Testimony of

H. Mark Gibson

Member of the Board of Directors and Regulatory Officer

The OnGo Alliance

On

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Chairman Doyle, Ranking Member Latta and members of the Subcommittee, thank you for the opportunity to testify today, it is truly an honor and pleasure to be here today, if only virtually.

I am here today in my capacity as Regulatory Officer and Board Member of the OnGo Alliance. The mission of the OnGo alliance is to support the common interests of members, implementers and operators for the development, commercialization, and adoption of LTE and 5G solutions for the U.S. 3.5 GHz Citizens Broadband Radio Service. This is a very important band for 5G deployment in our country, as it is one of the first 5G bands available, and I'd like to discuss how legislation that is the focus of today's hearing will enhance the importance of the band and allow for greater deployment of broadband.

Deployment in the Citizens Broadband Radio Service (CBRS) launched in January 2020. In the nearly two and a half years since CBRS service launch, there have been well over 200,000 CBRS base stations deployed across the country. These deployments support all reaches of telecommunications including support for distance learning during COVID, enabling hospital COVID triage centers, helping otherwise poorly connected farmers achieve 5G connectivity, support for critical manufacturing automation and helping to connect disparate corners of our supply chain. CBRS literally saves lives.

The CBRS band is shared with several types of incumbent operations including fixed satellite service, legacy broadband and the Department of Defense (DoD). Sharing happens through Spectrum Access Systems or SASs. The role of the SAS is to tell CBRS base stations what frequencies they can operate on at their locations without

causing interference to incumbent operations. For fixed satellite and broadband incumbents, SASs know where these operations are and can easily perform frequency availability analyses. However, for DoD operations, which are generally a specific type of Navy radars on board aircraft carriers, it is not possible for the SAS to know exactly where they are located for national security reasons. Therefore, these operations are identified through coastal sensor networks called Environmental Sensing Capability or ESC. Each ESC network is comprised of scores of coastal sensors that sense radar operation and alert SASs, which then tell CBRS base stations to avoid the radar frequencies in use.

ESC sensors must quickly sense radar operations that occur over 150 miles off the coast, which means that ESC sensors are extremely sensitive to very weak signals. This also means that ESC sensors can be susceptible to interference from CBRS base stations.

To avoid interfering with ESC sensors, CBRS devices as far as 25-50 miles from an ESC sensor must operate at a reduced power or avoid operating altogether. This creates a de facto protection area around each sensor where CBRS device operation is either curtailed or extremely limited.

ESC operators have tried to minimize these protection zones through sensor design and location by placing sensors as close to the coast as possible. But sometimes, avoiding populated areas is inescapable. Because of reduced availability of CBRS, ESC sensor protection affects millions of Americans in coastal regions, as well as CBRS licensees who paid over $4.5 billion for their spectrum in an FCC auction.

However, there's a remedy to this problem in the form of a portal-based incumbent informing capability. The National Telecommunications and Information Administration (NTIA) has proposed creating a portal they're calling the Incumbent Informing Capability or IIC. The IIC would allow for any federal spectrum user to notify about their operation with at least a few minutes notice, which would then be communicated to SASs. Federal spectrum users could specify a time, duration, location (which could be an area) and operating frequencies and this information would be provided to SASs, which would protect the areas as if an ESC sensor had sensed a radar. The only drawback to the IIC is authorization and funding. There is currently no firm timeline for the construction of the IIC and no authorization or specified funding source. The IIC would greatly enhance 5G operations in CBRS including allowing our operators to transmit closer to full power allowing potentially millions of users along the coasts to benefit.

This is why the OnGo Alliance fully supports H.R. 5486, or the "Simplifying Management, Reallocation, and Transfer of Spectrum Act", the SMART Act. The SMART Act will provide NTIA a timeline and funding authorization to build a capability that will allow for sharing in all bands, not just CBRS.

Thank you again, and I look forward to your questions.

