UNMANNED AERIAL SYSTEMS AND EMERGENCY RESPONSE: THE IMPACT OF DRONES AND OTHER EMERGING TECHNOLOGY ON U.S. LAW ENFORCEMENT

JOINT HEARING

BEFORE THE

SUBCOMMITTEE ON EMERGENCY MANAGEMENT AND TECHNOLOGY

AND THE

SUBCOMMITTEE ON COUNTERTERRORISM, LAW ENFORCEMENT, AND INTELLIGENCE

OF THE

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UNMANNED AERIAL SYSTEMS AND EMERGENCY RESPONSE: THE IMPACT OF DRONES AND OTHER EMERGING TECHNOLOGY ON U.S. LAW ENFORCEMENT

Thursday, May 16, 2024

U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON HOMELAND SECURITY,
SUBCOMMITTEE ON EMERGENCY MANAGEMENT AND TECHNOLOGY, AND THE
SUBCOMMITTEE ON COUNTERTERRORISM, LAW ENFORCEMENT, AND INTELLIGENCE,
Washington, DC.

The subcommittees met, pursuant to notice, at 10:09 a.m., in room 360, Cannon House Office Building, Hon. Anthony D'Esposito [Chairman of the Subcommittee on Emergency Management and Technology] presiding.

Present from the Subcommittee on Emergency Management and Technology: Representatives D'Esposito and Strong.

Present from the Subcommittee on Counterterrorism, Law Enforcement, and Intelligence: Representatives Pfluger, Kennedy, and Correa.

Also present: Representatives Higgins and Nehls.

Chairman D'ESPOSITO. The Committee on Homeland Security Subcommittee on Emergency Management and Technology and the Subcommittee on Counterterrorism, Law Enforcement, and Intelligence will come to oreder. The purpose of this hearing is to allow Members to examine how first responders are using unmanned aerial systems, or drones, and other emerging technologies, to improve public safety in communities throughout this great Nation.

Without objection, the gentleman from Louisiana, Mr. Higgins; the gentleman from Texas, Mr. Nehls; the gentleman from Guam, Mr. Moylan; the gentleman from New York, Mr. Lawler; and the gentlewoman from New York, Ms. Stefanik, are permitted to sit on the dais to ask questions of the witnesses.

I now recognize myself for an opening statement.

I would like to begin this hearing by welcoming our new Member to the subcommittee who will be joining us in a few minutes from the great State of New York, Mr. Kennedy. Unfortunately, also the passing of my esteemed colleague, Mr. Payne of New Jersey. I know we didn't always agree on everything policy-wise, but there is no doubt that he was a fierce fighter for his constituency. My prayers remain with his family, his friends, and the residents of his district.

I ask you all for a moment of silence for the Honorable Donald Payne, Jr. Thank you.

Welcome to our witnesses and thank you for testifying before the Subcommittees on Emergency Management and Technology and Counterterrorism, Law Enforcement, and Intelligence as we examine the use of unmanned aerial systems or drones in emergency response and their impact on the United States' law enforcement.

I commend each of you for your dedication to improving public safety throughout this country, and we look forward to hearing your testimony.

In honor of National Police Week I also want to thank our Nation's police officers for their service and commitment to keeping our communities safe. I know there are many in this room, so I would like to give a round of applause to the men and women of law enforcement.

Americans can freely live their lives and sleep well at night because of the unwavering work of our police forces to uphold our laws and make our communities safer. One of my greatest honors was serving as an NYPD detective, and as Chairman of the Subcommittee on Emergency Management and Technology, I am committed to supporting our State and local law enforcement officials and ensuring that our Nation's bravest and finest have the resources and technologies they need.

I have been a supporter of FEMA's suite of preparedness grants for States and localities to harden their defenses against the threat of terrorism, and I hope to hear how State and local police departments are using these grants to acquire drones and other emerging technologies to improve police operations and prepare for new challenges.

Throughout the Nation an estimated 1,400 public safety agencies are actively utilizing drones to enhance their operational capabilities. Cities throughout the country have implemented drones as first responder programs to provide police departments with tactical intelligence and situational awareness that informs police operations and emergency response on the ground.

In my home State of New York, the great New York City Police Department, who is represented well here today, has used drones to assist with search-and-rescue efforts, inspect emergency incidents, and provide intelligence for hostage situations, only to name a few. I am proud to say that the usage of those drones and technology is growing every single day.

More recently, following the April earthquake that occurred in New Jersey, the NYPD partnered with the New York City Department of Buildings and used its drones to inspect local bridges for any structural defects. It is clear that the utilization of UAS technology has the potential to reform the way that police departments operate, and I am looking forward to learning how UAS technology cuts emergency response times, saves taxpayer dollars, and enhances police department operations.

Drones have the potential to save lives by delivering medical support in rural and densely-populated urban areas. Tragically in 2022, over 75,000 people died from opioids. However, by dropping medication, a life-saving nasal spray, drones have improved emergency response times by arriving on the scene faster than an am-

bulance. As such, the benefits of drone use in emergency response are far-reaching.

As police departments look to expand their use of UAS technology it is important that they take stock of any unintended national security concerns. According to January 2024 guidance released by the FBI and the Cybersecurity and Infrastructure Security Agency, Chinese-made drones present risks to U.S. national security. However, Chinese-based drone manufacturer DJI makes up the majority of the United States' commercial market and due to its advanced features and affordability has become increasingly used among public safety agencies.

It is important that the Federal Government and the intelligence community continue to share guidance and relevant security information so that law enforcement agencies and first responders are able to take necessary precautions while not stifling innovative tools.

Further, it is important that the U.S. House of Representatives examine any regulatory barriers to public safety agencies when looking to utilize emerging technologies. We need to work with you to make sure that you have the ability to keep your communities safe.

We also need to ensure that those on the front lines, all of our law enforcement men and women, do not have to jump through hoops to be able to use the best tools available. UAS technology has the potential to save lives through efficient response times, providing medical care, and offering operational support to police officers with their boots on the ground.

I look forward to examining how public safety technology has complimented the United States' law enforcement and what the future could hold. I commend those for serving in uniform for their relentless pursuit to save lives and improve emergency response through the usage of drones and other emerging technology.

I want to thank our witnesses again for being here. I look forward to hearing your testimony and, more importantly, I look forward to working with you to make sure that departments and law enforcement agencies throughout this great Nation have every resource they need to do the job that you all do.

[The statement of Chairman D'Esposito follows:]

STATEMENT OF CHAIRMAN ANTHONY D'ESPOSITO

MAY 16, 2024

I'd like to begin this hearing by welcoming a new Member to the committee and subcommittee, Mr. Kennedy from the great State of New York, and by sharing my condolences for the passing of my esteemed colleague, Mr. Payne of New Jersey. I know we didn't always agree on everything policy-wise, but he was a fierce fighter for his constituency. My prayers remain with his family, friends, and district.

Welcome to our witnesses. Thank you for testifying before the Subcommittees on Emergency Management and Technology and Counterterrorism, Law Enforcement, and Intelligence, as we examine the use of unmanned aerial systems, or drones, in emergency response and their impact on U.S. law enforcement. I commend each of you for your dedication to improving public safety throughout this great Nation, and we look forward to hearing your testimony.

In honor of National Police Week, I also want to thank our Nation's police officers for their service and commitment to keeping our communities safe. As a retired NYPD detective, I know first-hand that justice is upheld only because of their bravery, dedication, and sacrifice. Americans can freely live their lives and sleep well

at night because of the unwavering work of our police forces to uphold our laws and make our communities safer.

As the Chairman of the Subcommittee on Emergency Management and Technology, I am committed to supporting our State and local law enforcement officials and ensuring that our Nation's bravest have the resources and technologies they need. I have been a supporter of FEMA's suite of preparedness grants for States and localities to harden their defenses against the threat of terrorism, and I hope to hear how State and local police departments are using these grants to acquire drones and other emerging technologies to improve police operations and prepare for new challenges.

Throughout the Nation, an estimated 1,400 public safety agencies are actively using drones to enhance their operational capabilities.[1] Cities throughout the country have implemented Drone as First Responder (DFR) programs to provide police departments with tactical intelligence and situational awareness that informs police operations and emergency response on the ground.

In my home State of New York, the New York City Police Department (NYPD) has used drones to assist with search-and-rescue efforts, inspect emergency incidents, and provide intelligence for hostage situations, to name only a few. More recently, following the April earthquake that occurred in New Jersey, the NYPD partnered with the NYC Department of Buildings, and used its drones to inspect local bridges for any structural defects. It is clear that the use of UAS technology has the potential to reform the way that police departments operate, and I am looking forward to learning how UAS technology cuts emergency response times, saves local taxpayer dollars, and enhances police department operations.

Drones have the potential to save lives by delivering medical support in rural or densely-populated urban areas. Tragically, in 2022, over 75,000 people died from opioids.[2] However, by dropping naloxone, a life-saving nasal spray, drones could improve emergency response times by arriving on the scene faster than an ambulance. As such, the benefits of drone use in emergency response are far-reaching.

As police departments look to expand their use of UAS technology, it is important that they take stock of any unintended national security concerns. According to January 2024 guidance released by the FBI and the Cybersecurity Infrastructure Security Agency (CISA), Chinese-made drones present risks to U.S. national security.[3] However, Chinese-based drone manufacturer, DJI, makes up the majority of the United States' commercial market, and due to its advanced features and affordability, has become increasingly used among public safety agencies.[4] It is important that the Federal Government and the intelligence community continue to share guidance and relevant security information so that law enforcement agencies and first responders are able to take necessary precautions while not stifling innovative tools.

Further, it is important for Congress to examine any regulatory barriers to public safety agencies when looking to utilize emerging technologies. We need to ensure that those on the front lines keeping our communities safe don't have to jump through hoops to be able to use the best tools available.

UAS technology has the potential to save lives through efficient response times, providing medical care and offering operational support to police officers on the ground. I look forward to examining how public safety technology has complimented U.S. law enforcement and what the future could hold. I commend those serving in uniform for their relentless pursuit to save lives and improve emergency response through using drones and other emerging technology.

Thank you again to our witnesses here today and I look forward to hearing your testimony.

Chairman D'ESPOSITO. Is Mr. Carter here?

I now recognize the Chairman of Counterterrorism, Law Enforcement, and Intelligence Subcommittee, the gentleman from Texas, Mr. Pfluger, for his opening statement.

Mr. PFLUGER. Thank you, Chairman D'Esposito.

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[1] *https://www.axon.com/resources/police-drones.*

[2] *https://www.yahoo.com/news/untrained-bystanders-administer-drone-delivered-132401332.html.*

[3] *https://www.nytimes.com/2024/04/25/us/politics/us-china-drones-dji.html.*

[4] *https://www.nytimes.com/2024/04/25/us/politics/us-china-drones-dji.html.*

We thank the witnesses and agree with the statement previously that we thank you for your service and your families' service as well because we know that it is a team effort.

We are holding this important hearing to examine how first responders are using unmanned aerial systems, or drones, to improve public safety in communities throughout the United States while considering security vulnerabilities and privacy concerns.

The use of drones by first responders represents a paradigm shift in our country. The ability of drones to access remote or hazardous areas, gather real-time intelligence, and provide aerial support in emergency situations can be at times invaluable.

In recent years, first responders have increasingly turned to drones to amplify their operations' response times, efficiency, and safety. Law enforcement agencies utilize drones in a variety of ways from special weapons and tactics or SWAT operations to search-and-rescue missions, as well as to provide situational awareness and added community safety for major events like the Super Bowl, the World Series, and other sporting events where tens of thousands of Americans gather together.

Law enforcement agencies are also bringing policing to the future with programs like mobile drones as first responders, a program to kit out marked patrol units with drones to respond to urgent calls like foot pursuits or violent crimes in progress.

Drones are utilized in emergency responses to establish situational awareness of various incidents. For instance, both rural and urban fire departments utilize drones to provide real-time information and to reveal the extent of a fire's spread on a burning building. All-in-all, drones can provide key data to our first responders allowing for effective decision making and assisting in public safety and saving lives.

While drones are used for emergency response, recreational use, or for research and commerce purposes, the proliferation of this emerging technology has also introduced new risks to homeland security and to privacy. In particular, malicious actors have used drones domestically to commit crimes, conduct illegal surveillance, industrial espionage, and hinder law enforcement efforts at all levels.

Additionally, malicious drone operators continue to attempt to target and disrupt critical infrastructure sectors. For example, the energy and chemical sectors often report suspicious activity by drones, including in my home State of Texas. Criminals, including drug cartels, regularly use drones for smuggling contraband into prisons, cross-border trafficking, and surveillance of U.S. law enforcement.

CBP officials have consistently raised concerns that Mexican narcoterrorist gangs are utilizing weaponized drones only a short distance from the U.S. Southwest Border to conduct nefarious activities.

We must do everything we can to protect against these threats, and we must also do everything we can to protect against potential threats to U.S. critical infrastructure and other matters posed by drones that are manufactured in foreign adversarial countries like the People's Republic of China.

In fact, DJI, a Shenzhen-based company, is a Chinese-based drone manufacturer that controls nearly the entire global drone market. While DJI has received the most attention from Congress, given the company's dominant market position, Autel, a drone technology company also headquartered in Shenzhen, has increased its footprint in the United States. The extensive deployment of Chinese-manufactured drones in the U.S. critical sectors is a national security concern, and it may increase the risk of unauthorized access to sensitive systems and data.

Multiple U.S. Federal departments and agencies have already warned against or banned the procurement of certain drones originating in the PRC in recognition of the threats they pose. Most recently in January 2024, the Cybersecurity and Infrastructure Agency and the Federal Bureau of Investigation shared that Chinese manufactured UAS pose a threat to critical infrastructure and provided guidance for drone procurement.

The advisory in part states that the use of Chinese manufactured drones in critical infrastructure operations risks exposing sensitive information to PRC authorities, jeopardizing U.S. national security, economic security, and public health and safety. Further, the Department of Commerce placed DJI on the entity list and the Department of Treasury placed DJI on the Office of Foreign Assets Controls List of Chinese technology businesses that have a nexus to PRC's military industrial complex.

These lists restrict U.S.-based business investments in DJI due to claims of support of human rights abuses against China's Uyghur Muslim population. State, local, Tribal, and territorial law enforcement agencies Nation-wide have increasingly turned to DJI drones without adequately considering the potential cybersecurity risk and broader national security implications.

Florida, Arkansas, Tennessee, and Mississippi all successfully have taken steps to prevent law enforcement agencies in their State from procuring drones that are manufactured in the PRC. I would strongly urge other States to follow suit and find ways to not be dependent on the PRC-manufactured drones.

As has been stated before, it is not good public policy to rely upon the goodwill of a strategic foreign competitor which is known for using supply chain control as a weapon of war and is beholden to the PRC's military and national security laws for public safety drones, and I couldn't agree any more.

Moreover, under the PRC's national security law from 2017, all Chinese organizations and citizens, including DJI and other Chinese manufacturers, are required to support, assist, and cooperate with the State's intelligence work. More must be done to ensure that certain foreign adversarial countries, including the PRC, are unable to supply our U.S. Government law enforcement partners and other entities with their own drones.

As the Chair of the Subcommittee on Counterterrorism, Law Enforcement, and Intelligence, I plan to continue to examine these issues and, in particular, the potential national security threats posed by drones that have been produced, manufactured, or assembled inside the PRC.

I look forward to the hearing from this distinguished panel today. I thank my colleague and the Chairman of this sub-

committee, Mr. D'Esposito, for his leadership in this particular issue and yield back.

[The statement of Chairman Pfluger follows:]

STATEMENT OF CHAIRMAN AUGUST PFLUGER

MAY 16, 2024

Thank you, Chairman D'Esposito.

We are holding this important hearing to examine how first responders are using unmanned aerial systems, or drones, to improve public safety in communities throughout the United States, while considering security vulnerabilities and privacy concerns.

The use of drones by first responders represents a paradigm shift in our country. The ability of drones to access remote or hazardous areas, gather real-time intelligence, and provide aerial support in emergency situations has proved invaluable.

In recent years, first responders have increasingly turned to drones to amplify their operations, response times, efficiency, and safety.

Law enforcement agencies utilize drones in various ways, from Special Weapons and Tactics or SWAT operations to search-and-rescue missions, as well as to provide situational awareness and added community safety for major events like the Super Bowl, the World Series, the Kentucky Derby, and many other major events, where tens of thousands of Americans attend.

Law enforcement agencies are also bringing policing to the future with programs like Mobile Drones as a First Responder, a program to kit out marked patrol units with drones to respond to urgent calls like foot pursuits or violent crimes in progress.

Drones are also utilized in emergency responses to establish situational awareness of various incidents.

For instance, both rural and urban fire departments utilize drones to provide real-time information to reveal the extent of a fire's spread on a burning building.

All in all, drones can provide key data to our first responders, allowing for effective decision making, and assisting in public safety and saving lives.

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In particular, malicious actors have used drones domestically to commit crimes, conduct illegal surveillance, industrial espionage, and hinder law enforcement efforts at all levels.

Additionally, malicious drone operators continue to attempt to target and disrupt critical infrastructure sectors.

For example, the energy and chemical sectors often report suspicious activity by drones, including in my home State of Texas.

Criminals, including drug cartels, regularly use drones for smuggling contraband into prisons, cross-border trafficking, and surveillance of U.S. law enforcement.

Customs and Border Protection officials have consistently raised concern that Mexican narco-terrorist gangs are utilizing weaponized drones only a short distance from the U.S. Southwest Border to conduct nefarious activities.

We must do everything we can to protect against these threats.

We must also do everything we can to protect against potential threats to U.S. critical infrastructure and other matters posed by drones that are manufactured in foreign adversarial countries, like the People's Republic of China (PRC).

In fact, DJI, a Shenzhen-based company, is a Chinese-based drone manufacturer that controls nearly the entire global drone market.

While DJI has received the most attention from Congress given the company's dominant market position, Autel—a drone technology company also headquartered in Shenzhen, China—has increased its footprint in the United States, which is equally concerning.

