Introduction

My name is Morgan Abele and I represent Rotor AirCam, a UAS service provider operating in the Northeast, which includes Pennsylvania. I wish to address this committee on its concerns and those of Rotor AirCam on the use of UAS technology in Pennsylvania.

For some background, Rotor AirCam is a commercial UAS service provider holding an FAA 333 exemption certificate. We provide a host of services including aerial photography, inspections, mapping, photogrammetry, laser methane detection, infrared inspections, and volumetric surveys. All of these are completed in strict observance of FAA regulations. These include the use of a licensed pilot, observer, flying no higher than 400', not flying within 5 miles of an airport, and not flying beyond the line of sight of the UAS.

While the word "drone" is typically used, the industry prefers Unmanned Aerial Systems or UAS as this is a more accurate description of equipment we are using. Additionally, for our purposes UAS can be either fixed wing or rotor wing aircraft not exceeding 55 pounds in weight.

As this committee is aware, UAS is a nascent and rapidly growing technology. High output batteries, lightweight airframes, advanced stabilization controls, flight control and mission planning software have greatly simplified the act of flying these aircraft, while at the same time greatly increasing their capabilities. The rate of development is rapidly increasing as the industry matures and the number of problems that UAS can solve expands.

Before I go much further, I would like to make the distinction between recreational UAS users and commercial UAS users. I think making this distinction is important as I feel all UAS users are being judged as a whole, but the two groups have very different approaches to the use of UAS.

As a recreational UAS user, I fly my personal aircraft for my own enjoyment. My system is flown primarily for the enjoyment of flight and for the spectacular pictures that I can take. I can fly without a pilot's license or observer and unless I have a grievous violation of FAA rules, I am highly unlikely to have any FAA or government authority. For a commercial UAS service provider, it is much different.

As a commercial UAS service provider, Rotor AirCam must have a pilot and at the controls whenever we operate a UAS. In addition, an observer must be with the pilot to ensure that no foreign aircraft enters our airspace without the pilot's knowledge. Rotor AirCam keeps detailed flight and maintenance logs, performance scheduled maintenance and retirement of equipment. If we have a project that requires us to fly higher than is allowed or closer than 5 miles to an airport, we must submit for a Certificate of Authority (COA) from the FAA. As a company, and like other commercial UAS companies, we have a strict observance of business and FAA rules.

Concerns

We realize that this committee, and in fact the general public, has a great many questions and concerns about UAS. These include the some of the following that have been expressed to us:

"Is the drone user taking pictures of me or my house?"

"Why can't they fly higher so they can't see me?"

"Are drones safe to fly around people?"

"What about drones and terrorism?"

"Can't you use a helicopter or plane instead?"

The above listed questions are real questions that we have been asked, and there are many more that we have not listed. Instead of trying to address every question, I would rather address the following areas of concern: security, privacy, safety, and need.

Security

For legislators around the country, perhaps no question raises greater concern than that of security. The actions of 9/11 changed our perspective on security, especially when it comes to aircraft. UAS is no different, whether manned or unmanned, aircraft can and have been used for terrorist activities. Likewise, in recent years UAS systems have been used to smuggle drugs and contraband into prisons or have been used to photograph or disrupt farming and industrial sites. There is no doubt the risks are real.

While security risks are real, it needs to be considered from what quarter the risk is appearing. The risk is not from commercial operations, registered and vetted by the federal government, or even from the avid hobbyists. The risk instead comes from those whose intent is to break the law, and if a UAS was not available, the user would not be deterred and would simply find an alternative.

UAS can provide security as well. Allowing for the monitoring of illegal activity, documenting poaching, illegal dumping, human trafficking, or simply being able to enter an area that is too dangerous for human beings.

Privacy

For the general public, privacy is a key issue. There is the fear that someone's UAS will spy on them or their families without their knowledge. Several high profile cases have centered on this issues, one of which involved a homeowner shooting a UAS out of the air.