The OnGo Alliance

The OnGo Alliance is an industry organization focused on driving the development, commercialization, and adoption of shared spectrum solutions. The OnGo Alliance represents nearly 200 companies who believe that 3GPP technology-based solutions in the CBRS band, specifically LTE and 5G, utilizing shared spectrum, can enable both in-building and outdoor coverage and capacity expansion at massive scale. In order to maximize the full potential of CBRS, the OnGo Alliance aims to enable a robust ecosystem towards making 3GPP-based CBRS solutions available. The mission of the OnGo Alliance is to evangelize 3GPP-based CBRS technology, use cases and business opportunities while simultaneously driving technology developments necessary to fulfill the mission, including multi-operator LTE or 5G capabilities. The OnGo Alliance also has an effective product certification program for LTE equipment in the US 3.5 GHz band, ensuring multivendor interoperability. Over 200 different CBRS enabled client devices have been authorized by the Federal Communications Commission (FCC). This includes the latest Apple, Samsung, Google, LG & Motorola phones.

Since 2016, the OnGo Alliance and its members have focused their time, energy, and innovation to develop reliable, secure, and cost-effective wireless services for the 3.5 GHz CBRS band. Since the authorization of full commercial service in early 2020, numerous networks have been deployed to satisfy a wide range of use cases, including mobile broadband, fixed wireless access, and enterprise private networks

The Citizens Broadband Radio Service

The Citizens Broadband Radio Service (CBRS) operates in the 3550-3700 MHz band. CBRS deployment launched in January 2020. In the nearly two and a half years since CBRS service launch, there have been well over 200,000 CBRS devices deployed across the country and growing at the rate of thousands of deployments monthly. These deployments support all reaches of telecommunications including support for distance learning during COVID, enabling hospital COVID triage centers, helping otherwise poorly connected farmers achieve 5G connectivity, support for critical manufacturing automation and helping to connect disparate corners of our supply chain. CBRS supports Education, Healthcare, Manufacturing, Supply Chain and Logistics and Entertainment. A growing number of cities & school districts across the U.S. are now deploying CBRS networks to bridge the digital divide and help students stay connected at home. CBRS can quite literally save lives.

The CBRS band is shared with several types of incumbent operations including fixed satellite service (FSS), broadband and the DoD. The FSS and broadband incumbents operate in the upper 50 MHz of the band (3650-3700 MHz) and the DoD operates in the lower 100 MHz of the band (3550-3650 MHz). This lower portion of the band is also where licenses were awarded through the CBRS auction, which generated $4.6 Billion for the US Treasury.

Sharing happens through Spectrum Access Systems or SASs. The role of the SAS is to tell CBRS devices what frequencies they can operate on at their locations without causing interference to incumbent operations. For fixed satellite and broadband incumbents, SASs know where these are and can perform frequency availability

analyses easily. However, for Department of Defense (DoD) operations, which are generally US Navy radar operations on board aircraft carriers, it is not possible for the SAS to know where they are due to the sensitive nature of Naval air operations. Therefore, these operations are identified through coastal sensor networks called Environmental Sensing Capability or ESC. Currently, there are two ESC networks. A third ESC network is under development with ESC sensors coming online. Each of the two networks is comprised of over 100 sensors that sense radar operation in a general area and alert SASs, which then tell CBRS devices to avoid the radar frequencies in defined coastal areas.

The Issue

ESC sensors must quickly sense radar operations that can occur over 150 miles off all U.S. coasts. This includes the continental U.S., Alaska, Hawaii, and U.S possessions. Thus, ESC sensors must be extremely sensitive to potentially very weak signals in all coastal waters. This also means that ESC sensors can be susceptible to interference from CBRS devices and from adjacent, high-power operations in the upper portions of the 3.45 GHz band.

To avoid interfering with ESC sensors, CBRS devices must operate at a reduced power, or avoid operating altogether in the vicinity of an ESC sensor. This creates a de facto protection area around the sensor where CBRS device operation is either curtailed or extremely limited. In fact, the Federal Communications Commission (FCC) has said that reliable operation of ESCs is essential to enabling spectrum access for licensees of

the Citizens Broadband Radio Service and that ESCs are subject to protection from harmful interference from adjacent-channel operations as licensee operations: harmful interference caused to ESC operations will be considered harmful interference to a primary service and dealt with accordingly. These protection areas affect millions of Americans in major coastal cities.

