Senate Committee on the Judiciary
Hearing on "The Future of Drones in America: Law Enforcement and Privacy Considerations"
Questions for the Record
From Ranking Member Charles E. Grassley

Questions for Michael Toscano:

(1) Addition of Technology to Unmanned Aerial Platforms

News reports have identified a wide range of technology that can be used with drones. For example, we have heard reports about thermal imaging equipment, high resolution cameras, sound recording devices, facial recognition tools, and biometric recognition tools.

- What technology is currently being used on drones to help law enforcement in criminal investigations?
- What technology is currently available to help farmers and those involved in agriculture?
- What types of limitations should Congress consider which would protect the privacy rights of law abiding citizens without stifling innovation in the private sector?

Answer from Michael Toscano:

What technology is currently being used on drones to help law enforcement in criminal investigations?

Due to size and weight constraints, especially on small UAS, the cameras or sensors on a UAS are significantly less advanced than cameras or sensors on manned aircraft, including police helicopters. During the hearing, Ben Miller with the Mesa County Sheriff's Office testified that that his small rotorcraft UAS is equipped with "a low cost point and click camera" that can be bought at Wal-Mart.

Currently, there are fewer than five law enforcement agencies that have permission from the FAA to fly for operational missions. Those that do have approval are usually limited to flying during the daytime, less than 400 feet in altitude, and within visual line of sight, all of which are required for safety reasons. Even with these limitations, law enforcement and public safety agencies still want to use UAS to get better situational awareness, and the best way to do that is from above. Here are a few ways UAS can help in public safety:

- **Supporting law enforcement.** Like other first responders, law enforcement officers and border patrol agents work in dangerous environments. UAS can be invaluable in aiding search and rescue missions, pursuing a fugitive loose in a neighborhood or offer a critical vantage point when responding to a hostage situation. In February 2013, a UAS was used by law enforcement responding to a hostage situation in Alabama.

  UAS also help law enforcement agencies cut costs. Operating manned police helicopters can cost between $200 and $400 per hour, while operating an unmanned aircraft can cost as low as $25 to $75 per hour. The purchase price of a UAS can also be significantly less

than a manned aircraft. A small UAS can cost less than $50,000, which is about the price of a patrol car with standard police gear.

- **Fighting fires safely and strategically.** Firefighters and other first responders do their jobs in incredibly dangerous environments. UAS can minimize the risks they face, while helping them to act faster and with the best information available to save lives. Able to fly through smoke-filled skies too dangerous for manned flights, UAS give firefighters the ability to better understand the circumstances they are facing, such as the size and scope of a wildfire or hotspots in a burning building, before putting a firefighter in harm's way.

  In 2008, NASA assisted the state of California in fighting wildfires with the use of a UAS. The information about the fires was transmitted to command centers within minutes, and then distributed into the field giving firefighters crucial situational awareness. Throughout the operation, NASA pilots operating the UAS were in close communication with the FAA to ensure its safe separation from other aircraft.

- **Improving search and rescue.** UAS can reach higher vantage points and survey a large search grid for a missing child, acres of land consumed by wild fires or vast expanses of water where a boat might be adrift. Bad weather and difficult terrain can prolong search and rescue efforts, lowering chances for survival while raising the financial cost. However, UAS make searching for lost hikers and missing persons cheaper, faster and safer than using manned helicopters.

- **Responding to disasters.** UAS can enter hazardous spaces too dangerous, difficult or costly for humans to enter. UAS have been used to survey flooding in the upper Midwest to assess damage and provide responders and engineers with live video and radar. NASA recently flew UAS into a Costa Rican volcano's plume – a mission that could destroy a manned aircraft's engines. UAS were also used in Japan following the 2011 earthquake-induced tsunami, which damaged the nuclear facility in Fukushima. With leaking radiation making it impossible for emergency responders to approach the facility's reactors, a UAS was used to fly over the damaged facility and use advanced sensors to help responders gain situational awareness.

What technology is currently available to help farmers and those involved in agriculture?

Currently, the FAA does not allow for commercial use of UAS, including for agriculture. The FAA's UAS policy requires operators who wish to fly for civil use obtain an airworthiness certificate the same as any other type of aircraft. However, the FAA is currently only issuing special airworthiness certificates in the experimental category. Experimental certificates are issued with accompanying operational limitations, which only allow them to be flown for research and development, marketing surveys, or crew training. Until the FAA writes the safety rules, UAS will not be allowed to fly for commercial purposes. Congress directed the FAA to implement those safety rules by October 2015.