There are few things, which make this unlikely to occur. Most UAS are equipped with camera containing lenses with a wide field of view. This means that they take great pictures of scenery but cannot zoom in on a particular person or subject. UAS are not quite. The sound of multiple rotor blades, which has been described as sounding like "a bunch of hornets", is clearly audible, even from several hundred feet away.

Finally, from a commercial UAS perspective. When we are employed we are flying over property in which we have the owner's permission. If in the unlikely event that we would need to traverse private property, we will attempt to notify the property owner of the time we would need to fly over their property. As battery levels and flight times are critical to our success we have no desire to loiter over anyone's private property.

Safety

UAS are safe when used as intended and by competent operator. Of course that goes for any piece of equipment, whether an airplane, a car or a hammer. Still, any object that falls from a height or has rapidly spinning blades represents a risk.

Current FAA rules discourage the use of UAS over people not associated with the UAS or over wildlife. For example, you cannot fly a UAS over a sporting venue or any gathering of people. This is for good reason, while the risk is small for failure of the UAS, pilot error is more likely to result in injury. Safety cannot also apply to structures such as cell towers, power lines or industrial, commercial or residential buildings. The FAA says how high, far and in what conditions someone can fly a UAS. What the FAA does not indicate is how to fly around the myriad obstacles that intrude into UAS airspace. This is especially the case with commercial operations.

But the industry is helping to develop standards where the FAA has none. For example, in addition to representing Rotor AirCam, I am also a board member of the Shale Alliance for Energy Research also known as SAFERPA. SAFERPA along with the Marcellus Shale Coalition (MSC) are sponsoring an oil and gas industry specific UAS Conference on April 28, 2016 in California University satellite campus in Southpointe, Canonsburg, PA. The purpose of the conference is to bring all stakeholders together to create a common set of industry best practices for operating UAS in and around facilities such as pipelines, tank farms, compressor stations, refineries, etc. I encourage the members of this committee to attend and if inclined to speak on behalf of the legislative process.

SAFERPA has talked to the FAA about this conference and they are supportive of it and other conference like it that will begin to development the safe operating practices for the industry. While we understand the desire of the legislator to exert control over both recreational and commercial use of UAS, we feel that those requesting, providing, insuring and monitoring UAS services would be the best authorities on developing operating rules and standards.

Need

I have addressed the issues of security, privacy and safety. Now I would like to address the need for UAS. While there are legitimate concerns over security, privacy and safety, these are more than offset by the need for UAS services. The FAA likes to refer to this as offsetting risk factors. The following will provide some brief examples of this premise:

> *UAS can perform roof inspections more safely and efficiently than can be provided by sending a person up on a roof. Instead of putting a person at risk inspecting a roof from a ladder or at great height, where a fall could be catastrophic. A UAS can complete the work in approximately one fifth the time, with minimal risk to employee or the public.*
>
> *UAS can inspect wind towers, cell towers, chimneys and other challenging vertical structures without the risk to inspectors, wear and tear on the individual and within a very short time.*
>
> *UAS can provide assessment in environmental sensitive areas without the damage that would occur if the area had to be inspected on foot or by boat.*
>
> *With lower operating costs and reduced risk factors compared to manned aerial surveys; inspections of industrial sites, landfills, brownfield sites, pipelines, manufacturing facilities, etc. can be completed more often improving public safety and mitigating risk factors.*
>
> *UAS can provide guidance to ground based crews during emergencies, quickly and efficiently, without risking a manned flight.*

I hope these help to highlight the role that UAS can perform now and in the future.

Conclusion

I realize as a UAS service provider, we are bias towards the role of UAS. However, I think that as it should be. This is our business and we take it, the FAA regulations we operate under, the public safety and our client's trust all into consideration each and every day we work. We truly hope that as you review the industry you keep in mind that in addition to those who fly as a hobby, there is a new and growing industry of those who fly as part of business. We are looking forward to seeing this industry grow and mature and hope that you will be part of that growth.