



Statement of Wing Aviation LLC

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Subcommittee on Aviation

House Transportation and Infrastructure Committee

Hearing: “FAA Reauthorization: Harnessing the Evolution of
Flight to Deliver for the American People”

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INTRODUCTION

Chairman Graves, Ranking Member Cohen, members of the Transportation and Infrastructure Committee, thank you for holding this hearing today on the important issue of integrating new entrants into our airspace. I am honored to testify.

My name is Adam Woodworth, and I am offering testimony today as the CEO of Wing, a company using uncrewed aircraft systems (UAS), commonly referred to as “drones,” to deliver small packages. I joined Wing in 2014 as an aircraft designer, rising to Chief Technology Officer in 2018, and assuming the role of CEO one year ago.

Begun in 2012 as Project Wing within X (at the time known as Google X), Wing has developed a highly automated aircraft to deliver small goods to customers, as well as a set of UAS Traffic Management (UTM) capabilities to help operators share the airspace. We partner with merchants such as Doordash and Coles Supermarkets to deliver goods ranging from over-the-counter medicine and household essentials to made-to-order meals, coffee drinks, and even ice cream. In 2018, Project Wing became an independent company - still under the Alphabet umbrella - called Wing Aviation.

Today, Wing has been approved to operate in five countries on three continents. Our most mature and high-volume operations are in Canberra and Logan City, Australia. We also have locations in Finland, Ireland, and the United States - around the Dallas-Fort Worth metroplex and in Christiansburg, Virginia. Wing holds relevant approvals in each jurisdiction and we were the first

drone company to receive a Part 135 air carrier certificate for commercial UAS delivery operations beyond visual line of sight (BVLOS). To date, we have successfully completed over 300,000 commercial deliveries to paying customers.

AIRCRAFT AND COMMERCIAL OPERATIONS

At Wing, we fundamentally believe that it should require fewer resources to transport a two-ounce bottle of medicine to someone's home than it does to deliver a large order of groceries. But today, because of our reliance on a single mode of transportation for virtually all residential deliveries, these two orders would likely be carried by similar vehicles, requiring similar resources, taking up similar space on our roadways, and emitting similar levels of pollution into our atmosphere. The reason we want to use drones for delivery is because it allows you to right-size the vehicle for the payload.

By right-sizing the delivery vehicle to the goods being delivered - such as using an eleven-pound, battery-powered drone mostly made of plastic and styrofoam to deliver a three-pound package instead of a two-ton car or truck - drone delivery can bring efficiency, safety, and environmental benefits to communities across the country and the world.

Wing has developed a hybrid fixed-wing and multirotor aircraft that cruises like an airplane but launches and lands vertically with a series of hover rotors. The aircraft is lightweight, electric, highly automated, and designed specifically for delivery in populated areas. Safety is paramount

and Wing has designed the aircraft to deliver a level of safety that exceeds any alternative mode of ground transportation.

Wing operates BVLOS in populated areas along flexible or “on-demand” routes. At the delivery zone, Wing aircraft hover at roughly 23 feet above ground and gently lower the package via tether. Delivery zones are typically backyards, driveways, or other small clearings. Wing also distributes flight paths across the operating area, where possible, to minimize repeat overflights.

Wing operates in low-utilization airspace below 400 feet over populated areas. For crewed traffic, we engage with local aviation stakeholders, Wing’s remote pilots monitor ADS-B, and today we also utilize visual observers of the airspace in the United States. Further, Wing issues a NOTAM and monitors local frequencies. For uncrewed traffic, Wing has demonstrated strategic deconfliction between different UAS through a network of interoperable UAS Service Suppliers (USS).

Wing has invested an incredible amount of time, brain power, and resources into developing and proving out a system that is capable of serving millions of customers in populated areas across the globe. We are anxious to see the FAA adopt a regulatory framework that will enable us to bring the benefits of this promising technology to communities across the country and maintain our leadership in the field of emerging aviation technology.

FAA REAUTHORIZATION

In the 2012 FAA reauthorization bill, Congress provided the first and fundamental direction to the FAA to treat these vehicles as aircraft. It was eleven years ago that Congress directed the FAA to safely integrate UAS into the National Airspace System (NAS). The dedicated civil servants at the FAA are hardworking and deserve praise for doing something new. But Congress can and should equip the FAA with the policy direction and regulatory tools to make safe operation of commercial drones scalable in the United States.

The FAA reauthorization process provides a perfect opportunity to do just that. Congress has acted in the past to give direction to the FAA and that led to the successful adoption of commercial flight approvals under Section 333 of the 2012 FAA bill, and adoption of the broader commercial drone operations regulation in Part 107. Congress also played a role in pushing the FAA to adopt regulations allowing for operations over people.

We appreciate Congress setting the policy direction for the FAA to implement, and there is more work ahead. Below are what I view as priorities necessary to advance commercial UAS integration in the United States for this Committee to consider for inclusion in the FAA reauthorization bill this year.

