

Before the  
**NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION**  
**DEPARTMENT OF COMMERCE**  
Washington, DC 20554

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Development of a National Spectrum Strategy ) NTIA-2023-0003  
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**COMMENTS OF THE SMALL UAV COALITION**

Gregory S. Walden  
Aviation Counsel  
Small UAV Coalition  
1900 K Street NW, 5<sup>th</sup> floor  
Washington, DC 20006  
(202) 403-9904  
[gregory.walden@dentonsglobaladvisors.com](mailto:gregory.walden@dentonsglobaladvisors.com)

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**COMMENTS OF THE SMALL UAV COALITION**

The Small UAV Coalition<sup>1</sup> welcomes the opportunity to submit these comments on the development and implementation of a National Spectrum Strategy for the United States.<sup>2</sup> Members of the Coalition are designers, manufacturers, and operators of commercial unmanned aircraft systems (“UAS” or “drones”) and others that serve in other roles in the commercial drone industry ecosystem. Drones offer a safe and efficient means of conducting a myriad of operations, including infrastructure inspection, law enforcement activities, wildfire monitoring, and deliveries of critical medicines and other products, even in rural, remote, and dangerous areas. And they do so while reducing transportation emissions by 96 percent as compared to vehicles on the road today.<sup>3</sup> Members of the Small UAV Coalition share an interest in advancing

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<sup>1</sup> Members of the Small UAV Coalition are listed at [www.smalluavcoalition.org](http://www.smalluavcoalition.org).

<sup>2</sup> See U.S. Dep’t of Com., NTIA, *Development of a National Spectrum Strategy*, 88 Fed. Reg. 16244 (Mar. 16, 2023) (“Request”).

<sup>3</sup> See Rodrigues et al, Drone flight data reveal energy and greenhouse gas emissions savings for small package delivery (Cornell Univ. arXiv.org, Nov. 2021) (“The adoption of Uncrewed Aerial Vehicles (UAVs) for last-mile deliveries will affect the energy productivity of package delivery and require new methods to understand the associated energy consumption and greenhouse gas (GHG) emissions. . . . The energy per package delivered by drones (0.19 MJ/package) can be up to 96% lower than conventional transportation modes.”)

regulatory and policy changes that will permit the operation of drones in the near term, within and beyond the line of sight, with varying degrees of autonomy, for commercial and other civil purposes, and that includes ensuring there is sufficient spectrum, licensed and unlicensed, for drone operations and communications.

The Coalition appreciates NTIA's recognition of the important role that spectrum plays in advanced transportation, including drones. As part of the connected device ecosystem, spectrum is a vital resource for drones, enabling not only basic drone operations but also specific use cases that provide the very utility that underlies the purpose of drone deployment. As the drone industry is only in its early stages, the Coalition encourages the NTIA to give due consideration to the spectrum needs of drones not only as the industry exists today, but also taking into consideration projected growth and scale.

Drones rely on both licensed and unlicensed spectrum for flight operations as well as other functionalities. While licensed spectrum is protected against interference and may benefit from dynamic spectrum management tools that allow spectrum licensees to appropriately prioritize multiple users, unlicensed spectrum allows for "permissionless innovation," as it does not require a license or a subscription plan with a license holder. Both unlicensed and licensed use cases may include streaming video, such as that used by first responders conducting search and rescue missions; streaming data, such as that used to gather data on storms or other catastrophic events; as well as for the operation of the drone itself, referred to as command-and-control. Drones may also use licensed or unlicensed spectrum to communicate between the drone and a drone operator or others involved in the operation such as visual observers, and between drones themselves to support autonomous deconfliction of aircraft.

Licensed spectrum networks are protected, ubiquitous, and reliable. Wireless carriers have invested hundreds of billions of dollars into building state-of-the-art networks, adding more cell sites, supporting more devices, and bringing the latest generation of wireless connectivity to more Americans.<sup>4</sup> As the Federal Communications Commission (“FCC”) has recognized, “the use of flexible-use [licensed] spectrum and existing networks as platforms for UAS offers promise because these existing networks provide significant coverage with low latency, high throughput, and dedicated and secure communications.”<sup>5</sup> Licensed spectrum is already enabling rapid technological innovation in UAS operations in areas such as agriculture,<sup>6</sup> construction,<sup>7</sup> and emergency services,<sup>8</sup> just to name a few examples. And in recent years, there has been an explosion of innovation enabling LTE/4G/5G connectivity in drones, both in the United States and in other countries.<sup>9</sup>

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<sup>4</sup> See CTIA, *2022 Annual Survey Highlights* (Sept. 13, 2022), <https://www.ctia.org/news/2022-annual-survey-highlights>.

<sup>5</sup> See Notice of Proposed Rulemaking, *Spectrum Rules and Policies for the Operation of Unmanned Aircraft Systems*, FCC 22-101, WT Docket No. 22-323, ¶ 111 (Jan. 4, 2023).

<sup>6</sup> See, e.g., FCC, *Remarks of FCC Chairman Ajit Pai at the Univ. of Miss. Tech Summit Oxford, Miss.* at 4 (Aug. 28, 2019) (describing an Idaho farmer using “drones to improve productivity and reduce costs on his potato farm”), <https://www.fcc.gov/document/chairman-pai-remarks-university-mississippi-tech-summit>.

<sup>7</sup> See, e.g., GSMA, *How 5G Drones Will Help Deliver Digital Twins*, <https://www.gsma.com/5GHub/drones>.

