

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions)	GN Docket No. 12-268
)	
)	
Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band)	WT Docket No. 08-166
)	
)	
Public Interest Spectrum Coalition, Petition for Rulemaking Regarding Low Power Auxiliary Stations, Including Wireless Microphones, and the Digital Television Transition)	WT Docket No. 08-167
)	
)	
Amendment of Parts 15, 74 and 90 of the Commission’s Rules Regarding Low Power Auxiliary Stations, Including Wireless Microphones)	ET Docket No. 10-24
)	

To: The Commission

**COMMENTS OF
THE BOEING COMPANY**

The Boeing Company (“Boeing”) provides the following comments in response to the October 2, 2012 Notice of Proposed Rulemaking (“NPRM”)¹ and the October 5, 2012 Public Notice (“Notice”) seeking, respectively, comments on the design and implementation of the incentive auction of broadcast television spectrum and comments to update and refresh the record pertaining to the use of unlicensed wireless microphones in the TV broadcast spectrum.

¹*Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Notice of Proposed Rulemaking, FCC 12-118 (rel. Oct. 2, 2012) (“NPRM”).

Boeing addresses herein the growing importance of allocating sufficient spectrum for unlicensed services and the need for reliable functioning of unlicensed wireless microphones in the TV white space spectrum. Boeing urges the Commission to take into consideration the goal of ensuring that the incentive auction and subsequent unlicensed device rules provide adequate spectrum for these important services.

Boeing is the world's largest aerospace company and a leading manufacturer of commercial aircraft and defense, space, and security systems. Boeing's substantial design, manufacturing, integration, and testing operations depend on the efficiency and flexibility of unlicensed spectrum both for communications and, increasingly, for control of automated equipment used in manufacturing. In addition, Boeing maintains facilities across the United States where meetings, announcements, and other large functions rely on unlicensed wireless microphones that operate in the TV white spaces. Boeing, like many other companies, depends on the effectiveness and flexibility of unlicensed devices and supports the Commission's proposals to protect and expand access to spectrum for unlicensed use.

I. THE COMMISSION SHOULD ENSURE THAT ADEQUATE UNLICENSED SPECTRUM IS AVAILABLE TO SUPPORT INTENSIVE USE FOR MANUFACTURING COMMUNICATION AND CONTROL

In the Incentive Auction NPRM, the Commission seeks comment on the technical and economic benefits of its unlicensed spectrum proposals to various industries including the unlicensed devices industry, wireless industry, broadcasters, and consumers.² Boeing notes that the benefits of unlicensed wireless services increasingly extend into the manufacturing industries, including aerospace. Boeing's factories and manufacturing facilities employ modern tooling and factory machines that rely on wireless data links to receive instructions, report status, and

² *Id.*, ¶ 232.

communicate among themselves. The increases in efficiency made possible through these improvements in communications and control is driving still greater adoption. In some Boeing locations, such as Everett, Washington, there is already intensive use of the available unlicensed spectrum. The likelihood of further growth of unlicensed device use in these crowded areas makes increasing the availability of unlicensed spectrum a matter of great importance to Boeing. Boeing therefore supports the Commission’s proposals to continue to allow white spaces devices to operate on unused television channels that are not repurposed for other uses, as well as to make guard band spectrum available for unlicensed white space use.³

Additionally, Boeing believes that, by establishing well-considered protection areas, the Commission can feasibly make Channel 37 available for unlicensed use without increasing the risk of interference to existing wireless medical telemetry service (“WMTS”) and radio astronomy service operations.⁴ Boeing’s wirelessly-controlled manufacturing operations, in particular, present a good case for such an expansion because they make intensive use of the spectrum in a fixed and limited area, permitting nearby co-channel services—or the lack thereof—to be taken into account with the goal of maximizing the use of available spectrum. Ensuring that sufficient spectrum is available for unlicensed use will promote more effective use of the spectrum and facilitate the operations of the many industries that depend on unlicensed devices.

³ *Id.*, ¶ 234.

⁴ *Id.*, ¶ 237.

