

**Remarks of Michael O’Rielly, FCC Commissioner  
Before Hogan Lovells’ Technology Forum: “The 5G Triangle”  
May 25, 2016**

Thank you for inviting me to this timely event to discuss spectrum policy; specifically, the developments and future deployment of so-called “5G” wireless technologies. Looking at this distinguished group of attendees, it is easy to see that a primer on 5G, its timing or capabilities is unnecessary. At the same time, I realize that I am, in fact, a poor substitute for the original speaker, Julie Knapp of the FCC, who is more knowledgeable about the potential of next generation networks, but especially the 5G “triangle” elements, than I will ever be. Therefore, my goal today is to avoid boring you or insulting your intellect. Instead, I intend to use this platform to explain how I am approaching some of the 5G policy issues.

At the current time, most people in the communications sector concede that there is no uniform definition of 5G. While standards are in the works in various venues, including the International Telecommunication Union (ITU), it will be a few years before anything is formalized, and even then, it’s likely that any resulting standard or standards will be quite flexible to reflect the dynamic nature of these new technologies. In the meantime, we are all working within the wide parameters of what is envisioned by 5G and talking about it while wearing fairly rosy glasses. I, too, am somewhat guilty of this, having painted a picture in a speech or two of the flowery possibilities of 5G’s speed, reliability and latency. I have labeled 5G as finally delivering that broadband utopia: wireless fiber. While all well and good, in the end, it will be physics, engineering and consumer demand that determine the fate of 5G. Well, as long as government bodies enable, as opposed to get in the way of, innovation.

*International Issues*

Not having a pre-set globally-approved standard has proven to be disconcerting to some foreign operators and nations. Historically, other countries have followed a pattern of painfully approving a regional compromise standard, then allocating the appropriate spectrum resources and finally awarding licenses to providers. This approach relies on heavy involvement and coordination by government entities, and it rests on the assumption that bureaucrats can best define the components of future wireless systems.

In fact, many of these countries are just getting around to awarding new spectrum licenses to make 4G a reality. On this point, it was noteworthy that, during the 2015 World Radiocommunication Conference (WRC-15), the positions of certain European countries reflected the fact that they were behind the curve, reluctant or ill-prepared for the wireless future. A deliberate goal of some participants was to slow the entire process down until their respective providers could financially recoup their investments. Thankfully, the U.S. has not followed this path in the past, and we reject it here as well.

While there are some regions that want to slow down 5G’s development, there are particular countries rushing ahead with upmost speed. We know all too well that South Korea, China, Japan and others seek to corner the 5G market. Concurrently, the U.S. is allowing experimentation to set our path, and yes, perhaps risking failure by a wireless carrier or carriers, rather than trying to dictate the exact form of 5G. Not only has this method served us well in the past, but it is also engrained in our national make-up, which is guided by a fierce commitment to free market capitalism. We have a deep desire – as well as a necessary interest – in continuing to be the world leaders in wireless innovation. Let it be known far and wide: we have no intention of ceding this leadership role to other nations.

And, due to our preeminence and experience in deploying 4G technologies, the United States is in an ideal position to take the reins and usher in the next generation of wireless networks. Let's look at the known certainties of 5G. For instance, it will not necessarily replace 4G equipment and infrastructure already deployed, but will supplement it; it will not operate in any particular spectrum band, but will use low, medium and high bands; it will require vast investments in time and resources to address all of the infrastructure needs; and it will need a provider-friendly licensing regime, free from unnecessary social experimentation, because licensed spectrum is likely to determine deployment schedule. I will focus my discussion today on these components.

### *Infrastructure & Buildout*

There is little dispute that 5G wireless networks will require expansive buildout efforts by providers. In fact, the anticipated use of high-band spectrum will necessitate vast new investment in physical infrastructure, more than ever before. Traditional towers will continue to be important and be upgraded, but a large part of the 5G solution will involve small cells and densification. And herein lies a significant problem. For anyone that has worked on these issues, you know all too well that siting wireless facilities is extremely difficult, expensive and time consuming. Consumers want wireless services, but some local governments often stand in the way for want of money, power or the vagaries of aesthetics and sight lines. Others are incapacitated by inefficient bureaucracies or outdated rules and procedures. Now imagine inundating the current siting review and approval process by a factor of ten, which some have estimated for high-band spectrum infrastructure needs in dense city centers.

It's important to acknowledge the good work that the Commission has already done on infrastructure matters, such as establishing shot clocks and exempting certain siting from unnecessary historic preservation review. I commend our recent actions to improve the situation. But more needs to be done, and more than what is in the Commission's infrastructure "pipeline."

For instance, an area that is ripe for attention is access to local rights of way. Beyond using such land for the placement of wireless antennas, rights of way are going to be key to getting the necessary power and wireline backhaul to facilities. Appropriate pressure will need to be applied to ensure that localities are not delaying access to rights of way – either intentionally or via sheer incompetence. Let me suggest a couple ideas that the Commission should consider to remedy the infrastructure dilemma.

