Before the
NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION
Department of Commerce

In the Matter of Implementation of the National Spectrum Strategy

COMMENTS OF AEROSPACE AND FLIGHT TEST RADIO COORDINATING COUNCIL, INC.

Aerospace and Flight Test Radio Coordinating Council, Inc. ("AFTRCC"), appreciates this opportunity to provide comments in response to the National Telecommunications and Information Administration's ("NTIA's") Notice of Opportunity for Public Input ("NOPI")[1] concerning the implementation of the National Spectrum Strategy.[2] AFTRCC applauds NTIA's work, in conjunction with The White House, to complete the National Spectrum Strategy.[3] The National Spectrum Strategy properly recognizes that spectrum and the multitude of uses of this resource by numerous industry sectors are fundamental for our nation's defense and economic well-being, now more than ever. It is vital to ensure that each industry, the public that depends on each industry, government at all levels, and the American economy in general are supported with the spectrum required for a multitude of applications both now and in the future.[4] As noted in the National Spectrum Strategy, the Strategy's implementation will be a

[1] *See Implementation of the National Spectrum Strategy*, Notice of Opportunity for Public Input, 88 Fed. Reg. 85266 (Dec. 7, 2023).

[2] The White House, *National Spectrum Strategy* (Nov. 13, 2023) *available at* https://www.ntia.gov/sites/default/files/publications/national_spectrum_strategy_final.pdf. The National Spectrum Strategy was accompanied by a Presidential Memorandum on the same day entitled Memorandum on Modernizing United States Spectrum Policy and Establishing a National Spectrum Strategy, dated November 13, 2023 ("Presidential Memorandum") *available at* https://www.whitehouse.gov/briefing-room/presidential-actions/2023/11/13/memorandum-on-modernizing-united-states-spectrum-policy-and-establishing-a-national-spectrum-strategy/.

[3] Earlier this year, NTIA solicited public comment on "the development and implementation of a National Spectrum Strategy for the United States". *See Development of a National Spectrum Strategy*, Request for Comments, 88 Fed. Reg. 16244-16247 (Mar. 16, 2023) ("RFC"). AFTRCC supplied comments in response to the RFC on April 17, 2023 ("AFTRCC NSS Comments"), and met with members of NTIA to discuss its position on October 17, 2023. Those comments contain a detailed description of AFTRCC and flight testing operations that are heavily dependent on reliable access to spectrum for aeronautical mobile telemetry in the L-, S- and C-Bands as well spectrum for communications purposes during flight testing in the HF and VHF Bands. *Id.* at 2-12. That description is incorporated herein by reference.

[4] *See* NOPI, 88 Fed. Reg. at 85266 ("Sufficient access to spectrum is vital to national security, critical infrastructure, transportation, emergency response, public safety, scientific discovery, economic growth, competitive next-generation communications, and diversity, equity, and inclusion. . . [and] will help the United States continue to lead the world in advanced technology and enhance our national and economic security").

"living process," and AFTRCC fully supports efforts to "reap the massive benefits of advanced wireless technologies and maximize efficient use of our Nation's spectrum resources,"[5] emphasizing that advanced wireless technologies are utilized by a broad range of industry sectors as well as Federal users.[6]

In implementing the National Spectrum Strategy, therefore, AFTRCC submits that it is incumbent upon the U.S. Government generally – and NTIA and the Federal Communications Commission ("FCC") working together, in particular – to ensure that all industries, companies, and organizations with interests in relevant bands have a fair opportunity to participate in studies. Early and fulsome input obtained about diverse real world spectrum uses, needs, and experiences will make the studies better and improve spectrum management outcomes based on those studies. The RFC acknowledged that the National Spectrum Strategy must serve all industry sectors, including national defense and transportation (including aviation), among others.[7] That recognition should continue to be central and inform how the National Spectrum Strategy is implemented.