<sup>8</sup> See, e.g., Clara McMichael, *Emergency-response technology with a 5G upgrade is having an impact in places like hurricane-battered Florida*, Business Insider (Dec. 14, 2022), <https://www.businessinsider.com/emergency-response-tech-with-a-5g-upgrade-is-impacting-places-like-hurricane-battered-florida-2022-12>.

<sup>9</sup> See, e.g., UgCS, *Enabling LTE/4G/5G connectivity in DJI drones* (accessed Feb. 17, 2023), <https://www.ugcs.com/news-entry/enabling-lte-4g-5g-connectivity-in-dji-drones>; Sky Drone, <https://www.skydrone.aero/products/sky-drone-4g-lte-upgrade-for-yuneec-h520> (“The ‘Sky Drone 4G/LTE/5G Upgrade for Yuneec H520’ is a user-installable upgrade module to add 4G/LTE or 5G communication capabilities to the Yuneec H520 UAV.”); Telefónica, *Telefónica makes 5G communication between drones and Smart City* (Feb. 16, 2023), <https://www.telefonica.com/en/communication-room/telefonica-makes-5g-communication->

Access to unlicensed spectrum is also important to enhance overall airspace safety . For example, authorizing radar use in the 60 GHz band onboard drones operating below 400 feet above ground level will enhance the ability to detect and avoid objects, reducing risk to both people and property in the air and on the ground. Recent rules adopted by the Federal Aviation Administration (“FAA”) require the use of unlicensed spectrum to facilitate remote identification (“remote ID”), whereby UAS transmit specific, identification and location information that can be received by other parties.<sup>10</sup> In addition, unlicensed spectrum has been used to support drones in healthcare<sup>11</sup> and logistics<sup>12</sup> operations.

At this stage of the development of the drone industry, it is premature to determine whether the amount of spectrum now available will be insufficient to handle future drone operations at scale. (Pillar #1, question 2). At the present time, the mix of licensed and unlicensed spectrum appears adequate for the functions described above. However, the Small UAV Coalition encourages NTIA to take a forward-looking approach to its spectrum strategy, taking into consideration not just what spectrum usage looks like today, but where it is likely to grow, whether due to increased adoption, new use cases, or other factors that are within the

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[between-drones-and-smart-city/](#) (“Telefónica has developed the first use case in Spain for package delivery based on 5G-connected drone air traffic control.”).

<sup>10</sup> 14 C.F.R. Part 89.

<sup>11</sup> See, e.g., The Economist, *Drone Deliveries Are Advancing In Health Care* (June 11, 2019), <https://www.economist.com/business/2019/06/11/drone-deliveries-are-advancing-in-health-care>; Forbes, *Drones May Become ‘The Next Big Thing’ In Healthcare Delivery* (Jan. 9, 2022), <https://www.forbes.com/sites/saibala/2022/01/09/drones-may-become-the-next-big-thing-in-healthcare-delivery/>.

<sup>12</sup> See, e.g., amazon, *Amazon Prime Air prepares for drone deliveries* (June 13, 2022), <https://www.aboutamazon.com/news/transportation/amazon-prime-air-prepares-for-drone-deliveries>; Wing, <https://x.company/projects/wing/> (“Wing has developed an air delivery service that’s faster, safer, and more ecologically friendly than what’s possible today on the ground.”).

foreseeable future. The drone services market is expected to grow to \$63.6 billion by 2025.<sup>13</sup> Not only are the number of drones likely to skyrocket in the near future, but as the industry scales, drone connectivity becomes more important. As more drones join the airspace, communications between drones, traditional aircraft, and air infrastructure will be increasingly important. Critically, a fully-scaled drone industry will require a comprehensive traffic management system that allows drones, operators, and other participants in the UAS ecosystem to communicate quickly and reliably. This is the key concept behind NASA’s development and FAA’s implementation of a Uncrewed Traffic Management (“UTM”) system – “to enable the safe management of the expected rapid influx of UAS operations in the [national airspace with] solutions that scale beyond the current [Air Traffic Management] infrastructure.”<sup>14</sup> To accomplish this goal, NASA developed UTM “predicated on layers of information sharing and data exchange.”<sup>15</sup> That information sharing and data exchange will require wireless spectrum that enables secure and reliable wireless communications across the United States. In order to ensure that the requisite spectrum will be available, it is important for NTIA as part of its Long-Term Spectrum Planning (Pillar #2) to consider not just the drone industry as it stands now, but as it is poised to stand in the near future.

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<sup>13</sup> See, e.g., Insider Intelligence, *Drone market outlook in 2023: industry growth trends, market stats and forecast* (Jan. 7, 2023), <https://www.insiderintelligence.com/insights/drone-industry-analysis-market-trends-growth-forecasts/>.

<sup>14</sup> Fed. Aviation Admin., Unmanned Aircraft Systems (UAS) Traffic Management (UTM) Concept of Operations v2.0, at 2 (March 2, 2020) at 2, [https://www.nasa.gov/sites/default/files/atoms/files/2020-03-faa-nextgen-utm\\_conops\\_v2-508\\_1.pdf](https://www.nasa.gov/sites/default/files/atoms/files/2020-03-faa-nextgen-utm_conops_v2-508_1.pdf).

<sup>15</sup> *Id.* at 6.

As the NTIA develops its National Spectrum Strategy and subsequently develops an implementation plan, the Coalition urges NTIA to include drone industry stakeholders in any and all ongoing or future dialogues regarding spectrum allocation and authorization, repurposing, sharing, and coordination.

Respectfully submitted,



Gregory S. Walden  
Gregory S. Walden  
Counsel  
Small UAV Coalition