



Written Testimony of Jennifer A. Manner

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Chairwoman Johnson, Ranking Member Lucas, and Committee Members, thank you for inviting me to testify today on the important topic of spectrum needs for observations in Earth exploration and space science, both of which are critical in addressing climate change. It is my honor to be here to discuss spectrum management during this momentous time in our history, with 5G-and-beyond technologies clambering for access to additional spectrum. Deployment of next-generation broadband is essential for the United States, but access to particular bands of spectrum for commercial broadband needs to be balanced with important Government uses, such as the space sciences. As this Committee knows, continued progress in Earth exploration and radiolocation abilities also hold strategic value for the United States. For the United States to continue its leadership in terrestrial and space-based wireless technologies, it is critical that the United States reform its spectrum management process for domestic proceedings and for international exchanges. After all, spectrum is the lifeblood that fuels all of our radiocommunications networks.

An improved U.S. spectrum management process is critical to the country's private entities, such as EchoStar/Hughes, as well as the U.S. government. HughesNet® is the global leader in satellite broadband services and the largest provider in the United States and the world, and EchoStar is leading the way in the 2-GHz band narrowband mobile satellite services market globally. For U.S. companies like EchoStar/Hughes to be successful in this global market, it is critical that the United States is efficient in both domestic and international spectrum management.

Domestic Spectrum Management

Our domestic spectrum management regime has existed for approximately 100 years. Unlike many other countries, we have one spectrum manager for commercial and public safety use, the Federal Communications Commission ("FCC"), and another, the Commerce Department's National Telecommunications and Information Administration ("NTIA") for federal use by agencies such as the National Science Foundation ("NSF"), Commerce's National Oceanic and Atmospheric Administration ("NOAA"), and the National Aeronautics and Space Administration ("NASA"). Our bifurcated approach to spectrum management brings unique benefits and challenges. However, the increased need for spectrum for terrestrial and space-based technologies across the board, both on the Government and commercial side, and the consequent need for more spectrum sharing has raised new challenges that call for changes. Agencies must adapt if we are to have an effective interagency spectrum management process.

From 2019 to 2021, I had the honor to serve as Co-Chair of NTIA's Commerce Spectrum Management Advisory Committee's Working Group 1. The Committee, or CSMAC, is a federal advisory committee composed of private sector representatives for entities whose business relies on spectrum. In Working Group 1 of CSMAC, we were charged with looking at the United States' current spectrum management approach and whether it is serving the entire stakeholder community or if it would benefit from reform. Reform was being considered because of the increasing demand for access to spectrum to support new technologies, including for 5G and beyond, and the mounting evidence that the current system was inadequately addressing the needs of both new and existing spectrum users.

The CSMAC endorsed the Working Group 1 Report, which noted the general agreement of its members that the United States' current approach for managing spectrum is indeed no longer effectively serving the needs of the entire stakeholder community and would benefit from reform. Moreover, with the increased use of spectrum by all stakeholders, the group agreed that issues around allocations, spectrum sharing, and band adjacencies will need to be handled with increased speed and skill to ensure that the United States is making the most of its critical national resources.

With this as a background, the group devised a series of recommendations that fell into three categories: (1) proposals to stand up a new agency that would unify spectrum management decision-making within the U.S. Government; (2) proposals to repurpose either of the existing spectrum management agencies with broader jurisdiction over spectrum governance; and (3) additional ideas that could be attached to other reforms or stand on their own, such as updating the current interagency Memorandum of Understanding (“MOU”) between NTIA and the FCC.

Legislation is required for either of the first two options, but I would like to share information regarding option three, providing several proposals that could be enacted without legislation. First, and most importantly, is the revision of the NTIA-FCC MOU on spectrum coordination, which was originally agreed to in 2003 and has never been updated. The MOU, which I helped design while working at the FCC, was last revised 18 years ago. CSMAC, in a report agreed to in January of this year, provided some detailed ideas on how to improve the spectrum coordination process between NTIA and the FCC.¹ Both as the Co-Chair of the originating Working Group and as Senior Vice President for Regulatory Affairs at EchoStar, I strongly support the recommendation to revise the MOU. as it would help improve the spectrum management process for Government and private sector users, which is something the Government Accountability Office’s (“GAO’s”) recent report supports as well.

