Aircraft Owners and Pilots Association

Statement for the Record

Subcommittee on Aviation

House Transportation and Infrastructure Committee

Hearing on: "Looking Forward: Aviation 2050"

Submitted by:

Mark Baker

President and CEO, Aircraft Owners and Pilots Association

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Chairman Larsen, Ranking Member Graves, Members of the Subcommittee, thank you for the opportunity to provide the Aircraft Owners and Pilots Association's (AOPA) perspectives on our future air transportation system. AOPA represents more than 300,000 of America's pilots and aviation enthusiasts. We were founded in 1939 with the simple mission: to give a united voice to what was then called "miscellaneous aviation". Through the decades, we have been faithful to our core missions – promoting safety, preserving the freedom to fly, and building the next generation of pilots.

Since AOPA was founded 80 years ago, aviation has gone through many changes and the advent of unmanned aircraft has been among the most dramatic. In 2017, AOPA stayed true to its values when we launched a new line of membership options created for unmanned aircraft pilots for the common purpose of safe integration of all users of the National Airspace System (NAS). Our members collectively operate over 85% of all general aviation (GA) aircraft in the United States and represent two-thirds of all pilots, making AOPA the largest civil aviation organization in the world.

Our testimony is focused on the safe integration of unmanned aircraft into the NAS, while maintaining our excellent safety record. Over the last several decades, the general aviation total accident rate has decreased by more than 85%. Preliminary National Transportation Safety Board (NTSB) statistics show that in 2017 (the most recent data available), for the fourth straight year, the overall GA fatal accident rate has declined to below one fatal event per 100,000 flight hours.

While technology, education, and training will lower this number even further, the stellar safety record reflects the productive oversight by this Committee and the constant work by the Federal Aviation Administration (FAA) and industry by putting safety first and producing results.

ECONOMIC IMPACT OF MANNED AND UNMANNED AVIATION

The general aviation industry has a large economic impact in the United States. It has a total annual economic output of over $219 billion and contributes more than $109 billion each year to the US GDP. The industry is made up of aircraft manufacturers, avionics and parts providers, fueling and service providers, maintenance shops and many more diverse businesses. There are over 1.1 million jobs directly or indirectly attributed to the general aviation industry.

The economic impact of unmanned aircraft integration is significant. According to the Alliance for Drone Innovation, the economic impact of unmanned aircraft into the NAS will total more than $13.6 billion in the first three years of integration and will grow sustainably for the foreseeable future, cumulating to more than $82.1 billion and more than 103,000 jobs by 2025.

AOPA ENGAGING WITH UNMANNED INDUSTRY

As an organization representing the freedom to fly for all users, AOPA believes that safely integrating unmanned aircraft can be achieved by engaging collaboratively with the entire aviation community, ensuring all users have an appropriate level of aeronautical knowledge, and using technology to minimize safety risks. Our long-term vision for unmanned aircraft is for routine operations to take place in harmony with other NAS users including general aviation.

To facilitate this vision, AOPA serves on a multitude of government and industry committees dedicated to the safe integration of unmanned systems. As AOPA President, I represent AOPA on the FAA's Drone Advisory Committee (DAC). The DAC is a broad based, long term advisory committee that provides the FAA with recommendations on key unmanned aircraft integration issues by helping to identify challenges, prioritize improvements, and create broad support for an integration strategy. Additionally, AOPA actively supports safe integration by participating in numerous FAA sponsored Aviation Rulemaking Committees (ARC), including UAS in Controlled Airspace ARC, Micro UAS ARC, Commercial Space ARC, Airspace Access Priorities ARC, and others. AOPA is also active on the ASTM International committees that are developing standards for detect and avoid, remote ID and Unmanned Traffic Management (UTM).

Additionally, AOPA has submitted a letter of interest in response to the National Aeronautics and Space Administration (NASA) Aeronautics Research Mission Directorate (ARMD) Urban Air Mobility (UAM) Grand Challenge Request for Information. AOPA shares ARMD's UAM vision for a "safe, efficient, convenient, affordable, environmentally friendly, and accessible air transport system".