AFTRCC agrees with NTIA that long-term spectrum planning requires affected stakeholders working openly and transparently in an ongoing manner.[8] In a spectrum sharing regime, stakeholders must regularly communicate with each other to avoid conflicting operations and resolve any instances of interference that arise efficiently and equitably under the applicable regulatory frameworks. A key ingredient to success is robust and regular dialogue between parties that establishes and maintains trust.

AFTRCC is well familiar with these requirements, as the two workhorse non-Federal, safety-of-life Aeronautical Mobile Telemetry ("AMT") bands – 1435-1525 and 2360-2395 MHz – are shared with the Federal Government, and they support several other applications on a coordinated basis while protecting AMT. Uses in adjacent bands as well can affect and be affected by AMT operations. As a result, AFTRCC has long been involved in bilateral and multi-stakeholder processes concerned with management of the radiofrequency spectrum utilized for flight testing. In playing its role in managing this spectrum, AFTRCC regularly confers on behalf of its Members[9] and other non-Federal flight test operators with Government Area Frequency Coordinators, AT&T (as a WCS licensee), commercial space launch operators, wireless

[5] National Spectrum Strategy at 23.

[6] *See id*. at Preface (noting that all advanced wireless technologies are to be promoted by the National Spectrum Strategy, "whether terrestrial-, airspace-, satellite- or space-based, for [the benefit of]all Americans"). *See also* note 4, *supra.*

[7] RFC, 88 Fed. Reg. at 16245.

[8] National Spectrum Strategy at 9.

[9] The Attachment appended hereto identifies AFTRCC's current members.

microphone manufacturers, broadcasting production companies, satellite operators, and others with interests both in those bands and in adjacent bands.

AFTRCC submits that the lines of communications and breadth of participation necessary to share spectrum equitably and in an environment characterized by mutual trust should be replicated when the Government implements its National Spectrum Strategy and studies the suitability of specific spectrum bands for additional uses. Thus, regarding the 5030-5091 MHz band, for example, one of the five bands identified for study within the National Spectrum Strategy over the next two years, there are a number of categories of stakeholders that should be expressly invited and strongly encouraged to be involved in the NTIA's "collaborative framework" efforts. These include Federal users of the band as well as of adjacent bands, uncrewed aircraft system ("UAS") manufacturers and potential UAS operators, other aviation interests, flight test operators in the adjacent 5091-5150 MHz band, and AeroMACS system operators in spectrum both immediately above and below 5030-5091, among other potentially interested parties. The existence of the robust record in the FCC's pending rulemaking concerning this band[10] will allow for identification of most, if not all, interested parties, so as to ensure that the National Spectrum Strategy implementation efforts regarding this band will serve the goal of "optimiz[ing] UAS spectrum access across the band while avoiding harmful interference to other protected in-band and adjacent-band operations."[11]

Regular and direct dialogue and meetings of potentially-affected and other interested parties in any of the bands that will be studied under the National Spectrum Strategy, overseen by NTIA and the FCC, will help ensure that the protection and opportunities of all stakeholders are given adequate consideration and confer added credibility on the process. AFTRCC agrees with NTIA, as the National Spectrum Strategy makes clear, timely collaboration opportunities are essential to establish trust and legitimacy: "[t]he collaborative framework, once implemented, will give stakeholders the opportunity to share their perspectives on future spectrum policies that could affect them and *engage early and often* in national-level spectrum planning."[12]

AFTRCC submits that all activity in furtherance of the National Spectrum Strategy, whether short-term spectrum studies and management or longer-term planning reflecting the evolution of new spectrum uses, must ultimately be band-specific. Studies and planning should be holistic, however, and not myopic, taking into account the present and future needs of the stakeholders within – and adjacent to – a particular band as well as the interests of those that

[10] *See In the Matter of Spectrum Rules and Policies for the Operation of Unmanned Aircraft Systems*, WT Docket No. 22-323, Notice of Proposed Rulemaking, FCC 22-101 (rel. January 4, 2023).

[11] National Spectrum Strategy at 6.

