Statement of

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"Our Wireless Future: Building a Comprehensive Approach to Spectrum Policy."

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Good morning, members of the Subcommittee. My name is Peter Pitsch, and I am the Executive Vice President of Advocacy and Government Relations at the C-Band Alliance (CBA). I would like to thank Chairman Doyle, Ranking Member Latta, and the fellow members of the Subcommittee on Communications and Technology for this opportunity to describe the extraordinary efforts the C-band satellite operators are taking to ensure that mid-band spectrum is made available for mobile wireless use and how our plan is the best way to meet the government's twin goals of speed and security.

Congress, the Federal Communications Commission (FCC), and private industry all have important roles to play in making sure the United States leads and wins the race to 5G. Private, market-based initiatives to clear spectrum for other uses are a particularly important element of any national spectrum strategy. The CBA is taking the lead to help repurpose a valuable portion of mid-band spectrum for next-generation mobile broadband. Never in the history of our country have spectrum holders voluntarily proposed to relinquish a substantial portion of licensed spectrum; cover the costs of clearing the spectrum; and protect the important services upon which hundreds of millions of Americans rely. The CBA's proposal to transition crucial spectrum for 5G using a market-based mechanism represents an important, innovative paradigm to free up more capacity for mobile use as spectrum bands become increasingly congested.

Background

The global race to 5G is on and the United States is at great risk of falling behind. China, Japan, and South Korea are already well on their way to deploying nationwide 5G networks in the next five years. As countries compete with each other to move beyond the 4G networks of today, the United States must act quickly to ensure leadership in 5G technology.

The benefits of 5G will be immense. 5G promises speeds up to twenty times faster than 4G, and it is expected to bring an incremental $500 billion to the U.S. GDP by 2027. Dubbed the "network of networks," 5G will enable smart technologies and the Internet of Things (IoT) that will result in new levels of automation and create entirely new industries. Autonomous cars, smart communities, the industrial Internet of Things, immersive education, telemedicine, and other cutting-edge innovations will be possible with 5G. As the number of IoT devices continues to grow, potentially totaling 31 billion connected devices worldwide by 2020, the limits to what IoT technology can do may be defined not by the devices, and certainly not by engineers' imaginations, but by the network that supports them and the bandwidth available. Meanwhile, 5G promises to close the digital divide by giving rural communities a meaningful alternative to fixed broadband services.

Rapidly transitioning our telecommunications networks to 5G therefore remains a national imperative. Some economists have calculated that for each year the rollout of 5G is delayed, the U.S. economy would lose $50 billion in GDP. Moving to 5G quickly also ensures that the United States remains relevant in the development of all of the equipment, applications, and services that will run over 5G. If we are late to the party, companies in other nations will establish the technology and therefore the standards for devices and applications that run on 5G. This time advantage will be the determining factor for 5G winners and losers.

The Mid-Band Opportunity

Wireless spectrum bands have different characteristics depending on the frequency used. Higher frequency spectrum can carry more data, but it travels shorter distances, requires more antennas, and is more susceptible to interference from rain, foliage, and other physical barriers.

Lower frequency spectrum, by contrast, can travel great distances, but it cannot carry as much data.

Mid-band spectrum is the "Goldilocks" band for 5G, with the right balance of coverage and capacity to facilitate 5G adoption throughout urban, suburban, and rural America. In particular, the 3.7-4.2 GHz band—known as the C-band—can deliver the high-throughput, low-latency performance that next-generation mobile networks demand. The C-band, in other words, is ideally suited for 5G.

Two problems, however, complicate repurposing a portion of the C-band for 5G. First, the C-band forms the backbone for the delivery of video and radio programming that reaches nearly 120 million U.S. households. The C-band also supports government and public safety operations, provides critical links to remote and underserved areas, and ensures communications systems' availability during disasters when terrestrial services fail. And the spectrum band immediately above 3.7-4.2 GHz supports aeronautical services, which need additional protection from terrestrial mobile operations.

