep Americans Connected During Coronavirus Pandemic," March 20, 2020, <https://docs.fcc.gov/public/attachments/DOC-363211A1.pdf>.

⁵⁹ This includes the 3.5 GHz auction, known as Citizen Broadband Radio Service, or CBRS (2020); 3.7 GHz auction, known as the C-band (2021); 3.45 GHz band (2022); and 2.5 GHz band (2022). See also Sydney Price and David DiMolfetta, "Big 4 Wireless Carriers Spent \$100B on 5G Spectrum: Was It Worth It?," *S&P Global*, February 24, 2022, <https://www.spglobal.com/ratings/en/research/articles/220224-credit-faq-will-big-spending-in-spectrum-auctions-and-higher-capex-squeeze-u-s-wireless-carriers-12283967>.

Although additional spectrum has been made available, wireless service providers continue to assert that there is a shortage of mid-band spectrum,⁶⁰ and more is needed to keep pace with global economic competitors, such as China.⁶¹ Some analysts expect high demand for the remaining AWS-3 licenses that cover major market areas such as New York, Boston, and Chicago, as was the pattern in the first AWS-3 auction.⁶² The highest levels of interest may come from entities already holding AWS-3 spectrum; adding to current holdings would allow carriers to increase capacity on current networks or expand coverage in uncovered areas.⁶³ Others note that the high levels of spending on spectrum in past auctions and capital expenditures to build out networks have increased carrier debt loads,⁶⁴ which may affect their willingness or ability to bid.

Since the FCC's general auction authority expired in 2023, and no new bands have been auctioned since, analysts say this next AWS-3 auction may serve as a bellwether for future FCC auctions. Of interest to Congress may be how the structure of the second AWS-3 auction may affect the bidding pool and how the bidding pool (discussed below) may affect the proceeds generated.

Bidding Credit Considerations

Per FCC rules,⁶⁵ the limit on the discount that a winning bidder that is eligible for a small business bidding credit may receive in any particular auction will be no less than \$25 million; the FCC may adopt a market-based cap on an auction-by-auction basis to establish an overall limit on the discount that a small business may receive for certain license areas. Entities submitted comments to the FCC on the bidding credits and cap proposed in the NPRM.

The Rural Wireless Association supported the bidding credits as proposed by the FCC, stating that they would provide rural carriers with a “more level playing field,” support smaller-scale deployment in remote and rural markets, and avoid concentration of licenses with the largest carriers.⁶⁶ The Competitive Carriers Association (CCA)—representing large-scale wireless carriers, small, rural wireless providers, and vendors and suppliers of telecommunications equipment—requested that the FCC increase the average gross revenue thresholds it uses to

⁶⁰ CTIA, “Comments of CTIA,” March 31, 2025, pp. 2-4, <https://www.fcc.gov/ecfs/document/10331067706386/1>.

⁶¹ U.S. Congress, House Energy and Commerce Committee, Communications and Technology Subcommittee, *Strengthening American Leadership in Wireless Technology*, 119th Cong., 1st sess., January 23, 2025. (See documents submitted for the record from stakeholders documenting need for additional spectrum and recommending equal access, at <https://www.congress.gov/119/meeting/house/117838/documents/HHRG-119-IF16-20250123-SD5585.pdf>); see also National Economic Research Associates (NERA), *The Economic Impact of Each Additional 100 MHz of Mid-Band Spectrum for Mobile*, January 22, 2025, p. 30, <https://api.ctia.org/wp-content/uploads/2025/01/The-economic-impact-of-allocating-mid-band-spectrum-to-mobile.pdf> (prepared for CTIA, a wireless industry association).

⁶² “Which AWS-3 Licenses Are at the Center of the FCC-Dish Decision?,” *Spektrum Metrics* (blog), November 19, 2020, <https://www.spektrummetrics.com/blogs/spectrum-blog/which-aws-3-licenses-are-at-the-center-of-the-fcc-dish-decision>. See also Phil Goldstein, “Analysts: Bidding in NYC, LA and Chicago in AWS-3 Auction Is 94% Above Average Prices,” *Fierce Wireless*, December 19, 2014, <https://www.fierce-network.com/wireless/analysts-bidding-nyc-la-and-chicago-aws-3-auction-94-above-average-prices> (noting that bidding for licenses in the major markets of New York City, Los Angeles, and Chicago were 94% above average prices in the first AWS auction).

