

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Office of Engineering and Technology Seeks)	ET Docket No. 17-340
Comment on Technological Advisory Council)	
Spectrum Policy Recommendations)	

Reply Comments of ITIF

ITIF has for years supported the efforts of the Federal Communication Commission's (FCC or Commission) Technological Advisory Council's (TAC) spectrum policy reform efforts, and appreciates the Commission seeking comment on the TAC's various proposals and principles.¹ Effective tools are essential to understand and resolve interference disputes, and with use of spectrum becoming ever more intense, the importance of these efforts will only grow.

Ever since Nobel Laureate Ronald Coase's famous *The Federal Communications Commission*, policymakers have been grappling with how to best define rights to spectrum use and lower transaction costs to see this resource put to its highest and best use.² In other words, policymakers continue to work towards the right abstractions to facilitate the most intensive and economically valuable use of spectrum. The TAC's whitepapers and principles point to new abstractions beyond the traditional focus on transmitter power, most notably in the attempt to incorporate the role of receivers into spectrum policy. ITIF supports these efforts.

¹ Office of Engineering and Technology Seeks Comment on Technological Advisory Council Spectrum Policy Recommendations, Public Notice (Dec. 2017), ET Docket No. 17-340 ("Public Notice"). For our prior support see, e.g., Doug Brake, "Comments of ITIF In the Matter of Amendment to Commission Rules Concerning Adjudication of Spectrum Interference Disputes," RM-11750 (July 2015), available at <https://ecfsapi.fcc.gov/file/60001115148.pdf>.

² Ronald H. Coase, *The Federal Communications Commission*, 2 J LAW & ECON 1 (1959).

ITIF would urge the Commission to move forward with the TAC's recommendations on moving towards a risk-based approach to assessing the potential for interference. As Coase said, "It is sometimes implied that the aim of regulation in the radio industry should be to minimize interference. But this would be wrong. The aim should be to maximize output."³ Radio services must have certainty in the protection against interference if we are to see the massive investment needed for large scale operations, but if the Commission is driven purely by worst-case-scenario thinking in attempting to minimize any possible interference, innovation and introduction of new services would grind to a halt. Explicitly analyzing both the likelihood and the downside of potential interference would be a laudable step towards a regime that can more rationally address the costs and benefits to any particular license change.

ITIF joins the widespread support for the general thrust of the "Basic Spectrum Principles," with some minor reservations. Commenters quibbled with various principles, but there is widespread agreement in the record for several principles, most notably on Principle 1 and Principle 4. This is an important recognition that receivers play a role in mitigating harmful interference. As CTIA puts it, "the factual statements included in these principles are simply general observations about the interference environment. It is certainly true that '[h]armful interference is affected by the characteristics of both a transmitting service and a nearby receiving service in frequency, space or time.'"⁴

More controversial is exactly how receiver performance should be incorporated into guidance or rules by the Commission. For example, commenters like CTIA are no doubt correct that harm claim thresholds and the Spectrum Principles should not be leveraged to eat away at the link budget reasonable systems have designed.⁵

In other words, T-Mobile is correct in saying the Commission "should not attempt to determine the appropriate performance level for any particular component of a system, but should instead focus on what is a reasonable expectation for interference resiliency of a system as a whole since tradeoffs between transmitter deployment and receiver performance involve potentially costly compromises and should be left to industry."⁶

If we recognize the need to incorporate receivers into our thinking of harmful interference, and also recognize that the Commission's role is not to determine the specific performance level of any one component, such as through receiver standards, the TAC's interference limits proposals look quite reasonable. Setting an

³ Coase at 27.

⁴ Comments of CTIA at 3, quoting the Public Notice.

⁵ Comments of CTIA at 3.

⁶ Comments of T-Mobile at 5-6.

interference limit or harm claim threshold will be as contentious as a rulemaking to set new transmit power and technical rules for a band, as it functionally involves the same trade-offs, and it is understandable that existing licensees would resist opening the terms of their service up anew. The Commission should consider experimenting with these recommendations in new bands or as a transitioning mechanism.

Many comments felt that harm claim thresholds were overly complex. But setting these limits entails the same trade-offs, uncertainties, and judgments about interference that are triggered when one sets transmitter limits. Interference limits would force these issues into the open. There has also been important progress in simplifying and clarifying how interference limits could be set, promulgated, and enforced since the concept was first introduced.⁷

Admittedly, enforcing interference limits is more difficult than certifying that a receiver meets an FCC standard—it would require modelling or field measurements rather than a simple bench test. However, measuring interference limits should be more straightforward than proving “harmful interference” in the abstract or in the context of a rulemaking proceeding. Interference limits represent a well-defined engineering parameter, providing more certainty compared to the current “harmful interference,” and lowering overall costs if enforcement is warranted.

With the general historic trend of ever more intensive use of spectrum, radio services will have to be packed ever closer together in time, space, and frequency. This trend will require coordination of an increasing diversity of services, services that may well have different waveforms, different (and sometime conflicting) business models, and different levels of familiarity with regulatory processes. The number of interference disputes is likely to increase over time. A key question is to what extent the coordination required to minimize the impact of interference incidents will be done more through a process of centralized planning or more through a new regime of decentralized negotiation and Coasian bargaining.

The general thrust of the Basic Spectrum Principles, combined with risk-based interference assessment and interference limits, point towards a better abstraction to allow for the private sector to more easily negotiate those sorts of bargains, and gives the Commission the tools to resolve future spectrum disputes that involve more complicated systems.

⁷ See, e.g., comments of Pierre de Vries at 3, citing Janne Riihijarvi et al., Statistical Inference on Spectrum Data for Design and Enforcement of Harm Claim Thresholds, IEEE Xplore, Aug. 30, 2017, DOI: 10.1109/TCCN.2017.2746578.

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