



INFRASTRUCTURE & TECHNOLOGY

Ensuring America Reaches Its 5G Potential

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Office of Science and Technology Policy

Making good on his promise to invest in the Industries of the Future, President Donald J. Trump is ensuring the United States leads in the global race to deploy secure and reliable 5G communications. This Administration's policies empower innovation and investment in America's 5G readiness, paving the way for what are sure to be some of the most substantial technological and economic advancements of the 21st century.

According to a leading industry association, America's telecommunications operators plan to invest \$275 billion to deploy 5G networks, creating 3 million new jobs and adding \$500 billion to our economy. Spurring this investment in 5G is only possible with a forward-looking, strategic approach that will sustain high-speed and high-capacity applications. Spectrum is a crucial resource needed to facilitate the exchange of vast data quantities that support cutting-edge technologies from autonomous vehicles and telemedicine to advanced public safety communications networks. Recognizing this, President Trump and the Federal Communications Commission recently [announced](#) that the largest spectrum auction in American history will kick off in December.

This announcement was not the first time the Administration demonstrated its commitment to efficient spectrum use and boosting private-sector investment in 5G and other advanced technologies, as well as ensuring that our Federal agencies are equipped with the spectrum they need for mission critical activities. On October 25, 2018, President Trump issued the Presidential Memorandum on [Developing a Sustainable Spectrum Strategy for America's Future](#), directing the Secretary of Commerce to lead the creation of a long-term spectrum plan.

Today, in response to that Presidential Memorandum, The White House Office of Science and Technology Policy (OSTP), along with the Wireless Spectrum R&D (WSRD) Interagency Working Group, released a report on [Research and Development Priorities for American Leadership in Wireless Communications](#). In addition, OSTP simultaneously released a report on [Emerging Technologies and their Expected Impact on Non-Federal Spectrum Demand](#). These reports will inform the National Spectrum Strategy and ensure American leadership in terrestrial wireless and satellite technologies for 5G and beyond.

Efficient spectrum use and spectrum availability are fundamental to the Nation's security and prosperity, requiring a "whole-spectrum solution" that encompasses and addresses scientific research, technology, policy, legislation, operations, and economics.

FEDERAL RESEARCH AND DEVELOPMENT

By focusing on both short-term and long-term goals, the WSRD Spectrum R&D Priorities Report recognizes the need to move efficiently towards better use of spectrum, while acknowledging the need for a sustainable strategy and development.

The new report offers three priority areas to increase the utility of one of our Nation's most valuable resources.

Priority 1: Pursue spectrum flexibility and agility to use multiple bands and new waveforms.

Spectrum R&D is needed to improve the temporal use of Federal and private spectrum. Wireless systems need new and improved radio frequency technologies that support the flexibility to use multiple bands.

Priority 2: Improve near real-time spectrum awareness.

As the spectrum environment continues to become more congested and contested, R&D is needed to improve spectrum awareness, such as near real-time network sensing and monitoring, in a manner that is secure and preserves privacy. In addition to providing more up-to-date information on network and spectrum environment changes, monitoring also supports enhanced interference detection and resolution. The increased use of lower-power and highly directional antennas presents a challenge as well as an opportunity in realizing spectrum awareness capabilities.

Priority 3: Increase spectrum efficiency and effectiveness through secure autonomous spectrum decision making.

Future wireless networks are likely to be more decentralized and better able to react to changing environmental conditions. Spectrum sharing decisions need to be made in near real-time, autonomously and securely, and coordinated with other disparate wireless systems over a wide frequency range in the same geographic area, while

balancing efficient use of spectrum with effectiveness of Federal and private missions.

EMERGING TECHNOLOGIES

In addition to Federal R&D, it is critical to recognize the ways in which non-Federal demand for spectrum will evolve in response to emerging technologies enabled by 5G networks. The second report released today analyzes new technologies and how they will utilize spectrum in the years to come.

With the advent of 5G and the proliferation of Wi-Fi, as well as the applications that will result from these networks, we anticipate that spectrum needs will change in ways that are only now being explored. Use cases like self-driving cars, factory automation, and remote surgery will require high capacity and ultra-low latency. Smart cities, precision agriculture, and connected homes will place unique demands on networks as well. We also must ensure that spectrum is available for emerging space-based technologies enabled by the President's commitment that the United States will lead in commercial space.

Whether ensuring efficient use of spectrum, authorizing innovative satellite constellations, or developing rules of the road to govern co-existence between incumbents and new entrants, it is essential that we provide entrepreneurs and engineers with the spectrum sandbox needed to innovate here in America.

These reports lay a strong foundation for the National Spectrum Strategy and serve as a resource for decision makers formulating spectrum policy. The upcoming strategy will focus on a balanced approach to spectrum management to support critical government services and future demands for spectrum. As we work to ensure America remains the world leader in technology, this Administration has and will continue to embrace innovation-driven 5G and spectrum policy to ensure that our

Nation will not only be first to 5G, but the American people will enjoy the greatest benefit possible from next-generation networks.



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