

**Before the
Federal Communications Commission
Washington, D.C. 20554**

Advancing Understanding of Non-
Federal Spectrum Usage

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WT Docket No. 23-232

**COMMENTS OF
THE SOCIETY OF BROADCAST ENGINEERS, INC.**

The Society of Broadcast Engineers, Inc. (“SBE”)¹ submits these comments in response to the Notice of Inquiry (the “NOI”)² in the above-captioned proceeding. SBE supports the Commission taking proactive steps to better understand non-Federal spectrum utilization—although accurately, comprehensively, and purposely assessing spectrum use will be a complex and multifaceted process, the information gathered may help inform effective management of spectrum well into the future. The FCC must approach this overarching process deliberately and thoughtfully, by establishing a clear series of steps from initial conceptualization to final implementation.

To begin, developing a clear working definition of “spectrum use” will be essential to frame the numerous issues raised in, and various substantial tasks proposed by, the NOI. After a clear definition is established, the Commission should further prepare by studying the many and varying ways such defined “spectrum use” occurs, which, in turn, will permit the FCC to analyze and determine which measurement techniques will accurately capture such uses. Actual data

¹ SBE is a national association of broadcast and multimedia technology professionals with over 5,000 members worldwide. SBE has managed spectrum within the broadcast industry since shortly after its creation in 1964, and is well suited to assist in this effort.

² *Advancing the Understanding of Non-Federal Spectrum Usage*, Notice of Inquiry, WT Docket No. 23-232 (rel. Aug. 4, 2023) (“NOI”).

collection should only begin once the foregoing groundwork has been laid, and the FCC should consider outsourcing such data collection and any corresponding technical studies to appropriate third-party experts rather than proceed on its own accord.

I.
The Definition of Spectrum “Use” Should Encompass All Types of Use the Commission Wishes to Study

As the NOI thoughtfully and accurately observes, “[s]pectrum bands do not have uniform service requirements, operational systems, or technical characteristics.”³ Indeed, there are nearly as many different types of operational usage parameters and other requirements for viably utilizing spectrum as there are forms of spectrum authorizations made available by the FCC. This, of course, makes measurement of generic spectrum occupancy⁴ extremely complex. As a consequence, and for purposes of the targeted goals set forth in the NOI, before any analysis can begin the Commission must settle on a definition of *what is to be measured*.

To truly determine “how to better obtain more sophisticated knowledge of non-Federal spectrum usage,”⁵ the definition of spectrum usage must be broad enough to encompass all types of non-Federal use the Commission is interested in studying. SBE therefore respectfully submits that to obtain a true and accurate picture of the current RF environment the definition of “spectrum

³ *Id.* ¶ 22.

⁴ These comments often use the term spectrum “occupancy” interchangeably with “use” or “utilization.” However, there may be room for a meaningful distinction between those concepts. At perhaps the most fundamental level, spectrum occupancy may be viewed as an action resulting in a measurable change to the radio frequency environment. The concept of when collection of data regarding spectrum occupancy is most useful—potentially, the point where spectrum occupancy becomes a meaningful spectrum “use”—hinges on how significant the measurable change to the radio frequency environment in fact is. For example, spectrum “use” may be viewed as a spectrum occupancy that either is significant enough to result in a verifiable benefit for or service to the public, or, on the other hand, is significant enough to exclude other occupancies that would otherwise fit the definition of spectrum “use.”

⁵ *NOI* ¶ 3.

use” should account for both continuous and intermittent use—including year-round, seasonal, and temporary use—as well as fixed and mobile use, unlicensed use, and unauthorized use, just to name some of the most common types of spectrum occupancy.

To that end, SBE tentatively supports a broad definition of use,⁶ but one that incorporates a number of technical details and subcategories. The NOI’s suggestion to break spectrum usage into discrete components like geographic usage, frequency usage and time usage,⁷ and to incorporate additional radio frequency engineering metrics,⁸ is a good place to start in this effort. Even this type of categorization may not effectively encompass all relevant spectrum use, however. Additional consideration may be needed to account for temporary or short-term spectrum uses (for example, broadcast auxiliary services operating pursuant to FCC Rule 74.24⁹) and spectrum uses that are in violation of FCC authority (to the extent the Commission wishes to evaluate such unauthorized use as part of these efforts).

II. Spectrum Usage Should be Studied Prior to Data Collection

No single approach is feasible to measure spectrum occupancy. Different frequency bands and services have unique characteristics, and the methods used to assess occupancy must vary accordingly. This is a complex and challenging task, but it is essential if the Commission is to effectively manage the non-Federal spectrum bands.

Given the variety of spectrum usage styles, an investigation of usage should begin with academic analysis involving subject matter experts from the industry and academic circles before

⁶ See note 4, *supra*.

⁷ NOI ¶ 18.

⁸ *Id.* ¶ 19.

⁹ See 47 C.F.R. § 74.24.

data collection begins. The numerous differences in types of spectrum usage can have a significant impact on the methods that are used to effectively measure occupancy. As an example, the broadcast industry itself utilizes spectrum in myriad ways. Some usage is fixed and continuous, like many television and radio broadcast streams. Other operations are intermittent and/or mobile, like mobile electronic newsgathering. In the case of AM radio, as the NOI notes, measured usage may vary significantly based on the time of day and contour being assessed.¹⁰ Data collection methods will need to be deliberately analyzed, selected, and tailored to capture and effectively compare all varying types of usage. Further, spectrum usage may change widely throughout the year, with some usage varying diurnally, seasonally, or otherwise—meaning some collection efforts may be effectively completed in less than a year, while some may necessitate years of data collection, averaging or other post-collection calibration, and processing. Thus, a fulsome study of appropriate collection techniques across the spectrum bands should be completed before new technologies are brought to bear gathering data.

The process of defining and determining effective assessment tools for the wide range of spectrum uses regulated by the Commission will be a colossal task, and one that may not be well-suited for the FCC and its existing resources. Instead, SBE respectfully submits that the most effective path forward would be for the Commission to employ qualified and experienced third-party contractors and organizations to complete the scientific research and actual usage analysis process. In addition to ensuring that skilled and hyper-specialized industry experts are brought to bear on this difficult task, outsourcing would allow better tracking of the FCC's expenses for the undertaking and thus aid in fairly allocating the cost of collection. Such an approach would further

¹⁰ See *NOI* ¶ 18, n.38 (noting the difficulties in measuring usage by an AM station based on differences in its Skywave Contour and Groundwave Contour hours).

allow the FCC to continue to focus on its core mission of regulating interstate and foreign commerce in communication by radio, while simultaneously ensuring that usage studies are conducted in a timely and cost-effective manner.

Conclusion

The process of better understanding non-Federal spectrum usage is of great importance to the FCC's efforts to effectively and efficiently manage spectrum for years to come. However, fully measuring and assessing spectrum usage will be difficult.

In order to successfully meet the challenge, the Commission should carefully define spectrum use to encompass the wide range of usage it wishes to assess, and should employ qualified and specialized third parties to thoroughly study the wide range of spectrum use prior to beginning data collection efforts.

Respectfully submitted,

The Society of Broadcast Engineers, Inc.

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