

Appendix

Introduction

This Appendix was prepared by the National Telecommunications and Information Administration (NTIA), in consultation with the Office of Management and Budget (OMB), and was sent to Congress and shared with the Federal Communication Commission in response to Section 618(d) of the MOBILE NOW Act.¹ It considers how the Spectrum Relocation Fund (SRF) could be reformed to address costs incurred by Federal entities related to sharing radio frequency bands with radio technologies conducting unlicensed or licensed-by-rule operations and how the SRF could cover such costs along with other authorized expenditures and budgetary expectations. Specifically, this report includes four potential options Congress might consider for legislative reform to facilitate reimbursement of eligible Federal entities for costs associated with researching, planning for, and enabling access to frequencies by unlicensed wireless devices or other technologies operating on a licensed-by-rule basis. In brief, the four options involve appropriating or authorizing funds from not yet scored auctions, from existing SRF balances, or from new sources, such as usage fees; or from spectrum leasing revenue.²

Background

In 2004, the Commercial Spectrum Enhancement Act (CSEA) established the SRF to support costs incurred by federal agencies relocating systems to “facilitate the reallocation of spectrum from governmental to commercial users” in “bands of eligible frequencies” through spectrum auctions conducted by the Commission.³ The Middle Class Tax Relief and Job Creation Act of 2012 amended the CSEA to cover additional costs for which Federal agencies can be reimbursed from the SRF including, among other things, costs for sharing spectrum with non-federal users, but only if such spectrum is auctioned.⁴ In 2015, Congress, through the Spectrum Pipeline Act, expanded further how SRF funds could be used by providing greater flexibility and earlier opportunities for agencies to conduct research and development and planning activities.⁵

¹ See Making Opportunities for Broadband Investment and Limiting Excessive and Needless Obstacles to Wireless Act, Sec. 618 (MOBILE NOW Act), Title VI, Div. P of the Consolidated Appropriations Act, 2018, Pub. L. No. 115-141, 132 Stat. 348, 1112 (Mar. 23, 2018), *codified at* 47 U.S.C. § 1508(d).

² NTIA made similar recommendations in response to a request from Congress in 2016. See Report to accompany S. 2837, Commerce, Justice, Science and Related AGENCIES Appropriations Bill, 2017, S. Rep. No. 114-239 (Apr. 21, 2016).

³ See Pub. L. No. 108-494, 118 Stat. 3996 (2004), *codified in part at* 47 U.S.C. §§ 309(j)(3)(F), 309(j)(8), 309(j)(15), 923(g) and 928.

⁴ See Pub. L. No. 112-96, 126 Stat. 245 (2012), *amending* 47 U.S.C. §§ 309(j), 923 and 928. It amended the description of “eligible frequencies” to include “any other band of frequencies reallocated from Federal use to non-Federal use or to shared use after January 1, 2003, that is assigned by competitive bidding pursuant to section 309(j) of the Communications Act of 1934.” 47 U.S.C. § 923(g)(2)(B) (emphasis added). Other changes permit eligible Federal agencies to receive SRF funds for costs associated with planning for FCC spectrum auctions and relocations, use of alternative technologies, replacement of existing equipment with state-of-the-art systems, research and engineering studies, economic analyses, and coordination with auction winners. See also NTIA, *Relocation of and Spectrum Sharing by Federal Government Stations-Technical Panel and Dispute Resolution Boards*, 78 Fed. Reg. 5310 (Jan. 25, 2013), available at <https://www.federalregister.gov/d/2013-01564>.

⁵ See Pub. L. No. 114-74, § 1005, 129 Stat. 622 (2015). See also Section 613 of the MOBILE NOW Act, Pub. L. No. 115-141, 132 Stat. 1109 (Mar. 23, 2018), *amending* 47 U.S.C. § 928(e)(1) to enable immediate SRF transfers to

The SRF is funded from a portion of the proceeds generated by Federal Communications Commission spectrum auctions of “eligible frequencies” that are reallocated from Federal use to non-Federal use or to shared use.⁶ From those monies already in the SRF, the Spectrum Pipeline Act appropriated \$500 million for use by federal agencies to identify opportunities for research, study, and other activities intended to improve efficient and effective spectrum usage.⁷ Additionally, the Spectrum Pipeline Act appropriated from the SRF as much as 10 percent of deposits made after November 2, 2015 for these purposes, creating a potentially consistent funding source for essential early-stage research, development and planning.⁸

