What is the Value of Wireless Spectrum?

telecompetitor.com/what-is-the-value-of-wireless-spectrum/

Joan Engebretson

What is the value of wireless spectrum?

It's a question I've been thinking a lot about lately as some stakeholders lobby for more unlicensed spectrum while others lobby for more licensed spectrum.

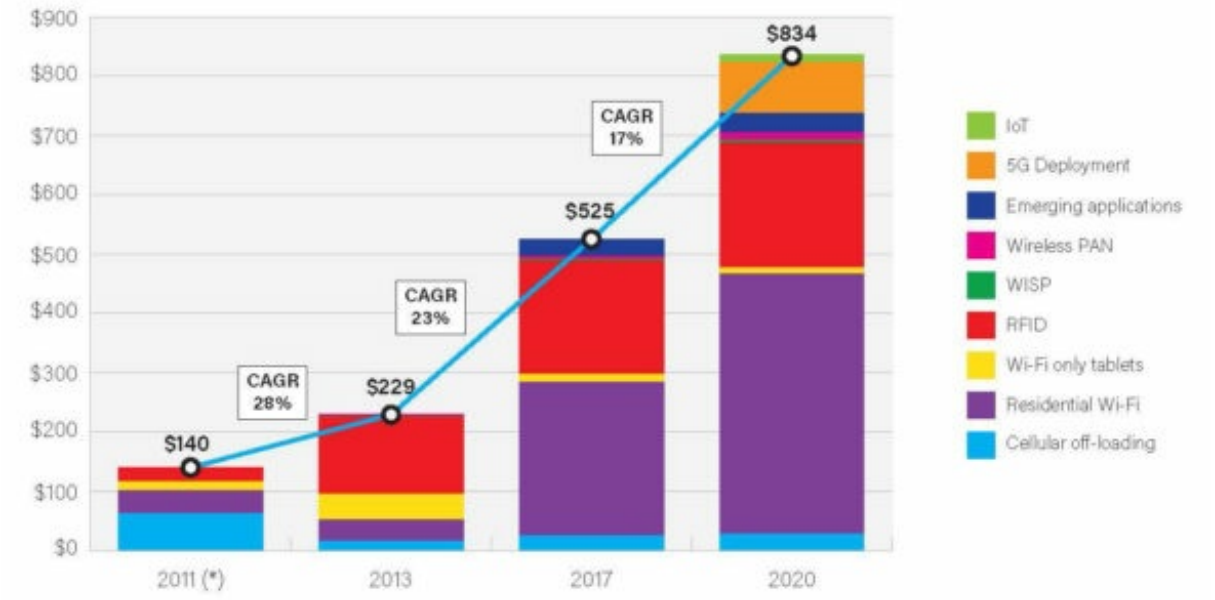
We've become accustomed to using an auction process to sort out spectrum value – an approach that can be challenging enough as the thinking about which portion of the spectrum band is most valuable continues to shift. And even when estimates are devised, they only gauge the value of licensed spectrum, which gives the user exclusive or, increasingly, nearly exclusive use of the spectrum.

The Value of Wireless Spectrum

Even more challenging is determining the value of unlicensed spectrum, which can be shared by multiple users for a wide range of applications. But a new report from Telecom Advisory Services commissioned by advocacy group Wifi Forward takes a good crack at it.

Unlicensed wireless spectrum contributed $525 billion to the U.S. economy in 2017, according to Telecom Advisory Services. By 2020, report author Raul Katz forecasts unlicensed spectrum's contribution to the U.S. economy to reach more than $834 billion – a growth rate of 17% annually.

A lot of research went into Katz's 96-page report titled "A 2017 Assessment of the Current & Future Economic Value of Unlicensed Spectrum in the United States." In arriving at his forecast, he considered a wide range of unlicensed spectrum uses, including the Internet of Things, 5G deployments, emerging applications, wireless personal area networks (PANs) such as Bluetooth and Zwave, wireless internet service providers (WISPs), RFID, Wi-Fi only tablets, residential Wi-Fi and cellular offloading.



Source: Telecom Advisory 2017 Unlicensed Spectrum Report

In scanning through the report, several findings caught my eye that may be particularly interesting to Telecompetitor readers:

- If all the traffic offloaded by mobile network operators were to be conveyed through cellular networks, the speed would decline to 13.5 Mbps from its current average speed of more than 30 Mbps, resulting in a negative impact of $7.7 billion on the U.S. gross domestic product.
- Working from data provided by the Wireless Internet Service Providers Association (WISPA), Katz notes that there were about 4.6 million WISP subscribers in 2017. With monthly average revenue per user (ARPU) of $52, those subscribers contributed $2.9 billion to the U.S. economy and are forecast to contribute $4.6 billion by 2020, when there will be 6.9 million subscribers at a $56 monthly ARPU.
- Once an 80-100 Mbps fiber link is deployed to a customer premises, the last mile is not the bottleneck any longer. Instead, residential Wi-Fi becomes the congestion point because a typical Wi-Fi router speed is below 70 Mbps.

With regard to the third point, it's worth noting that some service providers are deploying or making plans to deploy advanced Wi-Fi routers in homes with high-speed broadband, potentially overcoming the limitation cited. However, if Wi-Fi networks become overly congested, perhaps even high-speed Wi-Fi routers could have difficulty keeping up with the speed of the high-speed broadband link.

In his conclusion, Katz argues that "[i]f future assignment of unlicensed spectrum is not fulfilled, it is plausible to consider that economic value creation would be at risk." He notes, for example, that Cisco projects average Wi-Fi speed to increase to 56 Mbps but considering

anticipated traffic growth, he suggests that forecast could be at risk if additional unlicensed spectrum is not made available.

It would be interesting to see someone take this research further by estimating the economic value of licensed spectrum and the trade-offs involved if policy makers favor licensed over unlicensed spectrum or vice-versa.

Image courtesy of flickr user Stefano Brivio.