



**Unmanned Aerial Systems and Emergency Response:
The Impact of Drones and Other Emerging
Technologies for U.S. Law Enforcement**

Statement of

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Good morning, Chairman D’Esposito, Chairman Pfluger, Ranking Member Carter and Ranking Member Correa. I am Kevin Fetterman, Division Chief of Emergency Planning and Command with the Orange County Fire Authority in Orange County, California. I have personally been involved with unmanned aerial systems (UAS) or “drone” use on several all-hazard incidents, such as multi-alarm structural fires, wildland fires, building collapses, static water rescues/recoveries, and other incidents. I appreciate the opportunity today to discuss UAS and the role that this emerging technology plays in emergency response.

The IAFC represents the leadership of over 1.1 million firefighters and emergency responders. IAFC members are the world’s leading experts in firefighting, emergency medical services, terrorism response, hazardous materials (hazmat) incidents, wildland fire suppression, natural disasters, search and rescue, and public-safety policy. Since 1873, the IAFC has provided a forum for its members to exchange ideas, develop best practices, participate in executive training, and discover diverse products and services available to first responders.

America’s fire and emergency service is an all-hazards response force that is locally situated, staffed, trained, and equipped to respond to all types of emergencies. There are approximately 1.1 million men and women in the fire and emergency service – consisting of approximately 300,000 career firefighters and 800,000 volunteer firefighters – serving in over 30,000 fire departments around the nation. They are trained to respond to all hazards ranging from earthquakes, hurricanes, tornadoes, and floods to acts of terrorism, hazardous materials incidents, technical rescues, fires, and medical emergencies. We usually are the first at the scene of a disaster and the last to leave.

Orange County is the third-most populous county in California and the sixth-most populous in the United States. The population is larger than 21 states and the county is the second-most densely populated in California, behind San Francisco County. The Orange County Fire Authority (OCFA) is an all-hazard regional fire service organization. Over 1,500 career firefighters and staff serve 23 cities in the county and all unincorporated areas in a 586-square-mile coverage area. The OCFA protects nearly 2 million residents from its 78 fire stations, covers over 188,817 acres of wildland, and 658,659 dwellings. The OCFA responded to nearly 180,000 incidents in 2023.

First, I want to acknowledge the passing of a former member of the Committee. Representative Donald Payne, Jr. Representative Payne was always a longtime friend of the fire service. He often worked with first responders to ensure they had the support they needed. Just three months ago, Representative Payne held a workshop to help local fire departments receive federal grants, such as the Assistance to Firefighters Grant Program. Representative Payne’s dedication to public service will be long remembered, and he will be sorely missed.

Situational Awareness

The first step to any sort of emergency response is establishing situational awareness. This is the ability to identify and decipher all aspects of an incident. UAS can be a game-changer when it comes to the situational awareness of an incident scene. Here are some examples on how drones can improve overall situational awareness:

- Drones provide real-time data and visual documentation of affected areas by capturing high-resolution aerial images and videos, which is vital for coordinating incident operations. High-resolution ortho-imagery can be critical in incident decision support. During the Surfside building collapse, the Incident Management Team’s Planning Section worked in close coordination with the Florida State University Drone Team and provided real-time situational awareness and increased personnel safety by providing overwatch to first responders. Later, the imagery was used for advanced analysis, such as verifying volumetric analysis on the amount of rubble that needed to be moved offsite.
- Drones can also provide thermal imaging, such as what was utilized in the Tustin Hanger Fire, to determine the extent of the fire's spread on the structure in subsequent operational periods. This structure was so large and hazardous that it required personnel to be hundreds of feet away from the designated collapse zones.
- Drones can utilize LIDAR (light detection and ranging) to assess landslides and mud and debris flows.
- Drones have been utilized to locate and communicate with victims stranded during water rescue operations of swollen rivers and waterways.
- In the California fire service, wildland fire line leadership often ask the question, “What's over the next ridge?”. While the question is simple, the answer is not. During a rapidly expanding wildfire in the urban interface which impacts structures, the need for real-time information about what is occurring over the next ridge is of paramount importance. Drones can provide this necessary information.
- By providing this type of information directly to common operation platforms, such as SARCOP, Tablet Command, TAK, or Intterra, this information can be properly analyzed. This allows first responders to make critical, time-sensitive decisions and keep their personnel safe.
- Drones can also take actionable roles, such as a PSD Drone (Plastic Sphere Dispenser), which can assist with firing operations in active fire areas, eliminating the need to utilize wildland firefighters in dangerous and technically challenging areas. This occurred when I managed a Division on the Dixie Fire in California. Without the use of the PSD drone, it is likely the operation would not have been successful, and the fire line not held.