The extensive deployment of Chinese-manufactured drones in the U.S. critical sectors is a national security concern, and it may increase the risk of unauthorized access to sensitive systems and data.

Multiple U.S. Federal departments and agencies have already warned against or banned the procurement of certain drones originating in the PRC, in recognition of the threats they pose.

Most recently, in January 2024, the Cybersecurity and Infrastructure Agency and the Federal Bureau of Investigation shared that Chinese-manufactured UAS pose a threat to critical infrastructure and provided guidance for drone procurement.[1]

The advisory, in part, states that, "the use of Chinese-manufactured UAS [drones] in critical infrastructure operations risks exposing sensitive information to PRC authorities, jeopardizing U.S. national security, economic security, and public health and safety."[2]

Further, the Department of Commerce placed DJI on the Entity List, and the Department of the Treasury placed DJI on the Office of Foreign Assets Control's list of Chinese technology businesses that have a nexus to the PRC's military-industrial complex.[3]

These lists restrict U.S.-based business investments in DJI due to claims of support of human rights abuses against China's Uyghur Muslim minority.

State, local, Tribal, and territorial law enforcement agencies Nation-wide have increasingly turned to DJI drones without adequately considering the potential cybersecurity risks and broader national security implications.

Florida, Arkansas, Tennessee, and Mississippi have all successfully taken steps to prevent law enforcement agencies in their State from procuring drones that are manufactured in the People's Republic of China.

I would strongly urge other States to follow suit and find ways to not be dependent on PRC-manufactured drones.

As has been stated before, "It is not good public policy to rely upon the goodwill of a strategic foreign competitor, which is known for using supply chain control as a weapon of war and is beholden to PRC's [People's Republic of China's] military and national security laws, for public safety drones."[4]

I couldn't agree anymore.

Moreover, under the PRC's National Security Law from 2017, all Chinese organizations and citizens—including DJI and other Chinese drone manufacturers—are required to support, assist, and cooperate with the State intelligence work.[5]

More must be done to ensure that certain foreign adversarial countries, including the PRC, are unable to supply our U.S. Government, law enforcement partners, and other entities, with their drones.

As the Chair of the Subcommittee on Counterterrorism, Law Enforcement, and Intelligence, I plan to continue to examine these issues, and in particular, the potential national security threats posed by drones that have been produced, manufactured, or assembled in the PRC.

I look forward to hearing from this distinguished panel today and working in a bipartisan fashion to better understand this important matter and find solutions to address these cross-cutting public safety and national security issues.

Chairman D'ESPOSITO. Thank you, Mr. Pfluger.

I now recognize the Ranking Member of the Counterterrorism, Law Enforcement, and Intelligence Subcommittee, the gentleman from California, Mr. Correa, for his opening statement.

Mr. CORREA. Thank you, Chairman D'Esposito.

First, I want to associate myself with the comments made by my colleagues regarding the passing of our friend, Congressman Don Payne. Congressman Payne's contributions to this committee, this institution were incredible, and Don, I just want to say we will miss you.

Given that this week is Police Week, I also want to thank our law enforcement witnesses here today for your good work. You are the thin blue line that stands between us and those that would harm our family.

I also want to thank our Chairman, Mr. D'Esposito, for serving and protecting the citizens of New York City. Thank you, sir.

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[1] *https://www.documentcloud.org/documents/24362988-cybersecurity-guidance-chinese-manufactured-uas-final.*

[2] Id.

[3] *https://www.bis.doc.gov/index.php/documents/regulations-docs/2326-supplement-no-4-to-part-744-entity-list-4/file.*

[4] See, Testimony of Michael Robbins, AUVSI (pg. 11–12).

[5] PRC National Intelligence Law (as amended in 2018). China Law Translate. *https://www.chinalawtranslate.com/en/national-intelligence-law-of-the-p-r-c-2017/.*

Chairman D'ESPOSITO. Thank you.

Mr. CORREA. Turning to our hearing today, Chairman Pfluger, Mr. D'Esposito, and Ranking Member Carter, I want to thank you for leading the discussion on these unmanned aerial systems, or AE UASes in emergency situations. I want to start out by acknowledging that these drones have a long history of being used in military theaters throughout the world. Recently this technology of UASes has evolved and become adopted by Federal and local law enforcement agencies in the emergency response situations.

In fact, in my home State of California, the Chula Vista Police Department has become the first to routinely respond to 9–1–1 calls using flying drones. Chula Vista's drone program is a first responder. This is a concept that is proactive rather than reactive as to the fact that drones are actually remotely stationed around the city and give officers first real-time information before they actually arrive at situations, crime scenes so to speak.

My home district, city of Fullerton, Fullerton Police Department also uses drones to provide support to its officers in their emergency operations.

Of course, today I want to welcome all of our guests, but especially I want to welcome Chief Kevin Fetterman with the Orange County Fire Department that provides fire [sic] not only to the County of Orange but my own city, the city of Santa Ana. Thank you, Kevin Fetterman, for being here today.

The Orange County Fire Authority's drone program has assisted in search-and-rescue missions during fires, and they are deployed quickly to determine whether there are any victims trapped in homes and what have you, good tools to use. In 2021, there was an incident on the 261 toll road where Orange County Fire Authority deployed drones with infrared capability to better assess the scene and extinguish that fire. But you also teamed up with local police and the drones were able to locate the suspected arsonist who was hiding in the bushes nearby.

Unmanned aerial systems are also used at the Federal level in planning national special security events like the Los Angeles Olympics that are coming up in 2028. Clearly, these unmanned aerial drones will play a key role in preserving security for the people of Los Angeles.

A lot of positives here, but there are some concerns. Surveillance of society and privacy, are we being monitored every time we turn around? The answer is probably yes. But by whom is the issue. I have had many neighbors complain to me that they see drones flying over their backyards. So they will be home having a barbecue and all of a sudden a drone just essentially flies over their private residence and God knows who is controlling that drone or who is watching our private citizens.

I think all of us here today appreciate the benefits of drone technology, especially in emergent situations, but I think we can also agree that such technology has to be deployed in a manner that protects individuals' privacy, civil rights, and liberties. So I am looking forward to hearing from our witnesses today, your testimony about the novel ways that you have used drones and what you see emerging in the future.

I think we are just barely scratching the tip of the iceberg here. This is a great technology. Let's hope with your testimony here we can plot a great future that protects our citizens much better than they are protected today. Thank you very much.

Mr. Chairman, I yield.

[The statement of Ranking Member Correa follows:]

STATEMENT OF CHAIRMAN J. LUIS CORREA

MAY 8, 2024

Given that this week is Police Week, I would like to thank our law enforcement witnesses for being here today.

Turning to our hearing today, Chairmen Pfluger and D'Esposito and Ranking Member Carter, thank you for leading this discussion on the use of Unmanned Aerial Systems (UAS) in emergency response.

I would like to start by acknowledging that UAS, or drone programs, have a long history of utilization by militaries throughout the world. Recently, with technological advances, UAS programs have evolved and been adopted by Federal and local law enforcement and emergency response agencies.

In fact, in my home State of California, the Chula Vista police department became the first to routinely respond to 9–1–1 calls by flying drones. Chula Vista's "Drone as First Responder" concept is proactive rather than reactive in that drones are stationed at permanent locations throughout the city to help give officers real-time information before they arrive at a crime scene. In my District, Fullerton Police also use drones to provide support to its officers and their emergency operations.

Today, I am honored to have some Orange County representation on the panel with Division Chief Kevin Fetterman testifying on behalf of the Orange County Fire Authority. The Orange County Fire Authority's drone program has assisted in search and mission rescues during residential fires, where firefighters deployed drones to quickly search homes and determine that residents were not trapped inside.

In a 2021 incident on the 261 toll road, OC's Fire Authority deployed a drone with infrared capability to better assess the scene and extinguish the fire. Teaming up with the local police, the drone was also used to locate the suspected arsonist who was hiding in the bushes.

Unmanned aerial systems are also used on the Federal level in the planning of National Special Security Events, referred to as NSSEs, to include major sporting events, one of which will be held in Los Angeles—the 2028 Summer Olympics. Despite these positive examples of growing UAS programs Nation-wide, there are also concerns about their use.

People are concerned that the proliferation of drones could enable a "surveillance society," in which our every move may be monitored, tracked, recorded, and scrutinized by Government agencies. This concern has been heightened by reporting that drones have been deployed to monitor First Amendment-protected activity, like during the summer of 2020 protests against police brutality.

I believe that all of my colleagues here today appreciate the many beneficial uses of drone technology, particularly in emergency response, I believe we can also all agree that such technology has to be deployed in a manner that protects individuals' privacy and civil rights and liberties.

So today I look forward to hearing from our witnesses about the novel ways in which drones are enhancing our emergency response capabilities but also about how we can ensure safe and responsible use of this technology.

Chairman D'ESPOSITO. The gentleman yields.

Other Members of the subcommittee are reminded that opening statements may be submitted for the record.

[The statements of Ranking Member Thompson and Honorable Carter follow:]

STATEMENT OF RANKING MEMBER BENNIE G. THOMPSON

MAY 16, 2024

In honor of Police Week, I would like to express my heartfelt gratitude to our first responder witnesses for their dedication and commitment to keeping our communities safe. Thank you for your service.

Turning to the topic of today's hearing, unmanned aerial systems (UAS), also known as drones, were first used by the military to gather intelligence. More recently, law enforcement agencies and fire departments have found drones to be helpful in an emergency response capacity.

Drones can be used to monitor crimes in progress, traffic accidents, residential fires, and wildfires at a larger scale—a role usually served by crewed aircraft. Drones can carry camera systems capable of thermal imaging for search-and-rescue missions, as well as radio equipment and other sensors.

First responders across the country have recognized that drones can be a useful tool in advancing their public safety missions while reducing risk to personnel and the public. In short, the biggest advantage of drones for first responders is the ability to go where humans cannot. In my home State of Mississippi, we have found drones useful for surveying the damage wrought by disasters, such as the devastating tornadoes that ravaged my district in 2023, killing 22 people.

While drones can be helpful for emergency response missions, some have understandably raised concerns that law enforcement's use of drones could infringe upon individuals' privacy or free speech rights—such as in situations where law enforcement fly drones over First Amendment-protected activities.

It is imperative that Americans' Constitutional rights are upheld when first responders use drones to enhance public safety. I look forward to hearing from our witnesses about drones and how they are used for emergency response operations, and any recommendations they may have to strengthen this technology.

STATEMENT OF RANKING MEMBER TROY CARTER

MAY 15, 2024

Drones offer rapid aerial assessment capabilities, providing real-time views of disaster areas. They can comb through flooded areas, fires, wildfires, or collapsed buildings, identifying survivors and hazards.

My home district, New Orleans, is highly vulnerable to hurricanes and flooding. In such situations, drones can be incredibly useful in rapidly surveying affected neighborhoods, levees, and infrastructure. By providing a comprehensive overview of the extent of damage and potential risks, drones can aid first responders in their efforts to understand the situation better and take necessary actions. The usefulness of drones was particularly evident during Hurricane Ida, where drones were used to observe and analyze damage. By leveraging drones in emergency response efforts, particularly in disaster-prone areas like New Orleans, responders can enhance their capabilities to save lives, mitigate damage, and expedite recovery efforts.

Additionally, earlier this year, the New Orleans Police Department received approval by the Department of Justice to use drones in its investigations, which could potentially prove to be a game-changer in terms of enhancing the effectiveness of law enforcement. With Super Bowl LIX being held in New Orleans next year, it is essential for first responders to gear up and be prepared with the latest technologies at their disposal. I look forward to seeing how this capability will be used to ensure the safety and security of Louisianans.

While drones can be effective in emergency response efforts in disaster-prone areas like New Orleans, there are concerns about their use as these programs continue to grow Nation-wide and become easily accessible. The increasing use of drones has raised concerns about privacy and civil liberties as their capabilities for aerial surveillance and data collection continue to advance. Federal, State, and local first responders need to ensure that they use drones to enhance public safety while protecting individuals' and the public's privacy and Constitutional rights.

I also look forward to speaking to our witnesses today about a few things, the first being how the Federal Government can support use of drone technology by State and local first responders to enhance the efficiency, safety, and effectiveness of their efforts including via funding.

The Emergency Management and Technology Subcommittee has jurisdiction over the Department of Homeland Security Grant Programs, which can be used to purchase drones; however, these grants received a 10 percent cut for fiscal year 2024. The 10 percent cut not only compromises the effectiveness of first responders but

also endangers communities by reducing their access to essential resources like drones. This shortfall could impair their ability to promptly address security threats and emergencies, heightening risks and diminishing overall safety levels within affected areas.

To this end, the second thing I hope to hear from our witnesses is about any concerns about the grant programs and any recommendations you may have to improve them.

Last, I want to give a special thank you to our first responder witnesses today for their dedication and service to our communities.

Chairman D'ESPOSITO. I am pleased to have a distinguished panel of witnesses before us today on this very important topic.

[Witnesses sworn.]

Chairman D'ESPOSITO. Let the record reflect that the witnesses have answered in the affirmative. Thank you and please be seated.

I would now like to formally introduce our witnesses. First is Deputy Commissioner Kaz Daughtry, who started his career with the New York City Police Department as a police officer in 2006 and currently serves as the New York City Police Department's deputy commissioner of operations, in which he has spearheaded technological innovations within the New York City Police Department, including the expansion of the city's drone program.

Chief John Chell serves as the chief of Patrol Services Bureau, which is the largest bureau in the New York City Police Department, and oversees the majority of the department's uniformed patrol officers throughout 8 borough commands and 77 police precincts.

I will take a moment of personal privilege to say that I had the honor to serve with both Deputy Commissioner Kaz Daughtry and Chief of Patrol John Chell, and I will tell you that I am thankful that Mayor Adams has two of the finest of the finest leading the pack in the NYPD. So, gentlemen, thank you.

Mr. Kevin Fetterman has over 27 years of fire and emergency services experience and currently serves as a division chief at the Orange County Fire Authority where he oversees the Command and Emergency Planning Division and the Emergency Command Center and participates in the all-hazards incident management team.

Mr. Rahul Sidhu is a former police officer and paramedic as well as the cofounder and chief executive officer of Aerodome, a company that provides advanced drone as first response capabilities to public safety agencies. Mr. Sidhu also serves as a member of the board of advisors at the University of California and has travelled to help over 250 law enforcement agencies around the country. Thank you, sir, for your service.

Mr. Michael Robbins is president and chief executive officer of the Association for Uncrewed Vehicle Systems International, the world's largest trade association for uncrewed systems, autonomy, and robotics in both the commercial and defense sectors. He recently served as co-chair of the Federal Aviation Administration's UAS Detection and Mitigation Aviation Rulemaking Committee and currently serves on a task force with the United States Department of Transportation and are working with a group of the Cybersecurity and Infrastructure Security Agency.

I thank all the witnesses for being here today. I now recognize Deputy Commissioner Daughtry for 5 minutes to summarize his opening statement.

STATEMENT OF KAZ DAUGHTRY, DEPUTY COMMISSIONER, OPERATIONS, NEW YORK CITY POLICE DEPARTMENT

Mr. DAUGHTRY. Thank you. Good morning. Good morning, Chair D'Esposito and Pfluger, Ranking Member Carter, and Ranking Member Magaziner, and Members of the subcommittee. I am Kaz Daughtry, deputy commissioner of operations of the New York City Police Department. On behalf of Police Commissioner Edward Caban and Mayor Eric Adams, I am pleased to testify before your subcommittee today to discuss the importance of emergent technology in policing and how vital our Federal partnerships are to the NYPD public safety mandate.

With 8.8 million residents and 62.2 million visitors from every corner of the globe, New York City remains a city of possibility. Our police officers proudly patrol the city's 6,300 miles of streets and highways, 472 subway stations, and 274 public housing developments. In a city constantly on the move, our police department must continue to look forward and adapt.

I am proud to have spearheaded a number of strategies to better position our department and our crime-fighting efforts and make New York City the safest big city in America. This call to action requires that we embrace technology.

I am proud to point to some of our success stories today. This is a showcase of some of the most exciting technology and highlights of the work of our technical assistance in TARU, also known as our TARU team.

They provide expertise in audiovisual technology, operate our unmanned aircraft system commonly known as drones, and provide our officers with a crucial advantage in emergency management. We are also focused on the importance of securing our ability to mitigate hostile drones over the critical infrastructure and mass gatherings, such as those in Times Square.

Our most prolific technology-based innovation has been the department's use of drones. The NYPD has 85 drones. In 2023, our drone use has increased 419.8 percent compared to 2022.

There are, of course, limited circumstances in which a drone can be used. We have self-imposed policies that place limitations and restrictions on our drone uses. Under these policies drones are not used for warrantless surveillance, routine patrol, traffic enforcement, or immobilizing vehicles of suspects. Drones are not used as weapons and cannot be equipped with weapons of any kind, but they can be used to preserve life.

On Friday, April 5, 2024, after a 4.8 magnitude earthquake was felt throughout the tri-State area, our department ordered our drones be deployed to examine the structural integrity of our bridges and buildings. If we detected an infrastructure flaw, we had the ability to share this information with the Department of Buildings in real time.

Drone technology allows us to work closer with our partners in ensuring the community safety. Safety and security is always a priority and our drones have played a vital role in those endeavors.

Each year hundreds of thousands converge on Times Square, the crossroad of the world, to ring in a new year. This year we utilized our drone technology to give a bird's-eye view to our incident commanders in order to prevent overcrowding.

Another example on Sunday, September 3, 2023, 10,000 people rushed the entrance of the Electric Zoo concert, creating a dangerous situation. Due to the safety concerns, the NYPD leadership considered canceling this event entirely.

To gain better situational awareness, we ordered the TARU to deploy our drone truck. We put a tethered drone up and live footage showed us that the crowd was massed at the entrance, but there were no danger to life or safety. Using this information, we gathered our resources and we made the decision to allow the show to go on.