⁶³ Mike Dano, “AT&T Could Buy More AWS-3 Spectrum Next Year,” *Light Reading*, December 13, 2024, <https://www.lightreading.com/5g/at-t-could-buy-more-aws-3-spectrum-next-year>.

⁶⁴ Sydney Price and David DiMolfetta, “Big 4 Wireless Carriers Spent \$100B on 5G Spectrum: Was It Worth It?,” *S&P Global*, February 24, 2022, <https://www.spglobal.com/ratings/en/research/articles/220224-credit-faq-will-big-spending-in-spectrum-auctions-and-higher-capex-squeeze-u-s-wireless-carriers-12283967>.

⁶⁵ 47 C.F.R. §1.2110(f)(2)(ii).

⁶⁶ Rural Wireless Association, “Comments of the Rural Wireless Association, Inc.,” March 31, 2025, p. 2, <https://www.fcc.gov/ecfs/document/10331100287975/1>.

define small and very small businesses, and supported the rural service provider credit. CCA argued, however, that the thresholds set in the 2015 rules do not reflect rising costs and that a “carrier with the same number [of] employees and serving the same number of customers in 2025 as in 2015 may no longer qualify as a small business due to inflation alone.”⁶⁷ They argued that to fulfill its mandate to disseminate licenses among a wide variety of applicants,⁶⁸ including small businesses, the FCC could increase its revenue thresholds to allow small businesses to obtain spectrum and to avoid concentration of licenses with a few large wireless providers. CCA also asserted that rural service providers should be granted the same credit as very small businesses.⁶⁹

In response to the NPRM, Council Tree Investors, a private equity firm that invested in Northstar, and EchoStar (which acquired DISH) argued that the FCC must adopt the same rules that were in place for the 2015 auction, citing legal standards asserting that the defaulter should not be liable for a penalty created in part by the FCC’s decision to change the rules at the reauction.⁷⁰ EchoStar warned of a “cascading impact” from the revised rules that it said would reduce competition among bidders and therefore lessen bidding amounts, which could increase their deficiency payment and have an adverse impact on EchoStar, Northstar, and SNR.⁷¹ “These changes include a restrictive cap on bidding credits for small businesses, restrictions on joint bidding, and a prohibition on investments in multiple [designated entities],”⁷² which could include small businesses. EchoStar argued that bidding by designated entities in the previous AWS-3 auction “added more than \$20 billion of proceeds to Auction 97, bringing what was expected to be [an] \$18 billion auction up to \$45 billion”; the company argued that allowing more bidders led to higher auction proceeds.⁷³ Council Tree argued many of the same points, including that the rules should be the same as those used under the first auction, and also asserted that two auctions (i.e., the 2015 auction and the reauction) are inextricably linked. Council Tree also argued that the FCC should consider the impact of any rule changes on Northstar and SNR, and then on FCC’s obligation to repay the \$3.08 billion to the U.S. Treasury borrowed for the rip-and-replace program.⁷⁴

WISPA—The Association for Broadband Without Boundaries—which represents wireless internet service providers, infrastructure companies, equipment suppliers, and other broadband industry stakeholders, asked the FCC to include the smallest category of business (with revenues not exceeding \$4 million per year) as eligible bidders.⁷⁵ WISPA agreed with other commenters that the revenue thresholds should be adjusted for inflation and that bidding credits for small rural service providers should be increased. It did not agree that the FCC must use the same rules that were used in the 2015 auction, instead arguing that elements of the 2015 auction enabled small businesses to participate and that if there is concern that auction proceeds could be limited under

⁶⁷ Competitive Carriers Association (CCA), “Comments of the Competitive Carriers Association,” March 31, 2025, pp. 4-6, <https://www.fcc.gov/ecfs/document/103312342720321/1>.

⁶⁸ 47 U.S.C. §309(j)(3)(B).

⁶⁹ CCA, “Comments of the Competitive Carriers Association,” March 31, 2025, p. 8.