Second, each of the operating satellite companies have a non-exclusive right to use the entire C-band over the entire continental United States. This policy means that no one satellite operator alone can relinquish the full rights to the C-band in any specific portion of the United States. Therefore, to encourage and enable an efficient transition of spectrum to 5G, there must be a voluntary agreement among the satellite operators that provide C-band service in the U.S., a process to incentivize them to manage their transition, and safeguards for existing C-band users.

CBA's Solution

To solve these challenges, the four satellite companies providing C-band services in the continental United States formed a consortium called the C-Band Alliance. The CBA has

developed a proposal to clear and relinquish the lower 200 megahertz of the C-band—40 percent of its spectrum—for terrestrial 5G within 36 months of a final FCC order. Of this 200 megahertz, 60 megahertz in 46 major markets will be cleared and ready for 5G deployment within the first 18 months of an FCC order.

The remaining 300 megahertz of the C-band would not be cleared during this first 36 months, but would rather continue to be available for satellite services. The CBA will assume the costs and efforts to relocate all C-band services into the upper 300 megahertz of the band. This spectrum reduction and clearance will require several billions of dollars of investments in up to eight new satellites, filter technology, and filter installation in 30,000 to 40,000 earth station antennas across the United States. The FCC still will control the licensing of any new user of the spectrum.

The CBA's proposal is the only proposal before the FCC that protects existing satellite services while solving the holdout problem. And the CBA's proposal frees up 5G spectrum for immediate deployment much faster than any alternative offered to date.

Protects Existing Satellite Services

Although the C-band is well-suited for commercial deployment of 5G, that spectrum was assigned decades ago to satellite companies that today deliver virtually all of the television and radio programming consumed by U.S. citizens, powering more than $100 billion in annual broadcast business.

Four satellite providers currently use C-band spectrum to broadcast video and radio content from cable programmers and broadcasters to cable companies' local distribution centers, as well as to local television and radio stations across the continental United States. More than 300 million Americans enjoy this video and radio content. All of the major television networks

like FOX and NBC, all cable networks like ESPN and CSPAN, and radio networks like NPR and religious broadcasters rely on C-band to get their programs to viewers and listeners. C-band spectrum is also used for telecommunications infrastructure, certain critical weather tracking services, and private video and data networks in the United States—all of which depend upon the highly reliable propagation characteristics of C-band spectrum.

Unless carefully managed, introducing mobile services into the C-band will interfere with the satellite transmissions carrying the TV and radio programming enjoyed by hundreds of millions of Americans. Proposed 5G services in the C-Band operate at a significantly higher power level than satellite services. Thus, the 5G operators face almost no risk of interference from satellite operators, whereas satellite operators face significant risk of interference from 5G. Clearing a portion of this spectrum quickly for terrestrial mobile usage, while ensuring that all existing users of C-band service can continue to operate their businesses without risk of interference, requires collaboration among the satellite operators that serve these users.

With detailed knowledge of every television, radio, and data network in the U.S., the satellite operators understand the technical and operational necessities to accomplish such a transition in a seamless manner. Drawing upon the unique knowledge and capabilities of the satellite operators, the CBA's proposal is designed to streamline this extremely complex task. Under the CBA plan, 200 megahertz would be cleared by increasing existing transmission capacity through the procurement and launch of new satellites. Every existing customer will be kept whole: they will continue to distribute their programming and not incur the costs of the transition. Thus, the CBA plan protects every service that is currently provided over C-band in the United States.

No other plan under consideration guarantees existing broadcast and cable programmers the same high-quality, low-cost satellite distribution capability they have today. For example, some commentators with no experience distributing nationwide content have argued that fiber could be a suitable replacement for C-band spectrum. Not so. In reality, transitioning all C-band operations to fiber would be enormously complex and lack the reliability of C-band satellite distribution. And most importantly, most informed stakeholders in this proceeding understand that there is almost no possibility that the move to fiber could be completed in a 18-36 month timeframe. The time it will take to design a fiber network, obtain local permits, procure broadcast-quality architecture, mount the fiber, and install the components required to interconnect the fiber with 13,500 earth stations, 60 percent of which are rural, will take many years, if not an entire decade. Meanwhile, the total estimated 30-year costs for a massive fiber installation could be in the range of $20 billion to $30 billion or more. In short, a fiber-based proposal goes against the FCC's objective of moving as quickly as possible to allow 5G services in the band.

