

# 5.9 GHz: Best Opportunity for Better Wi-Fi Fast



### ECONOMIC IMPACT

The RAND Corporation recently released a new economic analysis finding that if the FCC opens the underused 5.9 GHz band for Wi-Fi it could add up to \$190 billion per year to the U.S. economy in additional consumer and producer surplus. RAND economists also found opening the 5.9 GHz band for Wi-Fi use could result in an annual potential contribution to U.S. gross domestic product ranging from \$59.8 billion to \$105.8 billion annually.

### THE NEED FOR A FRESH LOOK AT 5.9 GHZ

After 20 years of development, intelligent transportation system (ITS) technology in the 5.9 GHz band has not been meaningfully deployed and has not gained commercial acceptance. In reality, vehicle-to-vehicle (V2V) safety systems are not effective or reliable unless universally deployed in all U.S. cars and trucks. According to the U.S. Department of Transportation's October 2018 [guidance on Autonomous Vehicles](#), there are only 70 deployments of vehicle-to-everything (V2X) communications utilizing the 5.9 GHz band—in the entire United States. Additionally, the DOT's [SPaT challenge](#), where states and localities have been challenged to deploy at least 20 vehicle-to-infrastructure (V2I) intersections by 2020, records just 216 intersections operational nationwide.

Meanwhile, auto safety technology has moved on. Fully automated or self-driving vehicles **provide the safety benefits** of ITS while also operating **without direct driver action** to control steering, acceleration and braking. These systems rely on safety technologies like lidar, radar,

cameras, and sensors that use other spectrum—or no exclusive spectrum at all. These vehicles are in live testing on roads today as companies and researchers have responded to the market to develop computer-driven or computer-assisted driven vehicles.

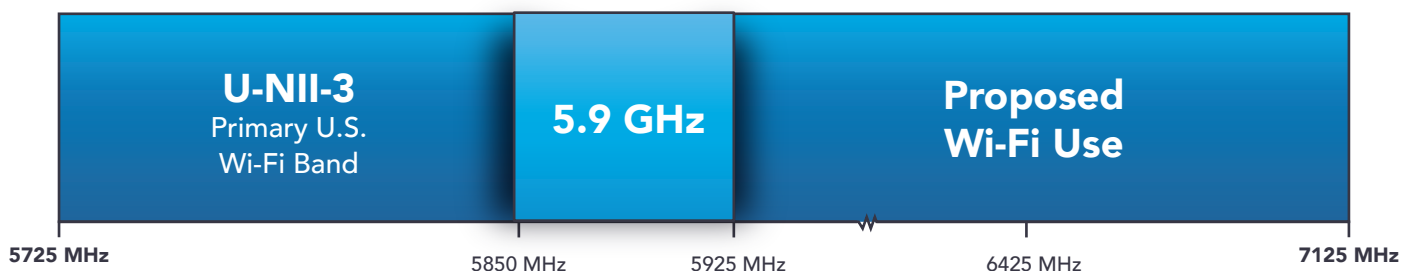
Recently, two major car makers have announced they will not deploy DSRC technology, the only ITS technology allowed by FCC rules to operate in 5.9 GHz. Toyota halted plans to install DSRC technology on its U.S. vehicles and [Ford has announced](#) that it will not deploy DSRC technology and will outfit all U.S. car models with a cellular-based technology, C-V2X, as a means of connecting cars to one another and to infrastructure. C-V2X and DSRC are not interoperable, and they cannot use the same spectrum. And C-V2X is prohibited from operating in 5.9 GHz by today's FCC rules.

These challenges have led industry leaders, advocates and policymakers on both sides of the aisle to call for a “fresh look” at the spectrum allocation within the 5.9 GHz band. These supporters argue that the 5.9 GHz band should be opened to Wi-Fi traffic.