⁷⁰ EchoStar Corporation, “Comments of EchoStar Corporation,” March 31, 2025, pp. 1-3, <https://www.fcc.gov/ecfs/document/103310668313401/1>; Council Tree Investors, Inc., “Council Tree Comments on AWS-3 Reauction,” pp. 9-10, <https://www.fcc.gov/ecfs/document/1033169314433/1>.

⁷¹ EchoStar Corporation, “Comments of EchoStar Corporation,” March 31, 2025, p. 2.

⁷² EchoStar Corporation, “Comments of EchoStar Corporation,” March 31, 2025, p. 2.

⁷³ EchoStar Corporation, “Comments of EchoStar Corporation,” March 31, 2025, p. 2. The \$45 billion was gross bids; the net bidding was about \$41 billion.

⁷⁴ Council Tree Investors, “Council Tree Comments on AWS-3 Reauction,” pp. 12, 15, <https://www.fcc.gov/ecfs/document/1033169314433/1>.

⁷⁵ WISPA – The Association for Broadband Without Boundaries, “Reply Comments of WISPA – The Association for Broadband Without Boundaries,” April 14, 2025, <https://www.fcc.gov/ecfs/document/104141281613660/1>.

the current rules, then one way to increase proceeds is to increase participation. This can be done by adjusting the average gross revenues, increasing the bidding credit, and raising the caps on credits that small businesses can receive.⁷⁶

While Congress has directed the FCC to promote competition and to disseminate licenses among a wide variety of applicants, and allows the FCC to define the terms of competition, Congress may have an interest in the AWS-3 auction rules and their impact on congressional priorities. For example, in terms of the bidding credits for small and rural businesses, some commenters support them and see them as a way to increase participation in the auction, which could increase competition and auction proceeds; others support the bidding credits but say the restrictions on bidders (e.g., revenue limits, caps on credits that the small business can receive) in the proposed rules could limit the ability of some entities to participate in the auction and limit proceeds. Still others argue that expanding small business eligibility (e.g., increasing revenue limits, eliminating caps) could reduce the net proceeds and affect the funds available to repay the \$3.08 billion borrowed for the rip-and-replace program and help reduce the federal deficit.⁷⁷ Congress may consider whether the FCC's proposed rules strike the balance between promoting competition and generating revenue. In addition, EchoStar and Council Tree raised issues with FCC's authorities to adopt new auction rules and the FCC's notice of such changes. They cite the recent Supreme Court decision in *Loper Bright Enterprises v. Raimondo*, which may limit agency regulatory authorities. In that case, the Court directed the reviewing court to exercise its independent judgment about the meaning of ambiguous statutes rather than deferring to federal agencies' reasonable interpretations of ambiguous statutory provisions that they administer.⁷⁸ If the FCC's rules are challenged in court, it could prolong the auction process.⁷⁹

For this and future auctions, Congress could encourage the FCC to adopt certain rules to increase participation or specify auction terms and conditions in legislation. Congress could also wait until the FCC publishes final rules for the AWS-3 auction before deciding whether to act, or it could decide not to act and to allow the FCC—an independent agency charged with regulating commercial telecommunications—discretion to make the rules.

Tribal Licensing Window

The 2025 NPRM sought comment on creating a tribal licensing window, including whether the statute (P.L. 118-159) permits a tribal broadband window and, more generally, whether a tribal window is suitable in this auction, given that, by law, the proceeds must be used to repay the \$3.08 billion borrowed for the rip-and-replace program. The FCC sought input on any impact that creating a tribal licensing window may have on the auction.

CTIA—The Wireless Association—which represents large wireless service providers, urged the FCC to dismiss calls for a tribal window; it argued that the Communications Act of 1934, as amended, directs the FCC “to assign spectrum licenses by auction where there are mutually

⁷⁶ WISPA – The Association for Broadband Without Boundaries, “Reply Comments of WISPA – *The Association for Broadband Without Boundaries*,” April 14, 2025, pp. 3-5.

⁷⁷ Commenters argue that the proposed rules could limit bidding, which could also affect the obligation of the previous bidders to compensate the FCC for the difference between their total winning bid in the first auction and the amount the FCC receives when it reauctions the spectrum.

