

**Remarks of FCC Commissioner Michael O’Rielly
Before The Policy Forum at AT&T
“The 3.5 GHz Future Innovation Showcase”
February 13, 2018**

Thank you, Joan, for that kind introduction and to AT&T for hosting today’s event. I am honored to participate in this Policy Forum showcasing the promise of 3.5 GHz and discussing the future of this centrally-located spectrum. Credit is also due to AT&T for putting together such an exceptional program. There is little doubt that if someone has a question about the 3.5 GHz band, the upcoming panelists will be able to answer it. From how the band should be structured and future use cases, to the technology and necessary equipment, many of the relevant experts are here in this room. Throw in some technology presentations and product demos and this topic is covered from A to Z.

That makes my job easy. My hope today is to give a bit of background on the band and the Commission’s work and provide an update on some outstanding issues. This should set the stage nicely for the subsequent, distinguished panelists to correct any and all of my misstatements and mistakes. As famous playwright and poet, Ben Jonson, said so eloquently, “To speak and to speak well, are two things. A fool may talk, but a wise man speaks.” Soon enough, we will find out in which category my utterances fall.

Background

It is fair to say that no one could have predicted when the Commission initially started considering the spectrum between 3550 and 3700 how important this band and the adjacent spectrum would become. At the time, this spectrum was seen as mere scraps surrounding federal incumbent users. It was certainly unclear if a use case could be made for these frequencies, whether there was sufficient private sector interest, or how difficult it would be to share with incumbent users. For these reasons, it was labelled an “innovation band.” But, we could have just as easily called it the “pipe dream band.”

For those unfamiliar, the Commission created a three-tier system to provide access to this spectrum. Under this structure, the Commission fully protects the first-tier, incumbent users. The second-tier users, or priority access licenses (PALs), receive priority over third-tier users, or Generally Authorized Access (GAA). In other words, if an incumbent is not using the spectrum in a geographic area, the PALs get priority over GAA.

The Commission’s rules ensure that 80 megahertz will usually be available to unlicensed-like GAA. And, up to 70 megahertz of spectrum will be auctioned for PALs. Moreover, if a licensee is not using the spectrum in a specific area, it can be shared among GAA users until the PAL is constructed and operational – commonly referred to as “use or share.” With all these moving parts, including the U.S. Navy’s use of the band for advanced radar, a mechanism needed to be put into place to ensure that spectrum was used efficiently and that incumbents did not experience harmful interference.

Therefore, the use of these frequencies will be coordinated by a spectrum access system, or SAS, which will manage spectrum access by all users, and the Environmental Sensing Capability, or ESC system, which will detect when federal users are transmitting on the spectrum. Prior to this circumstance, the Commission had never tackled such a spectrum paradigm.

SAS & ESC Developments

The Commission, along with industry, have done yeomen's work already to get this spectrum ready for the marketplace. SAS development is well on its way. In the first wave of applications, 7 entities expressed interest in being a SAS operator and 6 have been conditionally approved and are moving forward. These entities will begin the process of testing their systems soon and will eventually come to the Commission for equipment authorizations. After this initial application window, an additional 4 entities expressed interest and those applications are under consideration by the Commission, and should expect further follow up momentarily.

In terms of the second database, the ESC, I have certainly questioned the speed at which the systems were developing in the past, but I am pleased to report that thanks to efforts by industry, Commission staff, and our NTIA and Department of Defense colleagues, progress is finally being made. In fact, the Commission is preparing to announce very shortly that several entities that filed first wave applications have demonstrated that they have the technical expertise and financial capability to build and operate such systems. Accordingly, the Commission will soon conditionally grant these operators' applications, allowing each of them to do formal testing and work towards final certification. It is envisioned that these prototype systems will still have to go through public testing and field trials. ESC operators will also have to provide deployment plans to ensure that they are able to adequately sense use in an area. And before receiving final certification, each system will go through a formal trial period. The Commission is also in the processes of reviewing two second wave ESC applications that were filed by potential operators.

