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SENATE ARMED SERVICES COMMITTEE

SUBCOMMITTEE ON STRATEGIC FORCES

STATEMENT OF
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BEFORE

THE SENATE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON STRATEGIC FORCES

APRIL 24, 2013

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Introduction

Good morning Mr. Chairmen and distinguished Subcommittee members. Thank you for the opportunity to testify before the Subcommittee regarding the vital importance of scarce radio frequency spectrum to U.S. national defense capabilities, the economy, and consumers. My name is Major General Robert Wheeler and I am the Deputy Chief Information Officer for Command, Control, Communications and Computers (C4) and Information Infrastructure Capabilities. My testimony today will focus on the importance of spectrum to the Department of Defense (DoD) in ensuring that our warfighters and mission partners have the critical capabilities they need to prepare for and execute the missions assigned to them by the Commander in Chief as safely and effectively as possible.

Importance of Spectrum to DoD

The DoD remains fully committed in support of the national economic and security goals of the President's 500 MHz initiative to make spectrum available for commercial broadband use, the implementation of more effective and efficient use of this finite radio-frequency spectrum and the development of solutions to meet these goals while ensuring national security and other federal capabilities are preserved. Spectrum has become increasingly important to the Department's missions, consumers, and the economy of the nation as a whole.

Military spectrum requirements are diverse and complex given the variety of different missions the Department must support around the world. DoD uses spectrum for command and control operations, communications, intelligence, surveillance and target acquisition, on land, at sea, in the air and in space. In the United States, our systems utilize spectrum in order to properly train as we must fight.

For example, the Air Combat Training System (ACTS) uses the federally allocated and regulated 1755-1850 MHz band to support combat readiness pilot certification through

robust United States aircrew training along with crews from allied countries. The system is used at training ranges and bases across the United States with over 10,000 training flights per month. ACTS is also used for 10-12 large Carrier Strike Group exercises annually, where it is used 24 by 7 for up to six weeks in duration.

In short, spectrum is the critical enabler that ensures information is dependably available to train our forces and ensure safe and successful mission accomplishment.

The Department, like the rest of the country and world, also has growing requirements resulting from our increasing reliance on spectrum-dependent technologies. An example is the Department's use of unmanned aerial systems (UAS) requires spectrum to process volumes of critical intelligence, surveillance and reconnaissance data in support of our missions in military areas of operation. Our inventory of UAS platforms has increased from167 in 2002 to nearly 7,500 in 2010. This has resulted in a dramatic increase in UAS use and training requirements, and consequently an increase in demand for spectrum to adequately satisfy those missions.

While the Department critically depends on wireless and information technology that require spectrum, DoD is cognizant of the scarcity of this resource and its importance to the economic well-being of our nation. When referencing the United States Frequency Allocation chart, and using the strict interpretation of the allocations, one will find in spectrum between 225 and 3700 MHz 18% federal exclusive use, 33% non-federal exclusive use, and 49% federal/non-federal shared use. When you apply real-world factors for how spectrum is actually used within the United States, these numbers will vary, but they do illustrate the fact that there is not a significant gap between the amount of spectrum allocated to federal and non-federal/commercial users. Even within spectrum allocated for exclusive federal use, the majority of the spectrum is shared between DoD and all of the other federal agencies, across a wide array of systems, performing a multitude of varied missions, often with very different technologies.

As noted above, the Department also recognizes the importance of the growing needs for spectrum for economic development, technology innovation and consumer services. Within the DoD, we understand that the strength of our nation is rooted in the strength of our economy in harmony with the strength of our national security. We are dependent on industry for innovative products that can be used for national security.

The Department continues to work with the National Telecommunications and Information Administration (NTIA), other Administration partners, and industry to develop the information required to ensure balanced spectrum repurposing decisions that are technically sound and operationally viable from a mission perspective. The results so far have been promising. For instance, in support of the President's 500 MHz initiative, the initial frequency band assessment, commonly referred to as the "fast track study," resulted in arrangements to geographically share the 1695-1710 and 3550-3650 MHz bands. The reallocation feasibility assessment of the 1755-1850 MHz band also marks another important step. NTIA concluded in its assessment report that while there are significant challenges yet to overcome, it is possible to repurpose all 95 MHz of spectrum, based on the conditions outlined in the report. DoD is fully engaged in addressing these challenges, by closely working with industry to evaluate sharing possibilities.

In general, in order to avoid critical mission impacts and maintain comparable capability, there are three things the DoD requires if we are to relocate our systems out of spectrum to be repurposed for wireless broadband; cost reimbursement, sufficient time, and, if necessary, alternate spectrum with comparable technical characteristics to restore lost capabilities (note Public Law 106-65).

