Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of:	)	
	)	
Unmanned Aerial System Operations in the 960-1164 MHz and 5030-5091 MHz Bands, Pursuant to Section 374 of the FAA Reauthorization Act of 2018	)	GN Docket No. 19-356
	)	
	)	
	)	

REPLY COMMENTS OF
THE NATIONAL PUBLIC SAFETY TELECOMMUNICATIONS COUNCIL

The National Public Safety Telecommunications Council (NPSTC) submits these reply comments in response to the Public Notice in the above captioned proceeding.[1] The Public Notice seeks comment on issues related to unmanned aerial system (UAS) operations in the 960-1164 MHz and 5030-5091 MHz bands. In these reply comments, NPSTC supports UAS operation on these bands. NPSTC also reiterates its previous recommendation in the 4.9 GHz proceeding that public safety UAS operations be allowed on a portion of the 4.9 GHz band. Doing so would provide the requisite security for public safety UAS operations. It may also provide the opportunity for greater economies of scale on UAS communications modules, given the proximity of the 4.9 GHz band to the 5.030 - 5.091 GHz spectrum.

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[1] *Public Notice*, DA 19-1207, GN Docket No. 19-356, released November 25, 2019.

The National Public Safety Telecommunications Council

The National Public Safety Telecommunications Council is a federation of public safety organizations whose mission is to improve public safety communications and interoperability through collaborative leadership. NPSTC pursues the role of being a resource and providing advocacy for public safety organizations in the United States on matters relating to public safety telecommunications. NPSTC has promoted implementation of the Public Safety Wireless Advisory Committee (PSWAC) and the 700 MHz Public Safety National Coordination Committee (NCC) recommendations. NPSTC explores technologies and public policy involving public safety telecommunications, analyzes the ramifications of particular issues and submits comments to governmental bodies with the objective of furthering public safety telecommunications worldwide. NPSTC serves as a standing forum for the exchange of ideas and information for effective public safety telecommunications.

The following 16 organizations serve on NPSTC's Governing Board:[2]

American Association of State Highway and Transportation Officials
American Radio Relay League
Association of Fish and Wildlife Agencies
Association of Public-Safety Communications Officials-International
Forestry Conservation Communications Association
International Association of Chiefs of Police
International Association of Emergency Managers
International Association of Fire Chiefs
International Municipal Signal Association
National Association of State Chief Information Officers
National Association of State Emergency Medical Services Officials
National Association of State Foresters
National Association of State Technology Directors
National Council of Statewide Interoperability Coordinators
National Emergency Number Association
National Sheriffs' Association

[2] These comments represent the views of the NPSTC Governing Board member organizations.

Several federal agencies are liaison members of NPSTC. These include the Department of Homeland Security (the Federal Emergency Management Agency, the Emergency Communications Division, the Office for Interoperability and Compatibility, and the SAFECOM Program); Department of Commerce (National Telecommunications and Information Administration); Department of the Interior; and the Department of Justice (National Institute of Justice, Communications Technology Program). Also, Public Safety Europe is a liaison member. NPSTC has relationships with associate members: The Canadian Interoperability Technology Interest Group (CITIG) and the Utilities Technology Council (UTC), and affiliate members: The Alliance for Telecommunications Industry Solutions (ATIS), Open Mobile Alliance (OMA), Telecommunications Industry Association (TIA), TETRA Critical Communications Association (TCCA), Project 25 Technology Interest Group (PTIG) and the Government Wireless Technology & Communications Association (GWTCA).

NPSTC Reply Comments

The Public Notice seeks comment on issues related to unmanned aerial system (UAS) operations in the 960-1164 MHz and 5030-5091 MHz bands. The Commission is gathering this information as part of its determination whether to allow UAS communications on these bands identified in the FAA Reauthorization Act of 2018. That Act requires the FCC, FAA and NTIA to submit a report to Congress that addresses whether unmanned aircraft systems should be permitted, but not required, to operate on spectrum in these bands, and that addresses any related technological, regulatory and operational issues. The specific language of the reporting requirement is referenced in the Public Notice.[3]

[3] *Public Notice* at pages 1 and 2, and footnote 6.

NPSTC joins first round commenters in noting the need for the Commission to move forward to define spectrum allocations and related regulations for UAS. In addition, NPSTC also supports commenters' recommendations for the Commission, the FAA and NTIA to work cooperatively and expeditiously together to provide regulatory certainty for UAS operations. The needs of public safety, in addition to those of other critical functions, as well as those of commercial wireless providers, should be part of this discussion.