Discussion

Under current law, SRF funding may be used to address a federal entity’s costs incurred “in connection with the auction of spectrum frequencies or the sharing of spectrum frequencies (including the auction or a planned auction of the rights to use spectrum frequencies on a shared basis with such entity)” subject to additional statutory conditions and procedures.⁹ Similarly, certain research, development, and planning activities subject to the Spectrum Pipeline Act are eligible for SRF funding only if they would facilitate a future FCC spectrum auction within 8 years.¹⁰ These and other statutory limitations preclude the use of SRF funds by federal entities that relocate from or share frequencies that are not subject to the FCC’s competitive bidding procedures, including those frequencies made available on a non-exclusive basis such as unlicensed operations, services licensed by rule, many satellite and public safety services, and where no “mutually exclusive applications are accepted” by the FCC.¹¹

an eligible federal entity under certain circumstances.

⁶ See 47 U.S.C. § 309(j)(8)(D).

⁷ See 47 U.S.C. § 928(g)(1)(A).

⁸ See 47 U.S.C. § 928(g)(1)(B).

⁹ See 47 U.S.C. § 923(g)(3).

¹⁰ See 47 U.S.C. § 928(g)(2)(E)(ii)(I)(bb). In reviewing a plan submitted under the Spectrum Pipeline Act, the Technical Panel must also consider whether the plan’s proposed activities will increase net expected auction proceeds. See *id.* at § 928(g)(2)(E)(ii)(I)(cc).

¹¹ See *id.* at §§ 309(j)(1) and 765f; see also 47 C.F.R. §§ 1.2102, 25.155-25.158 (2018). As noted above, Section 618(a)(2) the MOBILE NOW Act, 47 U.S.C. § 1508(a)(2), defines the term “unlicensed or licensed by rule operations” as “the use of spectrum on a non-exclusive basis under (A) part 15 of title 47, Code of Federal Regulations; or (B) licensing by rule under part 96 of title 47, Code of Federal Regulations.” The principle statutory bases for the FCC’s authorization of “Part 15” unlicensed operations are Sections 301 and 302 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 301 and 302a. See, e.g., *American Radio Relay League v. FCC*, 524 F.3d 277, 234-35 (D.C. Cir. 2008) and 47 C.F.R. § 15.1(b)-(c) (2018). The operation of certain radio stations without individual licenses is authorized by Section 307(e) of the Communications Act, as amended, 47 U.S.C. § 307(e). Although the definition quoted above references “part 96” of the FCC’s rules, other rules govern authorized licensed by rule operations. See, e.g., 47 C.F.R. §§ 80.13(c) (ship stations) and 87.18(b) (aircraft stations), *id.* at Part 95 (Personal Radio Services). On the other hand, while General Authorized Access (GAA) users in the Citizens Band Radio Service (CBRS) will be authorized to operate by rule under subpart D of part 96 of the FCC’s rules, other provisions in part 96 govern the acquisition (including through competitive bidding procedures) and operation of Priority Access Licenses (PALs). See, e.g., 47 C.F.R. Part 96, Subpart C. Some of the CBRS spectrum frequencies (*i.e.*, 3550-3650 MHz) are “eligible frequencies” that were reallocated from Federal use to shared use. Cash proceeds attributable to these CBRS frequencies will be deposited in the SRF in accordance

Further expansion of the frequencies eligible for SRF cost recovery, or the federal entities eligible to be reimbursed, and of the costs that can be recovered from current or future SRF monies would require legislation and may have an impact on federal budget expectations for deficit reduction. Specifically, any SRF reforms directed at facilitating sharing with new non-auctioned operations would need to identify existing or additional funding sources to cover the amount of potential additional transfers from the SRF.

There are pros and cons to incorporating radio technologies conducting unlicensed or licensed-by-rule operations into the set of options for sharing with federal entities.¹² In some cases, it may be easier for federal users to share with these operations than with licensed spectrum operations. In part, this occurs because the devices used for these operations typically are authorized only for low power use on a non-interfering basis. Past efforts to enable sharing in the 5 GHz band between incumbent federal operations and new, unlicensed operations are an example of the kind of activity that might be supported by such an expansion of the SRF's authorities.¹³

Moreover, to the extent that incumbent federal users do not need to modify their operations in order to permit sharing with new entrants, the costs incurred by federal entities to enable sharing are likely to be much less than they would be if the federal entities instead were to share with new licensed users or to relocate to new spectrum. Federal expenditures might be required to study the compatibility of federal operations and those of new entrants, to design a sharing regime, and to ensure that the regime is technically feasible, but NTIA anticipates that the bulk of the costs of implementing any sharing regime would be incurred by the new users. Federal users have little incentive to incur these costs, therefore the availability of funding from the SRF might serve to reduce such a disincentive to study and possibly implement sharing.