⁷⁸ CRS In Focus IF12754, *Federal Communications Commission: Agency Regulatory Authority and Selected Rules*, by Colby Leigh Pechtoll, Patricia Moloney Figliola, and Peter J. Benson.

⁷⁹ The court challenge to the first auction took nearly eight years, meaning that the spectrum remained in the FCC's inventory and was largely unused during that time.

exclusive applications, absent limited exceptions that do not include this type of carve-out.”⁸⁰ CTIA noted that Congress authorized the FCC to use some mechanisms to expand access to spectrum, such as bidding credits, but not a “priority window that would assign licenses without an auction.”⁸¹ It argued that P.L. 118-159 required the FCC to initiate a system of competitive bidding and that removing some of the AWS-3 spectrum from the inventory is contrary to congressional direction. CTIA emphasized the success of the first AWS-3 auction, which offered exclusive high-powered spectrum for commercial use, generating \$41 billion, and urged the FCC to offer the same for the next AWS-3 auction. Last, it argued that creating a tribal licensing window would slow the auction and generate less in proceeds, which is not in the public interest.

Tribal groups and public advocacy organizations, filing jointly, supported the tribal window. Some cited Title 47, Section 309(j)(3) of the *U.S. Code*, which states that any system of competitive bidding “shall seek to promote the purposes specified in [47 U.S.C. §151],” which is to “make available, so far as possible, to all the people of the United States,” wired and wireless communication services with “adequate facilities at reasonable charges.” Commenters argue that this includes people who reside on or visit tribal lands. They assert that “carriers have historically displayed little or no interest in serving Tribal lands” and that offering “a new class of extremely small, well-defined licenses that cover Tribal lands” would be in the public interest and should not significantly impact the auction.⁸² The Navajo Nation Telecommunications Regulatory Commission noted that there is precedent in granting a tribal priority window. The FCC established a tribal priority window in a 2010 proceeding involving noncommercial radio stations, and in 2019 in the 2.5 GHz auction, where 176 tribes gained pre-auction access to spectrum, to support broadband deployment and services in rural tribal areas. Further, it stated that nothing in P.L. 118-159 precludes the FCC from creating a tribal licensing window.⁸³

The U.S. government has acknowledged challenges in deploying communications services in tribal lands and has recommended that the FCC undertake efforts to promote tribal access to spectrum.⁸⁴ The U.S. government has acted to make spectrum available through previous tribal windows, through specific grant programs aimed at supporting broadband deployment, through federal agency efforts to provide technical assistance, and through a memorandum of agreement among the Department of the Interior, Department of Commerce, and the FCC to promote the development and deployment of broadband over tribal lands, including expanding access to spectrum.⁸⁵ The FCC has supported this effort through tribal licensing windows, which tribal entities say allows tribes to build out broadband infrastructure, better serve their communities, and become more self-reliant; some tribal groups have argued for tribal licensing windows in

⁸⁰ CTIA, “Comments of CTIA,” March 31, 2025, p. 2, <https://www.fcc.gov/ecfs/document/10331067706386/1>. (CTIA cites 47 U.S.C. §309(j)(1).)

⁸¹ CTIA, “Comments of CTIA,” March 31, 2025, p. 6, <https://www.fcc.gov/ecfs/document/10331067706386/1>.

⁸² National Congress of American Indians et al., “Comments of National Congress of American Indians, Tribal Digital Village Network, Tribalbroadbandbootcamp.Org, Public Knowledge, Institute for Local Self-Reliance, X-Labs, Benton Institute for Broadband and Society, and Open Technology Institute at New America,” March 31, 2025, pp. 5-8, <https://www.fcc.gov/ecfs/document/1033167864849/1>. See also Navajo Nation Telecommunications Regulatory Commission (NNTRC), “Reply Comments of the Navajo Nation Telecommunications Regulatory Commission,” April 14, 2025, pp. 4-5, <https://www.fcc.gov/ecfs/document/104150835401066/1>.

⁸³ NNTRC, “Reply Comments of the Navajo Nation Telecommunications Regulatory Commission,” April 14, 2025, pp. 4-5, <https://www.fcc.gov/ecfs/document/104150835401066/1>.

