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**U.S. House of Representatives
Committee on Appropriations
Subcommittee on Transportation, Housing and Urban Development and Related Agencies
“Emerging Transportation Technologies”
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Chairman Diaz-Balart, Ranking Member Price and members of the subcommittee, thank you very much for the opportunity to participate in today’s hearing. I’m speaking on behalf of the Association for Unmanned Vehicle Systems International, the world's largest non-profit organization devoted exclusively to advancing the unmanned systems and robotics community. AUVSI has been the voice of unmanned systems for more than 40 years, and currently we have more than 7,500 members, including many small businesses that support and supply this innovative industry.

My comments today will specifically focus on unmanned aircraft systems, or UAS, and the resources needed to fully integrate UAS safely and efficiently into the National Airspace System. As you know, UAS are regulated by the Federal Aviation Administration, which has taken several positive steps in the past few years to help American businesses and individuals across the United States realize the potential of UAS.

The potential for UAS in business is great. From inspecting pipelines to surveying bridges to filming movies, UAS help save time, save money and, most importantly, save lives. It is no wonder why thousands of businesses—small and large—have already embraced this technology, and many more are considering integrating it into their future operations.

For years, AUVSI has been urging the FAA to use all available means to establish a regulatory framework for UAS, starting with finalizing the small UAS rule. We now have initial regulations governing civil and

commercial UAS operations, which means even more businesses are cleared for takeoff. These regulations have been in effect for a little more than eight months, and there is strong evidence that the commercial UAS market is poised for significant growth.

Much has been accomplished so far because government and industry has banded together to advance UAS. The collaborative process in which we have engaged, and the goals we share of supporting innovation and ensuring the safety of the national airspace, have made for a working relationship that is defined by both productivity and mutual respect. This has led to a more flexible and nimble approach to regulating UAS as well as to more businesses adopting the technology. The United States was once falling behind the rest of the world in embracing UAS; now our country is leading the way.

There is still much more we need to accomplish, however, and I hope to take a few minutes today to tell you about where the unmanned aircraft industry has been, where we hope it will go, and how an appropriately funded FAA is necessary to help the industry reach new heights.

Looking back at other historical transformations in technology and transportation, on June 29, 1956, then-President Dwight D. Eisenhower signed “The Federal-Aid Highway Act of 1956,” which authorized the construction of the national interstate and highways system. The 41,000-mile project came with an authorization of \$25 billion dollars over a 10-year period, and it was the largest public works project in American history at that time.

Per a February 2016 CBO report, “[i]nvestment in highways has made a significant positive contribution to economic growth. Studies of the economic returns from public investment in highways have found that the construction of the Interstate System was associated with sizable gains in productivity, especially for industries that use the road system relatively intensively.”¹ With the past as prologue, I believe we are at a similar moment in time regarding the integration of UAS into the National Airspace System.

In August of 2016, the FAA implemented the small UAS rule, also known as Part 107. The rule was the result of years of collaboration between government and industry that established a flexible, risk-based

¹ Congressional Budget Office, February 2016, “Approaches to Make Federal Highway Spending More Productive”, https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/50150-Federal_Highway_Spending-OneCol.pdf

approach to regulating UAS. This new regulatory framework helped reduce many barriers to low-risk civil and commercial UAS operations. In reducing those barriers, the rule allows businesses and innovators to harness the tremendous potential of UAS and unlock the many economic and societal benefits the technology offers.

It is clear American businesses are eager to take off and the demand for commercial UAS has exploded across a variety of industries. As of this month, there are more than 820,000 UAS registrations with the FAA, the vast majority of which are hobbyists. Of those, about 62,000 platforms have been registered for commercial use. The FAA expects more than 400,000 UAS could be flying for commercial purposes over the next five years—a more than six-fold increase from today.

Part 107 has paved the way by allowing anyone who follows the rules to fly. Generally speaking, operators need to fly under 400 feet, within visual line of sight and only during daylight hours. However, recognizing the need for the rule to be flexible, the FAA created a waiver process under Part 107 that allows for expanded types of operations with the approval of the agency.

To date, the FAA has granted more than 800 waivers to Part 107. An AUVSI analysis of the first 300 found that companies in 44 states were already taking advantage of the process. The vast majority of these companies are small businesses with fewer than 10 employees. More than 97 percent of waivers allow for nighttime operations, while others allow for flights over people, operating multiple UAS and operating UAS from moving vehicles. High profile use of these waivers includes the most recent Super Bowl halftime show, which featured an aerial light show made possible by Intel's waivers to operate multiple UAS at night. BNSF Railway received a waiver to conduct inspections of its sprawling rail network beyond line of sight. Other practical applications of these waivers include nighttime search and rescue operations and filming after sunset.

