

January 22, 2019

**BY EMAIL**

National Telecommunications  
and Information Administration  
U.S. Department of Commerce  
1401 Constitution Avenue NW  
Room 4600  
Attn: John Alden  
Washington, DC 20230

Re: Docket No. 181130999-8999-01; Developing a Sustainable  
Spectrum Strategy for America's Future

Dear Mr. Alden:

Aviation Spectrum Resources, Inc. ("ASRI"), the Air Line Pilots Association ("ALPA"), and the Aircraft Owners and Pilots Association ("AOPA") hereby responds to the National Telecommunications and Information Administration's ("NTIA") December 21, 2018, request for comments on developing a sustainable spectrum strategy for America's future ("Request").<sup>1</sup>

**Introduction**

ASRI is the communications company of the US commercial aviation industry and is owned by the airlines and other airspace users. As sponsor of the Aeronautical Frequency Committee ("AFC"), ASRI brings together expertise and opinions from across the aviation sector to promote the safe and effective operation of commercial aviation radio communications and navigation systems in use within the US.<sup>2</sup> ALPA is the largest airline pilot union in the world and represents the safety interests of over 61,000 pilots at 33 U.S. and Canadian airlines. AOPA is a not-for-profit individual membership organization of General Aviation Pilots and Aircraft Owners. AOPA's mission is to effectively serve the interests of its members and establish, maintain, and articulate positions of leadership to promote the economy, safety, utility, and popularity of flight in General Aviation aircraft. Representing two-thirds of all pilots in the United States, AOPA is the largest civil aviation organization in the world.

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<sup>1</sup> NTIA, Notice and Request for Comments, Developing a Sustainable Spectrum Strategy for America's Future, Docket No. 181130999-8999-01, 83 Fed. Reg. 65640 (Dec. 21, 2018) ("Request").

<sup>2</sup> AFC membership includes: Airlines for America, Alaska Airlines, ALPA, American Airlines, AOPA, ASRI, Boeing Corporation, Bristow Helicopters, Chevron, Collins Aerospace, Delta Airlines, Era Helicopters, Federal Aviation Administration, Federal Express, Frontier Airlines, Harris Corporation, Helicopter Association International, Helicopter Safety Advisory Conference, International Air Transport Association, JetBlue Airways, National Air Transportation Association, PHI, Inc., Societe Internationale de Telecommunications Aeronautique, Southwest Airlines, United Airlines, and United Parcel Service.

Ensuring safety is a core aviation principle that applies to all aspects of air travel, including the critical spectrum infrastructure needed for connectivity to mobile air platforms. Therefore, aviation safety requires access to adequate spectrum with sufficient protection from interference, which can only occur with sound spectrum planning and management. ASRI, ALPA, and AOPA welcome the opportunity created by the Request to provide their views regarding the development of a National Spectrum Strategy (“NSS”) that guides policy decisions of national spectrum regulators and serves the interests of all spectrum users, including the entire aviation industry and its beneficiaries, *i.e.*, the traveling public. ASRI, ALPA, AOPA, and the aviation industry look forward to working with NTIA as well as other government agencies as they develop the NSS.

In response to NTIA’s Request, ASRI, ALPA, and AOPA strongly recommend that this country’s NSS account for the growth in wireless communications for every industry sector, providing a consistent spectrum environment for all industries and users. A balanced approach would promote future system planning across the board, while ensuring new spectrum requests are appropriately assessed before implementing changes. Early industry engagement will be a key component in such a process, especially with the many shared Federal/non-Federal spectrum allocations in the US.

As NTIA develops the NSS, ASRI, ALPA, and AOPA recommend the following:

**A strategy that accounts for all spectrum users**

ASRI, ALPA, and AOPA strongly recommend that the NSS should account for all industry sectors contributing to the US economy through effective use of spectrum. For example, the commercial aviation industry is a globally linked system by its very nature, transporting a significant portion of people and goods around the nation and throughout the world. Global figures from the International Air Transport Association (“IATA”) show a total worldwide benefit of commercial air travel representing \$2.7 trillion in global economic impact annually, which supports 3.6% of global GDP.<sup>3</sup> In North America alone, the aviation industry supports \$844 billion of GDP and 7.3 million jobs, the clear majority of each figure represented within the United States.<sup>4</sup> Furthermore, this does not include the significant additional economic benefits from private aviation for business or individuals that touch every part of the country. Therefore, a singular policy focus on the headline growth industries that use radio spectrum, *i.e.*, the commercial mobile broadband industry, would overlook large areas of economic development that should benefit from sound spectrum strategy.

