

**Committee on Transportation and Infrastructure
Subcommittee on Aviation
United States House of Representatives**

**“ Work in Progress: Implementation of the FAA Reauthorization Act of 2018”
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Chairman Larsen, Ranking Member Graves, and members of the Subcommittee: on behalf of the Small UAV Coalition, to which I serve as Aviation Counsel, thank you for the opportunity to present testimony on the unmanned aircraft systems (UAS) subtitle in the FAA Reauthorization Act of 2018. I am also Senior Advisor with McGuireWoods Consulting LLC and Partner with McGuireWoods LLP. I served as FAA Chief Counsel from May 1988 through December 1990 and have been both practicing aviation law and teaching at George Mason University Law School for the last 20 years.

The Small UAV Coalition was organized in 2014 and is comprised of UAS operators, hardware and software manufacturers, and other companies involved in the commercial UAS sector. Coalition members have been involved in each and every committee, working group, and industry partnership the FAA has established with the UAS community. Together, Coalition member companies represent the innovative, cutting-edge technological leadership that in just a few short years, is poised to enable routine safe, secure, UAS integration. With your continued support, we are well on our way to securing a regulatory framework for commercial UAS operations that will not only capture, but exceed, our expectations and deliver untold economic and consumer benefits.

General observations

The Coalition welcomes the UAS provisions enacted into law last year and commends Congress for establishing a forward-looking policy roadmap for UAS integration. Subtitle B of the Safety title addressed all of the issues we believe are critical to the development of a safe and secure UAS regulatory framework: remote identification, unmanned traffic management, air carrier certification, standards development, security, privacy, spectrum, and state and local authorities. Significantly, the 2018 reauthorization law included two key provisions – both of which the Coalition supported – necessary to lift the informal hold on FAA UAS rulemakings, which dated back to December 2016.

Remote identification (Remote ID)

We are encouraged that the remote ID proposed rule, mandated by the FAA Extension, Safety, and Security Act of 2016, is now under review at the Office of Information and Regulatory Affairs (OIRA). Remote ID is fundamental to the development of a mature UAS regulatory framework; it addresses safety, security, and privacy concerns. As Congress envisioned in the 2018 reauthorization law by establishing a pilot program to utilize available remote ID technologies for safety oversight (section 372), remote ID will assist the FAA in conducting safety oversight and taking enforcement actions when necessary. While this section sunsets in September 2023, remote ID should continue to serve as a compliance tool for the FAA.

We are also pleased that ASTM Committee F38 has developed a remote ID standard, which is now out for ballot, and which will help to inform the remote ID rulemaking. We appreciate the role this Committee – in particular Chairman DeFazio – played in freeing the FAA to move forward with

a rule that we expect will apply both to commercial and non-commercial UAS operators. Section 349 allows recreational operators and hobbyists to work with FAA Air Traffic officials to designate discrete flying fields (“fixed sites”) where UAS perhaps need not be equipped. In other airspace, however, remote ID may be required of all UAS operators.

We are mindful that the OIRA process may result in further delays, beyond the 90 day review period set out in Executive Order 12866. Coalition members have demonstrated remote ID technology based on the ASTM standard. They have shown that the standard can be implemented today across a range of commercial and recreational operators without requiring costly additional infrastructure or equipage. The ASTM standard balances transparency with the privacy interests of customers and operators by sharing information only as necessary. Remote ID based on the ASTM standard can deliver immediate safety, security, and privacy benefits at reasonable cost. Indeed, earlier this month several Coalition members participated in a demonstration of network-based remote ID.

The FAA also tasked the Drone Advisory Committee (DAC) with recommending incentives to encourage early equipage, and the Coalition recently submitted its recommendations to the DAC. The Coalition urged that any pre-rule implementation be consistent with the ASTM standard. To demonstrate the potential of remote ID to address a number of concerns with UAS operations, the Coalition recommended the DAC urge the FAA to sponsor live remote ID demonstrations to Congress, Federal law enforcement and homeland security agencies, State and local law enforcement officials, and the general public. Remote ID demonstrations are critical to public

acceptance of commercial drone operations in a range of use cases, including operations over people (OOP) and beyond visual line of sight (BVLOS) in both rural and urban environments.

To incentivize companies to implement remote ID in compliance with the ASTM standard, the Coalition believes the FAA should prioritize Part 107 waiver and section 44807 exemption petitions filed by UAS operators using ASTM standard-compliant remote ID, and that remote ID equipage should be considered favorably in evaluating the merits of a waiver or exemption request because it increases the margin of safety of the drone operations.

