

Congress of the United States

House of Representatives

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

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March 13, 2019

The Honorable Ajit Pai
Chairman
Federal Communications Commission
445 12th Street, SW
Washington, D.C., 20554

Dear Chairman Pai,

We are deeply concerned about the Federal Communication Commission's (FCC) plan to auction radio frequency spectrum on March 14 for 5G wireless communications. Given the frequency spectrum being considered, and at the FCC's suggested noise limit, there is the potential for signal interference with Earth observation sensors for weather and climate forecasting which operate at adjacent spectrum frequencies. This could pose a serious risk to the American public, and as such, the FCC should engage with the National Oceanic and Atmospheric Administration (NOAA), the National Aeronautics and Space Administration (NASA), and the Department of Defense (DOD) to ensure interference issues are adequately addressed before continuing with the spectrum auction.

NOAA, NASA, and DOD have used satellite-borne microwave sensors to measure water vapor since the 1970s.¹ Water vapor data is essential to the numerical weather prediction of rainfall and drought and helps increase the precision of such predictions. Water vapor measurements are also important in increasing accuracy of tracking hurricanes and monitoring sea ice, sea surface temperature, and soil moisture. Due to the specific properties of water vapor, it cannot be measured in frequency bands other than those currently allocated.

The water vapor channel is critical to weather sensing, monitoring, forecasting, and warning, and understanding climate patterns. Any interferences with this channel would therefore seriously impact public safety.

Meteorologists have expressed concerns for many years about radio frequency interference and losing access to specific portions of the electromagnetic spectrum they

¹ Views of the U.S. National Academy of Sciences and National Academy of Engineering on Agenda Items at Issue at the World Radiocommunication Conference 2012 (2013).

rely on for Earth observation. The Washington Post recently published an article on this very issue.² They obtained a February 28, 2019 letter from Commerce Secretary Wilbur Ross and NASA Administrator Jim Bridenstine to the FCC asked Chairman Ajit Pai to remove the FCC's published proposal from its website and to attend a March 11 interagency meeting at NASA headquarters "to continue the long-standing interagency reconciliation process on this important topic." The letter said the FCC posted the proposal when "there was no consensus in the interagency on this topic." It requested the FCC take down the proposal "immediately" ahead of a meeting convened by NASA "to continue the long-standing interagency reconciliation process on this important topic." Unfortunately, in a March 8 reply Chairman Pai rejected this request and stated his intention to move forward with the spectrum auction.

The American Meteorological Society has expressed concerns "over increasing pressure on weather-related radio frequency bands" and stressed the "need for adequate protection and mitigation efforts against the loss and shared use of the spectrum" for at least a decade.³

The FCC's announced plan for the 5G spectrum operating at the band of 24.25 to 25.25 GHz which is subject to the March 14 auction is to set a noise threshold of -20 dBW, as reported in a policy position submitted to a coordination committee of the World Radiocommunications Conference 2019.⁴ There is great concern that the FCC's noise threshold will allow interference with weather and climate assets. A joint NOAA/NASA study to "determine the necessary out-of-band emission limit to allow co-existence" between International Mobile Telecommunications and passive sensors operating in the Earth exploration-satellite service, recommended a noise threshold of approximately -50 dBW to prevent interference with passive water vapor sensors. Because dBW is measured on a log scale, the difference between -50 and -20 dBW is significant. In fact, the U.S. National Academy of Sciences and National Academy of Engineering recommended a maximum interference level of -249 dBW/Hz within the 22.21-22.5 GHz band, in order to protect EESS satellite observations.⁵ We would also note that the Europeans recently defined their noise threshold at -56 dBW.

We are concerned that the FCC appears to be dismissing the views and concerns of NASA, NOAA, the DOD, the National Academy of Sciences, and the international community in moving forward with the March 14 auction.

² Jason Samenow, "Critical weather data threatened by FCC 'spectrum' proposal, Commerce Dept. and NASA say," Washington Post, (3/8/2019) accessed at: https://www.washingtonpost.com/weather/2019/03/08/critical-weather-data-threatened-by-fcc-spectrum-proposal-say-department-commerce-nasa/?utm_term=.852419060f72

³ "Radio Frequency Allocations for Meteorological Operations and Research." A Policy Statement of the American Meteorological Society, Adopted by the AMC Council on 1 October 2009. <https://www.ametsoc.org/ams/index.cfm/about-ams/ams-statements/statements-of-the-ams-in-force/radio-frequency-allocations-for-meteorological-operations-and-research/>

⁴ The -20 dBW threshold can be found in Table 1-1 in the document for download, entitled "[usa proposal 1.13 26 ghz.doc](https://www.fcc.gov/us-contributions-sent-citel-pccii-0)" at <https://www.fcc.gov/us-contributions-sent-citel-pccii-0>

⁵ Id.

Our concern is not with 5G technology. We are strong supporters of advancing America's telecommunications infrastructure. However, advancements in telecommunications should not come at the expense of the safety and security of the American people. We are therefore asking for you to delay the auction of 5G spectrum until NOAA, NASA, and the DOD have been adequately consulted and their concerns have been addressed.

If you have any questions about this request, please feel free to contact Richard Obermann, Chief of Staff for the Committee at (202)225-6375.

Thank you for your attention to this matter.

Sincerely,



EDDIE BERNICE JOHNSON
Chairwoman
Committee on Science, Space,
and Technology



FRANK LUCAS
Ranking Member
Committee on Science, Space,
and Technology