While there is still a way to go, this is a huge step. It's actually great news, because the ESC is incredibly crucial to the ability to use 3.5 GHz in coastal areas, which just so happens to be where a substantial portion of Americans live. Therefore, without this capability, it is unlikely that there would be a successful business case to attract sufficient investment to get 3.5 GHz equipment manufactured and the systems deployed.

Fixing the PALs

And, the timing for the finalization of these databases should align nicely with our efforts to review the PALs structure. I am sure that you are all aware of the Commission's efforts to take a fresh look at the seriously flawed licensing model previously adopted. In those earlier FCC items, I expressed concerns that short license terms and no renewal expectancy could negatively affect the investment in PALs. The record in the 2017 proceeding, along with the many meetings I have had since, confirmed that providers seeking to deploy wide-scale networks – larger than a building or campus – require greater certainty that the investment of time and money necessary for R&D, equipment, deployment and operating a network will not be lost if suddenly the PAL is no longer available or not won at auction. This concern was compounded by the Commission's ill-advised decision to limit the number of PALs auctioned if demand was low. As I have stated before, if an entity wants a PAL, even if it is the only one in a market, the PAL should be available. But adjusting the Commission's rules to fix these issues have proven not to be the main sticking points. Generally, most parties whole-heartedly embrace or at least can accept longer license terms, renewal expectancy, and making more PALs auctionable.

No, the real point of contention appears to be around the appropriate geographic license area size for auctioning PALs. The Commission originally decided to auction PALs by census tracts, making for an auction of over half a million licenses. Please note that, if you add up all the FCC's auctions to date, the Commission has auctioned just over 44,000 licenses cumulatively. Obviously, auctioning half a million licenses could be administratively burdensome on both the Commission and providers. Such small license areas may also cause significant interference complications for entities trying to build over a larger area. For instance, Washington, D.C. alone has 179 census tracts and New York City has over 2,100; and, there would be a potential for harmful interference at each of these boundaries. Thus, I have argued that this issue is ripe for changes to be made.

Now, some will try to counter these points. They will say that, if you change the current license structure, 3.5 GHz will become a 5G band and that all PALs will be won by large nationwide providers. Let me be clear: I am not trying to tilt the scales towards the largest wireless providers. A lot of effort has already been made by all sorts of entities seeking to make this band operational. And, I fully comprehend the different views held by the varied participants. I read the record filings in response to the petition seeking review of our rules, am in the process of reading the latest record of submitted comments, and look forward to even more meetings to hear about the needs of all interested parties.

Fundamentally, however, the Commission must not create a licensing model that is intended to appeal to some entities and uses while dissuading others. We must avoid trying to presuppose an outcome rather than allowing the market to fully function. That means that while FCC rules should not favor nationwide wireless providers, it must not penalize them either. Our rules also cannot be designed to ensure that a favored class gets licenses on the cheap. Unfortunately, in this proceeding it appears that some were given the impression that spectrum was being earmarked for their particular use or group. In coming to a final decision, the Commission should ensure that the spectrum is available for all purposes, including 5G, and the marketplace will determine its best use.

The good news is that the record and press reports suggest that many parties involved with the CBRS band are moving away from their previous positions and starting to talk to one another about possible compromises. This includes considering whether to offer different license sizes in urban and rural areas. I think this is generally constructive. While everyone may not get what they want in the end, my goal is to ensure that as many companies as possible are interested in participating in the 3.5 GHz spectrum auction and will soon be able to offer the services consumers desire.

The Importance for 5G & US Competitiveness

So, this brings me to 5G, the global developments of this technology, and why it is important that this enters into our calculations as we consider the structure of the 3.5 GHz band. When the Commission initiated our original 3.5 GHz proceeding, the next generation of wireless was not at the forefront of everyone's mind. At the time, 5G was somewhat amorphous with promises of higher speeds, lower latency, more capacity, and cheaper integrations of the Internet of things. But no one was sure what spectrum assets would be needed to bring it to reality. While we still do not have all the answers, the spectrum picture is becoming ever so clearer.