The CSMAC recommendation on the MOU included increased meetings of both the principals of the agencies and the staff to increase communications and planning and requiring definitive notice periods for coordinating on items. Increased communications will enable the ability to have increased opportunities to discuss contentious issues and definitive time periods for review will increase certainty for both agencies in the decision-making process.

In addition, the CSMAC recommended to include coordination in the MOU process on several important areas not in the current MOU, including preparation for World Radiocommunication Conferences and on international standards-setting. Other proposed ideas to increase communications and coordination include establishing a working group between the agencies to discuss spectrum initiatives and spectrum planning by both agencies, including practices to promote increased trust and efficiency in processes. This includes developing a common set of metrics and best practices to assess and predict potential harmful interference and on-going work at the NTIA and the FCC labs regarding modeling a radio signal’s propagation or a signal’s impact on passive services, such as Earth exploration or radio astronomy. Further, an annual public workshop was suggested to discuss spectrum research and coordination activities and review and explore spectrum sharing and management techniques and approaches, including the process for remediation of harmful interference situations.

In the 2020 report, CSMAC also recommended that the agencies work together and with other agencies to:

- Gather data and metrics on growth in spectrum-based services and applications so that they can better anticipate spectrum demand;
- Gather data from evolving technologies and how they will utilize spectrum;
- Advance the understanding of radio propagation through refinement in modeling based on updated technologies; and
- Advance the understanding and development of sharing mechanisms, particularly automated sharing mechanisms.

Although not a direct result of the CSMAC report, I am still pleased to see that work in this area is already ongoing, such as in NSF’s Spectrum Innovation Initiative ([NSF's Spectrum Innovation Initiative | NSF - National Science Foundation](#)).

In addition, we recommended certain confidence-building measures, including having the agencies host regular detailees of other agencies and perhaps even sharing office space.

¹ Available at [Report of CSMAC Working Group 1 01/14//2021 | National Telecommunications and Information Administration \(doc.gov\)](#).

Further, I would like to share some recommendations of my own. First, it is critically important that the FCC remain, consistent with its authorizing statute, independent of the political process and serve as the U.S. technical expert on commercial communications issues. Political considerations should not be a factor in FCC decision-making.

Another area of concern is the under-resourcing of technical staff in both the FCC and NTIA. For instance, the FCC's informal guideline for action on applications provides that applications should be placed on public notice within 30 days.² However, a review of recent FCC public notices placing applications on public notice demonstrates that in many cases, depending on the Bureau, this guideline is not followed potentially slowing the deployment of telecommunications services. This same lack of technical staff permeates throughout the agency for many functions including rulemakings. While I am not as familiar with NTIA's staffing, I understand similar issues are present there.

Therefore, having a focus on increased engineering staffing, including at the leadership level in both agencies, would be a positive change. For example, FCC decision-making would be facilitated if FCC commissioners had a dedicated technical staff person in addition to their legal advisors. The number of spectrum engineers at both agencies has grown very little over the last few decades while the demand for more spectrum and the need to have this spectrum released in the marketplace has increased exponentially. While my expertise is stronger relative to FCC and NTIA operation, I suspect the science agencies could also use more in-house spectrum engineers. These new hires would ideally be channeled into a more cooperative interagency process recommended by CSMAC—where common metrics for sharing and compatibility studies could be agreed to in advance in line with common goals articulated by principals at each agency.

Under its authorizing statute, the FCC allocates spectrum according to “public interest,” which is typically interpreted with the consumer front and center. This also understandably prioritizes new mass market services, such as 5G. Other agencies, under their authorizing statutes, must be mindful of “national interest,” which may take a broader view, including international ramifications. I would urge that both the public and national interest be considered for better balance regarding improved interagency decision-making.