II. THE TELEVISION SPECTRUM REPACKING SHOULD ENSURE ADEQUATE SPECTRUM FOR UNLICENSED WIRELESS MICROPHONE USE WHILE PRESERVING FLEXIBILITY

In the incentive auction NPRM, the Commission also seeks comment on what steps should be taken to best accommodate wireless microphone operations and to ensure that the spectrum is used efficiently and effectively by wireless microphones.⁵ Boeing employs more than 175,000 people across each of the fifty States and in 70 countries, with diverse specialties and technical fields. To facilitate training, strategic planning, and other company functions, Boeing routinely brings together large numbers of employees for conferences at Boeing sites and off-site conference centers. During these meetings, which can involve many events over several days, reliable and high quality wireless microphone operation is simply a necessity. Boeing has switched to using primarily digital technology to improve spectrum efficiency and resistance to interference. The transition to digital, however, is only a portion of the solution. The Commission should concurrently ensure that its plans for the Incentive Auction and wireless microphone rules include adequate spectrum for unlicensed wireless microphones.

To this end, Boeing supports the Commission's proposal to reduce the 113-kilometer separation distance between unlicensed wireless microphone operations and co-channel UHF stations.⁶ Such a reduction could make available significantly more spectrum for use by unlicensed wireless microphones and would promote spectrum efficiency by allowing use of these frequencies by wireless microphones in locations where it otherwise might lie fallow. For microphone operators that desire to and can feasibly operate still closer to television stations due to local propagation conditions, Boeing also supports the Commission's proposal to facilitate this

⁵ *Id.*, ¶ 224.

⁶ *Id.*, ¶ 225.

by permitting registration in a geolocation database or coordination with nearby stations.⁷ Boeing believes, however, that such registration or coordination should be required only of those operators seeking to operate within the Commission's revised sub-113-kilometer separation distance, and not for all unlicensed microphone users. This approach maximizes the flexibility of the service while still ensuring adequate protection for co-channel television stations.

Additionally, Boeing supports the proposal to permit unlicensed microphones to operate in the guard bands to be established during repacking of the broadcast spectrum.⁸ Access to this spectrum on the same status as other unlicensed operations could partially offset the loss of the exclusive wireless microphones channel set-asides near UHF channel 37 to white space devices.⁹

III. THE WIRELESS MICROPHONE RULES SHOULD EXPAND ELIGIBILITY FOR PROTECTED OPERATION OF UNLICENSED WIRELESS MICROPHONES TO CONFERENCE CENTERS AND CORPORATE CAMPUSES

In the Public Notice issued to refresh the record in the wireless microphones proceeding, the Commission seeks comment on whether to expand the pool of entities and venues eligible for protection of unlicensed microphones.¹⁰ Boeing suggests that venues such as large professional conference centers and corporate campuses be included among the eligible operators.¹¹ Such venues typically require fewer microphones and channels than major production events, but have

⁷ *Id.*

⁸ *Id.*, ¶ 226.

⁹ *Id.*, ¶ 224.

¹⁰ *The Wireless Telecommunications Bureau and the Office of Engineering and Technology Seek to Update and Refresh the Record in the Wireless Microphones Proceeding, WT Docket Nos. 08-166, 08-167, ET. Docket No. 10-24, Public Notice, DA 12-1570 (rel. Oct. 5, 2012) ("Public Notice").*

¹¹ *Id.* at 4.

large attendance and require long duration and extremely high quality performance to meet the needs of their customers. These venues tend to cover large but fixed locations and make intensive use of the spectrum within this area. Such an expanded eligibility would recognize and promote the effective and efficient use of the spectrum by wireless microphones at these venues.

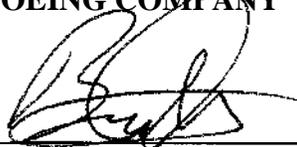
IV. CONCLUSION

Boeing urges the Commission to ensure that the upcoming incentive auction and spectrum repacking takes into account the wide use of unlicensed wireless devices and ensures that adequate spectrum remains available for them. In particular, the Commission should continue to allow white space devices to operate on unused television channels that are not repurposed for other uses, as well as making Channel 37 available for unlicensed use. In addition, the Commission should consider expanding eligibility for protection of unlicensed microphones to include conference centers and corporate campuses, and should ensure that its policies allow operators of unlicensed wireless microphones to have the opportunity to maximize their use of the spectrum without imposing mandatory registration or coordination requirements that could reduce the valuable flexibility that is a hallmark of unlicensed services.

Respectfully submitted,

THE BOEING COMPANY

By:



Audrey L. Allison
Director, Frequency Management Services
The Boeing Company
1200 Wilson Boulevard
Arlington, VA 22209
(703) 465-3215

Bruce A. Olcott
Preston N. Thomas
Squire Sanders (US) LLP
1200 19th Street, N.W.
Washington, D.C. 20036
(202) 626-6615

Its Attorneys

January 25, 2013