BVLOS Rulemaking

The UAS industry is well-positioned and evolving quickly to enable BVLOS operations, but the regulatory frameworks struggle to keep pace. The FAA has accelerated efforts to integrate routine BVLOS operations by convening the BVLOS Aviation Rulemaking Committee (ARC) in 2021, with the ARC's recommendations published by the FAA in March 2022. Broadly enabling BVLOS operations in a safe and secure manner is critical to unlocking the benefits of using drones for many commercial and public safety tasks. It will also foster new job opportunities within the industry.

The FAA must prioritize taking action to enable BVLOS operations by putting forth a Notice of Proposed Rulemaking. But the process of developing a final rule can take months, even years, to complete. The FAA currently has the opportunity to adopt a more predictable and pragmatic approach to UAS regulation by moving forward with a BVLOS rule. Congress should direct timely action on this rulemaking effort.

Congress can also demonstrate its commitment to further advancing this industry by directing the FAA to take such action under current authorities, specifically Section 44807 of Title 49, United States Code, as a way of marking progress while a more comprehensive rulemaking process unfolds.

Target Level of Safety / Acceptable Level of Risk

As part of enabling routine operations, including BVLOS, the FAA must prioritize the determination of an acceptable level of risk - or a calculable, objective target level of safety - for UAS operations consistent with existing accepted general aviation risks. Taking this step will give operators clear design targets and allow them to produce a detailed framework for building a suitable safety case to meet the target level of safety and take into account the specific needs for their operations while allowing the FAA to assess whether the operator meets their high bar for safety. This would add much-needed consistency to the process and reduce the arbitrary subjectivity and excessive delays currently experienced by operators.

Congress should include language in the FAA reauthorization to require the FAA to adopt and publish a quantified target level of safety for UA operations that is modeled upon and consistent with existing accepted general aviation risks.

UAS Certification

Despite multiple years of industry working with the FAA to receive type certificates for small UAS, the FAA has issued only a single type certificate out of the numerous UAS submissions pending, failing to keep pace with technology due to internal delays and inefficiencies. While the FAA has engaged in a multi-year internal debate regarding how to appropriately tailor a type certification process designed for crewed aircraft to low-risk small UAS, the agency has

received, considered, and approved type certificate petitions for much larger, passenger-carrying crewed aircraft.

Moving forward, Congress could help by directing the FAA to adopt a declarative certification for aircraft design approval for small UAS, modeled after the FAA's existing and successful light-sport aircraft certification process. Under this process, the FAA will adopt risk-appropriate consensus standards and manufacturers will then build to and declare compliance with those standards. Throughout the process, the FAA would retain ultimate safety and compliance oversight of each applicant.

Equipage & Modernization

With the introduction of more and different types of aviation, both crewed and uncrewed, the airspace is truly maturing to serve more users. This innovation provides promising opportunities to benefit communities across the country, and will usher in the adoption of novel technology solutions capable of maintaining the safety of the NAS, particularly in very low altitude airspace (below 500' AGL).

In order to safely and efficiently share this airspace, it is incumbent upon all of us to adopt existing, effective, and affordable mitigations to avoid collisions with other aircraft. Outside of airspace designations for particular uses, technologies such as ADS-B have been proven to enhance safety. These technologies are widely available, have been successfully in use for years in other portions of our national airspace, and are affordable to purchase and install. Most

importantly, the use of ADS-B technologies saves lives: a recent study found that it reduces airborne collisions for general aviation and air taxi aircraft by 53 percent and air collision fatalities by 89 percent¹.

At Wing, our pilots monitor ADS-B signals from crewed aircraft and we install ADS-B receivers on our aircraft as we work toward FAA approval of on-aircraft automated avoidance. But to truly create a cooperative environment and continue to improve the safety of the airspace, adoption rates across the board need to increase. For that reason, we believe Congress should provide incentives for legacy aircraft, possibly through restoring the ADS-B Rebate program, to adopt this reliable, effective, and affordable technology that can save lives and enable entirely new kinds of aviation to develop, integrate, and thrive in our national airspace.

UTM

Another key element of an open and cooperative airspace environment is UAS Traffic Management (UTM). The concept of UTM - an interoperable, cooperative and collaborative approach to airspace safety and efficiency in low-altitude airspace - was embraced by the U.S. Government and is being built by industry. Thanks to significant contributions from industry, academia, and government involvement, global standards development organizations have developed standards that regulators and industry have adopted to create operational UTM services. These services are seeing their earliest implementation in Europe where regulations have created the opportunity to broadly deploy UTM services and enable wide-scale operations.

¹ Howell, Daniel and King, Jennifer. *Measured Impact of ADS-B In Application on General Aviation and Air Taxi Accident Rates*. 38th Digital Avionics Systems Conference, September 2019.

It is imperative that the FAA also recognize industry standards and enable industry to utilize UTM services such as strategic deconfliction to create a safer, and more accessible airspace for all operators. Congress should require the FAA to adopt industry standards for strategic deconfliction and allow companies to utilize interoperable technology that meets this standard in their operations.

Environmental Reviews

Drones are an environmentally friendly technology powered by electrification that can contribute to curbing emissions by taking vehicles, including delivery trucks, off the roads. Yet, the current backlog of environmental reviews threatens to stall progress on UAS deployment and operations in the United States and further hamper the industry's competitive edge - leading to frustration for stakeholders and dissatisfaction for customers.