Increasing access for unlicensed or licensed-by-rule users in federal spectrum bands would be complicated by the lack of a licensee of record to address interference. Preventing interference and providing for its detection and resolution when it occurs would be key issues to be resolved in establishing any rules for sharing a band with federal users. Should Congress decide to expand the use of SRF to include facilitating unlicensed or licensed-by-rule operations, NTIA recommends that the OMB, NTIA, and Congressional review process that is currently required before funds are disbursed be applied to any request for funds for the expanded uses, to include review by the Technical Panel

with 47 U.S.C. § 309(j)(8)(D).

¹² Although licensed-by-rule regulatory regimes share certain characteristics with unlicensed regimes, they are nonetheless distinct approaches that carry advantages and disadvantages. Licensed-by-rule regimes, for instance, are able to use advanced frequency coordination and monitoring mechanisms that sometimes combine the advantages of unlicensed regimes (e.g., not having to apply to the FCC for a license) with the advantages of licensed regimes (higher power than unlicensed regimes, more sophisticated ways of coping with contention issues). Further, it is generally easier in the case of licensed-by-rule regimes to craft mechanisms that help the FCC and other federal agencies identify and resolve sources of interference to federal operations. On the other hand, because users in licensed-by-rule regimes do not need to apply for licenses and do not have exclusive use of the spectrum, the FCC usually authorizes licensed-by-rule users to operate at somewhat lower power than licensed (exclusive use) operations. Also, licensed-by-rule regimes generally require more limitations on use to prevent interference than unlicensed regimes because unlicensed users have no expectation that they will not experience interference. *See also, FCC Report to Senate Commerce Committee and House Energy Committee Concerning a National Plan on Unlicensed and Licensed by Rule Operations in Furtherance of the Ray Baum's Act (September 23, 2019).*

¹³ *See In the Matter of Amendment of the Commission's Rules to Provide for Operation of Unlicensed NII Devices in the 5 GHz Frequency Range, ET Docket No. 96-102, Report and Order (Jan 9, 1997).*

composed of representatives from OMB, NTIA, and the FCC, as provided in the Spectrum Pipeline Act of 2015. While it took some period of time to develop and implement these processes following adoption of the Spectrum Pipeline Act, NTIA believes they are now working effectively in ensuring that funding flows to appropriate projects.

The most significant challenge to using the SRF to support sharing with unlicensed operations is likely to be funding, in terms of both ensuring a sufficient balance in the SRF and the budgetary implications of providing such funding. Needless to say, even if the amount is small, any increase in demand for funding from the SRF is potentially problematic, given the limited resources available. Potential options for additional SRF funding sources include those listed below. In all cases, the amount of available funds would take account of competing needs and presumably would be limited to a specific dollar amount of existing SRF balances or a specified amount or percentage of anticipated revenue.

- *Appropriate funds from a portion of the anticipated or actual revenue from future (not yet scored) auctions.* This option has been used in the past to provide resources for important spectrum management activities such as those legislated through the Spectrum Pipeline Act. It presumes SRF-eligible costs associated with the frequencies subject to such future auctions are satisfied first.
- *Appropriate funds from existing SRF balances.* This option offers the potential for funding to be made available without the delay that is likely in connection with identifying a future, not-yet-scored auction. Significant obstacles to this approach are the need to identify scoring offsets for the new costs and the risks associated with directing SRF funds to this purpose that potentially could be needed for other uses (AWS-3 transition, Pipeline, and others).
- *Authorize funding from other sources, such as usage fees or fees collected from communications equipment manufacturers or distributors.* This option would require substantial further study to determine whether the collection of such fees would be practical. It likely would be logistically complex and might not generate sufficient income to account for all federal agency costs. It also might raise concerns that, depending on how the approach is structured, the money collected might be construed as a tax, which is more problematic than a fee. Unlike other options, this option would avoid the question of whether it is appropriate to fund cost-free commercial uses of spectrum through revenues collected from licensed spectrum users.
- *Appropriate funds derived from leasing for secondary commercial use spectrum currently reserved for the sole use of the Federal Government.* Significant resources would be required by NTIA and other federal agencies to negotiate and manage these spectrum leases. The cost of administering the lease program and managing the spectrum would need to be fully offset by revenue generated by the leases.