AOPA also supports the FAA's formation of an Unmanned Aircraft Safety Team (UAST), modeled after the very successful Commercial Aviation Safety Team (CAST). The group's mission is to collect and use UAS operational data to identify safety risks, and then develop and voluntarily implement mitigation strategies to address those risks.

Through the work of the above committees and other activities, the FAA and industry have demonstrated that by working collaboratively, we can make significant progress toward integrating unmanned aircraft into the NAS. Efforts to date have produced results. In 2016, a rule for Registration and Marking Requirements for small UAS was published, which applies to UAS weighting more than 0.55 pounds and less than 55 pounds. In June 2016, the FAA Part 107 small UAS rule was published, becoming effective in August 2016. This rule enables routine small UAS operations conducted within visual line-of-sight (VLOS). Prior to the finalization of the small UAS rule, the FAA only authorized commercial unmanned aircraft flights on a case by case basis for operation in the NAS.

UNMANNED AIRCRAFT IMPLEMENTATION PRIORITIES

AOPA believes there are a handful of key implementation priorities that must be addressed to facilitate the safe integration of unmanned aircraft into the NAS: Beyond Visual Line of Sight (BVLOS) operations, airspace and air traffic management, airport infrastructure, and growing the pilot population.

Beyond Visual Line of Sight (BVLOS) Operations

This effort will require Detect and Avoid (DAA) and Command and Control (C2) technical solutions for unmanned aircraft. These two capabilities must be implemented to keep unmanned aircraft at a safe distance from other aircraft and ensure the pilot can control the unmanned aircraft.

While manned aircraft accomplish see and avoid through visual means, unmanned aircraft operating BVLOS are unable to rely on the vision of the pilot. To support BVLOS, minimum DAA performance standards must be developed. The C2 link between an unmanned aircraft and its pilot is critical to ensuring that the pilot can safely control the unmanned aircraft during normal and emergency situations. The C2 link enables the pilot to maintain control, comply with air traffic control (ATC) instructions and avoid other aircraft. Because the C2 link is critical to safety, minimum performance standards are necessary to ensure the link performs safely and reliably.

Airspace and Air Traffic Management (ATM)

Air Traffic Management requires the FAA to work collaboratively with industry in developing operational ATM concepts for unmanned aircraft in the NAS. In low altitude airspace, typically below 400 feet AGL, where FAA air traffic services are not provided, the FAA must work with industry to develop operational requirements that enable routine small UAS operations at low altitudes.

The FAA currently envisions a low altitude Unmanned Traffic Management (UTM) concept for unmanned operations as not under the control of the FAA, but as a separate but complementary component to the FAA's Air Traffic Management system. This concept must integrate small unmanned aircraft at low altitude with manned aircraft that also operate in this airspace. UTM development will ultimately identify services, roles and responsibilities, infrastructure, and performance requirements for enabling the management of low-altitude unmanned operations where the FAA does not typically provide separation services. AOPA supports the development of a phased approach building from rural to urban and from low-density to high-density airspace.

Airport Infrastructure

Our nation's airport ecosystem must continue to support all sectors of aviation, including potential new entrant urban mobility aircraft and the challenges faced by high volume, low-altitude operations.

With new advances in electric and electric-hybrid vertical takeoff and landing (eVTOL) technology, aviation will be more accessible than ever before, and airports will be a cornerstone of the infrastructure these new aircraft will need.

Airports are already economic engines for the communities they serve and those who live around existing airports will be far more likely to realize the benefits that will come with eVTOL aircraft. Uber understands that existing airports are important parts of the coming eVTOL ecosystem. According to their whitepaper on “Uber Elevate”, the numerous airports located in and around metropolitan areas will serve as maintenance and support locations for eVTOL aircraft.

General aviation airports are already populated with aviation maintenance facilities and personnel. They have space available to host a substantial number of eVTOL aircraft. AOPA expects eVTOL operators to plug into this existing infrastructure as their market develops.