Existing statutes provide for relocation and sharing costs to be reimbursed through the Spectrum Relocation Fund, using auction revenue. Auction revenues by law must meet 110% of the estimated federal relocation costs for the auction to go forward. During the Department's study of the 1755 – 1850 MHz band relocation feasibility, the Service Cost

Agencies led the development of cost estimates for their respective systems, while the entire process was led and overseen by the Department's independent Cost Assessment and Program Evaluation (CAPE) organization to ensure consistency in methodologies and assumptions. The costs to modify or replace existing systems to use the identified comparable spectrum (e.g., 2025-2110 MHz, 5150-5250 MHz) were included in the analysis. NTIA report shows total cost for all federal agencies is about $18 billion, approximately $13 billion is DoD's cost. Any affected systems planned to be retired or already programmed to be replaced within the ten-year transition period (e.g., Air Force Precision Guided Munitions and Army Explosive Ordinance Disposal robots) were excluded. The Service Cost Agencies interviewed technical experts associated with each of the major systems to understand what components needed modification, made site visits to major test and training ranges to view the actual equipment, and gathered cost data for similar modifications and new components where available. The cost estimates were peer-reviewed through the respective Service Cost Agencies and reviewed again by CAPE and the DoD Chief Information Officer.

Sufficient time to relocate systems from the 1755-1850 MHz band is dependent upon the schedule of developing and deploying alternative capabilities, and can vary from a few years for simple systems with readily available alternatives, up to 10 years for more complex systems, and upwards of 30 years for space systems, where modification is not an option.

The last requirement is maintaining comparable capabilities. This includes alternate spectrum with comparable technical characteristics to relocate systems into, i.e., spectrum with the physical properties to support the missions currently being performed in the 1755-1850 MHz band. With the finite nature of spectrum, and growing requirements, this has become a tough requirement to meet.

Let me also address the issue of the lower 25 MHz or the 1755 – 1780 MHz band. We fully understand the desire to bring this 25 MHz to market rapidly, particularly with a

potential pairing band called out for auction within three years in the Middle Class Tax Relief and Job Creation Act, but the Department has some significant reservations. As we worked within NTIA's established process to identify the 500 MHz directed by the President, the federal agencies, including DoD, were instructed to study reallocation of the entire 95 MHz band. Thus, a detailed study of vacating solely the lower 25 MHz has not been conducted, and the results of the full 95 MHz band study cannot be extrapolated to a solution for just the lower 25 MHz. Further, it is important that DoD understand the long term status of the full band as part of any decision on the lower 25 MHz, in order to fully understand the impacts on DoD warfighting missions and cost implications of any relocation. In order to make balanced decisions about relocating from or sharing spectrum, the Department requires adequate time to conduct operational, technical, cost and schedule-feasibility analysis to ensure national security and other federal capabilities are preserved, while supporting the economic benefits spectrum use affords the nation. These studies are critical to preserving the warfighting advantages our weapons systems provide so that our soldiers, sailors, airman and marines can perform their missions with the greatest possible advantage over our adversaries, and return home to their loved ones safely.

Recognizing the relocation challenges, focus is shifting to spectrum sharing as a potential option for repurposing spectrum bands for commercial wireless broadband use.

The Department has and is continuing to work with NTIA and the Federal Communications Commission (FCC) to determine ways to share spectrum with commercial users when possible. Recent successes include the FCC's new rules which allow Dish networks to roll out a Broadband network across the country in the 2180-2200MHz band adjacent to the 2200-2290MHz band that is critical to our satellite communications downlink and aeronautical mobile telemetry testing, yet collectively DoD and Dish were able to establish the rules to permit this new use to enter the band without risk of harmful interference. We are also working with the FCC and NTIA to explore ways to share the 3550-3650MHz and 5GHz bands as well for commercial

broadband use. To date we have identified ~400MHz of Federal spectrum for potential commercial broadband use.

While large-scale spectrum sharing between federal systems and commercial licensed cellular broadband services presents new challenges, DoD is committed to working with government and industry partners to develop equitable spectrum sharing solutions. DoD is actively supporting efforts through NTIA-established working groups under its Commerce Spectrum Management Advisory Committee (CSMAC) to further the 1755-1850 MHz band assessment, working with interagency partners, NTIA, FCC and industry. The main focus of the evaluation is to determine the feasibility of sharing the 1755-1850 MHz band versus relocation. DoD is also cooperatively working with three major wireless providers to evaluate sharing the 1755-1850 MHz band including spectrum monitoring at selected DoD sites as well as modeling, simulation and analysis to develop an understanding of the sharing environment in the band. Results will inform the NTIA CSMAC working groups. These efforts are also examples of an unprecedented collaboration between the DoD and the commercial industry to assess highly complex technical issues with a goal of ensuring practical and balanced spectrum repurposing decisions that are technically sound and operationally viable from a mission perspective.

DoD recognizes the need to look forward. The Department is developing a spectrum strategy focused on investing in technologies and capabilities aimed at more efficient use and management of spectrum, and for increased interoperability with our Coalition partners and with Federal, State, and commercial entities.

Summary

The ability to have assured access to spectrum in order to operate spectrum-dependent national security capabilities without causing and receiving harmful interference while understanding the critical needs of our Nation's economy remains paramount to the Department. The federal government and our industry partners have built an impressive team that is working toward solving the technical and policy issues so we can move

ahead. Together, we will develop long-term solutions to achieving a balance between national security spectrum requirements and meeting the expanding demand of commercial broadband services.

I want to thank you for your interest in hearing the importance of spectrum to DoD.