



PUBLIC NOTICE

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FCC ANNOUNCES TWO NEW INNOVATION ZONES AND AMENDS ONE EXISTING INNOVATION ZONE FOR PROGRAM EXPERIMENTAL LICENSES

ET Docket No. 19-257

By the Commission: Acting Chairwomen Rosenworcel and Commissioner Starks issuing separate statements.

By this Public Notice, the Federal Communications Commission (FCC) creates two new Innovation Zones for Program Experimental Licenses in designated areas in and nearby the campuses of North Carolina State University (NC State Innovation Zone) in Raleigh, NC and Northeastern University (Northeastern Innovation Zone) in Boston, MA and expands the geographical boundary of the previously established Innovation Zone in New York City. The NC State Innovation Zone is intended to study new use cases for advanced wireless technologies that are emerging in unmanned aerial systems (UAS); the Northeastern Innovation Zone will enable researchers to use the Colosseum wireless network emulator to extend and accelerate research in wireless networked systems.¹ Both of these Innovation Zones will help promote platforms to test the integration of Open radio access networks (Open RAN). Additionally, we slightly extend the geographic boundaries of the established New York City Innovation Zone and increase the permitted maximum power for certain frequency bands within that designated area.² We authorize these Innovation Zones as part of our ongoing efforts to provide opportunities for qualified licensees to test new advanced technologies and prototype networks – such as those that can support 5G technologies – outside of a traditional small campus or laboratory setting.

The two new zones we establish herein are based on detailed proposals from the PAWR program. This program for new technology experimentation is funded by the National Science Foundation along with a consortium consisting of over thirty technology and telecommunications companies.³ According to

¹ See Letter from Joseph Kochan, Project Director, Platforms for Advanced Wireless Research (PAWR) Program Office, to Ira Keltz, Office of Engineering and Technology, Federal Communications Commission (January 15, 2021) (*PAWR 2nd Request*) (available in ET Docket No. 19-257).

² PAWR identified some necessary deployment changes while designing and constructing their New York City testbed. See *Id.* The New York City site provides a cloud enhanced open software-defined mobile wireless testbed for city-scale deployment. *Office of Engineering and Technology Announces First Innovation Zones for Program Experimental Licenses*, ET Docket No. 19-257, Public Notice, 34 FCC Rcd 8130 (10) (OET, 2019) (*Innovation Zone Public Notice*). In the first Innovation Zone Public Notice, we also authorized an Innovation Zone in Salt Lake City, Utah as a platform for open wireless data-driven research with massive multi-input multi-output (MIMO) capabilities.

³ See *PAWR 2nd Request*. PAWR, Platforms for Advanced Wireless Research, <https://advancedwireless.org> (last visited August 4, 2021); National Science Foundation, Platforms for Advanced Wireless Research (PAWR): Establishing the PAWR Project Office (PPO) (PAWR/PPO), https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505316 (last visited August 4, 2021).

PAWR, this program, “... will enable experimental exploration of robust new wireless devices, communication techniques, networks, systems, and services that will revolutionize the nation’s wireless ecosystem, thereby enhancing broadband connectivity, leveraging the emerging Internet of Things (IoT), and sustaining US leadership and economic competitiveness for decades to come.”⁴ We anticipate that the experimentation done at these zones may also materially improve understanding of opportunities for and capabilities of open, standards-based wireless networks. PAWR program testbeds are equipped for Open RAN research and testing, and PAWR teams are actively engaged with the Open RAN development community.⁵

These Innovation Zones will provide new capabilities and complement the existing Innovation Zones in Salt Lake City and New York City. More specifically, in Raleigh, North Carolina, PAWR is initiating AERPAW – Aerial Experimentation and Research Platform for Advanced Wireless. This project will create a city-scale platform to focus on new use cases for advanced wireless technologies that are emerging for unmanned aerial systems. AERPAW will focus on how cellular networks and advanced wireless technologies can enable beyond visual line-of-sight unmanned aerial systems to accelerate development, verification, and testing of transformative advances and breakthroughs in telecommunications, transportation, infrastructure monitoring, agriculture, and public safety. Notably, the AERPAW testbed will be the first platform to allow testing at scale of open 5G-and-beyond solutions in unmanned aerial system verticals.⁶

At Northeastern, PAWR will be supporting the transition of the Defense Advanced Research Projects Agency’s (DARPA) Colosseum network emulator to a shared platform that is usable by the research community. Colosseum, the world’s largest wireless network emulator, was originally designed to support DARPA’s Spectrum Collaboration Challenge.⁷ With the conclusion of that challenge, the larger research community will now be able to take advantage of Colosseum’s unique capabilities, including the ability to emulate full-stack communications, and to support artificial intelligence and machine learning algorithms and hardware in the loop. This project is expected to bring academia, government and industry researchers together to accelerate advancements in wireless networked systems including Open RAN.