Furthermore, a balanced approach to spectrum management that recognizes the dependencies of many different industry sectors would assist when assessing potential changes in allocations. An

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<sup>3</sup> See IATA, Policy, “Value of Aviation,” available at <https://www.iata.org/policy/promoting-aviation/Pages/index.aspx> (last visited Jan. 20, 2019).

<sup>4</sup> See IATA, Policy, “Value for regions and countries,” available at <https://www.iata.org/policy/promoting-aviation/Pages/value-for-regions.aspx> (last visited Jan. 20, 2019).

NSS embracing such an inclusive approach would ensure the needs of various industries competing for access to spectrum are understood and, where possible, compromises may be reached. An inconsistent and imbalanced policy that places undue emphasis on rapidly making large amounts of spectrum available to a single industry will only lead to more aggressive moves on all sides. The resulting entrenchment by either side to either repurpose or protect allocations across the frequency range will miss opportunities for win-win results. Such an inconsistent and imbalanced approach leads to inefficient spectrum use and is not beneficial to regulators, industries, Federal and local governments, institutions, or the American people.

### **A consistent spectrum environment is critical**

The aviation industry is a significant user of both terrestrial and satellite communications (“SATCOM”) systems, which provide necessary coverage through all phases of flight to maintain operational safety and aircraft functionality. This has resulted in airframes becoming increasingly complex antenna platforms, representing a significant investment in resources not only to design and test such platforms, but to build, operate, and maintain them over a 20-30 year lifecycle. Therefore, consistent and predictable spectrum planning is a critical requirement to ensure safe aviation operations. Directing resources to modify airframes to adapt to a constantly changing spectrum environment is a significant cost in time and resources, which could be better spent enhancing capabilities for future air travel, thus benefitting the US economy. Additionally, domestic changes affecting spectrum on which global industries such as aviation rely upon will have international implications. Therefore, initiating discussions in the Radiocommunications Sector of the International Telecommunications Union will ensure the global impacts from such potential changes are fully understood.

Aviation has recent experience with the potential impact of uncoordinated spectrum changes. The proposal by Ligado Networks (fka LightSquared) (“Ligado”) to modify its satellite licenses to support terrestrial cellular-like systems has been extensively studied by the FAA. Indeed, a 2011 study by the FAA of Ligado’s then plan estimated that the corresponding impact to the adjacent band Global Positioning System for the following 10 years would “result in an estimated impact to the aviation community of at least \$70 billion and an additional 30 million tons of CO<sub>2</sub>.”<sup>5</sup> Furthermore, the changes proposed by Ligado pose serious threats of interference to several other critical safety SATCOM services, including Iridium, Inmarsat, and the National Oceanic and Atmospheric Administration Geostationary Operational Environmental Satellite systems. The Ligado example demonstrates how a single spectrum change can affect multiple users and systems, necessitating appropriate coordination. Therefore, spectrum changes that could impact safety critical industries such as aviation and certain SATCOM services should only be taken after thorough and careful study, especially in this case for critical L-band SATCOM services supporting aviation safety.

Lastly, a consistent NSS must rely on comprehensive information on the radiofrequency characteristics and operational deployments of new systems being proposed in or adjacent to

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<sup>5</sup> LightSquared, “LightSquared Aviation Impacts,” Federal Aviation Administration Navigation Services, 1 (July 12, 2011), available at <http://www.govexec.com/pdfs/072711bb1.pdf> (last visited Jan. 20, 2019).

existing spectrum users. The aviation industry is built upon worldwide aeronautical standards for almost all of its modern systems, which are designed to ensure interoperability between different operators and nations. Such standards are critical in understanding how systems perform for certification, protection, and compatibility. Ensuring that all systems seeking new or modified spectrum allocations are similarly fully understood, and their operational characteristics are known to permit reliable compatibility studies, would eliminate a significant portion of the unknowns in advance when considering changes to spectrum utilization.