DSRC and C-V2X advocates are asking the FCC to set aside the full 5.9 GHz band exclusively for their technologies, without any auction or serious build-out requirements. The FCC typically requires exclusive users to pay for spectrum, or else share with others in unlicensed spectrum, as Wi-Fi does.

### WI-FI: A CRITICAL TECHNOLOGY THAT NEEDS MORE SPECTRUM

At least two recent studies have indicated that we are headed for a Wi-Fi spectrum crisis—by one estimate we're going to need to find 1600 MHz of additional unlicensed spectrum to meet busy-hour demand by 2025. The Hill, the FCC, and industry all recognize this, and recent policy developments reflect a bipartisan commitment to action. The RAY BAUM'S Act calls for at least an additional 100 MHz of new unlicensed spectrum, the FCC is considering whether to open the 6 GHz band next-door for unlicensed, and FCC Commissioners O'Rielly and Rosenworcel have jointly called for a fresh look at the 5.9 GHz band.



## LET'S NOT MAKE THE SAME MISTAKE TWICE

The U.S. abandoned a government-knows-best “beauty contest” model for allocating spectrum long ago because it led to failures just like the 5.9 GHz band. The fact is that the government is terrible at guessing the future of technology. Subsidizing one set of companies by granting free and exclusive access to spectrum to a particular technology kills investment and innovation and leads to under-utilized spectrum.

Some mobile providers and automakers have proposed abandoning DSRC in favor of C-V2X. While early tests of C-V2X have taken place in the 5.9 GHz band (because the spectrum is largely free of other operations), there may be a more appropriate spectrum band for these new safety operations. Qualcomm and other C-V2X proponents have acknowledged that the C-V2X standard, at least, is not band specific and that in future releases, the standard could operate in any band ranging from below 1 GHz to much higher bands.

No matter how C-V2X develops in the future, the FCC should reject calls to repeat the mistake it made with DSRC. Reserving the 5.9 GHz band exclusively for C-V2X—without an auction or the sharing responsibilities that come with unlicensed use—would amount to the FCC once again picking winners and losers among competing technologies. That’s a recipe for 20 more years of failure in the 5.9 GHz band.

## SPECTRUM IS SCARCE, AND WE NEED TO MAXIMIZE OUR RESOURCES

The 5.9 GHz band is the best near-term opportunity for better, faster, higher-capacity Wi-Fi. First, the band is large enough to support wireless innovation and investment, and it occupies a low enough frequency range to support widespread consumer operations. Second, it is immediately adjacent to the existing 5.8 GHz unlicensed band, which already uses Wi-Fi to support millions of consumer devices and critical applications like medical telemetry, airport gate operations, and smart-city safety monitoring today. This means that, if this band is opened for unlicensed use, commercial devices could be made available quickly and affordably. It also means that the United States will be able to deploy next-generation, 160-megahertz-wide gigabit Wi-Fi technologies, greatly increasing throughput and performance. The latest standard of Wi-Fi, Wi-Fi 6, depends on these wide channels to bring consumers (including carriers that offload traffic to Wi-Fi) better outdoor coverage, gigabit speeds, better battery life, and more efficient Wi-Fi operations. Third, for the reasons outlined above, the band is essentially empty in the vast majority of the country. There is simply no other band with as few existing operations.

The FCC should (1) recognize that the over-regulatory “beauty contest” policies of the past have failed in the 5.9 GHz band, (2) propose to deregulate by designating the band for unlicensed use, and (3) examine whether to allocate other, more suitable spectrum for automotive safety.

### Additional Resources:

- [The Potential Economic Value of Unlicensed Spectrum in the 5.9 GHz Frequency Band](#)  
(RAND)
- [Economic Value of Unlicensed Spectrum To Reach More Than \\$834 Billion By 2020](#)  
(WifiForward)
- [Guidance on Autonomous Vehicles](#)  
(Department of Transportation)
- [Spectrum Silos to Gigabit Wi-Fi](#)  
(New America’s Open Technology Institute)