Likewise, the possibility that hostile actors may use drones in a malicious manner at such a mass gathering is always at the forefront of our concerns. In an effort to support innovation to public safety, 5 precincts have been selected for the drone as first responder program, more commonly referred to as DFR.

Chosen based on recent crime trends, these precincts will each be outfitted to support 2 drone platforms affixed to their rooftops. Three of these precincts are in Brooklyn, 1 precinct in the Bronx, and Central Park precinct, which is located in the borough of Manhattan.

The plan to be rolled out in the coming months is to deploy these drones in response to certain 9–1–1 calls for service. The pilots, however, will be remotely positioned in our joint operations center at police headquarters rather than on the scene. This information will be provided by the DFR and will be shared with responding officers. DFR will enhance officers' situational awareness as they arrive on the scene and promote officer safety and help deploy resources more effectively.

In an effort to find technology-based solutions to reduce the number of vehicle pursuits, as well as to reduce the risks to the public, the department implemented a pilot program utilizing specialized GPS tracking equipment known as StarChase. By attaching a GPS-enabled device to a vehicle which can be tracked remotely, this technology prevents us to pursue vehicles while avoiding high-speed chases that endanger the community and our officers.

Since April 2023, the limited pilot program has helped us recover 42 vehicles and make 58 arrests. This technology has saved valuable manpower hours while reducing the risks associated with vehicle pursuits.

To speak more broadly on our ability to adapt as a department supported by critical Federal funding assistance, the funding that the city and the department receive from the Federal Government, as well as our collaboration with Federal partners such as the FBI, ATF, have been a key component in thwarting numerous attacks over the years.

By responsibly leveraging technology, we are able to promote public safety in our city, and we appreciate you calling attention to this important issue through today's hearing.

Thank you again for this opportunity to testify today. I am happy to answer any questions that you may have.

[The joint prepared statement of Mr. Daughtry and Mr. Chell follows:]

JOINT PREPARED STATEMENT OF KAZ DAUGHTRY AND JOHN CHELL

THURSDAY, MAY 16, 2024

Good morning Chairs D'Esposito and Pfluger, Ranking Members Carter and Magaziner, and Members of the subcommittee. I am Kaz Daughtry, deputy commissioner of operations for the New York City Police Department ("NYPD"). On behalf of Police Commissioner Edward Caban and Mayor Eric Adams, I am pleased to testify before your subcommittee today to discuss the importance of emerging technology in policing and how vital our Federal partnerships are to the NYPD's public safety mandate.

With 8.8 million residents and 62.2 million visitors from every corner of the globe, New York City remains a city of possibility. Our police officers proudly patrol the city's 6,300 miles of streets and highways, 472 subway stations, and 274 public housing developments. In a city constantly on the move, our police department must continually look forward and adapt. I am proud to have spearheaded a number of strategies to better position our department in our crime-fighting efforts and make New York City the safest big city in America. This call to action requires that we embrace technology.

I am proud to point to some of our success stories today. This is a showcase of some of our most exciting technology, and highlights the work of our Technical Assistance and Response Unit (TARU). They provide expertise in audio/visual technology, operate our Unmanned Aircraft Systems (UAS), commonly known as drones, and provide our officers a crucial advantage in emergency management. We are also focused on the importance of securing our ability to mitigate hostile drones over critical infrastructure and mass gatherings such as those in Times Square.

Our most prolific technology-based innovation has been the Department's use of drones. The NYPD has 85 drones. In 2023, our drone usage increased 419.8 percent compared to 2022. There are, of course, limited circumstances in which a drone can be used. We have self-imposed policies that place limitations and restrictions on our use of drones. Under these policies, drones are not used for warrantless surveillance, routine patrol, traffic enforcement or immobilizing vehicles of suspects. Drones are not used as weapons, and cannot be equipped with weapons of any kind.

But they can be used to preserve life: On Friday, April 5, 2024, after a 4.8 magnitude earthquake was felt throughout the Tri-State area, our department ordered our drones be deployed to examine the structural integrity of our bridges and buildings. If we detected an infrastructure flaw, we had the ability to share this information with the Department of Buildings in real time. Drone technology allows us to work closer with our partners, ensuring the community's safety.

Safety and security is always a priority, and our drones have played a vital role in those endeavors. Each year, hundreds of thousands converge on Times Square, the "Crossroads of the World," to ring in the New Year. This year, we utilized our drone technology to give a bird's eye view to our incident commanders, in order to prevent overcrowding.

As another example, on Sunday, September 3, 2023, 10,000 people rushed the entrance of the Electric Zoo concert, creating a dangerous situation. Due to safety concerns, NYPD leadership considered canceling the event entirely. To gain better situational awareness, we ordered TARU to deploy our drone truck. We put our tethered drone up, and the live footage showed us that the crowd was massed at the entrance but there were no dangers to life or safety. Using this information, we gathered our resources, and we made the decision to allow the show to go on. Likewise, the possibility that hostile actors may use drones in a malicious manner at such a mass gathering is always at the forefront of our concerns.

In an effort to support innovation in public safety, 5 precincts have been selected for the Drone as First Responder Program, more commonly referred to as DFR. Chosen based on recent crime trends, these precincts will each be outfitted to support 2 drone platforms affixed to their rooftops. Three of these precincts are in Brooklyn, with 1 precinct in the Bronx, and 1 at the Central Park Precinct in Manhattan. The plan, to be rolled out in the coming months, is to deploy these drones in response to certain 9–1–1 calls for service. The pilot however, will be remotely positioned in the Joint Operations Center, at Police Headquarters, rather than on scene. The information provided by DFR will be shared with responding officers. DFR will enhance officers' situational awareness as they arrive on scene, promote officer safety, and help us deploy resources more effectively.

In an effort to find technology-based solutions to reduce the number of vehicle pursuits, as well as reduce the risk to the public, the Department implemented a pilot program utilizing specialized GPS tracking equipment, known as StarChase. By attaching a GPS-enabled device to a vehicle, which can be tracked remotely, this technology permits us to pursue vehicles, while avoiding high-speed chases that endanger the community and our officers. Since April 2023, this limited pilot program has helped us recover 42 vehicles and make 58 arrests. This technology has saved valuable manpower hours while reducing the risks associated with vehicle pursuits.

To speak more broadly, our ability to adapt as a department is supported by critical Federal funding assistance. The funding the city and the Department receive from the Federal Government, as well as our collaboration with Federal partners, such as the FBI and ATF, have been key components in thwarting numerous attacks over the years. By responsibly leveraging technology, we are able to promote public safety in our city, and we appreciate your calling attention to this important issue through today's hearing.

Thank you again for this opportunity to testify today. I am happy to answer any questions you may have.

Chairman D'ESPOSITO. Thank you, Deputy Commissioner Daughtry.

I now recognize Chief Chell for 5 minutes to summarize his opening statement.

STATEMENT OF JOHN CHELL, CHIEF OF PATROL, PATROL SERVICES BUREAU, NEW YORK CITY POLICE DEPARTMENT

Mr. CHELL. Good morning, everybody, glad to be here. Thank you for having us to discuss this very important topic.

I am here just to describe things we have used the drones for, examples of how it has helped us, quite frankly, and policing in New York City, it is a game-changer to what we are doing. Whether it be earthquakes, New Year's Eve, Columbia University, missing kids found in the water who drowned, shark attacks, the 2,600 protests we have had to deal with since October 7, to mitigate crime control and keep us safe and keep New Yorkers safe, to collapsed buildings, and overall technology as a whole that we are using incorporating drones and incorporating what the commissioner said about StarChase. Incorporating old technology that we have refurbished, if you will, to add to a more safety and robust crime-fighting mechanism that I believe, that our team believes is really keeping crime down in New York City and, more importantly, keeping our cops safe and our city safe.

I look forward to the discussion from the panel and any questions you might have. Thank you.

Chairman D'ESPOSITO. Thank you, Chief Chell.

I now recognize Chief Fetterman for 5 minutes to summarize his opening statement.

STATEMENT OF KEVIN FETTERMAN, DIVISION CHIEF, COMMAND AND EMERGENCY PLANNING, ORANGE COUNTY FIRE AUTHORITY ON BEHALF OF THE INTERNATIONAL ASSOCIATION OF FIRE CHIEFS

Chief FETTERMAN. Good morning, Chairman D'Esposito, Chairman Pfluger, Ranking Member Carter, and Ranking Member Correa. I am Kevin Fetterman, the division chief over command and emergency planning with the Orange County Fire Authority in Orange County, California.

My perspective is that of an all-hazard incident commander and an operational emerging technology lead, and today I am here on

behalf of the International Association of Fire Chiefs. I appreciate and I am humbled by today's opportunity to discuss UAS and this emerging technology's role in emergency response.

First, I would like to acknowledge the passing of former Member of the committee, Representative Donald Payne, Jr. Representative Payne was always a long-time friend of the fire service and Representative Payne's dedication to public service will be long-remembered and he will be sorely missed.

One of the first steps in emergency response is establishing situational awareness. This is the ability to identify and decipher all aspects of an incident, and UAS can be a game-changer in establishing and maintaining situational awareness at an emergency scene. Here is how.

Drones provide real-time data, visual documentation of affected areas by capturing high-resolution aerial images and video. This is vital for coordinating incident operations, such as how they were used at the Surfside building collapse in Florida. Also, drones can offer thermal imaging, like how they were used at the Tustin Hangar fire in California, tracking the fire's progression through the structure in subsequent operational periods.

Drones can also take on actionable roles, such as a PSD drone or plastic sphere dispenser drone, which can assist with firing operations to hold critical fire breaks. The Dixie Fire in California, which was the State's largest single-source wildfire, a PSD drone was used in a very technically challenging firing operation and this limited the risk to wildland firefighters on the ground.

Clearly, 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 in California, fire traffic areas were established as an interagency airspace management tool. Fire traffic areas could also be described as the layering approach to aeronautical management.

When non-coordinated drones intersect with an FTA, they impact the fire service's ability to utilize the full spectrum of firefighting aircraft that is available, potentially tipping the scales between containment and catastrophe.

In the western United States, the saying is, "If you fly, we cannot." Standards such as the FTA and remote identification capabilities, known as remote ID, can help prevent non-coordinated drones from interfering with critical, life-saving missions and prevent explosive fire growth.

The needs of firefighters also often demand operations beyond what the FAA's visual line of sight rules permit. For example, UAS need to be deployed over long distances to track wildfire progression or see over the mountain ridge to assess the on-coming fire's impacts. Yet existing regulations on beyond visual line of sight operations remain cumbersome and ambiguous.

Failure to address this issue undermines our ability to leverage drones effectively, potentially hindering our capacity to save lives and protect property. We simply cannot afford to be slowed down by procedural delays when lives are on the line.

Rapid coordination and streamlined approvals in zero grid airspace are also crucial. Fire departments require the flexibility to

deploy drones swiftly within these zones to ensure this benefit to public safety.

By continuing to foster collaboration between stakeholders, we can develop agile solutions that balance safety imperatives with operational realities. The inclusion of AI within the UAS continues to make significant improvements to their operational capabilities. This can be critical in ensuring that aircraft work together in a coordinated and safe manner.

AI UAS avoidance technology can be a useful tool to ensure airspace deconfliction, so UAS plus AI equates to increased safety for all public safety responders. 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 also revolutionizing the way response is being delivered.

To enhance the response to everyday emergency calls, drones can now physically deliver automatic external defibrillators or life-saving medications such as Narcan. The application with drone pickup and delivery for medical professionals are endless.

I thank you for the opportunity to address the use of UAS during emergency response. This emerging technology is already a life-saving tool for first responders. Congress can also play a role in streamlining public safety's access to UAS.

For example, we appreciate the inclusion of provisions in the FAA bill to make it easier for volunteer fire departments to access tethered drones.

In closing, the IAFC looks forward to working with this committee to ensure that first responders can utilize UAS to better provide service to all of our communities. Thank you.

[The prepared statement of Mr. Fetterman follows:]

PREPARED STATEMENT OF KEVIN FETTERMAN

MAY 16, 2024

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 long-time friend of the fire service. He often worked with first responders to ensure they had the support they needed. Just 3 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 off-site.
- 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 air space management tool for standard communication protocols. In California, it is the Interagency Standard for Aerial Firefighting. The FTA can be further defined as air space with a 5-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 7 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 air space 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 on-going firefighting efforts, sends their personal drone into the air space, ignorant of the disruption it causes. The air space 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 air space 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 AIR SPACE DRONE OPERATIONS

In the high-stakes domain of firefighting, the need for rapid coordination and approvals in zero-grid air space cannot be overstated. The FAA's UAS Facility Maps delineate areas where drone operations are restricted, aiming to safeguard critical air space. 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 air space 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, power lines, 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 everyday fire calls, drones can now physically deliver automatic external defibrillators or the life-saving 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 (Pub. L. 115–254) which defined "public 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 public 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 ac-

tively tethered UAS to carry out life-saving operations—like volunteer fire departments. Approximately 65 percent 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 life-saving 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.

Chairman D'ESPOSITO. Thank you, Chief Fetterman.

I now recognize Mr. Sidhu for 5 minutes to summarize his opening statement.

STATEMENT OF RAHUL SIDHU, FOUNDER AND CEO, AERODOME

Mr. SIDHU. Good morning, Chairman D'Esposito, Chairman Pfluger, Ranking Member Correa, and esteemed committee Members. My name is Rahul Sidhu, and I am the CEO of Aerodome, a company specializing in next-generation drone as first responder technology.

With over 14 years of experience in public safety as a former full-time police officer and now reserve officer, crew chief, paramedic, and pilot, I am here today to discuss the transformative role of unmanned aerial systems in public safety. Unmanned aerial systems, or drones, have been integrated into emergency response for over a decade. These older-use cases usually involve first responders taking drones out of their vehicle and deploying them on scene. I am not here to talk about the past.

I am here to discuss the future, drone as first responder, or DFR. DFR involves sending a drone from a pre-positioned launch point, like a police station, and flying it directly to the scene of an emergency.

These drones are remotely piloted from a central location often beyond the visual line-of-sight. Launching drones at the scene of an emergency, even if piloted remotely, is not DFR.

In May 2018, Captain Fritz Reber of the Chula Vista Police Department, now a vice president at Aerodome, invented this concept. In 2020, as a reserve police officer, I followed in Captain Reber's footsteps and developed this Nation's second-ever DFR program in Redondo Beach, California.

Our DFR program virtually reduced our response time by nearly 70 percent and reduced the number of low-priority calls our patrol officers had to respond to by nearly 25 percent. This decreased

high-priority response times and increased the apprehension of suspects, making our community safer.

Over the past 4 years, the Redondo Beach DFR program conducted over 5,000 DFR flights. The impact of DFR is undeniable. Dozens of agencies are operating true DFR programs today with dozens more awaiting waivers from the FAA.

These programs are vital in crime-fighting strategies, significantly reducing retail theft, violent crime, and property crime. These programs routinely save lives. Just last month a police department in Texas used the Aerodome DFR system to find and rescue an unconscious victim of a violent assault and rape, who likely would have bled out and died if the drone had not located them in time.

These programs are also used to de-escalate and reduce the likelihood of tragic outcomes. Agencies report using DFR drones to identify the subjects who were reported to have guns in their hands were only actually holding toys or gun-shaped objects allowing officers to approach them safely without resorting to deadly force.

Most public safety agencies are implementing the first iteration of DFR, known as DFR 1.0. Aerodome is the first to deploy what is referred to as DFR 2.0 technology, which refers to fully remote, automated, multi-drone, 24/7 operations.

DFR 2.0 utilizes battery swapping drone stations and advanced air space sensors such as radar and allows for one person to safely launch from multiple drone stations without the need for visual observers. DFR 2.0 allows agencies to operate fully functional DFR programs with a fraction of the staff needed for DFR 1.0.

Unfortunately, we live in a time where police staffing is a challenge across the country, which makes this technology even more important. Aerodome's technology is already deployed in cities like Redondo Beach where the average drone response time to an emergency is now 85 seconds.

As with all advancements in public safety technology, we believe police accountability and transparency should not only be considered but should advance alongside the technology itself. Unlike traditional helicopter-based air support programs, DFR 2.0 systems record and upload entire flights, much like body cams, with flight logs made easily accessible to the public to promote accountability and transparency.

Several other key differences emerge when comparing traditional helicopter-based air support programs to highly-advanced DFR 2.0 programs. DFR 2.0 can supplement helicopter-based programs, making air support more effective, efficient, economical, environmentally-friendly, and, more importantly, safer for every community in America.

Enhanced safety should be within the reach of all communities, not just the ones that can afford helicopters. As DFR 2.0 systems continue to evolve, it is important to recognize how they can adapt to unique challenges. For example, these systems can be used to detect wildfires faster in wilderness areas, reducing the likelihood of destruction and death.

Larger drones capable of carrying water and fire retardants can remotely deploy firefighting payloads onto these fires before they spread, potentially extinguishing them prior to the fire crew ar-

rival. DFR 2.0 can also map this air space in real time, ensuring that these drones don't pose a threat to manned aircraft, which is important, especially given that my colleague, Chief Fetterman, mentioned this exact issue.

In conclusion, I believe the potential for DFR 2.0 to save lives, reduce crime, and increase safety is immense, making the adoption of these advanced technologies a crucial step forward toward a safer future for America. I urge this esteemed committee to support their local public safety agencies as they look to implement this type of technology.

I also want to thank my police chief, Chief Joe Hoffman, and my captain, Captain Stephen Sprengel, for being here to support me today. Thank you.

[The prepared statement of Mr. Sidhu follows:]

PREPARED STATEMENT OF RAHUL SIDHU

MAY 16, 2024

INTRODUCTION AND BACKGROUND

Good afternoon, Chairman D'Esposito, Ranking Member Carter, and Members of the Subcommittee on Emergency Management and Technology. On behalf of my organization and partners, I would like to thank you for inviting me to testify in front of you today.

