

THE NEED FOR COUNTER UNMANNED AIRCRAFT SYSTEMS  
RESEARCH & DEVELOPMENT

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# InfoBrief



International Public Safety Association

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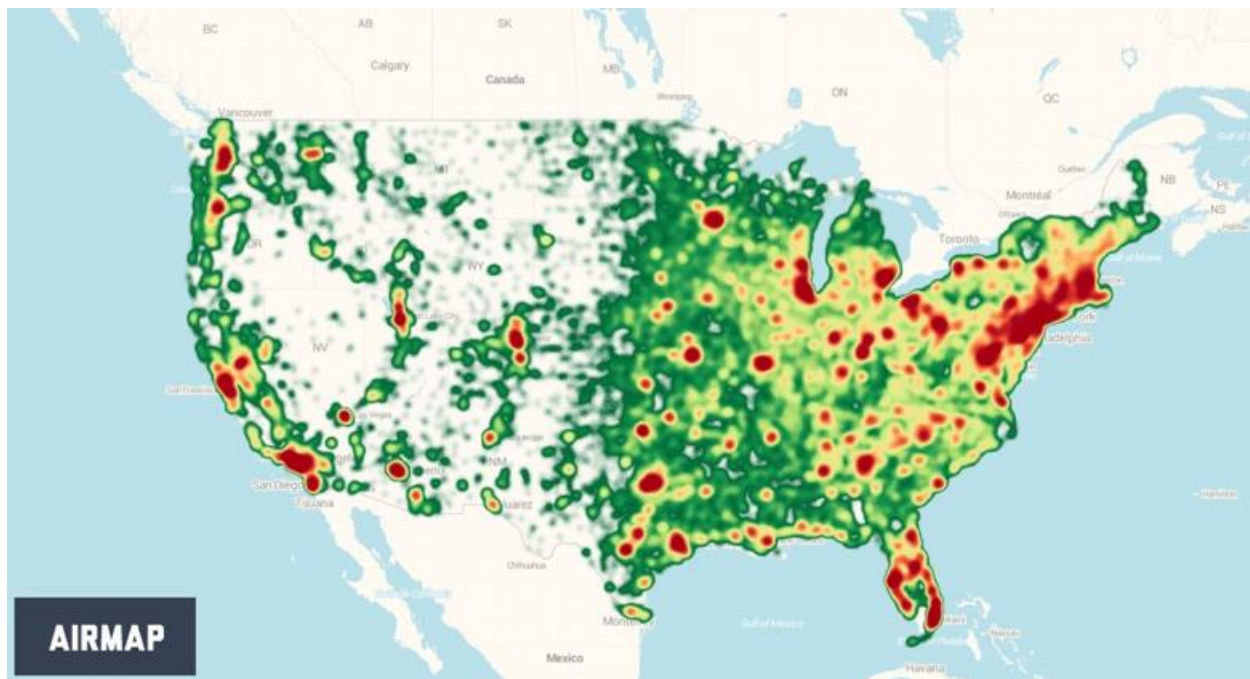


## About

This International Public Safety Association InfoBrief discusses the need for counter UAS research and development.<sup>i</sup> The International Public Safety Association UAS committee addresses contemporary issues relating to UAS programs and public safety. The committee is charged with researching and developing papers, policy, position statements and relevant artifacts for the International Public Safety Association to share with the global public safety community.

## Introduction

The purchase of UAS has dramatically increased, and the number of registered UAS owners (before the registration requirement was struck down by the courts) jumped to over 770,000. Combined with UAS purchased prior to 2017, there are easily more than a million drones in the United States.<sup>ii</sup> The illustration from AirMap (2016) below shows the proliferation of UAS across the country.<sup>iii</sup>



In 2018, the U.S. UAS registry officially topped 1 million. The popularity of UAS continues to grow because of its affordability, ease of use and availability. Numerous studies predict that UAS purchases will continue into the millions each year.

The geographic dispersion of UAS purchases in the U.S. is similar to the concentration of the population. Naturally, the dramatic increase in UAS also brings adversity in the form of inappropriate (intentional or unintentional) use. This requires a strategy on how public safety can identify and counter drones that pose danger to people and property.