To ensure timely and cost-effective 5G deployment, the Commission must be prepared to step in and move the siting process forward by using the existing authority provided by Congress, and affirmed by the courts, to hold localities accountable for their review processes and ultimate decisions. I realize that this triggers a verboten word: preemption. But that is precisely what must be done if local governments are going to obstruct wireless broadband deployment.

In addition, the Commission should be willing to actively resolve disputes caused by locality inaction or hostility. For example, one way to facilitate this effort would be to borrow from the much maligned accelerated docket initiated in the late 1990s to expedite resolution of disputes between wireline carriers. Although the 1990s process was admittedly different, the Commission could institute a similar structure by which carriers could seek action to root-out improper barriers to wireless siting. On top of this, why not institute a new "tiger team" of specific Wireless Bureau staff to travel, testify, investigate, and pose siting problems for the Commission to resolve? While I question whether the Enforcement Bureau tiger teams will work as designed, the Commission's endorsement suggests that they shouldn't be overlooked for use elsewhere.

## *Spectrum Frontiers*

Increasing the amount of spectrum available for commercial purposes and for wireless backhaul is a necessary part of the effort to make 5G a reality. While the broadcast incentive auction will provide an undetermined amount of low-band spectrum, the Commission is focused on reallocating millimeter wave bands as well. That's what makes this summer's completion of our so-called "Spectrum Frontiers" item so important. If all goes as planned, four spectrum bands – specifically, 28, 37, 39 and 64-71 GHz – will be made available for mobile use, with the first three on a licensed basis and the last for unlicensed. While certain issues remain, including some of significance, this item seems to be headed in the right direction and may represent one of the few items that could generate wide support from all Commissioners.

Although this is good news, it does not mean that there isn't additional work to do to find even more high-band spectrum. Adding additional bands will involve, to some degree, spending time to study spectrum bands that may have complications, and which we may ultimately decide not to pursue, but experts predict that the four targeted bands will be insufficient to address future wireless industry needs and we need to start the process of identifying more frequencies now. This is why I advocated that more bands should be considered and, with a little cajoling, Commission leadership came to the same conclusion. Accordingly, July's item will include a Further Notice of Proposed Rulemaking to explore and tee up for approval a number of other bands. I suspect that these potential bands will not come as a surprise to those that are familiar with the spectrum that has been discussed in the past and/or identified for study at WRC-15. Input by all interested parties in a reasonably quick time frame will be most appreciated.

## *Backhaul*

As I previously mentioned with regard to access to rights of way, ensuring backhaul for the plethora of 5G wireless towers and antennas will be a huge challenge. While wireless backhaul is likely to come into play, at some point the communications have to reach a wireline network. There are no easy solutions, but it is clear that the surest way to slow wireline backhaul expansion is to proceed as the Commission has in its special access item. Regulating special access, as proposed by the Commission, will force providers to rethink deployment plans, slowing or stopping the buildout of 5G in key markets.

Common sense should inform the entire backhaul discussion. Think about it: why would providers continue to buildout and provide backhaul if they know that the government intends to regulate their rates? The answer is: they wouldn't. If you couple this realization with the simple fact that there is no mandate in law – despite whatever crazy interpretation some might claim – that providers actually build or provide backhaul, it means that providers will just not build out the needed backhaul to meet the 5G infrastructure call. How is that helpful for the evolution of 5G services? The entire special access effort is like trying to regulate the price of cement without expecting any consequences to the construction or real estate industries.

The answer to a lack of competition in the special access market, to the extent that it exists, is not to add additional layers of costly regulation and price constraints but to provide incentives for new competitors to enter. Look at the relative success Google Fiber is having by letting cities bid against each other to determine which residential markets it will enter. Making local entry as frictionless as possible will induce companies to compete for business and build facilities to meet demand.

### *Licensing/PALs Experience*

Another way to stall 5G deployment is to impose untested licensing regimes on the new bands identified for mobile use. In particular, some are suggesting that the Commission should transfer the sharing model developed for the 3.5 GHz band to the 37 GHz band. This would be a huge mistake in my opinion.

The 3.5 GHz model has generated numerous concerns that should give us pause before adopting its use elsewhere. For instance, the Commission's unwillingness to ensure a forthright and legitimate path to obtain and retain Priority Access Licenses jeopardizes 3.5's development and long term success as a band where the government, licensed and unlicensed users can all reside in harmony. Failure to have a vibrant PALs regime means that the band will primarily consist of the Department of Defense and unlicensed users – hardly revolutionary. I am hopeful that this Commission – or the next one – will see the error of its ways and make necessary adjustments to the PALs structure. Until then, it is highly premature and may actually slow the deployment of 5G technologies to use the 3.5 GHz model in the high spectrum bands, like 37 GHz.

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So there are just a few thoughts about key policy issues facing the 5G universe. I intentionally did not focus on the so-called 5G triangle because most of those technical issues are best left to the private sector, rather than a regulatory body, such as the FCC.