However, as was stated in my testimony, an economic report on UAS recently released by my organization projects that agriculture will make up 80 percent of the potential commercial UAS market, for crop surveys and precision applications. A variety of remote sensors are being used to scan plants for health problems, record growth rates and hydration, and locate disease outbreaks. Precision application, a practice especially useful for crop farmers and horticulturists, utilizes effective and efficient spray techniques to more selectively cover plants and fields. This allows farmers to provide only the needed pesticide or nutrient to each plant, reducing the total amount sprayed, and thus saving money and reducing environmental impacts.

While the farmers in the U.S. are still prohibited from using UAS, farmers in Japan have been taking advantage of the technology for the past two decades. According to manufacturer Yamaha, in 2011, there more than 2,300 unmanned helicopters registered in Japan performing 90 percent of the nation's crop spraying. The advantages afforded by using UAS in agriculture include improved operational efficiency, zero soil compaction, zero crop damage, superior spray deposition, reduced applicator exposure to chemicals and increased operator safety.

What types of limitations should Congress consider which would protect the privacy rights of law abiding citizens without stifling innovation in the private sector?

AUVSI supports the development and advancement of UAS technology in a safe and responsible manner, while respecting existing privacy laws and ensuring transparency and accountability. To help safeguard Americans' right to privacy, **AUVSI supports**:

- The registration of unmanned aircraft and pilots with the Federal Aviation Administration (FAA).
- The enforcement of established law and policy, governing the collection, use, storage, sharing and deletion of data, regardless of how it is collected.
    - These policies should be available for public review.
    - The policies should outline strict accountability for unauthorized use.
- The International Association of Chiefs of Police recommended guidelines for UAS operations and their recommendations on data collection, which have been adopted by the Airborne Law Enforcement Association and others.
- The 4th Amendment's requirement that the government obtain a search warrant before intruding upon someone's reasonable expectation of privacy.
- Holding accountable any individual who misuses any technology to unlawfully violate someone's privacy through illegal surveillance. UAS manufacturers should not be held responsible for improper or illegal use of unmanned aircraft systems.

This issue should focus on the extent to which the government can collect, use and store personal data – which is why transparency and accountability are key. Instead of focusing on how the government collects information, AUVSI supports an open debate on the government's right to collect, use, store, share, and delete personal data.

When considering drafting federal legislation aimed at protecting privacy, Congress must be careful to not stifle this new industry before it is allowed to even take off. In a recent article entitled, *Observations from Above: Unmanned Aircraft Systems and Privacy*, 36 Harvard Journal

of Law and Public Policy 457-517 (2013), John Villasenor, a UCLA professor and Brookings Institution Nonresident Senior Fellow, concluded,

> When considering potential new statutory UAS privacy protections, it is helpful to keep in mind what has occurred with the Internet and mobile telephones, two technologies that are associated with privacy threats that are in some respects much more significant than those that will arise from unmanned aircraft. Both the Internet and mobile phones grew as fast as their underlying technologies enabled. As a result, the public and legislative dialogue regarding how best to address the privacy issues they raise has been conducted with a strong appreciation of their benefits. By contrast, while the privacy concerns associated with domestic UAS are real and deserving of attention, they are getting significant focus long before the potential benefits of the technology are widely recognized.

With this in mind, it is important to note that although the United States is currently the world leader in UAS technology, the rest of the world is working hard to catch up. In fact, many countries, such as Canada, Australia, Germany, England, and others, allow for routine small UAS flights for commercial purposes, including agriculture, infrastructure monitoring, photography, and public safety. This is a competitiveness issue, and it would be unfortunate for the United States to stifle this new aerospace industry.

AUVSI contends that the FAA is the wrong agency to oversee UAS-related privacy issues. The FAA should focus on its stated mission, which is to provide the safest, most efficient aerospace systems in the world. The FAA's criteria for permitting access to the airspace should solely be based on safety.

Other federal agencies with expertise dealing with privacy issues, such as the U.S. Department of Justice, the Department of Homeland Security, as well as the judicial system, could address privacy.

AUVSI believes information gathered by a UAS should be treated no differently than information gathered by a manned aircraft, or any other electronic means. Any new legislation or regulation addressing privacy should be technology neutral.

AUVSI looks forward to continuing to work with you, the Senate Judiciary Committee, and the Congress as this technology matures and begins to be used to do tasks that are currently to dangerous, difficult, dull, or expensive for manned aircraft.