As I have said many times, domestic 5G offerings will incorporate low-, mid- and high-band spectrum, licensed and unlicensed, as well as current networks and those that have not yet been built. But, the international community is starting to coalesce around certain mid-band frequency ranges. The focal point lies between 3.3 to 4.2 GHz. Many European countries, including the U.K., France, and Germany are looking at 3.4 to 3.8 GHz for large scale wireless operations. China, South Korea, and Japan are also looking at similar bands.

In fact, Germany is planning an auction of 300 MHz of spectrum for 5G in 3.6 GHz this year.¹ Australia is also expecting to auction 3.6 GHz spectrum for 5G in late 2018 to early 2019.² Further, many see the 3.5 GHz as the “key global roaming band for 5G.”³

The United States cannot ignore these developments. The economic benefits to our providers and manufacturers are too great to allow us to slip behind other countries. It is in America’s best interest to maintain its leadership in wireless technologies. That’s why the mid-band spectrum play will require the opportunity to offer 5G via the 3.5 GHz band.

Other Mid-Band Plays

At the same time, additional mid-band spectrum will be needed. A key option I have advocated for is opening the 3.7 to 4.2 band for commercial wireless use. As I have already noted, the international community is also looking at incorporating some or all of these bands. As soon as possible, the Commission should take the necessary steps to determine the full extent of the use in this band and ensure that the information that we do have is correct. We also should release an NPRM this summer to further refine our options. The two largest satellite operators in this band have come forth with a market-based proposal to clear some of the spectrum. This needs to be examined to determine how it would work and whether it is a viable option. We also should consider all the other ideas in the record, such as whether it is possible to clear even more of the spectrum. In short, it’s time to take the next step to reallocate the C-Band.

Similarly, the Commission must start exploring the spectrum bands below 3.5. Basically, we need to see if frequencies between 3100 to 3550 could be made available for additional wireless uses, with a special concentration on the 3.4 GHz band. While it may just be 100 MHz here and there, if spectrum in these bands is aggregated with potential licenses in 3.5 GHz and a good portion of 3.7 to 4.2 GHz, we could create a solid spectrum footprint in the mid-band for 5G.

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¹ See *German Regulator Proposes 5G Auction Terms*, MOBILE WORLD LIVE (Jan. 31, 2018),

<https://www.mobileworldlive.com/featured-content/top-three/german-regulator-proposes-5g-auction-terms/>

² See Lucy Battersby, *Australian Regulator Fast-Tracking Upcoming 5G Auction at Super-High Frequency*, SYDNEY MORNING HERALD (Sept. 11, 2017), <http://www.smh.com.au/business/media-and-marketing/australian-regulator-fasttracking-upcoming-5g-auction-at-superhigh-frequency-20170911-gyewu4.html> (“Planning is already well underway to release spectrum at 3.6 GHz frequencies for 5G with an auction expected in late 2018 to early 2019, but following an industry meeting last week the ACMA decided 26 GHz may now be a candidate for accelerated release.”)

³ Sean Kinney, *Qualcomm, Nokia Test 5G in the 3.5 GHz and 28 GHz Bands*, RCRWIRELESS NEWS (Feb. 7, 2018), <https://www.rcrwireless.com/20180207/5g/qualcomm-nokia-test-5g-tag17>.

So, there you have my perspective on how we got to where we are today with regards to the 3.5 GHz band, the positive developments for the SAS and ESC, and the overwhelming need to fix the PALs and find some common ground on the geographic license areas. I've hopefully also provided a snapshot of why this band is so important given the mid-band spectrum decisions being made elsewhere in the world. Finally, I outlined other mid-band options that need to be considered for reallocation, namely 3.7 to 4.2 GHz and 3.1 to 3.55 GHz, that can be combined with CBRS to allow fulsome 5G offerings. With that, it seems like a perfect point to let the next panel take it from here.