Solves the Holdout Problem

The primary reason market forces cannot repurpose the C-band on their own is due to what is known as the "holdout problem" that results from overlapping rights. Currently, satellite providers have rights to transmit across the entire 500 megahertz of the C-band to their customers and other users who receive signals from across the band. The problem created by these overlapping rights is that to reallocate any portion of the band at any specific location requires coordination of all relevant rights holders.

The CBA proposal solves the holdout problem, and it is the only proposal before the FCC that does so. First, it promotes coordination and collaboration by encouraging all C-band

operators providing service in the United States to participate in the CBA and in the CBA's negotiations of agreements with prospective terrestrial mobile service providers. The CBA eliminates the need for a terrestrial mobile service provider to enter into multiple contracts with satellite operators for access to the spectrum, which would be time-consuming and inefficient.

Second, the CBA's proposal addresses the holdout problem by incentivizing each eligible C-band satellite operator to join the C-Band Alliance. All satellite operators affected by reallocation of the C-band and their relocation into a smaller portion of the band will be compensated for their costs. As an enticement to collaborate and participate in the process, eligible satellite operators that join the CBA will receive compensation for their prior investment and opportunity costs (in addition to compensation for their reconfiguration and relocation costs) based on objective and verifiable measures, such as their 2017 C-band satellite service revenues.

The CBA's proposal is economically sound. As Nobel Laureate economist Ronald Coase observed many years ago, market forces will lead firms to organize themselves so as to internalize such transaction costs to achieve more efficient outcomes. That is exactly what the CBA does here. The CBA represents a solution to the "failure" created by the nonexclusive rights to use the C-band. Through the voluntary formation of the CBA consortium, uncooperative satellite providers will not benefit as much as cooperative ones. This brings the satellite operators under one umbrella, thereby creating an integrated entity with the ability and incentives to maximize efficiency and value creation for itself, and as a side benefit maximize efficiency and value creation for society.

The Benefits of a CBA Auction

The FCC has expressed a desire to clear the C-band for mobile services as quickly as possible. To ensure a speedy transition, the CBA proposes a commercial auction using globally

recognized concepts and procedures to allow bidders to acquire cleared segments of the C-band. This auction design will ensure that 5G bidders can access spectrum within 18 to 36 months of a final FCC order, making it by far the fastest way to enable the rollout of 5G in both urban and rural areas, while protecting essential television and radio services—including religious programming and live sports programming—enjoyed by U.S. consumers.

While some parties continue to argue that a private auction is unfair because it allows external parties to choose winners and losers in the race to 5G, the facts do not support such a conclusion. The CBA proposal specifies an auction mechanism with FCC oversight to ensure that the auction rules are fair and that the results are based on business principles around deploying the most spectrum at the market price, without consideration for who wins the bid.

The proposed CBA auction design is based on the FCC's extremely successful secondary market policies and draws from the most effective auction policies employed by the FCC and other countries. The model, which is designed to accommodate the specifics and complexities of the C-band in the continental United States, was created by Professor Paul Milgrom and his firm, Auctionomics. Together, they have worked with the FCC on auctions for more than two decades. Professor Milgrom is highly regarded by auction experts and his expertise is sought not only by the FCC, but also by regulators around the globe. The CBA's auction is consistent with how auctions have been carried out around the world.

The CBA's auction design best manages the complexity and time pressure of the C-band auction, creating opportunities for all sizes of bidders and all kinds of combinations. The CBA's auction process provides the following benefits:

1. **Fast –** The auction process will allow the CBA to announce winning bidders within 2-4 weeks. Every suggested alternative to the CBA approach—most notably, government-

run auctions—would lead to years of additional delay in the transition to 5G, costing the U.S. jobs, GDP growth, and endangering national security.