ESC operators have tried to minimize these protection zones through sensor design (for example, using specialized highly directional antennas), and sensor location by placing sensors as close to the coast as possible. ESC sensor protection could be a major limit to CBRS success. This not only affects CBRS licensees who spent over $4.5 billion on their spectrum, but also those Americans who rely now on CBRS.

The Solution

There's hope in the form of a portal-based incumbent informing capability. NTIA has created the concept of such a portal called the Incumbent Informing Capability or IIC. NTIA bills the IIC as a mechanism for more efficiently managing interference between incumbent federal users and new entrant non-federal and federal users that would be dynamically sharing spectrum in a given band. According to NTIA, the IIC is an, "…innovative way to collaboratively, securely, and dynamically increase opportunistic spectrum access within spectrum allocations principally used by the federal government." NTIA also says the IIC has several potential benefits including support for mid-band spectrum sharing, reduced dependence on environmental

sensing, more secure and reliable operations, and improved incumbent control of real-time spectrum usage information.

The IIC would allow for any federal spectrum user, in this case the DoD or Navy, to schedule their operation which would be communicated to SASs. Federal spectrum users could proactively specify a time, duration, location (which could be an area) and operating frequencies and this information would be provided to SASs, which would protect the areas as if an ESC sensor had sensed a radar.

The IIC will also mitigate the potential for disclosure of classified or sensitive information. The ESC sensor network has the inherent capability to pinpoint radar operation and identify specific locations of aircraft carriers. The FCC has certified ESC networks to ensure this capability is suppressed and ESC networks that have been deployed cannot pinpoint radar operation. ESC operators constantly monitor our networks to ensure that they are operating consistent with our certification. NTIA suggests that with the IIC, federal users gain greater control and security through providing their own, accurate usage data.

The IIC is also not without precedent. Similar systems are also under development at DISA through a program called, Telecommunications Advanced Research and Dynamic Spectrum Sharing Systems (TARDyS3) Tool Suite. The TARDyS3 suite includes a Spectrum Scheduling System (S3) capability that replaces a calendar-based spectrum portal being employed and maintained by SAS administrators for the purposes of reserving spectrum for certain types of radars.

Support for the SMART Act

The only drawback to the IIC is that there is no specific timeline, authorization or funding to implement an IIC. This is why the OnGo Alliance fully supports H.R. 5486, or the "Simplifying Management, Reallocation, and Transfer of Spectrum Act", the SMART Act. The SMART Act will provide NTIA with much needed funding to design and build a capability that will allow for sharing in all bands, not just CBRS. NTIA says the IIC is an, "…innovative way to collaboratively, securely, and dynamically increase opportunistic spectrum access within spectrum allocations principally used by the federal government."

We also support the appropriations timing in the SMART Act. NTIA has suggested an IIC availability time frame of 2026. Unfortunately, by then, it is conceivable that there could be at least three functioning ESC networks with several hundred sensors. The resulting protection zones from three ESC networks could have a substantially negative impact on CBRS success, impacting potentially millions of users along the coasts. This is why we think passage of the SMART Act and the eventual specific appropriation is critical to move IIC from concept to reality.

Support for The ITS Codification Act

The Institute for Telecommunication Sciences (ITS) represents the best of federal government subject matter expertise in many aspects of telecommunications. The annual International Symposium on Advanced Radio Technology (ISART) is one of the premier conferences that allows commercial and federal experts to collaborate on of

forecasting the development and application of advanced radio technologies. Industry has worked with and relied on ITS for numerous collaborative projects for years and we know first-hand of their level of commitment, skills and knowledge. We fully support H.R. 4990 or the ITS Codification Act and commend the sponsors for their leadership.

Summary

CBRS is experiencing substantial success considering the number of deployments, the diverse use cases and the success of federal-commercial spectrum sharing through the SAS. The OnGo Alliance expects this growth to continue, but it will be limited by the need to protect ESC sensors from interference due to both CBRS and 3.45 GHz service deployments.

The IIC promises to allow CBRS to reach its full potential by ultimately replacing the ESC with a portal-based scheduling system that builds on the evolution of similar systems under development by the DoD including TARDyS3. We commend Congressman Brett Guthrie and fully support the SMART Act, which provides both funding and an appropriate timeline for development of the IIC.

ITS represents some of the best talent and capability in the world in the area of telecom sciences. We fully support the ITS Codification Act.