NPSTC applauds the Commission for working to fulfill the reporting requirements Congress mandated in the FAA Reauthorization Act of 2018. Unfortunately, in preparing to develop its report, the Commission apparently is focused only on UAS operations by wireless service providers, and has made no mention of UAS operations by public safety agencies or other critical entities in its Public Notice. Specifically, the Public Notice states:

> We request information on the UAS applications (e.g. command and control, payload, or telemetry) and deployment scenarios under consideration **by wireless service providers and equipment manufacturers** at this time, as well as on the technical issues, including potential interference concerns, they are encountering in direct studies and testing. What are the altitude limits (above ground level) in using conventional mobile network infrastructure, and what are the infrastructure and spectrum options for serving unmanned aircraft at higher altitudes (in controlled airspace)? Additionally, what technical issues or interference concerns might arise from dissimilar uses of the same frequencies in a relevant geographic area or in adjacent areas? We also request comment on solutions under consideration to mitigate interference issues. [emphasis added]

NPSTC certainly supports well-planned provisions for UAS by commercial wireless service providers. UAS could be used to serve as a rapid deployable localized area cell site or "repeater in the sky" for commercial wireless communications at a major incident scene when ground-based network infrastructure has been damaged or there is otherwise no coverage in the area. However, commercial wireless service providers are not the only entities regulated by the Commission that can deploy UAS operations to benefit the public.

Public safety entities are increasingly utilizing UAS to help speed accident investigations, assess wildland and structure fires, conduct search and rescue operations, and deliver medical supplies and medical devices. NPSTC has published three reports that examine a portion of the public safety use cases for UAS.[4] As noted in those reports, Unmanned Aircraft Vehicles (UAV), commonly referred to as drones, is one of the fastest growing emerging technologies, with a tremendous potential to revolutionize many aspects of public safety. Unmanned Aircraft Systems (UAS) is an all-encompassing term that recognizes both the UAV and all the elements including the aircraft, the ground-based controller and control station, data links, and other support equipment which provides the system of communications connecting the two.

Just as the UAS is a combination of multiple parts to be fully functional, considerations for a successful public safety agency UAS program go far beyond choosing the vehicle itself. An agency planning to implement its own UAS program should also anticipate the need to create policy, understand any pertinent Federal regulations and obtain any required FCC and FAA authorizations or registrations, implement a training program, allocate funding, develop a data storage plan, address public perception and privacy issues, and possibly establish relationships with neighboring entities to maximize the productiveness of the program.

However, once these elements are completed, public safety entities will need the capability to deploy UAS instantaneously in many critical situations. Waiting until a UAS is urgently needed to establish the system's capabilities, obtain Federal authorizations and/or registrations, and establish State or local usage policies eliminates the ability to timely respond. Therefore, it is essential that any FCC and/or FAA rules and authorizations related to operations of UAS be established

[4] See NPSTC Reports at www.npstc.org: Using UAS for Communications Support Report (May 30, 2018); UAS Communications Spectrum and Technology Report (May 30, 2018); Guidelines for Creating a UAS Program (April 18, 2017).

expeditiously and clearly, and that FCC and FAA rules are consistent with one another rather than contradictory.

NPSTC supports UAS operations on the bands in question identified in the Public Notice, i.e., the 960-1164 MHz and 5030-5091 MHz bands. However, Congress and the Commission identified an important caveat, that is, whether unmanned aircraft systems should be permitted, but not required, to operate on these bands. NPSTC believes portions of other spectrum bands may also be beneficial for public safety UAS operations.

After a yearlong study and involvement by numerous public safety and industry representatives, NPSTC completed the May 30, 2018 report "Using UAS for Communications Support – Spectrum and Technology Issues." As noted in the report:

> UAS currently use unprotected radio frequency spectrum and remain vulnerable to unintentional (i.e., environmental or technological) or intentional (i.e., terrorist or hostile) interference. This is of paramount security concern for public safety users as interruption of radio transmissions of the command and control signal can disengage the UAS control mechanism which may result in loss of a communications link or a "lost link" scenario.
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> In a "lost link" scenario, UAS generally have pre-programmed maneuvers that direct the aircraft to hover or circle in the airspace for a certain period of time to reestablish its radio link. If the link is not reestablished, then the UAS will return to its launch location or execute an intentional flight termination at its current location. [5]

Even though there are normally provisions to help prevent loss of the UAS aircraft during the lost link scenario, the benefit of a UAS in public safety operations may still be compromised during such a situation. Therefore, use of protected spectrum allocated to public safety provides greater likelihood of a successful mission. The NPSTC report advised that several categories of control, status, and data messages, along with payload video, are normally required in order to ensure

[5] Using UAS for Communications Support – Spectrum and Technology Issues, May 30, 2018 http://www.npstc.org/download.jsp?tableId=37&column=217&id=4115&file=UAS_Comm_Spectrum_&_Tech_Considerations_180530.pdf

successful UAS missions. The NPSTC report also cited UAS control spectrum requirements as estimated by the ITU and by NASA. In assessing UAS spectrum requirements, NPSTC therefore recommends the Commission review the NPSTC report (linked in footnote 5 above) and the underlying ITU and NASA studies it cites.