⁸⁴ U.S. Government Accountability Office, *Tribal Broadband: FCC Should Undertake Efforts to Better Promote Tribal Access to Spectrum*, GAO-19-75, November 14, 2019, <https://www.gao.gov/products/gao-19-75>.

⁸⁵ *Memorandum of Understanding Among the U.S. Department of the Interior and the Federal Communications Commission and the U.S. Department of Commerce, National Telecommunications and Information Administration*, November 23, 2022, https://www.bia.gov/sites/default/files/dup/inline-files/mou_esb46-009818_doi-fcc-ntia_electromagnetic_spectrum_on_tribal_lands_2022-11-23_final_fcc_ntia_doi_signed_508.pdf.

every auction—a proposal that CTIA opposes.⁸⁶ Options for Congress could include codifying such a provision in legislation authorizing tribal licensing windows in spectrum auctions or allowing the FCC to decide when such licensing windows are appropriate.

The FCC is mandated to act in the public interest and is prohibited from considering the value that licenses will receive at auction as part of its public interest analysis on auction design.⁸⁷ Further, Congress has directed the FCC to promote competition and to disseminate licenses among a wide variety of applicants.⁸⁸ Yet the Innovation Act requires that proceeds from the AWS-3 auction be used to repay the \$3.08 billion borrowed for the rip-and-replace program. Given these competing mandates for the FCC, Congress could address auction terms in legislation, including the tribal licensing window for this and future auctions.

Reallocation of Spectrum from Federal Agencies

A challenge in reallocating spectrum is the time it takes to identify optimal spectrum bands and bring them to auction, and time and funding to relocate federal systems from one band to another.⁸⁹ In the case of the AWS-3 band, while some agencies had completed their transitions from AWS-3 spectrum before the 2015 auction,⁹⁰ transition activities were still under way for others in 2023.⁹¹ Reallocation of spectrum from federal to commercial use is complex and requires planning, coordination, testing, and time. Congress has, in the past, proposed legislation to expand use of the SRF to incentivize federal agencies to identify spectrum that could be reallocated from federal to nonfederal use or shared between federal and nonfederal users, and to provide funding to upgrade agency systems.⁹² In the 119th Congress, legislation has been introduced (H.R. 651) to streamline the process for making funds available to federal agencies.⁹³ A benefit from streamlining could be that spectrum may come to auction sooner; the challenge is that agencies and oversight bodies may need time to carefully assess and relocate federal systems.

Spectrum Sharing

In 2014, the NTIA—through its Commerce Spectrum Management Advisory Committee—evaluated sharing between the commercial mobile systems and federal systems operating in the

⁸⁶ CTIA, “Comments of CTIA,” March 31, 2025, pp. 2-3, <https://www.fcc.gov/ecfs/document/10331067706386/1>.

⁸⁷ 47 U.S.C. §309(j)(7)(A).

⁸⁸ 47 U.S.C. §309(j)(3)(B).

⁸⁹ Letter from Lawrence E. Strickling, Assistant Secretary for Communications and Information, NTIA, to Tom Wheeler, Chairman, FCC, May 13, 2014, Attachments, https://www.ntia.gov/sites/default/files/publications/notification_to_fcc_re_est_costs_for_1695_and_1755_bands_05132014_0.pdf.

⁹⁰ NTIA, *Commercial Spectrum Enhancement Act, Annual Progress Report for 2023*, September 2024, p. 13, <https://www.ntia.gov/sites/default/files/2024-10/2023-csea-report.pdf>. The eight agencies are the U.S. Capitol Police; National Oceanic and Atmospheric Administration in the Department of Commerce; Department of Housing and Urban Development; Federal Aviation Administration in the Department of Transportation; National Aeronautics and Space Administration; Department of the Treasury; U.S. Agency for International Development; and Department of Veterans Affairs.

⁹¹ NTIA, *Commercial Spectrum Enhancement Act, Annual Progress Report for 2023*, September 2024, p. 13. The report states that “Army has two systems (Army Telemetry and Army Video) that did not meet their scheduled August 14, 2022, spending timeline deadline and are considered delayed. Army is working with [the Department of Defense Chief Information Officer] on a submission to extend the spending timelines to 2025 in order to complete the projects.”