My name is Rahul Sidhu, and I serve as the chief executive officer of Aerodome, a company specializing in next-generation drone-as-first-responder technology. My previous company also operated within public safety, where I concentrated on developing customer service systems for local law enforcement agencies.

Over the past 14 years, I have served as a paramedic, crew chief, and police officer in the city of Redondo Beach, where I continue to serve as a reserve officer. I am not merely a business executive looking to profit from working with public safety agencies; I consider myself a police officer first and a business executive second.

THE BIRTH AND SUCCESS OF DFR PROGRAMS

I am here to speak about the application of unmanned aerial systems, more commonly known as drones, and their role in public safety. I recognize that many of you may already be acquainted with the use of drones in emergency response over the past decade. Previous applications have included perimeter security, safely searching the interior of residences for tactical teams, reconstructing accident scenes, and search and rescue. Many police and fire agencies have adopted similar programs, and they have found tremendous value in doing so.

I am not here to discuss previously understood and established drone use cases. I am here to talk about the future. This future is anchored in the concept of "drone-as-first-responder." To explain this further, let me share how this future came to be.

In May 2018, my colleague Fritz Reber, who now serves as a vice president at Aerodome and was previously a captain with the Chula Vista Police Department, launched an experiment. He deployed drones directly from the police department's rooftop to respond in real time to the scenes of 9–1–1 calls. Since these drones responded to calls directly, he referred to this initiative as "drone-as-first-responder," also known as DFR. I was particularly intrigued when I learned about this program, as I had heard that it virtually reduced their response time to emergencies by more than 50 percent.

Recognizing the importance of true DFR, I followed in Captain Reber's footsteps and spearheaded the development of the Nation's second-ever DFR program. In March 2020, I served as a reserve police officer with the Redondo Beach Police Department, where I continue to serve. Like many police and fire agencies at the time, we were short-staffed due to COVID. It's worth noting that many agencies are still short-staffed today. The Police Executive Research Forum yearly survey revealed that since 2020, sworn numbers across responding agencies are down 4.8 percent.

We knew DFR could revolutionize our approach to staffing challenges. By implementing this cutting-edge program, we achieved several significant improvements:

- *Centralized Drone Launching*.—By launching drones directly from a central location to calls-for-service throughout the city, we reduced our average visual response time by nearly 70 percent.
- *Efficient Triage of Responses*.—We triaged police and fire response more efficiently, reducing approximately 25 percent in the number of low-priority calls that patrol officers had to respond to.
- *Improved High-Priority Response Time*.—This ripple effect accelerated patrol officers' physical response time to high-priority calls.
- *Increased Apprehension of Suspects*.—This program also led to a significant increase in the apprehension of suspects fleeing the scene of crimes, resulting in safer outcomes for our community.
- *Longevity and Impact*.—This program has remained operational at the Redondo Beach Police Department for nearly 4 years, with over 5,000 DFR flights to date.

UNDERSTANDING AND DEFINING DFR

It's crucial to understand what constitutes DFR and what does not. DFR is defined as utilizing a system of pre-positioned drone launch points, flying drones directly from these launch points to the scene of an emergency. These drones are remotely piloted through a computer, typically beyond a visual line of sight, from a central location. To clarify, simply launching drones at the scene of an emergency is not drone-as-first-responder. Patrol-based drone programs have been around for nearly a decade, and while they can be helpful, they are not DFR programs. DFR programs are designed to have the drone arrive on the scene first before any first responders on the ground arrive. If the system isn't specifically designed to send a drone to an incident within seconds of learning of an emergency, it is not a drone-as-first-responder program.

I want to emphasize why DFR exists: its undeniable impact on saving American lives. Today, dozens of agencies have received the necessary waivers from the FAA to fly Beyond Visual Line-of-Sight to support their DFR programs, with more than double that amount currently working to do the same. These agencies have seen tremendous success with their DFR programs, sharing countless stories of lives saved, including those of children. Their DFR programs have been critical in modern crime-fighting strategies, significantly reducing retail theft, violent crime, and property crime. Just last month, our system was used to find and rescue an unconscious victim of a violent assault and rape who likely would have bled out if the drone had not located them on time.

The agencies are leveraging DFR programs not only to locate individuals needing rescue, apprehend dangerous criminals, and protect first responders but also to de-escalate potentially fatal encounters. For instance, many agencies have reported sending drones to incidents where people reported a man with a firearm threatening the public. In these situations, drones flew overhead and verified that the firearm was not real. This information was relayed to officers, allowing them to safely approach these individuals without resorting to deadly force.

THE IMPACT AND FUTURE OF DFR, NEXT-GENERATION DFR 2.0

Most of the public safety agencies I'm referring to are implementing the first iteration of DFR, which we call DFR 1.0. DFR 1.0 is limited, as it requires 2 staffed personnel per drone launch site and can only be operated during hours in which these launch sites are fully staffed. I want to introduce you to DFR 2.0, also known as next-generation DFR.

Aerodome is currently the sole provider of DFR 2.0 technology, which refers to a fully remote, automated, multi-station, and multi-drone operation. This involves several advanced features:

- *City-Wide Drone Coverage*.—Positioning drone stations across various locations within a city while managing the launch and flight of the drones remotely from a central hub.
- *Fully Remote Operations*.—Drones can safely operate day or night without a visual observer, utilizing a suite of ground sensors such as 3D radar, radio frequency, remote ID, and ADS–B.
- *Automated Docking Station*.—Once their mission is complete, the drones return to their docking station, where robotic arms swap out their batteries, preparing them for the next mission.
- *24/7 Operations*.—Enables the launch of drones 24/7, in various weather conditions, from mobile devices, without needing to rely on full staffing.

DFR 2.0 significantly reduces personnel requirements, allowing agencies to operate fully functional DFR programs with a fraction of the staff needed for DFR 1.0.

Moreover, it provides scalable, sustainable, and affordable next-generation air support coverage, enabling every city in America to benefit from this advanced technology.

Although our agencies are still working with the FAA to obtain the necessary waivers to operate without visual observers, our DFR 2.0 technology is already deployed in cities like Redondo Beach, where the average drone response time to an emergency is now 85 seconds.

ETHICAL RESPONSIBILITY AND TRANSPARENCY

We recognize that as leaders in the space, it is our responsibility to build this technology ethically and with the best interest of community members at the forefront of our minds. As with all advancements in public safety technology, police accountability and transparency should not only be considered but should advance alongside the technology itself. For instance, today's conventional helicopter-based air support video recordings are uploaded usually only when deemed evidentiary, with no straightforward process for the public to submit Freedom of Information Act requests to view them.

DFR 2.0 systems record and upload entire flights, much like bodycams. All flight logs are then uploaded to a community dashboard, where the details of each flight are readily accessible to the public, with any personally identifying information redacted.

Furthermore, several key differences emerge when comparing traditional helicopter-based air support programs to highly-advanced DFR 2.0 programs. Few agencies can afford helicopters due to their high costs and unpredictable on-going expenses. Helicopters can be unsafe, and using them has resulted in numerous public safety aviation-related deaths in the past decade.

Additionally, they significantly pollute the environment, rivaling private jet usage and generating noise complaints Nation-wide. DFR 2.0 can supplement these traditional helicopter programs, making air support more affordable, effective, efficient, safe, and environmentally friendly for every city and county in America.

DFR 2.0 AND ALTERNATIVE RESPONSE

As DFR 2.0 systems continue to be implemented in public safety agencies Nationwide, it is essential to understand how they can adapt to unique public safety challenges. With some hardware and software modifications, DFR 2.0 systems can be stationed in remote wilderness areas, rapidly detecting wildfires as they emerge. This capability can significantly decrease firefighter response times, reducing the likelihood of wild fires spreading and causing property damage or loss of life. Larger drones, capable of carrying water and fire retardants, can be operated remotely to deploy firefighting payloads onto these fires before they spread, potentially extinguishing them early enough to eliminate the need for firefighter response. This can be managed through a DFR 2.0 air traffic awareness system that prevents drones from interfering with manned aircraft operating in the same air space.

Last, it's essential to understand how DFR 2.0 systems can play a role in improving our response to things like natural disasters, school shootings, and terrorist attacks by domestic and foreign adversaries.

How much more quickly could the drone have located the terrorists who killed 14 people in San Bernardino on December 2, 2015?

How many more people could we have located and rescued during our response to Hurricane Katrina?

How many children could we have saved during school shootings by locating the shooter sooner for responding officers?

How many lives could we have saved if we more quickly detected and potentially extinguished the California wildfires in 2018?

Incorporating DFR 2.0 systems into our public safety infrastructure will revolutionize how we respond to emergencies, providing faster, more efficient, and safer solutions to crises that threaten our communities. The potential to save lives, reduce injuries, and mitigate damage is immense, making the adoption and integration of these advanced technologies a crucial step toward a safer future for America.

CONCLUSION

In conclusion, I implore this esteemed committee to acknowledge the indispensable role of DFR 2.0 in modern emergency response strategies. We must rally support for the wide-spread adoption of DFR 2.0 Nation-wide. By allocating resources to invest in advanced American drone technology and fostering collaboration among public safety agencies, Federal regulatory bodies, and forward-thinking companies,

we can collectively pave the way for a safer and more resilient future for all Americans.

Chairman D'ESPOSITO. Well, thank you, sir.

I now recognize Mr. Robbins for 5 minutes to summarize his opening statement.

STATEMENT OF MICHAEL ROBBINS, PRESIDENT AND CEO, ASSOCIATION FOR UNCREWED VEHICLE SYSTEMS INTERNATIONAL

Mr. ROBBINS. Thank you, Chairman D'Esposito and Chairman Pfluger, Ranking Member Correa, and Ranking Member Carter, and all the distinguished Members of the committee. I am Michael Robbins. I am the chief executive officer and president of AUVSI, the world's largest trade association and industry association representing uncrewed systems, robotics, and autonomy. Our members create the systems that operate in the air, on the ground, and in and on the water, in the civil, commercial, and defense domains.

The use of our industry's technology in public safety is unquestionably a positive-use case. As you have heard, drones are saving lives in emergency response. They are being relied upon to reduce the Nation—excuse me, reduce the risk posed to first responders every day in communities across the Nation.

As one first responder noted to me last week, drones help public safety make better decisions on actionable intelligence. They are often used as tools to de-escalate situations, reduce response times, provide overwatch, and identifying missing persons, those that are lost and those that are not looking to be found.

Drones can augment police forces that are short-handed, as mentioned, and monitor fires for hotspots. They can enter buildings in disaster zones where it would be unsafe to send in a human and can deliver life-saving medical supplies to those in need of urgent care.

This is just a snapshot of the many public safety use case. The bottom line, in emergency response drones have quickly become an effective and critical life-saving tool. To be clear, while I believe most of this hearing today is focused on aerial drones, everything I have just detailed applies to the ground and maritime drones, too.

Our member companies in all domains are working with public safety agencies to understand their needs and to develop products that serve the public safety community effectively. While drones in public safety is absolutely a good news story, there are points of friction. The FAA deserves tremendous credit for the progress made in recent years toward enabling more tactical beyond visual line of sight, or BVLOS, waivers and allowances for drones as a first responder programs.

That said, the FAA must move forward on the Part 108 BVLOS rule making to allow for drone operations to safely scale and grow. AUVSI sincerely appreciates the leadership of the U.S. Congress with yesterday's passage of the FAA reauthorization bill, which requires the FAA to release a draft BVLOS rule in the next 4 months and a final rule within 16 months after the release of that draft.

However, we need not wait 20 months to get this right. AUVSI and our members stand ready to work with the FAA to ensure a

timely rule that enhances safety and unlocks the full potential of drones for public safety and other responsible drone users.

Funding also remains a point of friction. Across the Nation the demands on public safety are increasing while budgets are decreasing. Accordingly, Congress should enact the Drones for First Responders Act, which was introduced yesterday, which would establish a new revenue-neutral grant program for first responders to purchase secure drones manufactured in the United States or manufactured in allied nations.

Further, Congress should also move forward on a robust competitiveness effort to support the U.S. drone industrial base with manufacturing tax incentives, loan guarantees, and other programs to level the playing field for U.S. drone companies against subsidized competition largely from the People's Republic of China.

AUVSI believes that we must move away from being reliant on Chinese companies and intellectual property for our drones, just as the United States is doing with other critical technologies. It is not good public policy to rely upon a strategic foreign competitor which is known for using supply chain control as a weapon of war and is beholden to the PRC's military and national security laws for public safety drones. Accordingly, a reasonable, common-sense transition is required to ensure that these critical life-saving tools are available to public safety, while at the same time we move rapidly to diversify supply lines outside of China.

AUVSI is in the middle between those who want to preserve the status quo, which is not working very well, and those that want to bring about an immediate ban on PRC drones, which would be extremely problematic for public safety.

Our objective is simple: To support a strong and competitive industrial base and to build global leadership in this critical industry that is relied upon by so many agencies and enterprise organizations, including public safety.

Grant programs for public safety, like the Drones for First Responders Act and AUVSI's other drone competitiveness priorities, will ensure public safety has the tools they need to do their jobs and demand that is generated from platforms produced outside the PRC, which will kickstart the flywheel for innovators and manufacturers. This is vital to reduce risk and to build the industrial base that is sorely lacking for all users, including public safety.

Thank you for your time. I look forward to discussing these topics as well as others over the course of the hearing.

[The prepared statement of Mr. Robbins follows:]

PREPARED STATEMENT OF MICHAEL ROBBINS

MAY 16, 2024

INTRODUCTION

Thank you Chairmen D'Esposito and Pfluger, Ranking Members Carter and Magaziner, and distinguished Members of the committee. My name is Michael Robbins, and I am the president & CEO of the Association for Uncrewed Vehicle Systems International (AUVSI), the world's largest industry association representing the uncrewed systems, robotics, and autonomy industry. Our members create systems that operate in the air, on the ground, and in the water across the civil, commercial, and defense domains. The use of our industry's technology in public safety is unquestionably a very positive-use case.

Drones are saving lives in emergency response operations. They are being relied on to reduce the risk posed to first responders, every day, in communities across the Nation.

As one first responder noted to me last week, "drones help public safety make better decisions on actionable intelligence." They are often used as tools to de-escalate situations, reduce response times, provide overwatch, and identify missing persons—those that are lost, and those that do not wish to be found. Drones can augment police forces that are short-handed. They can enter buildings and disaster zones where it would be unsafe to send in a human. Drones can monitor fires and wildfires, enabling more effective decision making and resource allocation. Drones can deliver life-saving medical supplies to those in need of urgent care.

In emergency response situations, drones have quickly become a critical, effective, life-saving tool.

And to be clear, while I believe most of this hearing today is focused on aerial drones, everything I just detailed applies to ground and maritime drones too. AUVSI member companies in all operational domains are working with public safety agencies to understand their needs and to develop products that serve the public safety community effectively.

While drones in public safety is absolutely a good news story, there are points of friction.

The Federal Aviation Administration (FAA) deserves tremendous credit for the progress made in recent years toward enabling more Tactical Beyond Visual Line-of-Sight (BVLOS) waivers and allowances of Drones as First Responder (DFR) programs. That said, the FAA must move forward on the Part 108 BVLOS rule making to allow for operations to safely scale and grow.

AUVSI sincerely appreciates the leadership the U.S. Congress has demonstrated with the recent passage of the FAA Reauthorization Bill, which requires the FAA to release a draft BVLOS rule in the next 4 months and a final rule within 16 months after the release of the draft. That mandate is certainly welcome, but with that time line a rule is still 20 months away. Accordingly, while that rule making is under way, the FAA should move faster toward a template exemption for BVLOS operations for public safety and DFR. This would enhance the number of operations Nation-wide, which would increase public safety. Furthermore, the increase in operations would increase the demand for drone systems and components, thereby lowering prices and making the industry more robust and leading to even greater adoptions.

Funding also remains a point of friction. Across the Nation, the demands on public safety are increasing while budgets are decreasing. Accordingly, Congress should enact the Drones for First Responders Act, which was just recently introduced, which would establish a new revenue-neutral grant program for first responders to purchase secure drones manufactured in the United States or manufactured in allied nations. Funds for this grant program will be raised through existing and enhanced tariffs on drones imported from the People's Republic of China (PRC). Further, Congress should also move forward on broader efforts to support the U.S. drone industry with manufacturing tax incentives, loan guarantees, and other programs to level the playing field for U.S. drone companies against subsidized competition, largely from the PRC.

In short, we need a robust, bipartisan drone competitiveness package—akin to the CHIPS Act or the Solar Energy Manufacturing Act—targeted toward the drone and robotics industry to ensure America doesn't lose complete control over this critical technology to the PRC and to level the playing field. Further, a drone competitiveness package would leverage Federal dollars to drive significantly greater private capital investment domestically, and with our allies.

AUVSI believes that we must move away from being reliant on Chinese companies and intellectual property for our drones, as the United States is doing with other critical technologies. A reasonable, common-sense transition is required to ensure that these critical life-saving tools are available to public safety, while at the same time we move rapidly to diversify manufacturing and technology supply lines outside of China.

AUVSI is advocating for a multi-pronged effort to support policies that would encourage investment, innovation, and ultimately scaled production of drone supply chains within the United States and its allied partners to lead us to a more balanced level of self-sustainment. This is important because multiple U.S. Govern-

ment agencies—including the Departments of Defense,[1] Treasury,[2] Commerce,[3] Homeland Security,[4] and the FBI [5]—have made it quite clear that the continued reliance on PRC drones is a risk to national security. Nevertheless, despite a shift away from PRC-drones by some public safety departments, approximately 90 percent of public safety agencies Nation-wide with drone programs are still using at least some Chinese drones as part of their fleets, despite the U.S. Government's warnings about the security threats these drones pose.[6]

AUVSI is firmly in the middle between those that want to preserve the status quo—which isn't working very well—and those that want to bring about an immediate ban on PRC drones—which would be extremely problematic, as we saw in Florida, which was an action we resolutely opposed.