Under a Program License, qualified institutions may conduct testing for multiple non-related experiments under a single authorization within a defined geographic area under control of the licensee and where the licensee has institutional processes to manage and oversee experiments.⁸ The Innovation Zone takes this concept a step further by effectively providing an extension of a Program License’s authorized area of operation. Such licensees are permitted to operate within an Innovation Zone, under the parameters set for that particular Zone, without having to modify their licenses to cover the new location.⁹

⁴ See *PAWR 2nd Request*.

⁵ For example, POWDER in Salt Lake City and COSMOS in New York City served as hosts for the North American O-RAN Alliance plugfest in 2020. See <https://www.o-ran.org/blog/2020/10/24/second-global-o-ran-alliance-plugfest-demonstrates-the-accelerated-readiness-of-multi-vendor-o-ran-compliant-network-infrastructure>.

⁶ “AERPAW will develop a software-defined, reproducible and open-access advanced wireless platform with production-like networking and experimentation features spanning 5G technologies and beyond. The AERPAW platform in Raleigh and Cary joins existing PAWR testbeds..., all of which are targeting early-stage research in next-generation wireless devices, techniques, protocols and services. These platforms are designed to accelerate the development and commercialization of promising technologies...” See <https://advancedwireless.org/nsf-names-third-pawr-wireless-research-platform-in-north-carolinas-research-triangle/>.

⁷ See <https://www.darpa.mil/about-us/timeline/spectrum-collaboration-challenge>.

⁸ 47 CFR Part 5, subpart E.

⁹ 47 CFR § 5.313.

We are using the Office of Engineering and Technology's (OET) Experimental Licensing System webpage to post the Innovation Zone designations and detail the guidelines we have established for each particular zone – including the specific geographic area(s) we have designated and applicable technical parameters, such as frequency bands and power limits.¹⁰ Those wishing to test in an Innovation Zone must meet the Program License eligibility requirements, hold an existing Program License and operate in accordance with the geographic areas and technical limits established for the Innovation Zone.¹¹ Prior to operating in an Innovation Zone, details for each Program Licensee experiment will be posted to the FCC webpage as described below. This posting will implement the Program License rules procedures that require notification of intended operations so that all nearby licensees and federal users have full knowledge of operations in an area.¹² Program licensees must still meet the timing requirements prescribed by the Commission's rules and agreements with other Federal agencies. Specifically, program licensees are required to wait 10-days prior to beginning tests on spectrum allocated exclusively for non-federal use and 15-days when using spectrum allocated for federal use including shared non-federal/federal use.¹³ Finally, as detailed below, the PAWR Project Office will serve as a frequency coordinator for these Innovation Zones; operation may not commence without prior coordinating through that office.¹⁴

Innovation Zone Term

Both the NC State and Northeastern Innovation Zones are established for a period of five years from the release date of this public notice.¹⁵ The term may be renewed upon request at the end of this term.

Program License Registration within Innovation Zones

A program licensee will be required to indicate its call sign and identify the Innovation Zone(s) in which it intends to operate. A program licensee must operate within the parameters established for the Innovation Zone within which it intends to operate. It will provide specific technical data, a description

¹⁰ The Experimental Licensing System webpage can be accessed at: <https://www.fcc.gov/els>.

¹¹ Program licensees with experimentation needs that differ from those permitted an Innovation Zone will be required to apply for and obtain a conventional experimental license through the Commission's experimental licensing system prior to operating. In such instances, requests to operate on federally allocated spectrum will be coordinated with NTIA.

¹² See 47 CFR § 5.309.