Part 107 and its waiver process were just the first steps in creating a regulatory framework for full UAS integration. An economic analysis by AUVSI projects that the expansion of UAS technology will create more than 100,000 jobs and generate more than \$82 billion to the economy in the first decade following full integration in to the national airspace. After witnessing the growth of the industry over the last few years and now with Part 107 in place, these figures will likely go higher under the right conditions and once we achieve full integration.

In addition to the implementation of the small UAS rule and the waiver process, Congress passed and the president signed an FAA extension measure which will advance UAS research, expand commercial operations and enhance the safety of the national airspace for all aviation systems—manned and unmanned. Notably, the extension calls for the creation of a comprehensive UAS research and development roadmap to coordinate industry and government R&D initiatives. The extension also outlines a pilot program for UAS Traffic Management (UTM).

While this extension measure will provide some short-term stability through September 2017, it is critical that Congress pass a long-term bill this year that will set the industry and the country on a glide path to reap all the benefits of UAS. A vital prerequisite for advancing UAS is an appropriately-funded FAA that can meet the employment and staffing needs required for the future, including the federal rulemaking processes to achieve full UAS integration, as well as provide the necessary resources to update and automate the FAA's infrastructure to support this new technology and the growing demand for UAS services.

The recent budget agreement that this Congress passed and President Trump signed into law made some significant investments for the FAA's UAS-related activity. I would like to personally thank this Committee's leadership for providing real resources to help expedite the integration of unmanned systems. It is a step in the right direction.

At the same time, there is much more work to be done to help pave the way for a true, holistic plan for full UAS integration that includes beyond line of sight operations, flights over people, access to higher altitudes and platforms above 55 pounds.

To safely manage the hundreds of thousands of UAS anticipated to operate in American skies over the next year, the FAA needs, first and foremost, to automate its IT systems to meet the growing demand for UAS services. Automation will also be important beyond Part 107 for more complex operations. The agency envisions creating a single online portal for all types of UAS users; automating its waiver and airspace authorization requests that allow access to certain segments of the airspace beyond Part 107; and automating its accident reporting and how it shares low-altitude data with non-federal agencies.

These important management tools and processes, which facilitate safer and more seamless UAS operations, currently operate by manual data input or processing, requiring manpower and man-hours that the FAA simply does not have to spare at its current funding levels. With the new Congressional investments provided, hopefully the FAA will be able to adopt new automation technology into their back-end systems. If the United States wants to remain a global leader in UAS innovation, manual processes and out-of-date technology will simply not help achieve that aim.

The FAA also needs employees who are dedicated to future UAS rulemakings to move us beyond Part 107 and allow for more complex operations. More resources to advance UAS regulations will help enhance the safety and security of the national airspace.

Moreover, the industry is not relying on the FAA and government alone to advance UAS. Industry is currently shouldering many of the research and development costs to spur innovation, finding solutions to make UAS fly higher and farther more safely and efficiently.

Industry has also been a close partner with government in advancing UAS Traffic Management (UTM) system, beginning with Low Altitude Authorization and Notification Capability (LAANC). It has also been a partner in developing standards for remotely identifying operators and owners of UAS, building on earlier registration efforts with real-time tracking of UAS operators. AUVSI recently collected papers on remote identification solutions for UAS from industry stakeholders to help the FAA meet its congressional directive under the 2016 FAA reauthorization extension to develop consensus for such standards.

Another key example of collaboration is the Drone Advisory Committee, of which I am a member. RTCA is the supporting organization for this Federal Advisory Committee and it “was formed to provide an open venue for the FAA and key decision-makers supporting the safe introduction of UAS into the National Airspace System. Members of the Committee work in partnership with the FAA to identify and propose actions to the FAA on how best to facilitate the resolution of issues affecting the efficiency and safety of integrating UAS into the NAS.” Through its Drone Advisory Subcommittee and three Task Groups, the DAC is working on providing consensus-based recommendations to the FAA on the issues of roles and responsibilities for federal, state and local governments, access to airspace, and short-term funding for the FAA’s budget. These important collaborative measures will continue to be important to the growth and security of the UAS industry.

The UAS industry is primed for incredible growth, thanks to industry representatives and government regulators nurturing innovation that helps more businesses be more competitive in the marketplace than ever before. We hope that these efforts can be sustained and that we continue to reach new historic milestones in integrating this technology into the national airspace. Vital to these efforts, however, is an FAA that is appropriately funded and empowered to engage meaningfully in the process, alongside industry stakeholders.

Thank you, again, for the opportunity to speak today. I look forward to answering any questions the committee might have.