Our objective is simple: To support a strong and competitive industrial base and to build global leadership in this critical industry that is relied on by so many agencies and enterprise organizations, including public safety.

Grant programs for public safety, like the DFR Act would create, will ensure public safety has the tools they need to do their jobs, and demand is generated for platforms produced outside the PRC, which will kickstart the flywheel for innovators and manufacturers. This is vital to reduce risk, and to build the industrial base that is sorely lacking—for all users, including public safety.

DRONES FOR EMERGENCY RESPONSE

In preparation for this hearing, I spoke with many AUVSI member companies that work on behalf of public safety agencies, as well as directly with multiple public safety agencies across the Nation, about how drones are being used for emergency operations.

The top takeaway is that public safety agencies are using drones in innovative ways to enhance their operations, response times, and overall efficiency and safety. Drones have become indispensable tools that offer a variety of enhanced capabilities.

It is truly remarkable how public safety leaders have put drones to work to protect citizens and save lives Nation-wide. In Southern California, the Chula Vista Police Department led the way on the Drones as a First Responder program with the FAA. In Texas, the Department of Public Safety has State-wide authorization to use drones to cover everything from the U.S.-Mexico border to protecting the State Capitol in Austin. In New York City and Virginia, city and State police forces are using drones to monitor campus protests.

Here is a snapshot of what AUVSI has heard about how drones (which in this context can apply in most cases to uncrewed aerial systems (UAS) and ground robotics) are being used in public safety missions Nation-wide:

Law Enforcement Support.—Police departments across the United States utilize drones for surveillance, crowd monitoring, and tactical operations, including Special Weapons and Tactics (SWAT).

Drones provide aerial views during crime scene investigations, monitor active incidents, and assist in tracking suspects, enhancing the capabilities of law enforcement agencies. Police departments increasingly use Drones as First Responders (DFR), providing aerial views for situational awareness (overwatch), suspect tracking, two-way communication, and more. When a drone is on site first, providing real-time high-resolution imagery back to officers responding to an incident, the knowledge the officer has before arriving on scene can be meaningfully enhanced, which will very likely inform how they respond. This is saving lives—blue lives as well as those of the public.

The Chula Vista Police Department (CVPD), under the capable leadership of Chief Roxanne Kennedy and Captain Miriam Foxx, has led the way with demonstrating the incredible utility of DFR programs. CVPD has flown nearly 20,000 DFR missions with zero critical airspace incidents, which has allowed them to avoid dis-

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[1] *https://www.defense.gov/News/Releases/Release/Article/2706082/department-statement-on-dji-systems/*.

[2] *https://home.treasury.gov/news/press-releases/jy0538*.

[3] *https://www.federalregister.gov/documents/2020/12/22/2020-28031/addition-of-entities-to-the-entity-list-revision-of-entry-on-the-entity-list-and-removal-of-entities*.

[4] *https://www.cisa.gov/resources-tools/resources/cybersecurity-guidance-chinese-manufactured-uas*.

[5] Ibid.

[6] Airborne International Response Team, 2024 Public Safety UAS Survey, Initial Analysis for Public Release, 11 May 2024.

patching patrol units over 4,200 times and achieve an average response time of approximately 90 seconds.[7]

Today, other departments around the country are also successfully using DFR programs. Pearland, Texas has a fully BVLOS DFR program using ground-based airspace monitoring. New York City and Oklahoma City are using patrol-led DFR programs, where a responding officer on the ground deploys a drone that is piloted by command staff at headquarters.

Firefighting and Wildfire Monitoring.—Both urban and rural fire departments across the country are using drones for wildfire monitoring and prevention, and even spraying dry powder to extinguish flames. Drones equipped with thermal imaging cameras have become invaluable tools for firefighters in detecting hotspots, monitoring fire spread, and assessing structural damage during firefighting operations. Drones provide critical data to firefighters, enabling more effective decision making and resource allocation, ultimately enhancing safety and saving lives.

Search and Rescue Operations.—Drones equipped with high-resolution cameras and thermal imaging can quickly cover large areas and provide real-time visuals to aid in locating missing persons or individuals in distress, especially in rugged or remote terrain. There are numerous well-documented instances where lives of people missing in the wilderness have been saved due to the effective deployment of a drone. Urban search and surveillance missions benefit from drones' ability to navigate congested or inaccessible areas, providing aerial views for reconnaissance, monitoring suspicious activities, or assisting in anti-terrorism efforts.

Disaster Response and Assessment.—Drones are deployed to assess damage, monitor hazards, survey affected areas, and deliver aid following disasters such as tornadoes, hurricanes, earthquakes, wildfires, and infrastructure collapses. They provide valuable situational awareness to emergency responders and help them coordinate relief efforts.

Traffic Management and Accident Reconstruction.—Drones equipped with high-resolution cameras are employed to monitor traffic flow, identify congestion points, and assist in accident reconstruction. Drones help improve roadway safety and optimize traffic management strategies.

Threat, Hazmat, and Environmental Monitoring.—Drones are being used to assess active-shooter situations, suspicious packages, bomb threats, hostage situations, and other extortionary threats. Drones equipped with specialized sensors can detect hazardous materials, monitor air quality, and assess environmental risks in industrial settings or areas prone to pollution. Drones help safeguard public health and facilitate timely responses to environmental emergencies.

Public Event Management.—Drones are deployed to monitor large public gatherings, such as protests, parades, concerts, or sporting events, to ensure public safety, manage crowds, and respond swiftly to any emergencies or security threats.

Delivery and Rescue Operations.—Drones can deliver life-saving medical supplies, including snakebite antivenom, EPIPENs, prescription medications, and defibrillators to those in need of urgent care but out of reach from traditional modes of delivery. Drones equipped with flotation devices or life-saving equipment have been deployed in water rescue missions to deliver aid, conduct swift water searches, or provide assistance to lifeguards and marine rescue teams.

As part of an initiative funded by DoT's Strengthening Mobility and Revolutionizing Transportation (SMART) Grants Program, Riverside Health System, Virginia Institute for Spaceflight & Autonomy (VISA) at Old Dominion University, Accomack-Northampton Planning District Commission (A–NPDC), an AUVSI member company has put together a drone delivery program for medicine and medical supply delivery to the area, including Tangier Island, which is 17 miles off coast and only accessible by sea or air. Over the last year, the company has delivered hypertension medication to patients in a 2–3-mile radius of Riverside Health System facilities. The SMART Grant Phase 1 is meant to be a demonstration exercise, and as the team progresses toward a Phase 2 application, it will enable consistent operations with the intent to improve patient outcomes and prescription adherence.

Another AUVSI member company recently announced that they have made more than 1 million deliveries, many of which have been health care supplies, including blood, vaccines, and prescriptions.

The continued integration and advancement of drone operations hold great promise for further improving public safety and emergency preparedness efforts, and AUVSI's members are motivated to be part of this mission set working with public

[7] *https://www.chulavistaca.gov/departments/police-department/programs/uas-drone-program.*

safety officials to deliver the tools they need with the capabilities, cost, service, and support they require.

FAA AIR SPACE ACCESS

The FAA has made significant progress in recent years toward enabling more Tactical Beyond Visual Line-of-Sight (BVLOS) waivers and allowances of Drones as First Responder (DFR) programs.[8] The true full potential of drones in public safety, however, awaits the Part 108 BVLOS rule. AUVSI appreciates the support of the U.S. Congress of the BVLOS rule, putting time lines on the FAA for moving forward with that rule-making progress in the FAA Reauthorization Act of 2024.

AUVSI encourages the FAA to work on an accelerated time line to complete the rule, which will safely unlock scalability for public safety missions. Our industry stands ready to work with the FAA to ensure a timely rule that enhances safety; we need not take the full 20 months to get this right.

While the BVLOS rule making is under way, the FAA should move faster toward a template exemption for BVLOS operations for public safety and DFR. This would enhance the number of operations Nation-wide, which would thereby increase public safety. The public safety drone use cases, especially DFR use cases, are often consistent across the country, and public safety operators are already a trusted public entity who are accustomed to producer-based operations and concepts like safety management.

By using the exemption process for public safety, the FAA would then gain operational data to inform additional BVLOS rule making, such as characterization of low-altitude air space in urban environments, the effectiveness of ADS–B as a primary mitigation for airborne collisions, common practices for remote pilot in command (RPIC) and operational training, mean time to failure for specific components of the system, and more.

DRONE CAPABILITIES AND COST

A common misconception is that the only viable drone options for public safety departments to employ are from the People's Republic of China (PRC). This is not true, but is a convenient myth propagated by PRC drone companies and their spokespeople. Dozens of the companies that AUVSI represents across operational domains offer leading technology designed for public safety use cases. Further, U.S. technology innovation is dynamics and rapidly evolving. The platforms offered today will most certainly be different from those offered in the years ahead.

Many public safety experts I spoke with stated that, even if they are using PRC drones today, they would like to move away from using them in the future. Many have already transitioned away from PRC drones, are in the process of doing so, or have a strong desire to do so as soon as practicable.

In the past, there have been at least two major hurdles for public safety agencies acquiring non-PRC drones, causing them instead to default to Chinese drones: capabilities and cost.

For many years, the capability gap between drones designed and manufactured in the PRC and drones designed and manufactured anywhere else in the world, including the United States, was real and it was, to varying degrees, quite wide. That is no longer the case. Due to the investments in innovation and advanced manufacturing, in recent years U.S. and other non-PRC drone companies have largely closed the capability gap in most use cases. With continued investment, this gap will disappear entirely.

AUVSI is confident in U.S. and allied innovation. There are now a wide variety of drones available on the market that provide the same level of capability, or in some cases even greater capability, than PRC drones.

Many of the departments that I spoke to that use U.S. or allied nation drones are pleased with their investments. Those with mixed fleets often noted that support from PRC drone companies was often lacking, whereas service and support was often outstanding from U.S. and allied nation drone companies.

This is not to say, "mission accomplished." Much work remains, as the non-PRC drone industry is still fractional in size compared to the state-supported PRC drone industry. Many U.S. drone companies have successfully narrowed or closed the capability gap with Chinese drone companies, but there remains a significant cost gap. This gap is undoubtedly an area of on-going friction within the public safety community with limited budgets.

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[8] *https://www.faa.gov/sites/faa.gov/files/uas/public_safety_gov/public_safety_toolkit/TBVLOS_Waiver_Final.pdf.*

PRC subsidies have allowed their drone companies to scale production and flood the U.S. market (a practice known as "dumping"). This monopolistic position created barriers to the development of U.S. and other non-PRC supply chains for the drone industry by effectively excluding them from the largest markets. The results have been devastating to the domestic manufacturing industry, resulting in difficulty attracting the capital investments to scale operations, and thereby drive down costs over time.

The cost gap is one of the reasons why AUVSI is a strong supporter of programs to support the U.S. drone industry to level the playing field, as well as grant programs to help public safety transition away from PRC drones. As the next sections will detail, given very real supply chain risks and national security concerns highlighted by the U.S. Government, the transition away from unsecure PRC-drones to non-PRC-manufactured secure drones must occur in a common-sense and reasonable time frame, and that transition should begin immediately.

LEVELING THE PLAYING FIELD FOR U.S. DRONE MANUFACTURING & ENSURING A ROBUST, SECURE SUPPLY CHAIN OF DRONES FOR PUBLIC SAFETY USERS

U.S. drone manufacturers and their component supply chain have struggled to compete against foreign subsidized competition, which hinders the availability of American-made UAS on the market and impedes workforce growth and investment. Accordingly, the U.S. Government must foster a more competitive and fair playing field for U.S.-based drone manufacturers. AUVSI is advocating for specific proposals that would generate demand for U.S.-made drones and supply-side measures that level the playing field for U.S. drone and component manufacturers against subsidized competition and dumping practices.

The U.S. Government should also coordinate activities with allied and partner nations to create a stronger, more secure supply chain. AUVSI believes it is essential to advance security and competitiveness in a thoughtful way that respects existing investments while building toward a more secure, sustainable future that puts U.S. interests first, including security, the economy, and overarching values. In practice, this means any effort to support the growth of U.S. drone manufacturers and the drone supply chain should account for the large investments, both of time and capital, made by U.S. companies.

Congress has enacted several laws, including the American Security Drone Act, that will strengthen our national security by limiting the purchase and use of certain drones manufactured in the People's Republic of China. Future legislation should focus on creating incentives for U.S. companies directly, and indirectly through demand generation, by providing grants, tax incentives, and loan guarantees.

Congress should enact a new program designed to help public safety agencies acquire more drones to enhance public safety and provide first responders with critical tools. Programs should also be designed to transition public safety agencies away from using Chinese drones to secure, non-PRC options.

AUVSI has been working closely with Members of Congress on these types of efforts, including the Drones for First Responders (DFR) Act, which was recently introduced. The legislation would establish a new revenue-neutral grant program for first responders, critical infrastructure providers, and farmers to purchase secure drones manufactured by the United States or our allies. Funds for this grant program will be raised through a new tariff on PRC drones. AUVSI urges Congress to support public safety users of drones in their transition away from PRC technology by passing the DFR Act into law in 2024.

Congress should also enhance existing Federal grant programs for first responders, ensuring that programs to support first responders are adequately funded to enable State and local agencies to transition to secure drone solutions. This should include the Department of Homeland Security's (DHS) Urban Areas Security Initiative (UASI) Program, the Federal Emergency Management Agency's (FEMA's) Homeland Security Grant Program, and grants administered by the U.S. Department of Justice. Critically, these and other Federal grant programs for first responders must allow grant recipients to purchase drones. At present, the Justice Department's Bureau of Justice Assistance flatly prohibits the use of grant funds to purchase UAS, as does FEMA's Assistance to Firefighters Grants (AFG) Program. Enabling these programs to support the purchase of U.S.-made drones would significantly benefit first responders.

Bolstering new drone manufacturing capabilities and the associated workforce will require infrastructure and capital expenditures. Providing tax incentives, loan guarantees, and other mechanisms to spur that spending would accelerate growth and development that would have otherwise been delayed or denied. Manufacturer tax

credits for the production and sale of certain UAS equipment and components produced and sold in the United States would benefit the industry and its competitiveness and would decrease reliance on subsidized, foreign drones.

This has worked in other industries. According to the *Financial Times,* U.S. manufacturing commitments doubled—to more than $200 billion, creating 82,000 jobs—based on the success of tax incentive programs for other industries, including solar panels, semiconductors, electric vehicles, and other clean technologies.[9]

In the solar industry alone, since the passage of the Solar Energy Manufacturing Act (SEMA), more than $100 billion in private-sector investment has been made into 51 new manufacturing facilities in the United States, ultimately representing more than 20,000 additional U.S. jobs to be created and significant capacity added for domestic solar panel production.[10] During a 2023 hearing on the CHIPS and Science Act, it was stated that since the law was enacted, along with $39 billion in Government appropriations and 25 percent investment tax credit to spur domestic production of semiconductors, more than $200 billion in additional private-sector funding has flowed into the industry in the United States.[11] Recently, the U.S. Energy Department made $15.5 billion in new funding available to spur domestic battery manufacturing through cost-shared grants and loans[12] and an additional $20 billion is being invested in crane manufacturing to on-shore production of secure cranes for U.S. ports.[13]

The time has come for the U.S. Government to act to similarly spur investment into the U.S. drone and component marketplace to level the playing field as it has done for other critical technologies. Congress should act on the following:

Manufacturing tax credits.—To promote domestic drone manufacturing capacity, Congress needs to develop a tax incentive program for drone manufacturing. This program can leverage the language and model the frameworks of SEMA, CHIPS, the House's Bioeconomy Research and Development Act of 2021 (America Creating Opportunities for Manufacturing, Pre-Eminence in Technology and Economic Strength (COMPETES) Act of 2022), and the Senate's United States Innovation and Competition Act (USICA) on semiconductors and other technologies.

Loan guarantees.—Congress should develop a program of loan guarantees to U.S. drone and component manufacturers modeled around language included in the Advanced Technology Vehicles Manufacturing Direct Loan Program.

Ensuring critical mineral access.—Access to rare earth-driven components is a challenge to U.S. drone and component manufacturers. Congress should enact legislation along the lines of H.R. 8981, the Securing America's Mineral Supply Chains Act, from the 117th Congress.

AUVSI does not support policies that would immediately ban the use of PRC drones in the United States, as this would have a negative impact on public safety given the number of safety agencies with PRC drones in their fleets.

When the State of Florida instituted an immediate ban, we witnessed the very real challenge this imposed on public safety, removing a critical, life-saving tool from their operations overnight. Ultimately, Florida authorized a $25 million program for public safety agencies acquire fleets of non-PRC, secure drones;[14] a move AUVSI applauds. Going forward, Florida should serve as an example to other entities seeking to transition away from PRC drones; immediate bans should be avoided, transition times should allow for a reasonable period of changeover, and funding should be made available to public safety agencies for the transition to new, secure drone fleets.

To ensure a robust, secure supply chain, we need a robust, bipartisan competitiveness package—like the CHIPS Act—targeted toward the drone and robotics industry to ensure America doesn't lose complete control over this critical technology to the PRC, and which leverages Federal dollars to drive private capital investment domestically and with our allies.

The next section of our testimony details the "why" support for the transition away from PRC drones is so critical.

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[9] *https://www.ft.com/content/b1079606-5543-4fc5-acae-2c6c84b3a49f*.

[10] *https://www.seia.org/research-resources/impact-inflation-reduction-act*.

[11] Senate Committee on Commerce, Science, and Transportation CHIPS and Science Implementation and Oversight, October 4, 2023: *https://www.commerce.senate.gov/2023/10/chips-and-science-implementation-and-oversight*.

[12] *https://www.energy.gov/articles/biden-harris-administration-announces-155-billion-support-strong-and-just-transition*.

[13] *https://www.whitehouse.gov/briefing-room/statements-releases/2024/02/21/fact-sheet-biden-harris-administration-announces-initiative-to-bolster-cybersecurity-of-u-s-ports/*.