Proceeds from recent FCC auctions demonstrate the economic value of spectrum for commercial broadband, but we must not lose sight of the value of space-based uses to the United States' strategic interests in climate science, national defense, or weather forecasting to protect lives and property. As members at this hearing are aware, many technological advancements have come from earlier investments in NASA and other science agencies, which have been applied broadly throughout our economy. Such technologies may be as prosaic as the microwave oven, yet responsible for incalculable productivity gains. Auction proceeds cannot be our only measure of the value of spectrum to the United States' overall national interest. Spectrum for international satellite services is not auctioned, yet it serves critical national purposes, including delivering connectivity to rural users and rural Government facilities in underserved markets more economically than terrestrial options, and supporting users in times of emergency when the terrestrial network is not available. Yet, time and time again, the FCC has placed terrestrial use of this spectrum as of more importance than satellite using the public interest standard, even when it may conflict with the national interest in solving problems, such as the digital divide. This was the case in the FCC's Spectrum Frontiers Proceeding.³ Deployment of the next generation of terrestrial broadband cannot be the only policy goal. Spectrum policy must balance the current and future requirements of our country, including remaining on the forefront of space sciences.

² [Informal Timeline for Consideration of Applications for Transfers or Assignments of Licenses or Authorizations Relating to Complex Mergers | Federal Communications Commission \(fcc.gov\)](#)

³ [Spectrum Frontiers R&O and FNPRM | Federal Communications Commission \(fcc.gov\)](#). Despite this decision, FCC Chairwoman Rosenworcel recently noted that “if we just relied on millimeter wave spectrum, we would actually increase the digital divide for 5G.” [Ina Fried and Kim Hart unpack future of 5G with Jessica Rosenworcel - Axios](#) at 4:47 et. seq. (July 16, 2021).

The International Spectrum Management Process

The shortage of technical agency staff in our domestic proceedings in an increasingly spectrum-hungry world is felt even more on the international side.

The International Bureau at the FCC, which is responsible for developing the technical positions relative to commercial spectrum use for the United States in international spectrum meetings, only maintains a handful of spectrum engineers actively engaged in preparation of U.S. positions below senior Bureau management. NTIA, responsible for the technical positions for the U.S. in international meetings relative to Government spectrum use, maintains even fewer engaged, working-level spectrum engineers. The State Department, which leads U.S. delegations to international spectrum meetings, maintains even fewer still. The State Department has traditionally served as the decision maker if the FCC and NTIA disagree on a particular U.S. position for an International Telecommunications Union (ITU) meeting. This has been a vital role, as the State Department does have a sense of the broader issues incumbent in the national interest; however, it cannot mediate on a technical issue if it lacks engineering expertise. In the recently released GAO Report, the State Department reportedly has stated that it does not want this “tie-breaking” role. It is likely that the State Department does not want this role because of its current lack of sufficient technical expertise. Accordingly, EchoStar respectfully suggests it is in the national interest to provide the State Department with this technical expertise so it can resume this role which is vital to the United States’ success internationally. Further, if the United States is to lead in these critical international settings, Congress should consider increasing appropriations for full-time engineer employees and travel budgets for all agencies with staff attending ITU meetings.

As this Committee is aware, relative to the space sciences, there is quite a degree of collaboration between the space-faring nations. The ITU was established in part to promote international harmonization in spectrum use in order to protect services that are allocated in accordance with the agreed International Table of Allocations in the ITU’s Radio Regulations. The ITU-hosted World Radiocommunication Conferences (“WRC”), held approximately every four years, are the forum for negotiating changes to the International Table of Allocations. For both science and mass market applications, most member countries place a premium on the harmonization found in the International Table of Allocations and ITU technical rules for space-based and other wireless applications. Some of the United States’ challenges at the last several WRCs have come from a miscalculation of the importance to other member nations of international harmonization. As demand for spectrum increases from all users, harmonized use can minimize some of the costs of spectrum sharing, managing interference into and from adjacent band services, and coordination of systems.