In sum, the Coalition supports pre-rule equipage and encourages the FAA to move forward with incentives to equip.

Unmanned Traffic Management (UTM)

When the Coalition was established in 2014, NASA was well along with its R&D work on developing a proposed UTM ecosystem. Coalition members partnered with NASA in this work and the Coalition urged Congress to address UTM design, development, and implementation in FAA reauthorization legislation. The 2016 extension law established a two-year UTM System Pilot Program (UPP). With further direction from Congress contained in sections 376 and 377 of the 2018 reauthorization law, both of which we strongly supported, that Program is now underway.

Unfortunately, UTM development has progressed slowly, and with little transparency. Industry is ready to implement UTM capabilities, but must depend on a supportive policy framework to do so. Earlier this year, the FAA selected three of the UAS test sites to serve as the UPP participants. The FAA recently showcased UTM demonstrations at these three sites, but there is no indication

that any UPP participant is seeking to take advantage of two provisions in section 376: blanket BVLOS waiver authority for any UAS operating simultaneously in a swath of airspace and demonstration of multiple remote ID technologies. We remain hopeful that FAA will meet the April 2020 deadline for the UTM implementation plan, which should not only build upon the FAA's UTM Concept of Operations document, NASA's work, and the results from UPP, but also include the UAS industry's work, including as part of ASTM Committee F38.

Section 377 encourages the FAA to determine, by February 2019, whether UTM services can be provided before the UTM implementation plan is completed. We are unaware whether the FAA has established a framework to evaluate and approve a request from a would-be UTM Service Provider.

Air carrier rule

The Coalition has long supported the development of a rule to authorize UAS air carriers that would be tailored to the very different and lower risk profile small UAS pose compared with traditional manned air carriers. Section 348 requires the FAA to update its rules within one year of enactment. While that clearly will not occur, we acknowledge that the FAA is moving ahead to authorize package delivery for compensation or hire by granting exemptions from Part 135. Wing has obtained this authority, with petitions from Amazon Prime Air, Uber Elevate, and UPS Flight Forward pending.

With respect to economic authority, DOT moved quickly to apply the existing Part 298 exemption process for air taxi operators to UAS operators.

State and local authority

One of the greatest challenges to the development of a mature UAS regulatory framework is to achieve a proper understanding of the roles and responsibilities of Federal, State, and local governments. Section 373, which the Coalition supported, tasks GAO with conducting a study and reporting to Congress by April 2019. The Coalition believed then, and believes now, that it is premature for Congress to make any changes to the FAA's exclusive authority over aviation safety.

The Coalition believes that plenary authority must remain with the Federal Government in four specific areas: aircraft, airmen, air carriers, and airspace. With respect to drones, this means that UAS equipage and maintenance requirements, remote pilot qualifications, regulation of package delivery, and airspace classification and regulation are for the FAA to regulate and enforce. With respect to airspace, the Coalition believes that the FAA must retain its safety authority over UAS operators and operations at any altitude, no matter how close to the ground. At the same time, State and local governments possess land use and other police powers. These authorities can co-exist, particularly with the support of technical solutions like UTM. We look forward to reviewing the findings and recommendations in the GAO report.

The Coalition strongly endorsed the UAS Integration Pilot Program (IPP) when it was announced in 2018 and many Coalition members are participating in one or more programs. The IPP was created in large part to allow for State and local governments to inform the FAA about local interests in UAS operations. Indeed, DOT required lead applicants to be State, local, or tribal government entities. While many Coalition members have had very positive experiences under the auspices of the IPP that have demonstrated the promise of commercial UAS technology, generally

speaking the IPP has lacked transparency; the initial report on this three-year program has not yet been published. Reports indicate that success has been uneven. From the start, the scope of projects in most IPP programs was significantly curtailed and waivers have taken longer than expected.

Aircraft safety standards and certification

As for aircraft certification, there remains much to do. The Coalition supports section 44807, which superseded section 333 exemption authority, so that the FAA is permitted to authorize UAS operations over 55 pounds, as well as waive type, production, and airworthiness certification requirements. Indeed, commercial package delivery under Part 135 requires an exemption under section 44807, because otherwise an air carrier may operate only those aircraft with a valid airworthiness certificate.

Section 202 created the Safety Oversight and Certification Advisory Committee (SOCAC) and provides for UAS industry representation. The law required the Secretary to establish the SOCAC by December 2018; this deadline was not met and the first meeting will not be held until this November. The Coalition supports the creation of this advisory committee and recognizes that the focus and attention this year has appropriately been on the response to the tragic Boeing 737 MAX accidents.