The FAA should move towards looking at broader geographic areas - or programmatic reviews - for UAS operations, not on a case-by-case basis for one specific area or operator as is the current process. This will help streamline the approval process for operators - especially in potential areas of deployment that share similar characteristics, wildlife, and topography.

Congress should include language directing the FAA to streamline environmental approvals of advanced UAS and encourage the FAA to move toward programmatic reviews.

FAA Realignment

The UAS Integration Office is the focal point for all matters relating to UAS integration policy. Historically, the majority of the FAA's institutional knowledge related to UAS has resided within this office. However, approvals for UAS operations largely exist outside of the purview of the Integration Office.

To meet the needs of the NAS, authority for the approval of UAS should rest with the experts within the FAA who best understand this form of aviation and how it will correspond with other aircraft operators and have the responsibility to safely integrate UAS into the national airspace. The existing approval process is not designed to accommodate the current evolution of aircraft design and capability.

Congress should enable the FAA to take a more direct approach with the hundreds of thousands of new aircraft operators and stakeholders in the NAS, by elevating and empowering the UAS Integration Office to streamline and improve existing approval processes within the FAA's organizational structure.

Specifically, Congress should include language in the FAA reauthorization to create a position of Associate Administrator to oversee UAS operations and certification, and provide that person with the authority to actually approve UAS and their operations, while ensuring appropriate consultation with other lines of business within the FAA.

It is also important to note here that this effort should be focused. Wing is excited about recent developments with Advanced Air Mobility, or air taxis, and we look forward to seeing more progress in the integration of that technology. But make no mistake about it – from a regulatory standpoint, the risk assumptions and regulatory timelines are vastly different. Most prominent in the safety analysis is that there is not a person onboard a drone – it makes no sense to regulate our uncrewed, 11-pound styrofoam drone to the same regulatory specification or timelines as a large vehicle that carries passengers.

Extending and Improving Section 44807

Section 44807 of Title 49 - the special authority for certain UAS - is currently scheduled to expire September 30, 2023. It has been a crucial enabler for the airworthiness of small UAS and must be extended in order to continue and expand part 135 UAS operations. If this authority is not extended, BVLOS operations in the United States will essentially cease, which will have wide-ranging ramifications on the UAS industry itself as well as the partners and customers that we serve. It will prevent the delivery of health items, critical infrastructure inspection, and many other benefits that BVLOS operations provide.

In extending Section 44807 authority, Congress should also take the opportunity to make improvements to it. Getting a 44807 exemption currently is a lengthy and burdensome process where each application has to go through the rulemaking process, including a notice and comment period. Congress should clarify that the FAA need not apply the Part 11 exemption

procedures, and Section 44807 approvals can be issued without undergoing a full rulemaking process.

These improvements are crucial to seeing near-term progress in advancing UAS integration here in the United States as the FAA works toward a final BVLOS rule.

Network Remote ID

Remote identification of UAS is a security tool required by the United States Government for operation by providing a “digital license plate” for nearly all UAS operating in the NAS. A Remote ID system can give law enforcement, security officials, and the general public necessary information about a nearby UAS, which may help to ensure operations are safe and secure.

Although international standards bodies have concluded that Remote ID can effectively be accomplished through two different means - either broadcast signal (based on radio frequency) or network (based on internet connectivity) - the FAA’s final rule on Remote ID determined only broadcast, not network, technology would comply with the rule. This stands in direct contrast to other regions of the world. In Europe, for example, UAS operators flying in designated “U-space” airspace are required to employ network identification.

Network identification has important advantages, from offering greater privacy protections to serving as a cornerstone to data exchange paradigms that enable UTM. To further the development of network identification, the FAA must allow UAS industry stakeholders to

demonstrate that the goals of the remote identification rule can be achieved in a technology-agnostic manner, as long as required performance standards are met.

Congress should include language in the FAA reauthorization to require that the FAA develop an additional means of compliance to the remote identification requirements that can accept internet-based network identification as an acceptable means of compliance with rules requiring UAS be equipped with technology to allow for remote identification.

CONCLUSION

In conclusion, at Wing we believe that the National Airspace System is a crucial asset to which everyone should have access and from which everyone should benefit. Simply put, there is room in the airspace for everyone. That should include passenger airliners, general aviation, model aircraft, and yes, even drones.

Drones are an important entry point for people of all ages and from all backgrounds into the world of aviation. Most people do not remember the first time they rode in a car, but many remember the first time they flew on an airplane. Aviation has traditionally been a rare and somewhat exclusive experience. Drones can help change that. I am an avid RC aircraft hobbyist, and I am excited about passing that passion along to my young daughters. The barriers to entry are so much lower for influencing and even employing people with drones than with traditional aircraft. The development of the drone industry is a critical tool in broadening and diversifying the aviation workforce.

Drones also have a lot to offer the economy, and each day of delay threatens the future of this industry here in the United States. We appreciate Congress's attention to advancing this innovation platform, and all of its novel uses, here in the United States.

I am happy to answer any questions you may have. Thank you.