## UAS dangers

The dangers from UAS and the need for a counter UAS strategy (C-UAS) is very real as illustrated by increasing criminal, nefarious and improper use. The following eight examples are documented UAS incidents of concern:

1. Earlier this month, there was an UAS attack on President Nicolás Maduro during a speech at a military parade in Venezuela.<sup>iv</sup>
2. In 2016 and 2017, there were reports of dropping drugs, guns, pornography and other contraband into prison yards.<sup>v</sup>

*“Though nobody is precisely sure just how many drones are landing every day in prisons, the threat is global. Last year, there was a melee at an Ohio prison after a drone dropped heroin into the exercise yard. In April, security cameras at a London prison recorded a drone delivering drugs directly to an inmate’s window.”<sup>vi</sup>*

3. Drug cartels carrying explosives in Mexico during 2017. Members of a drug cartel were pulled over in central Mexico and were in possession of a rifle and an UAS equipped with explosives.<sup>vii</sup>
4. Illegal transportation of drugs in Australia in 2017. Jails experienced numerous infractions of UAS used to drop drugs and other contraband and are seeking new technology to counter this illegal behavior.<sup>viii</sup>
5. Illegal counter surveillance. In Australia in 2017, UAS were used for surveillance against police operations. Police are now seeking methods to identify and C-UAS for nefarious purposes.<sup>ix</sup>
6. Assisting prison escape in South Carolina in 2017. An elaborate escape of a convict with a life sentence occurred as an UAS flew over the prison and dropped wire cutters. The wire cutters were used by the convict to cut through the prison perimeter fence.<sup>x</sup>
7. Illegal flight & drop of leaflets over NFL Football Games in November 2017. During the 2017 NFL season, an UAS was used to drop leaflets at two separate stadiums (San Francisco and Oakland). This raised great concern for any large outdoor public event.<sup>xi</sup>
8. In the United Kingdom, the Pentonville Prison experienced several problems with UAS dropping drugs and contraband cellular phones inside the prison walls. As a result, they initiated a program called ‘Operation Airborne’ to address the problem.<sup>xii</sup>

This initiative involved positioning undercover law enforcement officers at various locations to track the UAS and apprehend the operators. They were successful at stopping several attempts to drop contraband. This reinforces the concern that as UAS become more stealthy, easy to operate and affordable they will increasingly present new concerns and challenges.

Additional information from the Department of Defense (DoD) has reported to public safety agencies that they have seen commercial off the shelf (COTS) UAS now being modified and used against military forces of the U.S. operating overseas.

This further exacerbates nefarious use of drones with the anticipation that this threat may be realized and used by bad actors in the U.S. Further concerns are raised as UAS can be used to deliver a wide array of potentially harmful payloads such as:

- Drugs
- Guns
- Explosives
- Chemical/Radiological/Biological Agents

Crop dusting UAS could also be used to spray weaponized toxins such as Anthrax. As UAS technology continues to advance with faster speeds, stealth flight and the ability to carry dangerous payloads, the UAS threat will increase.

Public safety officials from all disciplines have expressed their concerns as such event over a heavily populated event would create very dangerous possibilities:

- Mass panic.
- Mass casualties.
- A mammoth hazmat decontamination.
- Damage to critical infrastructure (e.g. electric grids, nuclear power plants, water supplies and chemical plants).

## C-UAS

While UAS presents a clear element of danger from of the above described nefarious uses, the ability to use C-UAS technology remains out of reach for local public safety.

C-UAS is restricted by approximately 16 federal rules and/or laws. This will require a direct effort of government officials and legislators to develop a comprehensive strategy that will allow the use of many C-UAS solutions that exist today but must also be versatile enough to accept future solutions as the technologies advance.

This will also require a simultaneous process of stimulating continued methods of UAS detection, UAS identification, and C-UAS solutions. Presently, the DoD has the sole authority to conduct C-UAS research on military bases.

It is hopeful that localities and public safety will be invited to be involved in this important work.

## Recommendations

In consideration of the threats that illegal use of UAS can have on public safety, the International Public Safety Association's UAS Committee proposes seven recommendations:

1. C-UAS research and development be a priority with a comprehensive, collaborative strategy between government and the private sector C-UAS industry.
2. Federal agencies and legislators must review laws/regulations and make the necessary changes that will allow the use of C-UAS solutions by local, state and federal authorities.
3. Legislation must be reviewed to address/limit liability when C-UAS is appropriately used to bring down a rogue drone.
4. C-UAS research and development done by DoD should be made available for local, state and federal authorities to develop approved domestic C-UAS technologies.
5. Research must also involve the International Public Safety Association, local and state public safety and, where possible, test in real world settings by engaging facilities where such a threat exists.
6. Policies and procedures need to be developed to address authority for C-UAS operations and the safe conduct of the approved missions
7. A review and after-action report should be conducted for any C-UAS deployment to determine appropriateness, effectiveness and compilation of lessons learned.

## Summary

A strategy for C-UAS is necessary to minimize the potential danger or disruption from one or multiple – a swarm. A comprehensive solution requires federal legislation to enable development of C-UAS technology, limit the liability when bringing down a rogue UAS, education/training to public safety and facility operators on the use of C-UAS technology.

A successful C-UAS strategy will require the involvement of the International Public Safety Association, the DoD, federal law enforcement agencies, local/state public safety officials from law enforcement, fire service and emergency management, facility operators, the private sector and legislators.

For UAS to successfully evolve, a strong counter balance must be in place to address the inappropriate use of UAS by the criminal, careless and clueless.

## References

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