Section 345 directs the FAA to set up a process to accept risk-based industry-consensus standards and to allow UAS manufacturers to declare compliance with such standards. There is much promise in this provision, but it will take some time to work through its complexity, and therefore this is one provision for which the absence of a deadline makes sense. The Coalition believes the

FAA shares with the UAS industry the desire to adapt the current type and airworthiness certification processes to unmanned aircraft, both small and large. It will be up to the UAS industry, working with various U.S. and international standards-setting groups, to develop standards for such technologies as detect-and-avoid. The Coalition supports the adoption as an industry consensus standard the Specific Operations Risk Assessment (SORA) process initially created by the Joint Authorities for Rulemaking on Unmanned Systems (JARUS). We also support the work the FAA is doing on the so-called MOSAIC (Modernization of Special Airworthiness Certificates) process: the FAA has current regulatory authority under 14 C.F.R. 21.17(b) to adopt Special Conditions for aircraft designs for which neither Part 23 nor Part 25 is appropriate.

Section 345 recognizes that the initial and primary responsibility for designing and manufacturing safe and reliable drones rests with the UAS industry. The FAA must have the final say that a UAS has been designed and manufactured in compliance with FAA-approved standards. In reviewing the FAA's Organization Designation Authorization process, Congress should be mindful that, with respect to small UAS, the industry will lead in ensuring the safety and reliability of hardware and software innovations that increasingly lead to autonomous operations.

The Coalition also supports the FAA's work on developing an alternative certification process for lower risk UAS operations that relies primarily on a demonstration of reliability and durability, and that scales from remote, densely-populated area to high-density cities.

Risk

One of the central themes one can derive from the 2018 reauthorization law is the imperative to base decision making on the nature and degree of risk to aircraft (so-called air risk) and to persons and property on the ground (so-called ground risk), and to evaluate how this risk can be mitigated. The Coalition strongly supports risk as the touchstone for UAS regulation. Based on the FAA's proposed rule for operations over people, however, the Coalition is concerned that the FAA may be approaching risk in an overly conservative way.

The Coalition recommends a holistic approach to evaluating risk that takes into account avoided risk (such as the risks associated with alternatives such as manned aircraft, or road vehicles) and risk mitigation (measures that reduce the likelihood of failure and the likelihood of a collision, not just the consequences of a collision). At its most basic level, the risk model the FAA identifies in its proposed rule fails to consider the net reduction in risk in operating a small UAS rather alternatives, such as a manned aircraft of any size, operating a motor vehicle or, in some cases, undertaking the task personally (i.e. climbing a cell tower). UAS operations reduce risk by limiting the public's exposure to the greater dangers associated with operations of significantly larger, heavier, and faster fixed-wing aircraft that are fuel-powered, or the even greater danger posed by automobiles. UAS operations under 55 pounds are lightweight, nearly all battery-powered, have no on-board crew, and create no toxic emissions.

Assessing the Risks of Unmanned Aircraft Systems into the National Airspace System, a recent Consensus Study Report commissioned by the National Academies of Sciences, Engineering and Medicine at the FAA's request in 2017, recommends this approach.

In the OOP NPRM, the FAA uses a kinetic energy standard that assumes a small UAS has collided with a human being. In other words, the standard is not based on the probability of failure or the probability of impact, but only on the severity of impact. The FAA does not use this standard for manned aviation, whether transport category or small aircraft. If it did, no aircraft would ever be allowed to fly over people, and the aviation industry would not exist.

As the Alliance for System Safety of UAS through Research Excellence (ASSURE) explained, “FAA’s safety program relies heavily upon the risk-based approach that includes hazard severity and probability of occurrence. . . . The NPRM proposes to achieve their safety objectives by establishing a performance-based standard on severity of the impact without any clear guidelines or application of probability of the collision even occurring.” The Coalition urges the FAA to reconsider its risk assessment models, and revise its performance standards in line with ASSURE’s recommendations.

Recreational operators

The Coalition supports the requirement in section 349 that recreational operators pass an aeronautical knowledge test that is administered online. We expect online training and testing will encourage many recreational operators, who would otherwise elect not to travel to a testing center to take the test, to go online and come into compliance. The FAA set up an Aviation Exam Board to develop questions for the aeronautical knowledge test; a member of the Coalition serves on this Board. Unfortunately, the FAA did not meet the April 3, 2019 deadline to develop a test and a request for information (RFI) to potential online aeronautical knowledge test vendors was not issued until August. Submissions were due September 19, so we are hopeful that the FAA can

begin the online aeronautical testing by the end of this year or early in 2020. The Coalition encourages the FAA to ensure that the test is affordable and accessible to the recreational UAS community in order to maximize compliance.

