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House of Representatives
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

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November 5, 2021

The Honorable Eric Lander
Director, U.S. Office of Science and Technology Policy
Science Advisor to the President
1650 Pennsylvania Avenue NW
Washington, DC 20502

Dear Director Lander,

As you know, scientific research across natural science disciplines, including astronomy, climate science, and other Earth and environmental sciences, all depend upon the radio-frequency spectrum for active and passive remote sensing and other methods of data collection. As demand for spectrum for mobile applications has increased drastically in recent years, spectrum-dependent scientific fields and operational functions such as weather forecasting are facing increasing threats to their spectrum equities, including bands coordinated domestically and internationally, due to harmful interference. Both privately- and federally-funded research and operational science may be affected, including environmental observation, operational weather forecasting, and radioastronomy activities within the National Oceanic and Atmospheric Administration (NOAA), the National Aeronautics and Space Administration (NASA), and the National Science Foundation (NSF).[1,2,3]

Due to these concerns, we respectfully request that the President's Council of Advisors on Science and Technology (PCAST) prepare a report on strategies for protecting and enabling spectrum access and quality for science and operational applications. These findings should influence both the United States government's position at international proceedings, such as the World Radiocommunication Conferences (WRCs), and in domestic proceedings at the Federal Communications Commission. A clear message from PCAST would also empower OSTP and the National Telecommunications and Information Administration (NTIA) to advocate for science spectrum needs more effectively.

[1] https://www.aip.org/fyi/2019/noaa-warns-5g-spectrum-interference-presents-major-threat-weather-forecasts
[2] https://spectrum.ieee.org/how-nasa-is-adapting-radios-to-a-noisier-mars
[3] https://www.ntia.doc.gov/fcc-filing/2021/ntia-comments-regarding-24-ghz-emission-limits

We would recommend that PCAST consider the following questions:

1. What additional research is needed to strengthen our ability to detect and predict the conditions under which spectrum applications may be harmed by interference?

2. What additional research is needed to improve processes, technologies, and techniques to mitigate interference with both passive and active sensing?

3. Are the concerns of science spectrum users, including federal science and operational agencies, being acknowledged, and accommodated effectively in the federal spectrum management process? What are opportunities for improvement?

4. Is there adequate agreement among federal agencies, the scientific community, and industry on how technical studies to evaluate potential spectrum interference should be conducted (assumptions, metrics, etc.) such that "apples-to-apples" analysis supports decision-making? If not, how can the federal government help in establishing common methodologies for interference studies?

These questions are somewhat time sensitive, as domestic and international spectrum management decisions continue apace. In particular, the United States will be participating in the next WRC meeting starting November 20, 2023. WRC23 will consider specific Agenda items which have potential impact on spectrum used for radio astronomy and remote sensing. The National Academies Committee on Radiofrequencies (CORF) has already convened to assess each agenda item and consider their potential effects on current and future radio frequency science applications. CORF issued a report on those items in late September.[4]

With a clear-eyed view of the stakes WRC23 in hand, we would like to see the U.S. government establish unified, pro-science policy positions that are supported by detailed technical analysis in advance of the Conference. At this time, the ITU study committees are already working on preparing draft recommendations for the agenda items for WRC23. As such, we would recommend that PCAST produce its findings no later than May 2022.

We appreciate your consideration of this important issue and its implications for both discovery science and operational activities that affect the daily lives of all Americans. If you would like to discuss further, please have your staff contact Janie Thompson on the Majority staff and/or Michael Beavin of the Minority staff at 202-225-6375.

[4] https://www.nap.edu/catalog/26080/views-of-the-us-national-academies-of-sciences-engineering-and-medicine-on-agenda-items-at-issue-at-the-world-radiocommunication-conference-2023.

Sincerely,

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Committee on Science, Space,
and Technology

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