### **Additional spectrum requests should be rationalized**

ASRI, ALPA, and AOPA would also note that demands for additional spectrum should be rationalized and deliberately reviewed rather than simply presumed. Proponents for more 5G spectrum in the recent C-band (3.7-4.2 GHz) proceeding before the FCC contend that demand for 5G services is high, and therefore justifies making several hundred megahertz of the band available for flexible mobile use. ASRI, ALPA, and AOPA do not contest that mobile services are experiencing growth. However, the proponents gloss over the fact that much spectrum has already been identified and even licensed for 5G services and is sitting fallow. As Comcast pointedly observes in its comments, it is uncertain whether there is a hyper demand for 5G spectrum, as “there remains a significant amount of AWS-4, 700 MHz E Block, and H Block spectrum currently going unused,” in addition to other FCC proceedings for 5G in so-called mid- and high-frequency bands.<sup>6</sup> Any attempts by the mobile industry to acquire additional spectrum from other services while not using the existing spectrum already allocated for such a purpose only increases tension and the protective nature of affected industries. And to the extent those attempts are rewarded, it raises concerns by other industries, including aviation, whether spectrum will be available in the future to accommodate growth for their own spectrum needs.

Aviation has taken a pragmatic approach to new spectrum requirements. While it too looks for additional spectrum options to allow the industry to grow, there have also been several major efforts to increase usage of existing aeronautical allocations and introduce new aviation systems that co-exist with current ones.<sup>7</sup> In all cases, the new systems reuse existing aeronautical safety allocations following extensive compatibility work to ensure existing systems are unaffected. An NSS should embrace adoption of a similar approach, challenging initial spectrum requests to confirm that industries have reviewed alternative spectrum options, before taking action to repurpose or change existing allocations away from other industries.

Furthermore, changes to spectrum affecting existing services should require engagement with incumbent users to fully understand the existing spectrum usage of the bands. This is especially critical when shared Federal/non-Federal allocations are assessed, which is the case for many aeronautical allocations in the US. The Federal government working in isolation can lead to

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<sup>6</sup> See Comments of Comcast Corporation and NBCUniversal Media, LLC, GN Docket No. 18-122, *et al.*, 30 (Oct. 29, 2018).

<sup>7</sup> The Aeronautical Mobile Airport Communications Systems, the Wireless Avionics Intra Communications System, and the L-Band Digital Aeronautical Communications System are all new aviation safety systems developed within existing Aeronautical safety allocations already used for other aviation systems on an international basis.

incorrect conclusions. For example, when NTIA in 2011 reviewed the 4.2-4.4 GHz frequency band for possible reallocation to commercial mobile services, it initially concluded that the band was a candidate due several factors, including “the number of frequency assignments within the band...”<sup>8</sup> However, ASRI formally filed to notify NTIA that radio altimeters are fitted on almost all aircraft operating in the US, and operate in the 4.2-4.4 GHz band under a non-Federal fleet license.<sup>9</sup> Current estimates place the number of radio altimeters registered in the US at over 250,000. Therefore, engagement by NTIA with potentially affected industries and agencies when initiating consideration of spectrum repurposing proposals in Federal/non-Federal bands is strongly recommended to avoid wasted effort and resources or, worse yet, potentially disastrous outcomes.

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<sup>8</sup> NTIA, Report, “An Assessment of the Near-Term Viability of Accommodating Wireless Broadband Systems in the 1675-1710 MHz, 1755-1780 MHz, 3500-3650 MHz, and 4200-4220 MHz, 4380-4400 MHz Bands,” 2-1 (Oct. 2010), available at <https://www.ntia.doc.gov/report/2010/assessment-near-term-viability-accommodating-wireless-broadband-systems-1675-1710-mhz-17> (last visited Jan. 20, 2019).

<sup>9</sup> Comments of Aviation Spectrum Resources, ET Docket No. 10-123, 2 (Apr. 22, 2011), available at <https://www.fcc.gov/ecfs/filing/6016378252> (last visited Jan. 20, 2019).

## Summary

All industries reliant on wireless systems have a critical interest in supporting the development of a balanced NSS. It is therefore important that the strategy incorporate inputs from all these industries into its consideration to facilitate growth across all sectors supporting a strong US economy. This can only be achieved with a consistent approach to spectrum allocations, one which ensures that changes are rationalized before engaging with affected users. Spectrum availability is an issue for all industry sectors, and should be approached in such a manner as a matter of course.

Respectfully submitted,

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