Part 107 waivers

A virtue of Part 107 is that several operational prohibitions in the rule are subject to waiver. In its early stages, the Part 107 waiver process lacked transparency and was far from user-friendly. We applaud section 352's direction to the FAA to increase transparency and make technological improvements. FAA has significantly improved its guidance on seeking waivers, although the UAS community would benefit greatly from the availability of FAA staff after an application is filed. The application process has also improved, but waivers still take too long to be processed. The DAC has created a Task Group to develop recommendations on how to improve the Part 107 waiver process, and the Coalition urges the FAA to implement these recommendations. We do applaud the development of the Low Altitude Authorization and Notification Capability (LAANC) and facility maps that support approvals to operate in controlled airspace in a matter of minutes.

Spectrum

Spectrum is another policy area that is important to UAS integration, as commercial licensed spectrum offers the security, reliability, and ubiquity, as well as the speed, latency, and bandwidth necessary to support sensitive UAS operations, including remote ID, UTM, and payload as control and non-payload communications (CNPC). Section 374 requires the NTIA, FAA, and FCC to report to Congress by July 2, 2019 on whether UAS operations should be permitted, but not required, to operate on the 960-1164 MHz and 5030-5091 MHz bands, on an unlicensed, shared,

or exclusive basis, whether as part of or outside of a UTM system, and to make additional recommendations if these bands are unsuitable for BVLOS operations. The Coalition looks forward to reviewing this report when it is released.

Protecting government facilities, operations, and critical infrastructure

The Coalition supported extending counter-UAS authorities to DHS and DOJ in a manner consistent with authorities previously granted to DOD and DOE in recent National Defense Authorization Acts (NDAAs). We note that section 1602 permits the Departments to issue regulations, but requires them to issue guidance. We understand that DHS and DOJ each is working on guidance. Although there is no deadline in section 1602 to develop such guidance, we believe that it should be in place before counter-UAS authority beyond detection is exercised.

Section 364 requires the FAA by December 2018 to have initiated a review of counter-UAS activities by Federal agencies by April 2019 to have reported to Congress. To our knowledge, this report has not been provided. Section 1602 requires DHS to provide a report to Congress by October 5, 2019 on an evaluation of threats and current authorities. We are unaware of any reported use of counter-UAS authority by DOD, DOE, DHS, or DOJ.

Because Executive Branch policies are not yet in place, and there appears to be little, if any, experience by these four Departments in using counter-UAS authorities, the Coalition believes it is premature to consider extending these authorities to other Federal agencies, airports, or State and local governments. Section 383 directs the FAA to develop a plan and to charter an aviation rulemaking committee (ARC) to consider allowing the deployment of UAS detection and

mitigation at five airports. We suggest that any ARC that is established should consider Federal Department guidance required in section 1602 and the experience these Departments gain in using counter-UAS authorities in the future.

With respect to protection of critical infrastructure, Section 369 requires the FAA to propose a rule to implement Section 2209 of the 2016 extension law by March 31, 2019, with a final rule by March 31, 2020. The FAA's current timetable expects a proposed rule by December 2019. We recognize that FAA has used its Temporary Flight Restriction (TFR) authority in the interim, and recommend the FAA continue to do so until a rule is in place.

U.S. leadership

Aviation is international in its reach. While each country regulates aircraft and airlines within its borders, the International Civil Aviation Organization (ICAO) exists in part to promote uniformity and harmonization of regulations and standards throughout the world. Since the dawn of aviation, the United States had led the world in safety improvements, which ICAO has later used in standards to be adopted by United Nations Member States.

The commercial UAS industry is likewise international in its reach. Many Coalition members are international companies that will manufacture, operate, and sell UAS in many countries. It is thus equally important that the United States remain the leader in aviation regulation. The Coalition urges the FAA to continue to engage with ICAO's RPAS Panel and with JARUS, which has developed an effective regulatory framework for evaluating complex UAS operations and recently

adopted a work plan to address UTM-ATM interface, autonomous operations, and UAS flight rules.

Conclusion

The FAA Reauthorization Act of 2018 was a major milestone in helping to shape and advance a mature UAS regulatory framework that will support continued innovation. There is much more to do before largely autonomous BVLOS UAS operations will be routine, and there remain some difficult issues to resolve. The Coalition therefore again commends the Committee for charting a forward-looking course for safe, secure UAS integration and urges this Subcommittee to continue its vigorous oversight to ensure its many directives are addressed in a timely manner.

Thank you again for the opportunity to testify today, and I look forward to your questions.