Fire Traffic Areas (FTA)

Public safety’s use of drones is drastically different than commercial users. The key to public safety’s use of drones is communication and coordination. In 2001, after a serious mid-air collision, Fire Traffic Areas (FTA) were established as an interagency airspace management tool for standard communication protocols. In California, it is the Interagency Standard for Aerial Firefighting. The FTA can be further defined as airspace with a five nautical mile radius from an incident during suppression operations. Since its implementation, it has been adopted by the

United States Forest Service, and it has become policy at the Bureau of Land Management and the U.S. Department of the Interior.

Fire Traffic Areas also could be described as a layered approach to aeronautical management. After an incident and establishment of a FTA, coordination takes place with helicopters, fixed-wing fire suppression aircraft, command and control aircraft, intelligence gathering aircraft, as well as with drones that are being used by public safety. When non-coordinated drones intersect into a FTA, it eliminates any allowable area to fly in. Pilots are either provided with an additional clearance or told to hold until one can be provided to them. For a standard FTA, pilots are instructed to hold at seven nautical miles. Standards such as a FTA can help prohibit non-coordinated drones from interfering with critical life-saving missions.

Remote Identification of Drones

In the realm of fire suppression operations, every second counts. As a fire department leveraging drones for situational awareness and tactical advantage, our operations hinge on seamless coordination and airspace integrity. However, the presence of non-coordinated drones poses a grave threat to our efforts. Uncoordinated drones near structural fires and wildfires jeopardize not only our public safety drone operations but, more importantly, they pose a significant risk to our manned aircraft operations that are vital to firefighting. This is why remote identification capabilities, known as Remote ID, are so important, to discern between coordinated and non-coordinated drones in the skies in which we operate.

The uncoordinated presence of drones around wildfires significantly impairs our ability to swiftly mitigate fires, potentially tipping the scales between containment and catastrophe. Picture this: a drone operator, unaware of the ongoing firefighting efforts, sends their personal drone into the airspace, ignorant of the disruption it causes. The airspace above a wildfire becomes a complex environment, with firefighting aircraft maneuvering with precision and purpose. Yet, amidst this orchestrated chaos, the sudden appearance of a non-coordinated drone immediately impacts our operations, and often brings such operations to a complete halt. In California, the saying is, “If you fly, we can’t.”

The importance of Remote ID capabilities cannot be overstated. Not only does Remote ID empower us to swiftly identify and address unauthorized and non-coordinated drones, but it also bolsters the safety of our firefighting personnel and the public. Without this critical capability, the airspace would remain increasingly vulnerable to intrusion, threatening to disrupt our firefighting efforts at a moment's notice.

Beyond Visual Line of Sight Operations

The exigencies of firefighting often demand operations beyond what the Federal Aviation Administration’s (FAA) conventional visual line of sight rules permit. When battling unpredictable fires, navigating through smoke-columns and around steep terrain is routine. Yet, existing regulations on beyond visual line of sight operations remain cumbersome and ambiguous. Therein lies the conundrum: while drones could provide invaluable support in penetrating hazardous environments, procedural hurdles impede their deployment.

Failure to address this issue undermines our ability to leverage drones effectively, potentially hindering our capacity to save lives and protect property. Imagine a scenario where there is an explosive wildfire, engulfing homes and threatening lives. A drone equipped with thermal imaging could swiftly assess the extent of the fire spread, guiding firefighters to the area's most in need of attention. However, current regulations limit this potential, necessitating a reevaluation to align with the exigencies of firefighting.

In the heat of battle, time is of the essence. We cannot afford to be slowed down by procedural delays when lives are on the line. The urgency of revising visual line of sight regulations and expediting approval processes cannot be overstated. Only by embracing flexibility and innovation can we fully harness the transformative potential of drones in our firefighting efforts.

Zero Grid Airspace Drone Operations

In the high-stakes domain of firefighting, the need for rapid coordination and approvals in zero-grid airspace cannot be overstated. The FAA's UAS Facility Maps delineate areas where drone operations are restricted, aiming to safeguard critical airspace. However, in the dynamic context of fire response, agility is paramount. Fire departments require the flexibility to deploy drones swiftly within these zones for timely investigation and response.

Streamlined processes and real-time coordination mechanisms are indispensable in ensuring that drone operations remain a force multiplier in our firefighting arsenal, rather than an operational hindrance. Picture a scenario where every minute lost in obtaining clearance to deploy a drone translates to acres of land consumed by the fire or another room within a building being completely immersed in flames. The consequences of procedural delays in such situations are not merely logistical but have far-reaching implications for public safety and property preservation.