[14] *https://www.fdle.state.fl.us/FDLE-Grants/Open-Funding-Opportunities/Funding-Opportunities/Drone/FY23-24-DRONE*.

Public safety agencies, as well as other users of drones, cannot be reliant on the PRC, a strategic competitor and an increasingly hostile foreign adversary, for critical technology such as drones and ground robotics. It is not logical to allow such power over public safety technology in the hands of the Chinese Communist Party (CCP). Should the United States enter a conflict with the PRC, a scenario our member companies are actively working to prevent through the success of strategic deterrence, access to PRC technology would end immediately.

Lawfare observes, "A foreign adversary dominating the world market could deny the United States effective drone support in warfighting or potentially disable U.S. drones in a conflict."[15] The *Lawfare* article proved prescient, confirming the fear that Chinese companies would in fact use software updates to disable drones to meet CCP policy goals—something that could also happen to every Chinese drone in the United States. Just 6 months ago, in December 2023, a firmware update from Autel Robitcs, a PRC drone company, disabled all drones in "conflict zones" as defined by the company.[16] This action, however, presumably came via direct influence from the CPP and the People's Liberation Army (PLA), as the drone deactivating extended into international conflicts in Ukraine and Israel, but also, aligning with CCP and PLA policy, into the entire island of Taiwan and the disputed the Arunachal Pradesh region on the border of India and the PRC.[17] This is a disturbing example of CCP and PLA policy extending directly into corporate supply chain interdiction as a weapon of war. U.S. users of drones, including public safety users, are vulnerable to these same software updates, that could come at any time and without warning. The United States must have a plan to transition away from PRC drones forthwith, as AUVSI has set forth.

Furthermore, the U.S. Government has raised multiple security concerns associated with Chinese drone companies, which are obligated to comply with China's national security laws.[18]

In December 2023, in recognition of the threat PRC drones pose to the United States, the American Security Drone Act was signed into law as part of the 2024 National Defense Authorization Act, prohibiting the U.S. Government from purchasing and operating PRC drones, as well as drones from other "covered entities" including Iran, Russia, and North Korea.[19]

In January 2024, the Cybersecurity and Infrastructure Security Agency (CISA), along with the Federal Bureau of Investigation (FBI), released a warning memo noting that, "The use of Chinese-manufactured UAS in critical infrastructure operations risks exposing sensitive information to PRC authorities, jeopardizing U.S. national security, economic security, and public health and safety."[20] Assistant Director of the FBI's Cyber Division, Bryan Vorndran stated, "the wide-spread deployment of Chinese-manufactured UAS in our Nation's key sectors is a national security concern, and it carries the risk of unauthorized access to systems and data."[21]

In October 2022, the DoD identified Shenzhen-based Da Jiang Innovations, or DJI as it is commonly known, as a "Chinese military company" operating in the United States under Section 1260H of the fiscal year 2021 NDAA.[22] The Section 1260H list catalogs companies that the DoD believes contribute to the modernization goals of the People's Liberation Army, ensuring its access to advanced technologies as part of China's military-civil fusion strategy. The U.S. Department of Commerce placed DJI on the Entity List,[23] and the U.S. Department of the Treasury placed DJI on the Office of Foreign Assets Control's (OFAC) list of Chinese tech firms that are

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[15] *https://www.lawfareblog.com/us-reliance-chinese-drones-sector-next-chips-act*.

[16] *https://dronexl.co/2023/12/24/autel-robotics-drone-no-fly zones-conflict/*.

[17] Ibid.

[18] *https://www.wsj.com/articles/china-adopts-sweeping-national-security-law-1435757589*/Article 7 of National Security Law of China states "All organizations and citizens shall support, assist, and cooperate with national intelligence efforts in accordance with law, and shall protect national intelligence work secrets they are aware of."

[19] *https://www.Congress.gov/bill/118th-congress/house-bill/2670/text?s=2&r=2&q=%7B%22search%22%3A%22national+defense+authorization+act+of+2024%22%7D*.

[20] *https://www.cisa.gov/sites/default/files/2024-01/Cybersecurity%20Guidance%20Chinese-Manufactured%20UAS__final508__16JAN2024.pdf*.

[21] *https://www.cisa.gov/news-events/news/release-cybersecurity-guidance-chinese-manufactured-uas-critical-infrastructure-owners-and-operators*.

[22] *https://www.defense.gov/News/Releases/Release/Article/3180636/dod-releases-list-of-peoples-republic-of-china-prc-military-companies-in-accord/*.

[23] *https://www.bis.doc.gov/index.php/documents/regulations-docs/2326-supplement-no-4-to-part-744-entity-list-4/file*.

part of the Chinese military-industrial complex.[24] These lists restrict U.S. investments in DJI based on allegations of support of human rights abuses against the Uyghur people.

It is not good public policy to rely upon the goodwill of a strategic foreign competitor, which is known for using supply chain control as a weapon of war and is beholden to PRC's military and national security laws, for public safety drones.[25] AUVSI challenges Congress to act immediately on the policy areas detailed earlier in this testimony to ensure public safety departments continue to have cost-effective, capable, life-saving drone technology, while also safeguarding the United States from the very real threat of reliance on PRC drones.

DRONE SECURITY

The Defense Innovation Unit's (DIU) Blue UAS program is an effort to curate, maintain, and improve a robust roster of policy-approved commercial drone technology that is compliant with the fiscal year 2020 and fiscal year 2023 National Defense Authorization Acts (NDAA).[26] Blue UAS is intended to meet the needs of Department of Defense (DOD) users and addresses cybersecurity and supply chain requirements. DIU does not assess drones that will not be used to accomplish DOD objectives. Congress has not mandated or provided funding to DIU to take on the responsibility of assessing all commercial-sector drones and components that could serve the needs of all Government agencies or other users, including public safety.

The limits of the Blue UAS program for non-DOD users left a void in cybersecurity and supply chain validation for much of the industry that was not part of the Blue UAS program. This was a source of significant friction; accordingly, AUVSI moved toward the friction to solve this problem. In close collaboration with DIU, AUVSI provides Green UAS as a solution to fill the gaps between the Blue UAS Cleared List and drones that meet non-DOD needs.[27] AUVSI's goal is to assess and certify additional platforms and components beyond those on the Blue UAS list as secure, widening the offering of secure, vetted drones available for procurement by non-DOD agencies, including public safety. Green UAS was designed to develop a standing application for NDAA-compliant technology and validate them preemptively. Green UAS builds upon DIU's Blue UAS program and brings it into the commercial realm, while still offering any company that obtains Green UAS certification the opportunity to undergo Blue UAS certification if they wish to sell to DOD. Last month, AUVSI and DIU strengthened our partnership with a new data-sharing Memorandum of Understanding.[28]

For public safety agencies seeking drones meeting validated cybersecurity and supply chain requirements, in addition to those cleared on the Blue List, AUVSI offers the Green UAS program. This initiative expands certification beyond the Blue UAS list, providing more options that meet public safety operational needs while continuing to comply with the appropriate cybersecurity and supply chain compliance standards. The Green UAS program mirrors Blue requirements for the certification process and also expands upon it, including a Remote Operations and Connectivity assessment (5G, WiFi, Bluetooth, Remote ID, etc.) that has become increasingly important across use cases, especially for first responders and public safety mission requirements.[29]

AUVSI supports the Drone Evaluation to Eliminate Cyber Threats Act of 2024 (DETECT Act), which directs the National Institute of Standards and Technology (NIST) to develop cybersecurity guidelines for the Federal Government's use of drones, which could also be extrapolated to public safety and other users.[30] Notably, the legislation specifically notes AUVSI's Green UAS as a best practice for NIST to consider.

PRC FLOODING THE U.S. MARKET WITH SUBSIDIZED DRONES AND "NO LIMITS" GOVERNMENT SUPPORT

In 2015, the PRC launched "Made in China 2025," a 10-year whole-of-society effort to invest in key industries, primarily in the technology area, to ensure China's

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[24] *https://sanctionssearch.ofac.treas.gov*.
[25] *https://warontherocks.com/2023/05/the-art-of-supply-chain-interdiction-to-win-without-fighting/*.
[26] *https://www.diu.mil/blue-uas*.
[27] *https://www.diu.mil/latest/auvsi-launches-green-uas-cybersecurity-certification-program-for-commercial*.
[28] *https://www.c4isrnet.com/unmanned/2024/04/26/defense-innovation-unit-moves-to-ease-commercial-drone-certifications/*.
[29] *https://www.auvsi.org/green-uas-framework*.
[30] *https://www.congress.gov/bill/118th-congress/senate-bill/3758/text*.

world leadership and market dominance.[31] In a distinct role reversal with high-tech capitalist economies in the West, China has removed red tape to development while enabling sophisticated market mechanisms to spur rapid growth. While much of the discussion on PRC government involvement in the industry has centered around direct subsidization, the scope of their support is far greater. No Chinese company or investment firm is free of Chinese Communist Party (CCP) involvement.

The U.S. Department of Commerce (DOC) labels "dumping" as an illegal trade practice.[32] In 2019, U.S. Under Secretary for Defense Ellen Lord highlighted this challenge with respect to drones, noting, "We don't have much of a small UAS industrial base because DJI dumped so many low-price quadcopters on the market, and we then became dependent on them."[33]

The flood of inexpensive drones into the United States has resulted in PRC drones accounting for more than 90 percent of the first responder market, according to 2024 data from the Airborne International Response Team (AIRT).[34] As a former U.S. Deputy Assistant Secretary of Defense put it, "China's domination of drone manufacturing has been deliberately cultivated through aggressive government subsidies, direct investment, and strategic regulations to develop a domestic industry and gain a technological edge."[35]

DJI has been a major beneficiary of the "Made in China 2025" policy and the resulting subsidies.[36] In a February 2022 report, *The Washington Post* found that DJI's investors included at least 4 Chinese investment firms with close ties to the government of the People's Republic of China (PRC).[37] The company's investors include "China Chengtong Holdings Group, which is directly administered by Beijing's state-owned Assets Supervision and Administration Commission, a ministerial-level organization tasked by China's State Council to manage the country's state-owned enterprises."[38]According to the *Post* report,

"Other funds that list DJI as an investment include the Shanghai Venture Capital Guidance Fund, which is administered under the Shanghai Municipal Government. Guidance funds in China mix state assets with private funds to advance Beijing's industrial development goals in emerging industries. A Chinese-language S&P global report released in March 2021 says that state-run Guangdong Hengjian Investment Holding invested in DJI alongside SenseTime, which was also added to a U.S. sanctions list in December 2021 by the Biden administration over alleged human rights abuses in Xinjiang.[39] SDIC Unity Capital, a fund administered by the State Development & Investment Corporation, a state-owned investment holding company approved by China's State Council, also lists DJI as an investment on its website."[40]

The PRC's support for its drone industry, to the detriment of U.S. manufacturing and global competition, was recently reinforced by a Shenzhen visit from high-level government officials who noted "no-limits support" to DJI and the Shenzhen-based drone and component industry.[41] This unequivocal support for the PRC drone industry increasingly extends to another Shenzhen-based drone company, Autel Robotics, which has been growing in market share in recent years.[42] Autel has received similar preferential tax rates and government subsidies as DJI, and as a result is similarly flooding the U.S. market with drones, crowding out U.S. and non-PRC manufacturers who must compete on unequal footing with the government-backed PRC

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[31] *https://www.csis.org/analysis/made-china-2025*.

[32] *https://www.trade.gov/us-antidumping-and-countervailing-duties:* Unfair foreign pricing and government subsidies distort the free flow of goods and adversely affect American business in the global marketplace. Enforcement and Compliance, within the International Trade Administration of the Department of Commerce, enforces laws and agreements to protect U.S. businesses from unfair competition within the United States, resulting from unfair pricing by foreign companies and unfair subsidies to foreign companies by their governments.

[33] *https://foreignpolicy.com/2019/08/27/pentagon-seeks-to-counter-chinas-drone-edge/*.

[34] Airborne International Response Team, 2024 Public Safety UAS Survey, Initial Analysis for Public Release, 11 May 2024.

[35] *https://www.thedefensepost.com/2023/10/13/drone-war-chinese-equipment/*.

[36] *https://www.csis.org/analysis/made-china-2025*.

[37] *https://www.washingtonpost.com/national-security/2022/02/01/china-funding-drones-dji-us-regulators/*.

[38] Ibid.

[39] *https://www.washingtonpost.com/technology/2021/12/10/us-investment-ban-sensetime/*.

[40] *https://www.washingtonpost.com/national-security/2022/02/01/china-funding-drones-dji-us-regulators/*.

[41] *https://www.scmp.com/economy/china-economy/article/3238118/shenzhen-trip-dji-visit-chinas-vice-premier-offers-no-limits-support-amid-us-tech-curbs*.

[42] *https://www.reuters.com/markets/asia/dji-is-more-elusive-us-target-than-huawei-2021-12-17/*.

companies.[43] The founder of Autel, Li Hongjing, described the PRC's support for the company as "indispensable oxygen" to the company.[44]

The results of PRC support for the domestic drone industry, and the subsequent PRC drone dumping, have been devastating to the U.S. drone manufacturing industry. Non-PRC companies in the United States, and across the global, struggle to attract capital to scale operations, and thereby drive down costs. This is an area of friction that Congress can address, and AUVSI challenges Congress to take immediate action on the policy solutions communicated in this testimony to level the playing field for U.S. drone manufacturers, ensuring secure and robust drone supply chains are available to public safety and other enterprise users.

CONCLUSION

The use of drones in public safety operations is a tremendous boost to the effectiveness, efficiency, and ultimately safety of various missions. Drones are saving lives in public safety across multiple use cases. Points of friction remain—including air space access, the need for a BVLOS rule for expanded operations, funding for secure drone operations, and transitioning away from unsecure PRC drone technology—but Congress has the playbook, as detailed in this testimony, for action. Thank you again. I am looking forward to answering your questions.

Chairman D'ESPOSITO. Thank you, Mr. Robbins.

Members will be recognized by order of seniority for their 5 minutes of questioning. An additional round of questioning may be called after all Members have been recognized.

I now recognize myself for 5 minutes of questioning. New York City Mayor Eric Adams has stated that deploying drones in the utilization of public safety costs only 17 cents per launch, whereas a helicopter would cost $2,200 per flight. So I think we would all clearly understand that utilizing drones are a step in the right direction in places like the city of New York where the mayor is working to crunch numbers and save money.

But while we begin to utilize drones, we do have the concerns, as many of my colleagues have mentioned. We have seen guidance released by both CISA and the FBI where there are risks posed to U.S. national security by Chinese-manufactured drones.

Deputy Commissioner Daughtry, what measures have the NYPD taken to ensure that when utilizing drones that information is kept safe?

Mr. DAUGHTRY. Thank you, Mr. Chair. Thank you for the question. So the measures that we have taken we put in place is, No. 1, this department under this administration we are looking to move away from purchasing DJI drones. We share, this agency as well as the police commissioner, shares the same sentiments as this committee that there is some security concerns with the DJI drones, and we are looking to phase them out of our fleet.

As far as your question, the safety measures that we have taken place, when a drone is recording it goes from up to down so it goes from the recording goes back to the SD card which then goes into our Genetec system. It is like a firewall basically so that nobody can go in there and tamper with the video data.

But to answer your question, we are looking to phase out DJI drones. We are not looking to purchase any more.

Chairman D'ESPOSITO. So in the process of phasing out the DJI drones you are confident, which I know the answer is yes, and we

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[43] *https://www.defensenews.com/opinion/2023/09/15/dji-isnt-the-only-chinese-drone-threat-to-us-security-meet-autel/*.

[44] *https://selectcommitteeontheccp.house.gov/sites/evo-subsites/selectcommitteeontheccp.house.gov/files/evo-media-document/11.29.23-letter-to-austin-yellen-and-raimondo-autel-drones-final-.pdf*.

are confident that none of the information collected by drone usage is compromised in the New York City Police Department?

Mr. DAUGHTRY. That is, that is 100 percent correct. No, it is not.

Chairman D'ESPOSITO. Right. Your testimony also mentions that the NYPD plans to roll out DFR programs in 5 police precincts based on crime analysis. Can you just briefly explain what a game-changer that will be and really the idea that, you know, New York and others are setting a precedent on how we will continue to fight crime?

Mr. DAUGHTRY. Yes. So we are actually in the testing phase. I have a big vision for the drones in our department, but the DFR program we have what is called in our department ShotSpotter. I believe a lot of other municipalities in the country uses it, also. So when the ShotSpotter is activated it will send the coordinates, the longitude and the latitude, to the actual drone in a box, the drone station, which I just in my testimony—where it is a couple of them in the Bronx, Brooklyn, and Central Park.

When the drone receives that alert it will then send an alert to the pilot which would be sitting in our joint operations center. He will do his preflight inspection and then hit send. The drone will then autonomously fly to the ShotSpotter location.

Officers will have the ability to go into their department-issued smartphone, pull up the job, look at the job as in real time, and click the link to see what the drone is seeing before they even get there.

Chairman D'ESPOSITO. Amazing.

Chief Chell, I know that you mentioned some of it in your opening testimony, but I would like to get into it a little bit deeper. What are the limitations that you are seeing in the usage of drones in law enforcement and what could Members of Congress—what legislation can we provide that will require you to have less restrictions?

Mr. CHELL. Well, we are looking, first and foremost, for drone mitigation, to have the ability to take a drone down electronically. So again, things I am going to talk about here are real-life examples.

So the funeral of Detective Diller on Long Island, there were thousands and thousands of cops, elected officials all lined up down the street and we made an announcement to remove any drones from the area. But there was one drone that we couldn't get down.

You know, from a safety point of view we don't know who has that drone, what they are doing, what they intend to do. In this case, nothing happened, but we have to deal at a level where when you have that many people in the area, especially police officers, community elected officials, we have to have the ability to take that drone down safely and mitigate any harm to us.

Chairman D'ESPOSITO. Great. Yes, and I know that we have had conversations prior with Commissioner Weiner and that was some of the language that we inserted into the FAA reauthorization to try to help with you guys being able, and law enforcement in general, having the ability to take down drones. My time has expired.

