Airware

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Chairman LoBiondo, Ranking Member Larsen, and members of the subcommittee, thank you for inviting me to testify here today in this crucial hearing on Unmanned Aerial Vehicle (UAV) technology. I am the Head of Business Development and Regulatory Affairs for Airware, a San Francisco-based company developing flight control systems for commercial unmanned aircraft, enabling companies to use commercial UAVs to collect, analyze and disseminate data for a growing number of commercial applications around the world. At Airware we're building a development platform. As a result, we work closely with companies across the industry including vehicle and sensor manufacturers, operators and software developers, giving us a unique and holistic perspective of the industry and impact of the regulatory environment. Airware has raised over $40 million from several of the world's leading venture capital firms including Andreessen Horowitz, Kleiner Perkins Caufield & Byers, Google Ventures, and most recently GE Ventures. Our team has more than doubled over the last year. I also serve on the board of the Small UAV Coalition, which was formed earlier this year to promote safe commercial operations of small UAVs in the United States, as well as the President of the Silicon Valley chapter of the Association for Unmanned Vehicle Systems International (AUVSI).

This is a critical time for the UAV industry, and Airware, The Small UAV Coalition and others in the community would like to ensure that the United States becomes the global leader for commercial UAV technology development and operations while maintaining the safest airspace in the world. Today, I will focus on three key issues for this subcommittee:

1.   The current state of UAV technology, and potential implications in various industries;

2.   The need for a risk-based approach to UAV regulations;

3.   The effect of current and expected regulations on U.S. businesses.

I. The current state of UAV technology

First, the UAV industry is one of the fastest growing markets in the United States and I would like to share some information about the landscape of this industry. Many here today may be familiar with the small consumer UAVs, those used for personal enjoyment or photography, but I would like to focus on the commercial-grade UAVs which are tackling some of the biggest problems across a variety of industries. Commercial UAVs are being used for purposes such as disaster management, search and rescue, for inspection of oil and gas platforms and pipelines, cell towers, wind turbines, and for inspection of property damage following catastrophic events. These UAVs are equipped with many technological features to ensure the safety and reliability of operations, such as geo-fencing, which is a technology that keeps a UAV within certain altitude and distance limits; and contingency management procedures, which, in the case of a loss of communications, GPS signal, or if the UAV encounters an unexpected obstacle or other

emergency, enables the UAV to make intelligent decisions based on a pre-programmed set of procedures in order to return to a safe location. Just as advancements in automation in the medical and even manned aviation industry have increased levels of safety by orders of magnitude, the same will be true in the UAV industry. These types of technologies are developing at an increasingly rapid rate and are enabling safe operations, even beyond line of sight, in many parts of the world.

With increasing technology, the risks are being reduced and therefore providing equivalent levels of safety, which the FAA will require to open up additional operational environments like those beyond line of sight and above 400 feet. In addition to the FAA, other federal agencies such as NASA, are working to develop systems such as the UAS Traffic Management System (UTM) at NASA Ames alongside Airware and others in the industry in order to provide a means to safely manage these small systems even at low altitude.

II. The need for a risk-based approach to regulate UAVs

The FAA's utmost responsibility is to protect people and property in the air and on the ground through regulating our national airspace. However, small UAVs are very different from the Boeing 737s, Gulfstream 550s, or even the Cessna 172s that the FAA is accustomed to regulating. They pose vastly different risks to people and property in the air and on the ground. Through my past experience working at the FAA, I understand what a difficult challenge it is to regulate this new and revolutionary technology in the U.S. National Airspace Systems, but there are steps we can be taking in the interim to begin to open up operational environments sooner. This brings me to my second point: We must take a new, risk-based approach to regulating UAVs, one that recognizes both the technological capabilities of UAVs and the fact that safety risks are directly proportional to a few key factors and are inherently different from manned aircraft.