¹³ See 47 CFR § 5.309; *Promoting Expanded Opportunities for Radio Experimentation and Market Trials under Part 5 of the Commission's Rules and Streamlining Other Related Rules*, ET Docket 10-236, Report and Order, FCC 13-15, 28 FCC Rcd 758, 790 ¶ 84 (2013). The waiting period between notification and when operation can actually begin is intended to provide potentially affected spectrum users an opportunity to provide comment or voice concerns. In such instances, experimental operation cannot begin until coordination is completed, which could take longer than the notification period and could also require operational adjustments, such as altering operational frequency bands or reducing power levels to be used during experimentation.

¹⁴ The PAWR Project Office will coordinate with non-federal licensees as appropriate as well as establish coordination procedures with potentially affected federal spectrum users and coordinate appropriately via the National Science Foundation (NSF) spectrum management office for federal frequency usage. As indicated below, with respect to the Northeastern University Innovation Zone, operations in certain frequency ranges must be coordinated with the Haystack Observatory in Westford, MA.

¹⁵ The New York City and Salt Lake Innovation Zones expire five years from the date of the *Innovation Zone Public Notice*, on September 18, 2024.

of the experiment, and a stop buzzer contact person for posting on the appropriate Innovation Zone web page(s). Parties will use OET's Experimental Licensing System webpage to submit this information.¹⁶

Program licensees must register on OET's Experimental Licensing System webpage under the respective Innovation Zone webpage at: <https://www.fcc.gov/els> prior to operation. The online registration process will provide a record of Program Licensees that indicate an intent to operate in each Innovation Zone. This registration process along with the required coordination process through the PAWR program office will provide an opportunity for incumbent licensees and federal spectrum users to be an integral part of any necessary compatibility evaluation. The website will further be useful to alert other program licensees and experimental licensees of nearby operations.

Innovation Zone Frequency Coordination

In addition to requesting to operate in an Innovation Zone, a Program Licensee must also coordinate its operations prior to commencing its tests.¹⁷ The PAWR Project Office will serve as the frequency/operations coordinator for the Innovation Zones established and/or modified herein (as well as the Salt Lake City Innovation Zone). In this role, the PAWR Project Office will offer non-discriminatory service to all interested Program Licensees to coordinate specific times and locations for each Program Licensee's operations to avoid interference to other spectrum users and between Program Licensees' tests. The frequency coordinator may act as a central clearinghouse to obtain consent from other potentially affected Commission licensees and/or federal spectrum users for Innovation Zone operations.

Alternatively, Program Licensees may coordinate their own arrangements with these authorized spectrum users. In such cases, Program Licensees must still coordinate specific operations through the PAWR Project Office. Note that designating PAWR as the Innovation Zone frequency coordinator does not confer operating authority on PAWR nor does it confer sole authority for PAWR to permit operations as Program Licensees must also register on OET's Innovation Zone Registration Webpage.¹⁸ Additionally, current Commission rules do not allow airborne use in certain bands including active as well as passive receive-only bands (e.g., 2495-2690 MHz and 3450-4000 MHz); therefore, Program Licensees that plan to engage in experimental operations involving airborne transmissions in any Innovation Zone must take extra care to coordinate such operations (potentially over distances much greater than that necessary for terrestrial experimental operations) to ensure that authorized users will not experience harmful interference.

Interested Program Licensees may contact Mari Silbey, PAWR Program Director, at mari.silbey@us-ignite.org.

FCC Contact

Program licensees interested in operating in the Innovation Zones referenced herein may contact Ira Keltz at 202-418-0616 or ira.keltz@fcc.gov or Anthony Serafini at 202-418-2456 or anthony.serafini@fcc.gov with questions regarding this public notice.

¹⁶ Further information and detailed filing instructions can be found at <https://www.fcc.gov/els>.

¹⁷ We note that some of the bands being designated for use within the various Innovation Zones contain or are adjacent to important incumbent uses, including safety-of-life applications. The PAWR project office will take these uses by non-federal and federal spectrum users into consideration when coordinating Program Licensees' specific operations for each area.

¹⁸ The FAA has authority over matters of aviation safety, and is specifically tasked by statute with developing regulations and standards to integrate unmanned aerial systems into the National Airspace System and licensees may also be required to coordinate with and get approval from the Federal Aviation Administration for any airborne operations, including for unmanned aerial system use within any Innovation Zone.