[12] *Id.* at 10 (emphasis added).

would like to introduce additional uses into the band.[13] Processes should explore whether alternative spectrum resources or technologies exist that could be practically implemented in current or other candidate allocations to meet the interests of proponents of introducing new uses, taking into account potential cost, disruption, and compromises to the performance of existing uses. While consideration of new uses may initially focus on one frequency range, full consideration of all the issues involved may naturally lead to the consideration of other spectrum bands, as discussed further below.

In order to complete studies of the bands identified in the National Spectrum Strategy within the two-year time frame contemplated in the Strategy, affected and interested parties should be invited and convened by NTIA and the FCC promptly after adoption of the Implementation Plan. The meetings among interested parties, both Federal agencies and departments, as well as non-Federal industry participants, should be moderated by NTIA and the FCC, and will be essential to develop band-specific National Spectrum Strategy implementation frameworks.[14] It is the experience of AFTRCC's Members that Government involvement is a critical driving factor in the success of multistakeholder meetings, especially where competing (and, unfortunately, from time-to-time, adversarial) perspectives on spectrum use are at play. NTIA and FCC moderation will be key to ensure that there is "consistent, robust, and transparent engagement among stakeholders."[15] This sort of multistakeholder engagement is essential at the outset of considering new uses in a band, and such engagement should not be postponed until there has been a decision (or tentative decision) to transition a band to new uses.[16] If robust dialogue is delayed, the credibility of the

[13] *See id.* at 20 ("[L]eaders at all levels of government, including Tribal governments, need to understand spectrum issues holistically and have access to spectrum managers and professionals that understand the complexities relative to their interests. Recognizing this need and providing policymakers with foundational information and tools will serve the Nation well as we implement a more strategic spectrum planning process").

[14] In this regard, AFTRCC may disagree slightly with the National Spectrum Strategy, which envisions that the "Implementation Plan . . . will name a responsible [government] party, other contributing stakeholders, the anticipated start date for work on the objective, and the estimated amount of time needed to achieve the objective." *Id.* at 22. The list of "other contributing stakeholders" should not necessarily be closed (in the event that was what was being suggested), given the complexities of the potential interests involved in a particular band, and, apart from a general schedule, specific intermediate timeframes to complete the work should be the result of early multi-stakeholder meetings (and the outside timeframe to complete the work should be subject to adjustment based on the multi-stakeholder input).

[15] *See Id.* at 2.

[16] That said, AFTRCC concurs with the discussion in the National Spectrum Strategy that, if a particular band is ultimately identified for repurposing, "leading program-management practices to plan and monitor the success of spectrum repurposing objectives" should be employed. *See id.* at 8. Just as studies to consider possible new uses require "consistent, robust, and transparent engagement," so, too, does the process of introducing additional uses into a band.

process could be damaged, and it may be difficult to engender trust among interested parties leading to a successful and equitable transition because "battle lines" may have been hastily drawn during the process leading to a repurposing decision.

AFTRCC agrees with NTIA that successful implementation of the National Spectrum Strategy "will require commitments from stakeholders to meet specific outcomes on established timelines."[17] AFTRCC encourages NTIA, when studying a band for possible additional uses, to call for coexistence and compatibility studies as early in the process as possible to help answer the questions below. Where possible, the interested parties should confer and agree upon a course of analysis and any field testing in the initial meetings and establish a schedule to complete those efforts.[18] AFTRCC realizes that this goal of mutual agreement on how studies and testing are to be completed may, in some circumstances, prove aspirational and not realistic, in which case interested parties should be encouraged to submit "competing" studies/tests. At the very least, parties should work to develop a reasonable schedule, taking into account the two-year deadline for the work, to allow for analyses and test results to be submitted, and then reviewed and commented upon by interested parties.

In addition to the foregoing, the multi-stakeholder process should consider the following matters regarding any particular spectrum band under study:

- What are the present and future needs for additional spectrum access that the band can potentially support? If the spectrum may be suitable, due to its propagation characteristics and the amount of spectrum available, for serving the additional needs of more than one sector of industry, these "competing" needs should each be considered and assessed in light of the questions that follow.