Currently, the FAA has been taking rules made for manned aircraft and applying them to small, unmanned vehicles because those are the rules they have available to them. Take for example, the FAA requiring manned pilot certification for commercial UAV operations in the United States. I believe the FAA understands this is not the ideal solution in the long run and is taking steps to create new standards, but these standards need to be accelerated. Today highly-skilled and qualified UAV operators are being substituted for manned aircraft pilots but the skills required to operate a UAV are vastly different than the skills required to fly manned aircraft.

Most commercial UAV operations will take place below 400 feet, 100 feet below the typical minimum safe altitude of 500 feet for manned aviation. Many commercial UAV applications, like inspecting cell towers, monitoring crops, and surveying quarries, will all fall outside of the typical airspace used by commercial and general aviation. Imagine within this type of environment a simple, regulatory structure based on the risks posed. So for example, a very small aircraft operating over a remote farm field would be subject to minimal regulatory requirements where as a larger aircraft operating over a populated area would require highly reliable avionics, additional training, and failsafe mechanisms like parachutes. These are the types of risk models being used to allow commercial operations in Europe today. UAV companies in France for example are already being certified for operations beyond line of site based on this risk matrix approach.

The correct approach for the FAA is one that is based on, and proportionate to, the safety risks exposed. As recently as Monday, the FAA stated its intentions to shift to this type of model which we applaud them for, but hope we can see this implemented in the very near future.

III. The effect of current and expected regulations on U.S. businesses

Finally, I'd like to discuss the effect that the FAA's current approach is having on U.S. businesses. I referenced earlier that France allows low-risk commercial operations; as does Canada, the United Kingdom, Germany, Australia, Denmark, and many other countries. The United States, typically a leader in aviation, is one of only a few countries that currently prohibits commercial UAV operations, except pursuant to an exemption. As of today, however only seven petitions for exemption have been granted out of the more than 150 that have been filed. Months after the FAA granted those petitions, those companies are still trying get Air Traffic Control authorization to operate. There are also many within the industry concerned that the small UAV rulemaking, soon to be released for comment, will not likely be effective until 2016. Additionally, we expect the rule to be unduly restrictive on commercial operations and testing, and will limit the ability for operators to perform commercial work even in scenarios that pose little to no risk to people and property.

This has consequences. There are hundreds if not thousands of small UAV businesses here in the United States either operating in the shadows or struggling to follow the current rules. There are even more companies that would have started here in the U.S. but are moving abroad because of the uncertain regulatory environment here in the U.S. These companies want and need regulations so they can test and sell their products, but don't have years to wait as their profits are being narrowed by foreign competitors.

Delayed regulations aren't just slowing growth of the UAV industry. Many of the largest industries and corporations in America see this technology as vital to the growth of their companies and a key for remaining competitive in the global marketplace. Airware recently announced a strategic partnership with one of the largest corporations in America, General Electric. GE could use UAVs across many of their business units including oil and gas, energy management, transportation, to name a few. The Farm Bureau recently noted that U.S. farmers will not be able to keep up with foreign competitors if they are not allowed to use the same technology. Likewise, oil and gas companies in the United States cannot use the same UAV inspection technology as oil companies in other nations, and are forced to undergo more costly procedures. AUVSI states that in the first three years of integration, conservative estimates include creating more than 70,000 jobs and adding $13.6 billion into the economy. This technology will have a major impact our economy. We want the jobs, economic benefits, and core intellectual property produced from this work to be here; in the United States.

IV. Conclusion

We know that UAV technology is already revolutionizing industries - helping farmers get higher crop yields, aiding in efforts of first responders and search and rescue teams, making infrastructure safer through more frequent inspections, keeping workers out of harm's way and

ultimately saving lives. These applications are happening around the world, today, in countries where regulations are more mature and advanced than ours. They are also happening here in the United States, but in the shadows and by operators who want risk-based guidelines to safely operate and allow them to keep their businesses here in the United States. We know that no matter what actions are taken today, the technology will create jobs, save lives and grow the economies of those countries with the foresight to act. I also know that the United States is poised to lead the way for this growing and game-changing industry and that we have the talent and the workforce to create the technology needed to safely integrate into the world's most complex and safest airspace. But only if we are willing to act quickly. Thank you for your time. I look forward to answering your questions.