I now recognize the gentleman from California, Mr. Correa.

Mr. CORREA. Thank you very much, Mr. Chairman.

Really enjoyed presentation, gentlemen.

Emergency responders tell us they need access to drones that are affordable, easy to operate, customizable, and easy to replace. These men and women who are out there putting their lives on the line for us every day, whether they are police officers, firefighters, EMTs, have told us that they are aware of some of the security risks of Chinese drones.

Are there any security risks? That would be my first question. And that usually they take preventative measures to make sure if there are security issues they are minimized, but, at the end of the day, these foreign-made drones seem to hit the sweet spot: cost, performance, being able to replace them.

Mr. Daughtry, any thoughts? I am going to ask each one of you the same question.

Mr. DAUGHTRY. I agree with you, we are working with American-based companies, Skydio and Nightingale, I can go on and on.

I have reached out to the CEOs of this company personally, have been on calls with them personally tell them that the DJI drone performs better than your drones; however you have to, get to that standard. I want our American-based companies, Skydio and Nightingales to have the ability—the same abilities that the DJI drones have, payloads, parachutes——

Mr. CORREA. But right now we are looking at a situation that those foreign-made drones may have capabilities that locals can't offer on that cost-by-cost basis. We are talking about a weapon, a tool that our front-liners need to protect their lives, save innocent lives out there. That is essentially what we are talking about. Is that correct?

Mr. DAUGHTRY. Yes, sir.

Mr. CORREA. Mr. Chell, any thoughts?

Mr. CHELL. Absolutely. Like I said in my opening statement, what drones have done for us as an agency in protecting the lives and property of New York City has been a game-changer for us. I mean, I can go down the list. I mean, just what was listed with the hot topic of protests.

The ability for me as an incident command to see what I am up against in terms of viable people, crimes being committed. When we have to take back a campus, I will go right to Columbia University. The fog was low that night. We didn't have any aviation support. We had to utilize our drones to keep us safe in order to take back the building, the rooftops, the rooftop surveillance so we can take any ammo which was coming at us, just really provided us with the safety to actively take back that campus with minimal to zero incidents whatsoever.

Mr. CORREA. That is important. Thank you very much.

Mr. Fetterman, back home I look at my city of Santa Anna and looking at a multimillion-dollar deficit. The city of Orange same thing.

So I am trying to figure out here foreign-made drones, cost-effectiveness, can we figure out a way to minimize the security risks and continue to use this technology to save lives and protect front-liners?

Chief FETTERMAN. Ranking Member Correa, thank you for the opportunity to address this. While certainly the IAFC and Orange County Fire are working diligently with American-made manufac-

turers to seek American-made drones and certainly the fire service as a whole would prefer to buy American-made, we also are dealing with the reality on the ground.

The nuances of the importance of life safety and the tool that drones and information that they provide to us are critical. So we actively take steps when we are utilizing our current drones to ensure that we are not flying over critical infrastructure or in scenarios that may compromise security.

We take great lengths to ensure we don't identify any personally identifiable information.

Mr. CORREA. Would it be safe to say, Mr. Fetterman, that you are buying the best product at the best price to protect lives and protect your men and women in uniform?

Chief FETTERMAN. Yes, absolutely, sir. We will always seek to buy the best products to keep the most available technology.

Mr. CORREA. Thank you very much. I am running out of time.

Mr. Sidhu, I am going to ask you not as a CEO but as a first responder, police officer, and emergency tech, this stuff is emerging now. You know, this stuff is exploding, but right now, given what is out there, you work with Chula Vista, you work with Redondo Beach, what can we do to minimize the security risk? Do we continue to buy these foreign-made products until we reach that level that American products are as good as these foreign ones?

Mr. SIDHU. Ranking Member Correa, thank you for the question. I would start by saying, you know, I am a first responder first. I am an executive in the American drone industry. As much as I want to say it I have to, you know, be honest and say that as an industry we have not yet caught up to the capabilities of some of the drones in question.

As a first responder I think it is the most important thing to make sure that our first responders have the best technology to have at any given moment, but it is also our responsibility as an industry to catch up and build products that can provide that level of security that we discussed without the need for foreign adversaries and ensure that first responders choose those products of the products available today.

Mr. CORREA. I would ask Mr. Robbins the same question except that I am out of time, sir.

So, Mr. Chairman, thank you very much.

Chairman D'ESPOSITO. The gentleman's time has expired.

I now recognize the gentleman from Texas, Mr. Pfluger.

Mr. PFLUGER. Thank you, Mr. Chairman, and I will kind-of pick up on that line of questioning.

I think, you know, we know the benefits of what drones can do when it comes to the operations and the intelligence and situational awareness, and so I will start with you, Mr. Robbins.

Looking back at HSI's August 2017's warning, maybe kind-of talk us through what that warning meant and what it means for these DJI and other Shenzhen or PRC-based companies to utilize those drones? What is the risk right now that we face with those drones?

Mr. ROBBINS. Sure. Thank you very much for that question, Mr. Chairman. I think the risk as we lay out in our testimonies is twofold. First, as it relates to public safety, while the public safety offi-

cers here and many that I spoke to over the last couple of weeks have talked to me about, they are obviously more concerned about their tactical day-to-day job and saving the lives of the public and blue lives and firefighters and other public safety, and of course that makes sense.

The challenge comes when they are almost completely reliant upon a foreign adversary for this technology. As we have seen, as I noted in my testimony and you did as well, sir, this foreign adversary often uses supply chain control as a weapon of war.

This is not a theoretical concern. This is a very real concern. In December 2023, Autel Robotics, which you mentioned in your opening statement, set forward a software update to their drones rendering them inoperable in what they deemed as conflict zones. So that included Gaza. That included Ukraine. It also included the entire nation of Taiwan, and it included the border region between India and China.

Those are not current conflict zones. I am in the Navy Reserve, I think I would know. So that clearly aligned with PLA policy and CCP policy and was not something that Autel Robotics would have done on its own.

Mr. PFLUGER. Yes.

Mr. ROBBINS. So we have that risk where if we are going to be reliant upon a foreign nation for these drones we are putting ourselves at risk.

In terms of data security, there is absolutely a risk there. That is not AUVSI saying that. That is the FBI. That is CISA. That is the Department of Treasury. That is Department of Commerce and Department of Defense. That is actually the U.S. Congress because you have banned the use of PRC drones by the Department of Defense. Recently in December of last year you banned them for all of the Federal Government.

Mr. PFLUGER. Let me pick up there with Mr. Sidhu. Talk to us about the steps that have been taken to mitigate those data risk vulnerabilities? Then I have got another couple of questions for the other side of the table after that.

Mr. SIDHU. Well, first of all, I would say that, I mean, I rely on the experts within the Federal Government to make those determinations and I do understand the risks of, as my colleague mentioned, of these foreign adversaries potentially controlling hardware that our public safety personnel use today.

When you talk about data security, there is data that lives and is exported from the hardware itself, the drones, and that is something that the drones are relying on and that is security that is posed by the drones.

On the software side, companies like Aerodome are beholden to ensuring the data that reaches our software is, you know, is secure and is not able to be or is not vulnerable, and we take multiple steps to ensure that is the case.

Mr. PFLUGER. Commissioner, I appreciate you talking to us about the NYPD and, you know, getting away from the purchasing of DJI drones and I think that is something that is very important. So I would like the two of you, both commissioner and chief, to just talk to us about what is the utility today of the drones and explain

some of the benefits of why we should be using these specifically on the police force?

Mr. DAUGHTRY. Do you want to go first? Mr. Chell let's bring the children in, right? I mean, I have got a bunch of topics. Let's bring the children in, like, what we can do, what we have done.

Mr. CHELL. In York City we have seen a phenomenon of young teenagers driving and jumping on top of moving trains on the outside on TikTok and to get millions of views. Unfortunately, they have lost their lives.

So in one program we have a drone that follows the 7 line that goes to old—if you are a Met fan you go and it follows the train back and forth.

Mr. PFLUGER. I am sorry, I am not.

Mr. CHELL. We were able to see kids jump on the train. We have cops down below running parallel to them and we pull them off the train and hopefully save their lives.

When you look at the beaches, where you just look at the beach, we had a shark attack last year in New York City. It was our first one in decades. For the next couple of days we were be able to see sharks in the water and close the beach to help prevent people getting bit by a shark, obviously.

Then just in terms of purposes of what we can we do on a beach, AEDs, payloads that could drop a flotation device if a young child gets caught in riptides. We have that in New York City also where after the lifeguards go home, the kids go in the water, they don't understand how to deal with riptides.

So the speed, the accuracy, the cost, and the bottom line trying to save lives in that situation is just—we can just keep going with it. It is a game-changer to protect the children of New York City.

Mr. PFLUGER. My time has expired. If you don't mind maybe reply in writing?

Then also for the panel what I would like to understand is when you are—you are using these for your benefits but they are also flying around and they pose a risk if you don't know who is flying them or what they are carrying. You know, the payloads can differ.

So also for the record would like to hear your thoughts on the attribution and also the anti-drone defense that we have at major sporting events like you mentioned at ball games and et cetera.

My time has expired. I yield back.

Chairman D'ESPOSITO. Yes. The gentleman's time has expired.

I now recognize the newest Member of the subcommittee and committee from New York, Mr. Kennedy.

Mr. KENNEDY. Thank you, Chairman D'Esposito, Ranking Member Carter and Correa, for holding this hearing. Thank you to each of you for your testimony, for your leadership, and for keeping our streets and communities across the Nation safe.

It is clear from your testimony and my conversations with first responders in my district in western New York that the technology improvement of drones can make them an effective tool for emergency responses. You are speaking today of keeping the law enforcement and other first responders safe on the job in a moment's notice in an emergency.

I have a few questions. I want to start with you, Mr. Sidhu. Out of western New York we deal with inclement weather quite often

and just a couple of years ago we had a horrific storm that killed dozens of people. It was a blizzard across this Nation. We were hit particularly hard in Buffalo.

When it comes to the use of drones and the effectiveness in evaluating and assessing damage following a severe winter weather event, can you speak to that and their use and effectiveness in that regard?

Mr. SIDHU. Yes. So I believe that drones when used to find, for example, patients in need of care, missing people, people in need of rescue after a natural disaster like you described, it is a fantastic use case and it has been used for that purpose routinely.

Many of these drones are equipped with thermal cameras that can see something that the human eye might not be able to see. If someone is wearing a white T-shirt and they are laying in the snow it might be difficult, for example, to see them with the human eye even through using a helicopter or just walking around and finding them where the drones can actually be utilized for that purpose.

I think in the variety of natural disasters that have occurred in the United States our response would have been improved had the technology been available the time.

Mr. KENNEDY. Thank you.

I want to switch over to our friends from the NYPD. Again, thank you for being here, thank you for your testimony and your leadership. I also want to recognize Mayor Adams for his leadership and commitment to public safety. I know his team has joined us here today.

Currently, the Department of Homeland Security lacks a Department-wide policy regarding the law enforcement use of drones, but has developed best practices to not only utilize them but to protect privacy, civil rights, and civil liberties.

Deputy Commissioner, what can be done to ensure that you and your brothers and sisters in law enforcement and emergency management departments are able to safely and securely utilize these drones?

Mr. DAUGHTRY. Yes. Well, thank you for the question. We have our policies in place where when our drones are up our legal team is actually monitoring them to making sure that we are not violating anybody's rights. We are not putting them in people's faces. You know this is—we have a robust policy plan in regards to the drones in this department.

We just can't arbitrarily fly drones throughout the city without permission from the chief of department's office. So there are a ton of policies in place in regards to that.

Mr. KENNEDY. Is there a need for more comprehensive training and supports from the Federal Government to your agency?

Mr. DAUGHTRY. You have to have your FAA 107, your 107 to fly a drone so uniformed members go get that on themselves and then they go through a 2-week robust training plan with our technical assistance, our drone experts in the department.

Mr. KENNEDY. Where would investments from the Federal Government be most impactful?

Mr. DAUGHTRY. Definitely in technology, more U.S.-based drones would help the guys. If we can get the ability to—we only have de-

tection capabilities but if we can get the ability from the Federal Government to actually intercept and take down a drone, a hostile drone and have it returned to home, that would be extremely beneficial to this department.

Mr. KENNEDY. So you need Federal clearance to do that?

Mr. DAUGHTRY. Yes.

Mr. KENNEDY. You need investment into the agency?

Mr. DAUGHTRY. Yes, sir.

Mr. KENNEDY. OK. Back to you, Mr. Sidhu. Again, you know, we are seeing a proliferation of drones over both the Southern Border and the Northern Border. There was a report even today of drone technology used over the Northern Border in my community in western New York to smuggle narcotics and other illicit drugs.

What advice do you have to our Government to help to mitigate this and give the resources necessary to our front-liners?

Mr. SIDHU. I completely agree with my colleagues in New York here that, No. 1, we need to invest more heavily in the technology that is able to detect those drones and then able to mitigate those drone threats in real time.

I don't believe that the reality of the situation is—I believe the reality is that in a local environment like at a city where a rogue drone is going to be utilized in the next 2 minutes to attack something, that the Federal Government will have the resources to zap that drone out of the air.

So we need to be able to empower our public safety agencies to have not just the resources to be able to defend themselves from drone attacks, but the clearance to be able to do so as well.

Mr. KENNEDY. Thank you. I yield my time.

Chairman D'ESPOSITO. The gentleman's time has expired.

I now recognize from the State of Alabama, Mr. Strong.

Mr. STRONG. Thank you, Chairman D'Esposito.

I appreciate each of you for being here today. As you have highlighted, drones are a powerful force multiplier for law enforcement and have drastically improved both officers and community safety.

In my district one police department's UAS team flew nearly 3,000 flight missions last year with 37 certified pilots. Similar to stories we have heard today UAS have enabled the department to locate and apprehend violent suspects, quickly respond to traffic accidents, missing persons, natural disasters, civil unrest, and gather valuable intelligence, size up the scenes to determine resources that are needed, and, most importantly, protect the officers and the public.

Mr. Daughtry, Mr. Sidhu, as both of you worked within your respective departments to establish drone and first responder programs, what were the most significant challenges that each of you faced?

Mr. SIDHU. I believe that many of the challenges come down to first learning how to utilize these drones. I have experience as a pilot so it is easier for me to understand what drone systems use and what is important. I believe challenges exist when it comes to incorporating these drones in the existence of your policies and then choosing how to—you know, which drone stations to use and how to be able to monitor air space.

There is a variety of technological gaps that are now being filled with companies, but you have to become an expert very quickly as a police commander to be able to install a program like that.

Then you have to get buy-in from the community and I think that is extremely important, to go to the community and say this is what we are going to use these drones for and you can hold us accountable to ensure that we are using them for the right purposes.

Mr. STRONG. Thank you.

Mr. DAUGHTRY. Yes, and finding drones that can do all of the things that we need. That is the one. The second challenge that I have personally seen speaking to our drone teams are when there are, I guess, mass gatherings when everybody is on their cellphone, sometimes there is frequency interference, cellular interference, where the drone will lose connectivity to the satellite and they can't fly or they can't push forward a little more until they reconnect with the satellite. But that is due to the interference from the cell towers and cellphones in the area.

Mr. STRONG. Thank you. What is the one thing Congress can do better to support departments seeking to establish such programs and continuity of equipment?

Mr. DAUGHTRY. Like what we said before, drone mitigation. If we could have the ability to take down a hostile drone or a drone that has not been identified, that didn't follow our rules and regulations that we have set forth where they apply for a permit in the city of New York and they just go out there and arbitrarily put their drone up. To be able to take that drone down and not have to wait for the FAA or wait for—let's use a perfect example.

July 4th. July 4th, the 4th of July, Independence Day in New York City, the fireworks display is on the river. A lot of times we see outside people just putting drones up because they want to get a nice picture of the fireworks show.

The FBI comes in purposely for that because they know that there is going to be hostile drones in there and they take them down. Instead of having somebody come from Washington all the time, to be able to have the ability to do it ourselves I think would be extremely beneficial to us and I think any agency in the United States of America.

Mr. STRONG. Mr. Daughtry, man, I like you. I am going to tell you, we have got to take you to the Southern Border with us. If you know right now, border security for every 1 drone they are flying the Mexican cartel is flying 17. I like what you are talking about.

You shouldn't have to have Federal authorization to take that bad drone down and you know what we are dealing with at that Southern Border. But I like how you answered that question.

Mr. Sidhu, are you aware of any police department that have received rejections from the FAA to fly their drones outside of direct line-of-sight in an official capacity?

Mr. SIDHU. Congressman, yes. I believe that multiple agencies have applied and have not obtained set of waivers. I think that that is one of the largest hurdles in scaling these programs Nationwide is to create a reasonable and scalable process with the FAA for a public safety agency to be able to obtain a beyond visual line-

of-sight waiver without a visual observer by demonstrating that they have the ground sensors like radar, et cetera, to be able to safely operate.

I believe that that needs to be a more scalable and easy thing for agencies to do.

Mr. STRONG. So that is kind-of the common reason the FAA rejects a police department's application for certificates of waiver authorization or beyond visual line-of-sight, BVLOS waivers? What can Congress do to make this easier for police departments to acquire these authorizations?

Mr. SIDHU. Well, I believe Congress has taken up a meaningful step with the FAA Reauthorization Act. I believe with that act the FAA has a few months essentially to come up with a plan and show Congress that they are going to make meaningful steps to taking these BVLOS waivers and making them scalable and easy for these agencies to apply for and receive.

Mr. STRONG. As you mentioned, I guess Mr. Robbins, in your testimony, Part 108 of the BVLOS rule could have the potential to safely unlock scalability for public safety and drones as first responder missions, but that could be months away. What can be done today to ensure departments are able to safely scale and grow operations?

Mr. ROBBINS. Templatize the approval process, make it standard. By and large, as my colleague noted, for the most part a lot of the DFR programs are very, very similar, the air space challenges are similar, the technology exists to integrate these into the air space safely now. If the FDA were to templatize the process it could lead to much greater operations and, as a result, much greater safety for our citizens.