- Is the band currently shared by multiple incumbents? How heavily is the band used today, and is that use expected to grow in the future? What makes that sharing possible, *e.g.,* what coordination processes are necessary to enable successful sharing? Are the candidate additional spectrum uses compatible with existing uses of the band? Can the sharing frameworks that exist be leveraged to accommodate the additional uses (or at least some of them) in a technically and economically feasible manner (*e.g.,* through adoption of mitigation measures that do not overly impact deployment and performance)? Or is sharing not possible such that addition of the candidate additional uses would cause disruption to existing users?

17 *Id.* at 22.

18 AFTRCC agrees with the National Spectrum Strategy that, "[i]f determined necessary, stakeholders (working through the same collaborative framework) will articulate to the research and development community gaps in capabilities and needs related to improved modeling to inform the decision-making process." *Id.* at 12.

- If the introduction of additional uses in a band will disrupt incumbent uses, is there adequate spectrum available in other bands to feasibly support the current and future needs of the incumbent uses? AFTRCC notes that this question pinpoints the fact that consideration of additional uses in one spectrum band may lead to a daisy-chain effect requiring the study of other spectrum bands in a holistic manner (with respect to which displaced users from the initial band being studied may themselves be new users in the second band).

- What alternatives are there to meet the candidate additional uses in the band under study in other bands (about which same set of questions in the previous bullets must be asked)?

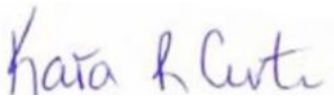
As part of the longer-term implementation of the National Spectrum Strategy, outside of the five specific band studies called for by the National Spectrum Strategy, AFTRCC submits that periodically, in *suitable bands*, there should be an updated inquiry into current and future spectrum needs and existing and emerging radio technologies to determine if spectrum use *in the long-term* in such bands has been maximized or can reasonably be intensified, including by accommodating compatible additional uses.[19] Even exclusively-licensed spectrum, including that which, at least in the past, has been made available to commercial wireless providers, should be considered potential candidates to undergo this periodic examination.[20] The experience of the last two decades has shown that exclusive licensing frameworks forcing the relocation of incumbent users have been among the greatest sources of disruption in spectrum planning. Entities seeking access to spectrum that would necessitate relocation of incumbents should have an increased burden to demonstrate the need for that access – and any claimed inability to repurpose spectrum they already have for the introduction of new technologies and expansion of effective capacity.

[19] Whether a band is reviewed periodically and how frequently should depend upon a number of factors, such as whether the allocation is unique for the uses being supported and the mission critical nature of the uses (*e.g.,* whether it is a safety-of-life band).

[20] AFTRCC acknowledges the process outlined in the National Spectrum Strategy to move beyond studying the initial five bands identified for study: "The U.S. Government will work within the collaborative framework to [implement] an ongoing process for solicitation of new and future spectrum requirements. Users will articulate their future needs through an agreed-to, standardized submission process that includes, at a minimum, a description of requirements, accompanied by supporting data, to ensure they are considered as part of the envisioned long-term planning process." *Id.*at 10. *See also id.* at 12 (discussing "a structured schema for documenting and identifying future spectrum access requirements and a recurring process to solicit future requirements, enabling long-term planning"). Such a process of identifying additional bands for study, like the associated studies themselves, should be open and transparent and available for all industry sector participants.

In conclusion, AFTRCC appreciates this opportunity to comment in response to the NOPI and looks forward to working with NTIA, the FCC, and industry participants going forward to implement the National Spectrum Strategy. That implementation should benefit all sectors of the economy and promote efficient and innovative uses of the radio spectrum. AFTRCC urges NTIA and the FCC, in carrying out their respective regulatory roles, to ensure reliable access to adequate spectrum for flight testing now and in the future in the service of safe and efficient military and commercial aeronautical operations.

Respectfully submitted,



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ATTACHMENT

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