⁹² For example, see H.R. 3430 (118th Congress) and H.R. 651 (119th Congress).

⁹³ NTIA, *Annex O: Procedures and Guidance Related to the Spectrum Relocation Fund and Transition Activities in Support of Relocation of Sharing by Federal Government Stations*, January 2021, https://www.ntia.doc.gov/files/ntia/publications/o_21_1.pdf (see Figure 1, “Transition Planning Process”, p. O-5). H.R. 651 (119th Congress) amends this process, reducing most steps allotting reviewing agencies 30 days to 15 days.

1755-1850 MHz band, which was paired with the 2155-2180 MHz band already allocated for commercial mobile use.⁹⁴

The AWS-3 license rules defined coordination zones around federal agency stations and required carriers to coordinate with federal agencies operating in these zones during the 10-year transition period. Carriers were required to submit requests to agencies to ensure that planned commercial operations would not interfere with federal operations. When coordination requests are submitted to DOD, the agency may perform interference analysis to determine whether proposed tower locations are compatible with existing DOD assets operating in the 1755-1780 MHz band and whether transmissions from mobile users would create a risk to DOD systems and capabilities.⁹⁵

In a 2019 paper, researchers asserted that the Defense Information Systems Agency's Defense Spectrum Organization spearheaded testing and improvements in spectrum sharing for many years through its Spectrum Sharing Test and Demonstration Program—formed to help DOD transition out of the AWS-3 band. They asserted the same coordination and interference mitigation techniques used in the AWS-3 band could enable sharing in other bands and “improve [DOD] tactical communications operations in constrained, congested, and contested spectrum environments where [DOD] is taking advantage of LTE and 5G technology in the future.”⁹⁶

Considering increasing demands for spectrum and limited free and available spectrum, Congress may be interested in developing spectrum sharing approaches. Bills to fund research on such approaches have been introduced in previous Congresses.⁹⁷ Options include supporting specific spectrum sharing approaches or researching and developing new spectrum sharing approaches, including techniques used in the AWS-3 band, to facilitate sharing in other bands and to accommodate 5G use for commercial and DOD use.

Funding for the Rip-and-Replace Program

A consideration for Congress is whether the \$3.08 billion authorized to be borrowed in P.L. 118-159 is enough to cover the existing rip-and-replace projects. The projects were first funded in 2020, but actual costs came in higher than estimated costs, and funds appropriated did not cover all expenses. In July 2022, the FCC provided each network operator with funds to cover about 40% of its costs.⁹⁸ Over time, costs increased. In 2023, industry associations reported that networks could “go dark” without additional funding.⁹⁹ In 2024, one provider said the partial funding has delayed planning, permitting, and contracting, and additional time may be needed to restart projects, which may affect costs.¹⁰⁰ One consulting firm said initial estimates were made in

⁹⁴ Commerce Spectrum Management Advisory Committee, Working Group 5 (WG-5), *1755-1850 MHz Airborne Operations*, March 2014, https://www.ntia.doc.gov/files/ntia/publications/wg5_final_report_posted_03042014.pdf.

⁹⁵ Howard McDonald et al., “AWS-3 Interference Mitigation: Improving Spectrum Sharing with LTE & 5G Uplink Spectrum Control,” 2019 IEEE Military Communications Conference (MILCOM), Norfolk, VA, USA, 2019, pp. 102-107, <https://ieeexplore.ieee.org/document/9020877>.

⁹⁶ Howard McDonald et al., “AWS-3 Interference Mitigation: Improving Spectrum Sharing with LTE & 5G Uplink Spectrum Control,” 2019 IEEE Military Communications Conference (MILCOM), Norfolk, VA, USA, 2019, p. 102.

⁹⁷ For example, see H.R. 1677 (118th Congress) and S.Amdt. 6585 (117th Congress), neither of which were enacted.

⁹⁸ FCC, “Wireline Competition Bureau Announces the Grant of Applications for the Secure and Trusted Communications Networks Reimbursement Program,” July 18, 2022, <https://docs.fcc.gov/public/attachments/DA-22-774A1.pdf>.