North Carolina State University Innovation Zone

Location

The NC State Innovation Zone will encompass two separate areas and program licensees will be permitted to use either or both areas.

The first area encompasses approximately 10.5 square miles for testing over the NC State University campus, a suburban residential area and a rural research farm. This area is defined as the area roughly between the Western Boulevard at the northern boundary, south of the Lake Wheeler Agricultural Research Station at the southern boundary, Gorman Street on the western boundary and South Saunders Street on the eastern boundary. The boundary for this area is within the polygon defined by the following coordinates:

35° 46' 23.4" N,	78° 39' 12.7" W
35° 47' 06.3" N,	78° 41' 13.0" W
35° 45' 03.3" N,	78° 42' 42.2" W
35° 43' 21.1" N,	78° 42' 11.9" W
35° 42' 59.5" N,	78° 41' 16.8" W
35° 43' 01.5" N,	78° 40' 08.1" W

To minimize the risk of harmful interference to incumbent operations and avoid areas where airborne operations may be restricted, PAWR states that their primary area for airborne transmissions within the larger Innovation Zone will be over approximately 3 square miles in the Lake Wheeler area in the southern portion of the Innovation Zone. This area is defined by the following coordinates:

35° 44' 29.9" N	78° 40' 20.0" W
35° 44' 38.7" N	78° 41' 32.3" W
35° 43' 58.3" N	78° 42' 22.0" W
35° 43' 23.5" N	78° 42' 12.3" W
35° 42' 59.5" N	78° 41' 16.8" W
35° 43' 01.5" N	78° 40' 08.1" W

The second area of NC State Innovation Zone will extend into the Town of Cary, North Carolina and cover approximately 3 square miles. This area is anticipated to support four fixed towers with permanent wireless transceivers. The tower locations are yet to be determined, but will be restricted to ensure all testing is confined within the Innovation Zone as defined by the following coordinates:

35° 48' 32.49" N,	78° 47' 39.64" W
35° 48' 30.14" N,	78° 45' 53.70" W
35° 46' 16.16" N,	78° 45' 51.17" W
35° 46' 19.55" N,	78° 47' 47.80" W

Technical Limits and Band Information:

Frequency Band	Type of operation	Allocation	Fixed Station Maximum EIRP (dBm)	Mobile Station Maximum EIRP (dBm)
617-634.5 MHz (DL)	Fixed	Non-federal	65	-
663-698 MHz (UL)	Mobile	Non-federal	-	20
907.5-912.5 MHz	Fixed & Mobile	Shared	65	20
1755-1760 MHz (UL)	Mobile	Shared	-	20
2155-2160 MHz (DL)	Fixed	Non-federal	65	-
2390-2483.5 MHz	Fixed & Mobile	Shared	65	20
2500-2690 MHz ^{1,2}	Fixed & Mobile	Non-federal	65	20
3550-3700 MHz ^{1,2,3}	Fixed & Mobile	Shared	65	20
3700-3980 MHz ^{1,2}	Mobile	Non-federal	-	20
5850-5925 MHz	Fixed & Mobile	Shared	65	20
5925-7125 MHz ²	Fixed & Mobile	Non-Federal	65	20
27.5-28.35 GHz	Fixed & Mobile	Non-federal	65	20
38.6-40.0 GHz	Fixed & Mobile	Non-federal	65	20

¹ Commission rules do not permit airborne use on all or portions of these bands.

² Any experimental use must be coordinated with authorized users and registered receive-only fixed satellite earth stations.

³ Operations must be coordinated with a spectrum access system administrator

Northeastern University Innovation Zone

Location

The Northeastern University Innovation Zone will encompass two separate areas and program licensees will be permitted to use either or both areas.