As the need for spectrum harmonization continues to increase, the importance of the international spectrum management process continues to increase as well.

The FCC and NTIA are critical players, along with the State Department, in our success at the ITU. When I attended my first WRC in 1995, there was no question about the United States’ leadership at the ITU. However, since that time, other countries have gained influence. Unlike twenty-five years ago, the U.S. now operates in an increasingly competitive global communications market, where it alone is no longer the market-determinant hegemon. China, Russia, and others are now aggressively asserting their interests at the ITU, with large delegations full of both Government and private sector spectrum engineers.

Traditionally, the United States has had the largest delegations at ITU meetings, including the WRCs, in part because of the large number of private sector delegates and representatives from the various spectrum management and user agencies. However, this has changed. At the last WRC, the U.S. had approximately 150 delegates, while China had approximately 200. Each delegate increases the ability for a country to cover the issues and negotiate their resolution with interested parties.

The United States must continue to up its game to be successful. What does this mean?

First, we must ensure that we develop a balanced approach to international spectrum management issues, especially at the WRC. This means the three core agencies—the FCC, NTIA, and the State Department—must actively coordinate on U.S. positions throughout the year, with U.S. private sector input, with the Department of State, the agency vested with international policy authority, as the lead agency. As noted above, the State Department has been vital in serving as the middleman regarding controversial issues between the agencies and making difficult policy calls at international meetings that balance both commercial and longer-term strategic

goals. In fact, this was the case at WRC 2000 when the United States, through a decision by the State Department, protected a frequency band used for weather satellites, from being identified for terrestrial IMT.

Our democracy benefits from robust, open debate, including in preparations domestically for international conferences. However, many of our greatest competitors have an autocratic approach for determining their international positions. The United States must work harder to resolve our domestic differences earlier to compete effectively internationally. An improved domestic interagency process, as recommended by CSMAC and now the GAO, will enable a more effective U.S. delegation at ITU meetings. A more effective interagency process will also ensure greater U.S. success at international meetings.

The State Department and other agencies must make their decisions based on the public and national interest and must strive to achieve the balance of commercial and governmental interests that have been instrumental in establishing the United States as the world leader in telecommunications.

In addition, more emphasis needs to be placed on training technical agency staff with the diplomatic skills required to lead U.S. delegations to international meetings and act as spokespeople for issues. Such training will facilitate U.S. leadership and success at the ITU.

Finally, a word on the international standards making process outside of the ITU.

Industry standards in our 5G and beyond world do heavily influence the success of the United States in the wireless world. I am glad to see that the U.S. industry is so active in this standards process, but it is often outnumbered by our Chinese competitors. It would be useful to have the United States Government more actively participate as observers to industry standards-setting bodies to advance the interests of its users as well as the overall national interest.

Conclusion

Thank you for inviting me to testify today. As you consider your next steps, I would urge that you bear in mind the recommendations of CSMAC on improving spectrum management in the United States. Right now, we have an approach that favors 5G technology over other commercial services and critical federal uses, including space observations. I would also urge that policymakers in Congress be mindful of agreed international allocations and technical standards for radiocommunications, both for commercial applications, such as 5G, and space sciences, like Earth exploration. The United States can no longer propose spectrum that is inconsistent with international usage and allocations and expect other countries to follow. To further lead at the ITU, our preparation for international meetings, like our domestic proceedings, must be driven by a more collaborative interagency process that starts with agreed goals and then spectrum-sharing metrics. Our U.S. positions should seek outcomes consistent with a national interest that balances the benefits from commercial next-generation broadband and critical federal uses. To achieve improved interagency spectrum management, we must require periodic review of spectrum governance more than once every hundred years. Thank you Madame Chairwoman for the invitation to testify before the Committee today.