Please take a moment to watch our video of what eVTOL technology and local airports means for transportation and the economy. https://www.youtube.com/watch?v=OtpCldGVSSg&feature=youtu.be. It is now more important than ever for Congress to ensure a strong and vibrant airport ecosystem for today’s aviators and for the future.

ADDRESSING THE FUTURE OF AVIATION

Growing the Pilot Population

Getting the next generation of Americans interested in aviation and aerospace is a key component of the aviation industry's future. The FAA estimates that 1.3 million unmanned aircraft pilots will need to be certified for commercial operation by 2020.

Safe integration of unmanned aircraft requires an investment in training, certification and ongoing safety education of unmanned pilots. For example, Uber has published "Uber Elevate", a detailed vision of small, electric air vehicles capable of vertical takeoff and landing and distributed across urban centers in huge numbers. While the long-term vision includes autonomous operation, the authors of the Uber paper expect that building the system will require pilots, and many of them. Autonomous flight is likely to be years, if not decades down the line.

Highschool Aviation STEM Program

AOPA is a leader in developing our future workforce. We are already working to rebuild the pilot population and the aviation industry from the ground up through AOPA's High School initiative to get young people interested in aviation careers.

By providing high-quality STEM-based aviation education to high school students nationwide, AOPA is opening the door to aviation careers for thousands of teens.

The courses are designed to capture the imagination and give students from diverse backgrounds the tools to pursue advanced education and careers in aviation fields.

Working with professional instructional designers, AOPA is offering a four-year high school aviation STEM program that falls along two tracks—pilot and unmanned aircraft systems or drones.

The program conforms to math and science standards and, in keeping with career and technical education best practices, will lead to a certification or industry-accepted test, such as the FAA Private Pilot knowledge test or a Part 107 drone pilot certification.

As of February 2019, the curriculum is being used by an estimated 2,190 ninth-grade students at 80 schools in 26 states. There are another 402 students at 25 schools testing the tenth-grade curriculum with additional grade-level curriculums to be introduced in the coming years.

We are already seeing a dramatic improvement in diversity demographics when comparing students using the 9th curriculum compared to today's aviation workforce. Below is a chart comparing AOPA 9th grade students to employed pilots and flight engineers.

AOPA 9th Grade Students	Employed Pilots and Flight Engineers*
25% Female	6.2% Female
22% African American	1.8% African American
26% Hispanic	8% Hispanic
3% Asian	1.5% Asian

*US Department of Labor, Bureau of Labor Statistics, 2017

Congress, and this Committee specifically, has also recognized the need to support aviation workforce development programs by authorizing two new grant programs to recruit and train the next generation of pilots and aerospace workers as part of the Federal Aviation Administration Reauthorization Act of 2018 (Public Law 115-254).

The pilot education grant program would support the creation and delivery of curriculum designed to provide high school students with meaningful science, technology, engineering, math and aviation education and encouraging our nation's youth to become the next generation of commercial, general aviation, drone or military pilots. The aviation technical workforce grant program includes scholarships, apprenticeships, establishing new training programs, purchasing equipment for schools and supporting career transition for members of the armed forces.

While these two programs are authorized for $10 million per year over the next five years, it is imperative that Congress provide full funding in FY20 to help ensure the future of our nation's aviation industry will have the pilots and aviation

technical workforce needed to meet the growing demand for a well-trained aviation workforce.

Each sector of aviation, civil, commercial, and military face significant challenges in preparing for the future. There are hundreds of programs and projects being undertaken today to address these challenges whether they be workforce, technology, environmental, commercial space, air redesign, unmanned aircraft, and several others. More coordination and knowledge sharing are seriously warranted in these areas.

Private and governmental organizations working together to address the development and sustainability of the aviation workforce, conducting and coordinating research activities and developing new aviation materials, training programs, and procedures, and leveraging the knowledge of organizations and federal agencies are all vital to protect and grow the aviation industry.

CONCLUSION

AOPA and its members are committed to serve and grow general aviation, including the unmanned aircraft community, as they safely integrate into our Nation's airspace. We will continue to serve as the chief advocate and support of all pilots and continue our work to ensure our skies are safe and accessible to everyone who dreams of flying.