The first area is on Northeastern University's main campus in Boston, MA and will cover a triangular tract of approximately 0.8 square miles. This area is defined as the area roughly between 361 Huntington Avenue as the northern vertex, Carter Playground as the eastern vertex, and 860 Columbus Avenue as the southern boundary. The coordinates for this area are:

Northwest: 42° 20' 24.00" N, 71° 05' 25.00" W
 Southwest: 42° 20' 12.12" N, 71° 05' 16.22" W
 Northeast: 42° 20' 20.33" N, 71° 05' 2.90" W

The second area of the Northeastern University Innovation Zone is on Northeastern University's satellite campus in Burlington, MA and will cover a polygon of approximately 0.9 square miles. This area is defined as the area west of Cambridge Street in Burlington MA and bordering Mary Cummings Park. The coordinates for this area are:

Northwest: 42° 28' 44.54" N, 71 11' 37.43" W
 Northeast: 42° 28' 45.59" N, 71 11' 20.62" W
 Northeast: 42° 28' 41.88" N, 71 11' 22.2" W
 South: 42° 28' 37.67 N, 71 11' 32.64 W
 Southwest: 42° 28' 38.89" N, 71 11' 38.83" W

Technical Limits and Band Information:

Frequency Band	Type of operation	Allocation	Fixed Station Maximum EIRP (dBm)	Mobile Station Maximum EIRP (dBm)
746-787 MHz	Fixed and Mobile	Non-federal	10 W	100mW
880-960 MHz ^{1,2}	Fixed and Mobile	Non-federal	10 W	100mW
1920-2170 MHz	Fixed and Mobile	Non-federal	10 W	100mW
2305-2360 MHz ^{1,2,4}	Mobile	Non-federal	-	100mW
2500-2690 MHz ^{1,2}	Fixed and Mobile	Non-federal	10 W	100mW
3000-3100 MHz	Fixed and Mobile	Shared	10 W	100mW
3300-3600 MHz ^{1,2,3,4}	Fixed and Mobile	Federal	10 W	100mW
3700-3980 MHz ^{1,2}	Fixed and Mobile	Non-federal	1 W	100mW
4620-4990 MHz ^{1,2,4}	Fixed and Mobile	Shared	1 W	100mW
27-30 GHz	Fixed and Mobile	Non-federal	10 W	100mW
37-40 GHz ^{1,2,5}	Fixed and Mobile	Shared	10 W	100mW
71-86 GHz ^{4,5}	Fixed and Mobile	Shared	10 W	100mW
122.5-140 GHz ⁴	Fixed and Mobile	Shared	1 W	100mW
209-225 GHz ⁴	Fixed and Mobile	Shared	1 W	100mW
232-235 GHz	Fixed and Mobile	Shared	1 W	100mW
238-250 GHz ⁴	Fixed and Mobile	Shared	1 W	100mW
1-1.05 THz	Fixed	Shared	100 mW	-

¹ Commission rules do not permit airborne use on all or portions of these bands.

² Any experimental use must be coordinated with authorized users and registered receive-only fixed satellite earth stations.

- ³ Operations in the 3550-3600 MHz band must be coordinated with a spectrum access system administrator.
- ⁴ Note that this band includes frequency ranges covered by footnote US342; all practicable steps should be taken to protect radio astronomy operation, including sites near the Innovation Zone.
- ⁵ Operations in the 37-40 GHz band and in the 80-86 GHz band must be coordinated with the Haystack Observatory in Westford, MA.

New York City Innovation Zone

Location:

The New York City Innovation Zone is being modified¹⁹ to cover the three Columbia University and City College of New York campus areas and will be defined as the area contained within:

- W 116 St from the Hudson River to Morningside Avenue (Through Riverside and Morningside Parks and The Columbia University Campus).
- Morningside Ave from W 116 St to W 124 St.
- W 124 from Morningside Ave to St Nicholas Ave
- St Nicholas Ave from W 124 St to W 138 St
- W 138 from St. Nicholas Ave to Broadway (through St. Nicholas park and the CCNY campus)
- Broadway from W 138 St to W 133 St
- W 133 St from Broadway to the Hudson River (through the park).
- Hudson River from W 133 to W 116

Technical Limits and Band Information:

Frequency Band	Type of operation	Allocation	Maximum EIRP (dBm)
2500-2690 MHz	Fixed	Non-federal	20
3700-4200 MHz ¹	Mobile	Non-federal	20
5850-5925 MHz	Mobile	Shared	20
5925-7125 MHz	Fixed & Mobile	Non-federal	20
27.5-28.35 GHz	Fixed	Non-federal	40 ²
38.6-40.0 GHz	Fixed	Non-federal	40 ²

¹ Commission rules do not permit airborne use in this band. Any experimental use must be coordinated with authorized users and registered receive-only fixed satellite earth stations.