The intersection of regulatory frameworks and operational exigencies underscores the need for a proactive approach to zero-grid airspace operations. By fostering collaboration between firefighting agencies, regulatory authorities, and technology providers, we can develop agile solutions that balance safety imperatives with operational realities. Only through concerted effort and forward-thinking strategies can we unlock the full potential of drones in our firefighting efforts.

Artificial Intelligence (AI)

The inclusion of AI within UAS made significant improvements to their operational capabilities. The ability to detect hazards such as trees, powerlines, buildings, and other aircraft is otherwise known as avoidance technology. This can be critical in ensuring that aircraft work together in a coordinated and safe manner. Not every community in our nation has experience with establishing Fire Traffic Areas. AI can be a useful tool to assist in their place. Teaming of drone systems and manned aircraft is vital, as drone technology with the inclusion of Automatic Dependent Surveillance-Broadcast technologies, and other avoidance technologies, should ease the concerns of all pilots.

Autonomous, simultaneous coordinated drone operations conducted by a single operator controlling multiple drones (coordinated and waiver authorized) can maintain persistent situational awareness over emergency incidents for multiple operational periods. This provides incident commanders with the best information possible and directly correlates to lives and property saved. Similarly, the use of approved advanced drone technology with AI and advanced sensor arrays allows for even further flights, which are out of visual line of sight. Thereby extending the range an incident commander or division supervisor may peer into their areas of responsibility. This equates to better preparedness for impending fire behavior or fire advancement.

Examples of Usage of Drones by Public Safety

The use of drones by emergency responders is continuing to do wonders, especially when it comes to the proper deployment of resources. As described earlier, drones can be used to accomplish tasks that would otherwise put first responders at high risk. In rural communities, drones are revolutionizing the way response is being delivered. Instead of dispatching units out to every day fire calls, drones can now physically deliver automatic external defibrillators or the lifesaving drug NARCAN®. In communities where response time is typically greater than 10 minutes, drones can significantly improve the success of response. Now, drones can be dispatched to provide care in an efficient manner. This is noticeable when it comes to volunteer fire departments. For most volunteer fire departments, typically the firefighters must travel to the fire station, instead of living there while on duty. If volunteers can use drones during response, the likelihood of success will rise.

For example, Tangier Island, Virginia, is roughly 17 miles from land. It currently has about 500 residents. If a resident requires any blood tests, it can take a week or longer to transport specimens. With the use of drones, residents must no longer rely upon commercial mail carriers to transport medical specimens. The applications of drone pickup and delivery for medical professionals are practically endless. Since 2021, the Sacramento Metropolitan Fire District has operated a fleet of drones. Recently, the Sacramento Fire Authority has said that they will always respond to hazardous materials incidents with some sort of drone. Their drones can even drop life jackets to those who need assistance whom first responders cannot reach fast enough.

Finally, the use of tethered drones from public safety has yielded great results. The ease with which these can be deployed is remarkable. However, there are prohibitions to their use that are currently written into law. Provisions in the 2024 FAA Reauthorization Act will immensely strengthen this work for public safety. In 2018, Congress passed the FAA Reauthorization Act (P.L. 115-254) which defined “publicly actively tethered” unmanned aerial systems as UAS weighing 4.4 lbs. or less and physically tethered to a ground station. The Act directed the FAA to permit the use of publicly actively tethered UAS under certain conditions without obtaining further certificates or authority from the agency. The FAA determined that the word “public” in this section only applies to aircraft used by federal, state, or local governments, or a political subdivision of one of those groups. Unfortunately, the current FAA interpretation excludes numerous public safety groups who rely on actively tethered UAS to carry out life-saving operations—like volunteer fire departments. Approximately 65% of the country’s fire

departments are volunteer-based and thus fall outside the definition of “public” under the FAA’s current interpretation.

Section 604 of the FAA Reauthorization Act of 2024 would expand the aperture so that tethered drones may be operated by any public safety organization. It also would require tethered UAS to have increased safety systems to prevent injury in the case of malfunction. Additionally, this bill would allow actively tethered UAS to be flown in zero-grid spaces, expanding public safety groups and first responders’ flexibility to utilize UAS technologies when responding to emergencies. I urge the U.S. House of Representatives to support the final passage of H.R. 3935, Securing Growth and Robust Leadership in American Aviation Act (the FAA Reauthorization Act of 2024).

Conclusion

I thank you for the opportunity to address the use of drones and other UAS during emergency response. This emerging technology is already a lifesaving tool for first responders. Congress can also play a role in streamlining public safety’s use of UAS. Passing the FAA Reauthorization Act of 2024 (H.R. 3935) can help empower first responders to better use and better understand this innovative technology. If first responders can keep pace with UAS innovations, the result will mean more lives are saved. The IAFC looks forward to working with the committee to ensure that first responders can utilize UAS to provide better service to their communities.