2. **Efficient –** The CBA auction puts spectrum to use at the earliest possible date, reduces bid preparation time, minimizes bidding errors, and avoids the possibility of strategic bidding that could skew the auction results.

3. **Flexible –** The CBA auction is designed to allow successful participation by entities of every size, from large national bidders to mid-sized regional bidders to small rural bidders. The design also allows bidders flexibility in the packages they want to bid on and the prices they are willing to pay, while promoting head-to-head competition over individual licenses in specific markets. Yet the design also protects each bidder against winning either too little spectrum or too few areas to support its business plan.

4. **Fair –** The proposed auction is purposefully simple to encourage the greatest range of participants. The simplicity of the auction, combined with a training period, will ensure that all participants understand the process and are ready to bid. The auction will be transparent and subject to FCC oversight, thus increasing the fairness and effectiveness of the market process. The auction is also fair because it meets the FCC's stated objective of protecting incumbent users.

5. **Effective –** At the close of the auction process, winners can begin the 5G build-out process within 18 months of a final FCC order in key economic areas of the United States, with a roll-out of the repurposing throughout continental United States within 36 months of the final FCC order.

Incorporates Transparency and Oversight

Under the CBA's proposed auction, the FCC will be involved every step of the way. We expect and invite FCC oversight of our auction process, which would be approved by the FCC before moving forward. Moreover, nothing about the proposed auction would change the process under which the FCC issues licenses for terrestrial mobile operation.

The CBA has provided unprecedented transparency about its proposal to date. At each step of the FCC's ongoing proceeding, the CBA has made efforts to provide greater transparency regarding every aspect of its proposal, including: proposed rule changes, proposed technical and service rules, satellite transponder migration plans, customer commitments, a proposed band plan, and a transition implementation process. All of these documents have been filed with the FCC and are available for public inspection by interested stakeholders.

As one example, the CBA filed a band plan on May 21, 2019 that describes how cleared C-band spectrum would be divided into blocks upon which wireless carriers could bid, enabling the rapid deployment of 5G services in the United States. The proposed band plan is designed to be competition-friendly and to facilitate a transparent auction open to all. The band plan proposes clearing an early tranche of mid-band spectrum in the most populous Partial Economic Areas (PEAs) in as little as 18 months from the final order of the FCC. This enables the U.S. to reap the first-mover benefits of broad deployment of 5G on mid-band spectrum, including GDP growth and the creation of high-tech jobs.

In addition, the CBA has filed with the FCC a binding commitment letter to the CBA members' respective customers. In this letter, the CBA members committed to take all actions to migrate their customers after the transition. In particular, the CBA has committed to cover the reconfiguration and relocation costs for all affected C-band incumbents. The CBA has also

committed to maintain interference free C-band services in the remaining 300 MHz and to earmark up to 120 percent of the estimated spectrum clearing costs to pay customer expenses. As the sole entity responsible for conducting the auction and protecting existing services, the CBA will also serve as a central point of regulatory accountability.

Finally, if the FCC approves the CBA's proposed auction, CBA's member companies have committed to make a significant voluntary contribution to the U.S. Treasury. Moreover, as should now be clear, the CBA's members are undertaking considerable expense and risk, and the likely near term benefits to society from clearing this spectrum for terrestrial 5G use years faster than the alternatives will dwarf any future auction revenues. Simply put, concerns about "unjust enrichment", "windfall", and "speculation" are unfounded. Americans and the U.S. Treasury will benefit significantly from the proceeds of the CBA's proposed auction, not to mention the innovations Americans will see from accelerated 5G deployment.

Conclusion

The CBA's proposal represents the fastest way to repurpose C-band spectrum for terrestrial mobile services while also protecting existing satellite operations. More importantly, the CBA's voluntary, secondary-market approach could represent another tool in the FCC's toolkit to reduce congestion and free up greenfield spectrum for next-generation uses.

We understand and respect the priorities of Chairman Doyle, Ranking Member Latta, and the Members of the Subcommittee. As we work through these issues, we will do our best to be responsive to those priorities. Thank you for the opportunity to testify, and I look forward to answering your questions.