² These power limits are an increase from the previously permitted 20 dBm limit.

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¹⁹ The previously approved New York City Innovation Zone was bounded by W 123rd Street on the south, Amsterdam Avenue to the east, W 134th Street to the north and Broadway to the west.

**STATEMENT OF
ACTING CHAIRWOMAN JESSICA ROSENWORCEL**

Re: *FCC Announces Two New Innovation Zones and Amends One Existing Innovation Zone for Program Experimental Licenses, ET Docket No. 19-257.*

Our 5G future is about connecting everything. It is about moving to a new networked world that will open up possibilities for communications that we cannot even fully imagine today. By exponentially increasing the connections between people and things around us, this technology could become an input in everything we do—improving agriculture, education, healthcare, energy, transportation, and more. In the United States if we want to reap the full benefits of this 5G future, it is essential that we take action to advance our wireless leadership.

We are taking action with our new focus on mid-band spectrum. Last week, we granted more than 5,000 new mid-band licenses in the 3.7-3.98 GHz band. In October, we will kick off another auction of prime mid-band spectrum for 5G in the 3.45-3.55 GHz band. Moving down the spectrum chart, we've granted more than 250 spectrum licenses in the 2.5 GHz band to help address rural Tribal connectivity needs and expect to auction the remaining licenses after we complete the 3.45-3.55 GHz band auction that will start in October.

We are taking action to prioritize 5G security and supply chain trust. We published the first-ever list of communications equipment and services that pose an unacceptable risk to national security. We've prohibited the use of universal service funds to purchase this equipment, and we are targeting late October to launch a program to help carriers replace this equipment to the extent that it is present in their networks today.

We are taking action to support open and interoperable equipment for our 5G wireless world. Earlier this year, we launched the first-ever inquiry exploring how we can accelerate the development and deployment of open radio access networks for 5G, known as Open RAN. We created opportunities for carriers who want to transition to Open RAN as they replace insecure equipment in their networks to do so. Last month, the agency held its first-ever Open RAN Showcase, which gave network operators an opportunity to hear directly from vendors about the capabilities of open, interoperable, and standards-based 5G network equipment.

And we are taking more action today. We are establishing Innovation Zones that will support cutting-edge wireless research and development—including efforts to advance Open RAN.

How does this work? The FCC's experimental licensing rules have long provided a platform for innovation. Experimental licensing allows researchers to develop and test wireless systems without the cost of getting a commercial license. It's a terrific way to foster innovation. But historically researchers have had to apply for an experimental license for each new test they want to run. So research institutions, manufacturers, and other large entities would file to get a program license instead, which authorizes them to conduct a range of experiments within facilities under their control without seeking an individual experimental license for each one.

Innovation Zones take this concept and crank up the possibilities. That's because they are city-scale testbeds that make it possible for anyone with a program license to show up and conduct experiments. They make opportunities for innovation accessible to both large entities and small players. Plus, they make it possible to develop products in real-world environments at a scale no laboratory could provide.

Today we establish two new Innovation Zones. The Boston Innovation Zone, split between two campuses of Northeastern University, will allow for testing in dense urban and suburban environments. It also will support the transition of the Defense Advanced Research Projects Agency's (DARPA) Colosseum network emulator to a shared platform, usable by the broader research community. The Raleigh Innovation Zone, in collaboration with North Carolina State University, will house the Aerial

Experimentation and Research Platform for Advanced Wireless, which will focus on new use cases and things like developing flying 5G base stations to support wireless connectivity.

But our efforts are not limited to these new zones in Boston and Raleigh. That's because today we also increase the footprint of our existing Innovation Zone in New York City, which supports the Cloud Enhanced Open Software Defined Mobile Wireless Testbed for City-Scale Deployment. This will create more opportunities to explore edge computing and how it can be leveraged for the emerging internet of things.

Taken together, these initiatives will support a range of new innovations and experimentation in next generation ultra-high-bandwidth and low-latency wireless communications. We also are leveraging these testbeds to advance ongoing work to develop Open RAN. Doing this now will help ensure that this technology develops here, on our shores. This, in turn, could mean more competition and security in network equipment for 5G service and beyond. It's a way to turn up the innovation and supercharge competition and vendor diversity in the 5G supply chain.