As a means to help satisfy a portion of these spectrum requirements, NPSTC recommended in the 4.9 GHz proceeding that the Commission allow public safety manned and unmanned airborne operations in a portion of the 4940-4950 MHz (4.9 GHz) band.[6] Currently, airborne operations at 4.9 GHz are not allowed under the rules and the only licensees authorized for airborne operation in the band are those that have obtained a waiver of the rules.

In the Sixth FNPRM in the 4.9 GHz proceeding, the Commission proposed to designate Channels 1-5 (5 MHz total) as aeronautical mobile channels in the 4.9 GHz band for manned aircraft only. NPSTC instead recommended that public safety airborne operations, both manned and unmanned, be allowed on the lower 10 MHz of the band.[7] In its 4.9 GHz comments, APCO, International (APCO) also supported providing for public safety UAS operations:

> Consistent with the goals of flexibility and support for emerging technologies, APCO would encourage the Commission to allow use of the band for UAS operation.[8]

Instead of limiting public safety UAS operations to 10 MHz in the 4.9 GHz band, APCO recommended the Commission provide maximum flexibility and "…avoid limiting any channels to specific uses, leaving public safety frequency coordinators to determine how best to deploy and coordinate such uses as they arise." [9]

[6] NPSTC Comments in WP Docket No. 07-100, dated July 6, 2018, at pages 13-15.
[7] In the 4.9 GHz band, Channels 1-5 (1 MHz each) would likely need to be aggregated to provide one video-capable 5 MHz channel from 4940-4945 MHz. Channel 6 in the band (4945-4950 MHz) is already 5 MHz wide.
[8] APCO Comments in WP Docket No. 07-100, dated July 6, 2018, at page 9.
[9] APCO Comments at page 8.

It is not clear why public safety UAS operated under the rules established by the FAA should not be allowed. The 4.9 GHz band is needed as a secure resource to support public safety UAS communications. Public safety prevention and response operations increasingly benefit from the use of UAS for law enforcement, the fire service and the emergency medical services.

NPSTC also recommended that when airborne operations, manned or unmanned, are used at 4.9 GHz, they need to be authorized on recommended channels, without making the designated channels exclusive to airborne use. That way, any regions that do not have public safety airborne use are still able to use the channels on a frequency-coordinated basis for robotics or other uses. Of course, frequency coordination at 4.9 GHz will be needed to help minimize interference among the various types of operations and to help ensure efficient spectrum use. NPSTC also recommended that both control and payload communications be allowed in the 4.9 GHz band.

To the extent additional spectrum is needed for payload, it may also be possible to secure added payload capacity from the 5030-5091 MHz band, while maintaining secure public safety control and a portion of payload capacity needed at 4.9 GHz. Equipment economies of scale may also be possible, given the proximity of 4940-4950 MHz segment NPSTC has recommended for public safety use, to the 5030-5091 MHz band addressed in the Public Notice. Additional exploration and discussions are needed between the public safety and equipment manufacturer communities on these issues.

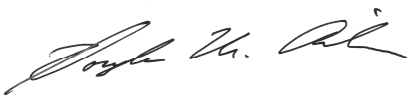
Conclusion

NPSTC supports permitting, but not requiring, unmanned aerial systems (UAS) to operate on the 960-1164 MHz and 5030-5091 MHz bands. NPSTC joins first round commenters in noting the need for the Commission to move forward to define spectrum allocations and related

regulations for UAS. In addition, NPSTC also supports commenters' recommendations for the Commission, the FAA and NTIA to work cooperatively and expeditiously together to provide regulatory certainty for UAS. Regulatory certainty is a key element for operational planning.

The Public Notice appears to focus only on UAS spectrum for wireless operators, and makes no mention of public safety. Public safety entities increasingly utilize UAS to help speed accident investigations, assess wildland and structure fires, conduct search and rescue operations, and deliver medical supplies and medical devices. In a separate proceeding, NPSTC recommended that public safety airborne operations, including UAS, be allowed on a portion of the spectrum in the 4.9 GHz band. Doing so would provide added security for public safety UAS operations and may offer the potential opportunity for equipment economies of scale, given the proximity of 4.9 GHz to the 5.030-5.091 GHz band addressed in the Public Notice.

Chief (ret.) Douglas M. Aiken, Acting Chairman



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