⁹⁹ Linda Hardesty, “Without Funds to Replace Huawei Gear, Some Rural Areas Could Go Dark,” *Fierce Network*, November 18, 2022, <https://www.fierce-network.com/wireless/without-funds-replace-huawei-gear-some-rural-areas-could-go-dark>.

¹⁰⁰ For example, see Northern Michigan University's [Supply Chain Reimbursement Program] Term Extension Request (pp. 8, 10), detailing the impact of partial funding, at <https://www.fcc.gov/ecfs/document/102555842173/1>.

2021 and do not account for inflation, which they calculated at 14% since costs were first estimated.¹⁰¹

On April 15, 2025, the FCC announced that it borrowed the full amount authorized under P.L. 118-159 and has made a further allocation of funding available to existing rip-and-replace applicants.¹⁰² Of interest to Congress may be whether the additional funds will cover the remaining costs for these providers to remove untrusted equipment from their networks.

Conclusion

At the date of this report, the rules for the AWS-3 auction remain under consideration by the FCC. Some commenters have continued debate on certain issues (e.g., bidding caps, accelerated build-out requirements, setting a reserve price of \$3.3 billion) in comments, which were due on April 14, 2025.¹⁰³ Some commenters have urged the FCC to move quickly on the auction, stating that the spectrum has been out of use for 10 years;¹⁰⁴ others suggested auction dates in late 2025 to allow participants time to plan.¹⁰⁵ P.L. 118-159 requires the FCC to *initiate* an auction of the AWS-3 frequencies by June 23, 2026.

This is set to be the first spectrum auction in several years and the first after the *Loper Bright* decision. In comments on the proposed AWS-3 auction rules, entities challenged the FCC's authority to adopt certain auction rules (e.g., tribal window) without specific congressional authorization. Congress may wish to consider whether specific authorizations (e.g., small business bidding credits, rural business credits, tribal window) should be included in future auction legislation.

With FCC general auction authority now expired, Congress could address spectrum needs on a band-by-band basis, as it did in P.L. 118-159. While this approach can make new spectrum available, it also inhibits long-term, comprehensive planning for wireless service providers and agencies. Legislation introduced in the 119th Congress, the Spectrum Pipeline Act of 2025 (H.R. 651), would identify spectrum for future auction, modify spectrum management processes, and reinstate the FCC's auction authority. Congress could take no action, which would mean that no new spectrum would be made available for wireless services.

¹⁰¹ Letter from J. Arman Musey, President, Summit Ridge Group, to Marlene H. Dortch, Secretary, FCC, April 2, 2024, <https://www.fcc.gov/ecfs/document/104021231018469/1>; <https://www.fcc.gov/ecfs/document/104021231018469/1>.

¹⁰² FCC, "Wireline Competition Bureau Announces Availability of Additional Funding for the Rip-and-Replace Program," April 15, 2025, <https://docs.fcc.gov/public/attachments/DA-25-342A1.pdf>.

¹⁰³ For a list of comments filed in response to the FCC's proposed AWS-3 auction rules, see [https://www.fcc.gov/ecfs/search/search-filings/results?q=\(proceedings.name:\(%2225-117%22\)\)](https://www.fcc.gov/ecfs/search/search-filings/results?q=(proceedings.name:(%2225-117%22))).

¹⁰⁴ CTIA, "Reply Comments of CTIA," in *In the Matter of Auction of Advanced Wireless Services (AWS-3) Licenses*, April 25, 2025, pp. 1, 4, <https://www.fcc.gov/ecfs/document/1042559574316/1>; and AT&T, "Reply Comments of AT&T," in *In the Matter of Auction of Advanced Wireless Services (AWS-3) Licenses*, April 25, 2025, pp. 1-2, <https://www.fcc.gov/ecfs/document/1042548935576/1>.

¹⁰⁵ Verizon, "Reply Comments of Verizon," in *In the Matter of Auction of Advanced Wireless Services (AWS-3) Licenses*, April 25, 2025, <https://www.fcc.gov/ecfs/document/10425106514179/1>.

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