I'm proud the FCC can do this. I'm also proud that we have collaborated with our federal partners to make it happen. This effort builds on the Spectrum Innovation Initiative Memorandum of Understanding I signed in February with our partners from the National Science Foundation and the National Telecommunications and Information Administration. I especially want to thank the National Science Foundation for coordinating these Innovation Zones through its Platforms for Advanced Wireless Research Program.

This is a big deal. History tells us that when you give innovators in the United States sandboxes to test new ideas, good things follow. Here's hoping that creating these Innovation Zones will unlock new breakthroughs in advanced wireless technology and Open RAN. I know I'm excited to see what comes next.

Thank you to the staff working on this all-hands effort, including Martin Doczkat, Michael Ha, Kevin Holmes, Ira Keltz, Jamison Prime, Ron Repasi, Tony Serafini, and Tom Struble from the Office of Engineering and Technology; Linda Chang, Charles Mathias, Roger Noel, and Joel Taubenblatt from the Wireless Telecommunications Bureau; Kate Mataves from the Office of Economics and Analytics; and Debra Broderon and David Horowitz from the Office of General Counsel.

STATEMENT OF COMMISSIONER GEOFFREY STARKS

Re: *FCC Announces Two New Innovation Zones and Amends One Existing Innovation Zone for Program Experimental Licenses, ET Docket No. 19-257.*

Experimentation and innovation are critical to advancing the development of our communication networks. The FCC has a responsibility to encourage such efforts because they will hopefully lead to benefits that will expand and enhance connectivity and promote US leadership and economic competitiveness around the world. The innovation zones we announce today should spur progress in two major areas—drones, or Unmanned Aircraft Systems (UAS), and Open RAN wireless networks.

The first Innovation Zone will allow focused experimentation for UAS use cases. This action is timely. In early 2020, I visited the Nevada Institute for Autonomous Systems (NIAS), an FAA-designated UAS test site outside Las Vegas. During that visit, I learned how NIAS is helping to incubate new UAS companies and develop new applications, techniques, and technologies to facilitate integration of UAS into the national air space. UAS have tremendous potential, with benefits for public safety applications like critical infrastructure inspections, firefighting, and preservation and monitoring of our vast natural resources in rural areas or tribal lands. UAS also offer potential benefits for consumers and other industries through innovative delivery services, transportation, and telecommunications. Authorizing this new zone will provide valuable data to researchers to spearhead experiments and approaches for development.

This is a good step, but we have more work to do. For years, we've heard how the lack of access to licensed spectrum for UAS may be stifling innovation in this potentially explosive sector. It's time we address this issue, which necessitates moving forward in a coordinated manner with our federal partners at the FAA and NTIA. We will need licensed spectrum for a truly integrated airspace, free of harmful interference. If you'll forgive the pun, without licensed spectrum, UAS can't truly take off.

Our decision should also spur progress in another exciting technology -- Open RAN technologies. Open RAN could increase network security, reduce operator costs, and restore the United States as a leader in the provision of communications equipment and services. One of the major challenges associated with Open RAN, however, is overcoming the uncertainty of potential customers, particularly small carriers, with adopting such a novel approach towards network infrastructure.

The second Innovation Zone we authorize today has the potential to address this uncertainty by allowing experimentation at an unprecedented scale in the world's largest wireless network emulator -- aptly named "the Colosseum." The Colosseum is a massive radio frequency emulator supported with 256 programmable software defined radios and is capable of emulating a full wireless network. Until now, this tool was only available to researchers associated with the Defense Advanced Research Projects Agency (DARPA), but it will now be available to researchers from the wireless community as a whole. I saw the Colosseum in action a couple of years ago during the finals of DARPA's Spectrum Collaboration Challenge and can testify that it is an impressive tool. I'm confident that this project will allow researchers to improve our understanding of Open RAN's capabilities and increase confidence among potential Open RAN customers.

The Commission must continue its work of encouraging innovation. The more opportunities to experiment and innovate, the faster we will be able to achieve universal access to the most advanced communications networks. These innovation zones are a good step, but we need to keep working. Thanks to OET for their work on this item.