Mr. STRONG. Thank you. The other thing is I can tell you this. We have the capability to block, drop, or intercept other drones. We have got to take advantage of doing that. I thank each of you for being here.

Mr. Chairman, I yield back.

Chairman D'ESPOSITO. The gentleman's time has expired.

I now recognize from the State of Louisiana, Mr. Higgins.

Mr. HIGGINS. Thank you, Mr. Chairman.

Gentlemen, thank you for being here.

Mr. Robbins, you are the president and CEO of the Association for Uncrewed Vehicle Systems International. Is that correct?

Mr. ROBBINS. Yes, sir.

Mr. HIGGINS. You are an expert on drones, shall we say, for the American people watching?

Mr. ROBBINS. I do my best.

Mr. HIGGINS. What does this technology look like in the decade then?

Mr. ROBBINS. Well, if I knew that I would——

Mr. HIGGINS. Take a stab. You know that better than I. I see——

Mr. ROBBINS. I think drones are——

Mr. HIGGINS. I see silent drones. I see——

Mr. ROBBINS. Yes.

Mr. HIGGINS. I see drones——

Mr. ROBBINS. In 10——

Mr. HIGGINS [continuing]. That are virtually invisible with incredible technologies of optics, including thermal and incredible clarity.

Mr. ROBBINS. Yes. I think——

Mr. HIGGINS. I see drones that are——

Mr. ROBBINS [continuing]. We may come to work on a drone.

Mr. HIGGINS [continuing]. That have AI programs that coordinate with each other.

Mr. ROBBINS. Yes. With the scalability of the industry with AI, the potentials are almost limitless. I think you may come to work on a, you know, a drone that is operated to move people safely. I think it transforms the logistics industry and it makes the movement of goods and services much, much quicker, much, much safer, much more efficient.

I think it, you know, our entire transportation economy is going to be upended by autonomy and ultimately make things much safer.

Mr. HIGGINS. Great.

Mr. ROBBINS. I think it is also the case for war-fighting, sir, which was of particular interest to you.

Mr. HIGGINS. So I concur. You know, regular Americans are quite capable of observing emerging technologies, and we envision what that technology might look like over the course of time.

This is where the concerns of a Constitutionalist like me would be part of the narrative, and indeed they are. I am a Member of Congress. I serve we the people and I have sworn an oath to uphold the Constitution and that means protecting the freedoms of the citizens that I serve.

So we have a variance of responsibility to deploy technology depending upon the mission. For instance, the mission at the border, I would encourage the wide use of the most advanced drone systems in the world for border security because at the border if you are coming into a sovereign territory as a child of God, as not an American citizen, you have no expectation of privacy.

There is no reasonable expectation of privacy if you are crossing into the sovereign territory of another land. You are expecting to be observed.

However, in our police departments, Chief, Mr. Daughtry, American citizens do and should enjoy a reasonable expectation of privacy as we embrace our freedom to travel the land. We have concerns some of us, Chief, about, you know, where is that barrier?

You said, Chief, and I wrote the quote, you said, "We won't compromise security." In the effort to not compromise security using drone technology, are you willing to compromise freedom? Are you willing to compromise Fourth Amendment protections? Are you willing to compromise an American's expectation of privacy as we walk about the city of New York?

Mr. CHELL. Oh, absolutely not. In our opening statements we have strict self-imposed restrictions that we put upon ourselves as it relates to expectation of privacy in people's backyards. No facial recognition, just not randomly going on daily patrol with a drone just to arbitrarily——

Mr. HIGGINS. A public street?

Mr. DAUGHTRY. Not unless it is mitigating circumstance. We have about 10 of them that we have clearly defined and——

Mr. HIGGINS. You see what I am saying though, Chief?

Mr. DAUGHTRY. Absolutely. We won't. No one is being watched.

Mr. HIGGINS. Throughout the history of mankind, and we are entering an era now where things are changing. That is why—are you are familiar with the observer effect and the Hoffman studies that basically that if you observe something it necessarily is changed and altered? Even at the quantum level, you know, tests and studies show that subatomic matter, right, changes its action and behavior when observed. There is something very significant about our moments of privacy that we anticipate and enjoy.

I just think it should be part of the narrative, Mr. Chairman. I support this technology for the right reasons, but I also advise caution amongst my colleagues as we move forward.

I yield. Thank you for allowing me to waive onto your committee.

Chairman D'ESPOSITO. The gentleman's time has expired. Mr. Higgins, thank you for your service as well.

I now recognize my good friend from Texas, Mr. Nehls.

Mr. NEHLS. Thank you, Mr. Chairman, and I thank you for allowing me to also waive onto your committee today to speak on this important issue.

As a former law enforcement official of 30 years, folks, retired sheriff, large county in Texas, I am pleased to speak today about the importance of unmanned aerial drones in providing public safety.

I had drones. I thought they were fantastic, expensive ones, like $35,000, $40,000. Would tether them to the top of my command center to give us a good view of the area, fantastic.

Every day law enforcement officers and first responders around our great Nation are forced to deal with some of the most difficult and dangerous situations, whether it is a firefighter racing into a burning building or a police officer responding to gang violence, having real-time—real-time—information is invaluable.

The unknown and high-risk scenarios has the potential to lead to more unintended consequences and often one of the most dangerous things to consider. In high-stress situations where seconds can be a matter of life or death, it is imperative that we provide our brothers and sisters in blue the best technology, weaponry, and tools to combat violent criminals. Every police officer around the country would prefer to deescalate high-risk situations. To achieve this objective, law enforcement needs to gain situational awareness of the threats they face and drones provide real-time data to responding officers about the threats they face and where they should respond.

So I have a bill. I have a bill. It is called the Drone Research and Innovation for Law Enforcement Act and that would permit small, unmanned aircraft pilot research for public safety. Specifically, the bill would establish a pilot research study managed by the FAA's Center of Excellence for unmanned drones utilized for public safety.

The goal of the study is to evaluate the potential of nonlethal deescalation drones as a tool for State and local law enforcement during high-risk events. It just makes sense. I believe de-escalation

drones provide officers more distance from dangers and time to address them.

After completing this study, the bill directs the administrator of the FAA to initiate a rule-making process that could approve the use of nonlethal de-escalation unmanned aircraft.

So, Mr. Daughtry, first I want to thank you, sir, for your service.

Mr. DAUGHTRY. Thank you.

Mr. NEHLS. Can you explain how law enforcement would utilize, let's just say a drone in a hostage situation or, God forbid, my friend, a school shooting where the perpetrators have bunkered into a compound?

Mr. DAUGHTRY. I am going to give you a real-life example. A couple of months ago there was a barricaded situation where the issue—our emergency service units were positioned outside the door. They did everything to try to mitigate this incident. They sent in a scout, which is a robot where they go in and look. The guy put a towel over it. They sent in a—like, a little ball where it had a camera where they could see. The guy threw it out.

We sent in a drone in the window and they seen that he had the weapon, and the guy smacked it with a broom, but then that was a diversion where he was distracted and our team went in and safely took the individual into custody.

So these drones are a game-changer and they are saving our officers' lives.

Mr. NEHLS. Without a question. You know, when we would have high-risk warrants we would send a drone overhead just to evaluate the situation, see if there is anybody going in and going out. Drones are absolutely a wonderful way. I think it saves lives. I think it saves officers' lives.

I will even take it to the next step and say eventually we should put nonlethal on drones, use one to tase somebody, you know? How are you going to knock that drone out of the air that is 10 feet above you?

If you have a camera on it and you can communicate with that drone and that drone can communicate with that suspect, I think it is going to save officer's lives. But that is a whole other story.

But tell me a little bit about the StarChase. What do you think about that?

Mr. DAUGHTRY. StarChase is another tool under this administration, under our police commissioner, our mayor, we are not going to have a city of lawlessness. I think after COVID that the criminal element just became emboldened. They are not stopping for the police on regular minor traffic stops.

So if a car takes off or if a stolen car comes in, we know if we get a hit from one of our LPR readers throughout one of the areas throughout the city, once the officer is behind that vehicle, they activate their lights and sirens, the vehicle takes off. Instead of us going through a pursuit throughout New York City, as you know 8.6 million people, the officers will go behind the vehicle, shoot a dart that sticks on the back of the car and will fall back. They are tracking it in our joint operations center real-time.

Also, the officers are tracking it live on their cell phone as well as our aviation unit. When that vehicle stops, the team will move in and converge on him and safely take him into custody.

Mr. NEHLS. I think that makes total sense, too, because officers don't like to get into high-speed chases. They don't want to do that because they are risking their own lives as well. So eventually you have that technology. Eventually you just wait for the guy to go home.

Mr. DAUGHTRY. Yes.

Mr. NEHLS. Wait for the guy to get home or stop in a certain area in an unincorporated area and then try to take that unit down. But the technology that we have today, and specifically drones, using the drones that we have had, putting one in every sergeant's car, I mean, you can get them. They are relatively cheap. Then to be able to transmit that information down to the MDC inside police in their cars or back in a command center I think is a tool. I think it is a step in the right direction, and we need to do everything we possibly can to support the use of unmanned drones in law enforcement.

God bless you guys for what you do. Have a good Police Week.

Mr. DAUGHTRY. Thank you.

Chairman D'ESPOSITO. Thank you, Mr. Nehls. We are going to do a second round of questioning so, Mr. Nehls, if you have anything else that you want to stick around for.

So, Mr. Robbins or Mr. Sidhu, either one, so I think we have come to the conclusion that drones are making a drastic improvement to the way that public safety is handled in this country, whether it is in the fire service or as, you know, we have heard in our law enforcement agencies throughout this Nation.

But there are hurdles that we need to clear, and we have had this conversation. As I mentioned in my opening remarks, I have had conversations with Commissioner Daughtry and Commissioner Weiner from the NYPD, and we have included language in the FAA reauthorization to assist in giving the authority to take down the drones, as well as legislation to support domestic drone manufacturers so, to Commissioner Daughtry's point, we can begin to move from depending on Chinese technology and actually utilizing American drone technology in order to keep these communities safe.

So there are roadblocks ahead, and I know that if a law enforcement agency wants to launch a DFR program they have to acquire a certificate of authorization from the FAA. They have to have someone who can fly the drone. So we know how to get there, but there obviously are still those hurdles.

So this really is for both of you. If you could lay out the steps that Congress needed to take from this point forward in order to give all of you, and specifically the law enforcement world, the ability to utilize drones to the full capacity, give me the top 3 steps that we need to take.

Mr. ROBBINS. Thank you very much for that question, Mr. Chairman. I think getting more of the technology into the hands of law enforcement is step No. 1.

So as I mentioned my opening statement, yesterday the Drones for First Responders Act was introduced as a revenue-neutral program to allow first responders to acquire more drones and more drone systems. It is not unique to just the drones, also the training, all the maintenance that goes along with that. So that would be

step 1. That would help. That would go a long way toward helping these great public officials acquire more of this technology.

No. 2 is oversight of the FAA and ensuring that the FAA is sticking to the BVLOS rule-making time line and ensuring in that gap between now and when the rule comes out that they are making continued progress on BVLOS waivers and exemptions.

No. 3 would be to support a broader drone competitiveness initiative to level the playing field for U.S. drone manufacturers so they can compete against subsidized, unsecured competition from China. Thank you, sir.

Chairman D'ESPOSITO. Real quick, talk about the oversight of the FAA.

Mr. ROBBINS. So I think the FAA is doing an admirable job with the resources that they have and with the allowances that they have at the moment given existing authorities. Every time a public safety community wants to go forward with a new program they are asking for an exemption from the current rules. An exemption within the FAA's bureaucracy, frankly, is a challenging thing to do.

Chairman D'ESPOSITO. Everything in the FAA is a challenging thing to do.

Mr. ROBBINS. There are some great public officials there and as I have made outreach calls to public safety officials the first question I ask all of them is how is your relationship with the FAA? Time and time again I heard it is good. There are good people there, like Mike O'Shea and others, that are trying to make progress on our behalf. So I don't want to completely knock the agency because there are people that are trying to help these officials.

But like with anything else within the broader, the larger Federal Government they need oversight, to Congressman Higgins' standpoint. When you are observed, the Hoffman effect, your decisions and what you do changes. The more Congress provides oversight on the FAA the better the behavior will be, the more they will do to support public safety.

Chairman D'ESPOSITO. So I asked that because there are Members of this committee, like myself and others, who have the honor to serve on both Homeland Security and Transportation and Infrastructure, and I think that this is an opportunity for us to sort-of, you know, take what we have learned from both committees and put it to good use so that we can provide the resources that law enforcement and the fire service need for throughout the country to actually begin to utilize drones in their full capacity.

Mr. ROBBINS. Yes, absolutely, sir.

Chairman D'ESPOSITO. Commissioner Daughtry, how is your relationship and the intergovernmental relationship between the NYPD and the FAA?

Mr. DAUGHTRY. So the FAA came down to our TARU base and we gave a demonstration of our joint operations first responder program, our drone in a box, and the feedback was very well. They said that they would like to use the NYPD as the model for the rest of the country when we get this up and fully running. We are going to be the model police department.

Chairman D'ESPOSITO. Excellent.

My time has expired.

I now recognize Mr. Correa from California.

Mr. CORREA. Thank you, Mr. Chairman.

Just while I was just talking to Mr. D'Esposito here he has some legislation regarding the FAA and giving you authority to address the issue of hostile—possibly hostile drones. I want to thank him for that work.

Mr. Fetterman, thinking about back home, we have 2028 Olympics. We have a world soccer match coming up in the Americas. Back home we have Disneyland that is about to build a third park. We have the OCVIBE, a huge complex that is under construction.

So the challenges there in terms of safety are there. My question would also be what you need from the Federal Government to make sure you have the tools to use this emerging technology, these drones, to keep our public safe and, No. 2, to protect us from hostile drones?

Chief FETTERMAN. Thank you. That was an excellent question. I appreciate the opportunity.

No. 1, we would really appreciate the additional or the reinstitution of the UASI and SHSGP funding with that purchase authority for drones within that.

I have heard from my partners with the IAFF and the IAFC and the Robotics Committee that they would really appreciate a national curriculum, a national standard training curriculum for the fire service potentially to be hosted by the National Fire Academy under the USFA.

Last, what the drones provide is information and so with that a common operational platform, support for common operational platforms such as SARCOP, Search and Rescue Common Operational Platform. Those types of areas would provide a tremendous amount of capability for us.

Mr. CORREA. Mr. Sidhu, I want you to follow up on that, the answer to my question there, which is common operational platforms. In your opinion, I mean, foreign manufacturers right now a little bit ahead of us in terms of these technologies. Where do we start in terms of moving forward to catch up and also to adopt, to address the needs of our locals in terms of common platforms, so on and so forth?

Mr. SIDHU. Well, first I would start by answering the second part of your question, which is the need for local agencies to be able to utilize this. I think there is actually quite an overlap between an agency putting up a DFR 2.0 system like I referred to and then being able to protect the air space, not just for events that occur but generally speaking above them.

That overlap exists because in order to fly a drone beyond visual line-of-sight without a visual observer, you need to place ground-based sensors like radar, et cetera, that can detect drones and aircraft in that air space to allow the drone to fly miles away and to be able to do this safely.

So a lot of the work that gets done into putting this in the hands of local agencies where they will put the infrastructure to be able to detect drones and manage their air space up can kind-of, you know, essentially do both things at once. I think that if we are able to go out to these agencies and support their ability to deploy that infrastructure to detect drones and detect aircraft and support

their ability to do these DFR 2.0 programs, we are doing that. It is a two birds, one stone, initiative.

To answer your first question about what we can do to support the American industry, I think American manufacturers on the drone side, you know, we need to support them everywhere we can. We need to provide them with the ability to catch up financially. These foreign adversaries have dumped quite a bit of money into these companies of the billions of dollars over the course of 10 years.

I also urge that it won't happen overnight. We are not there yet and it will take some time. It will take financial support. It will take the ability for them to be allowed to do things at the agency level to be able to utilize what is available today. We have to be able to support those while we do it.

Mr. CORREA. I would like to also ask you to address the issue of privacy. We haven't talked a lot about that.

Mr. SIDHU. It is a great question. When we deploy a DFR program, having deployed one before, one of the most important things you do is you go to your community and you ask them, this is what we are looking to do. What are your concerns? I have done this many times for many communities.

The common thread is you ensure that the drone is only used to respond to calls for service——

Mr. CORREA. In my few seconds I would—later on we will talk.

Mr. SIDHU. Sure.

Mr. CORREA. A question to all of you, Government drones versus knuckleheads out there that are just, you know, recreational and can't figure common sense that you shouldn't be flying these things in certain places. Those are the people we have got to figure out, No. 1, how to say if you do this there are going to be serious penalties, and, No. 2, don't do it.

So let's talk later on about developing a policy to educate folks, for lack of a better term, in terms of what is right and what is not.

Mr. Chairman, I am out of time. Thank you very much.

Chairman D'ESPOSITO. The gentleman's time has expired.

I now recognize from the State of New York, Mr. Kennedy.

Mr. KENNEDY. Thank you, Chairman.

Once again, I want to go back to the technology and first responders. This time, Chief Fetterman, I have a couple of questions for you. First of all, thank you for your leadership. Thank you for your service. My brother-in-law is actually a Buffalo fireman so I have a unique perspective on the sacrifices families make protecting our communities as firefighters.

As this drone technology continues to advance, are drones being utilized for locating and triaging patients in maybe a multiple casualty accidents prior to the arrival of health care units to potentially improve the time and quality of the care that you might provide as a first responder?

Chief FETTERMAN. Thank you, Congressman Kennedy. Absolutely. Drones bring one of the purest abilities is their thermal imaging. So at night when you may have a vehicle accident over the side where patients or victims may be thrown from the vehicle in a rural environment or in scenarios where other aircraft can't fly,

we absolutely utilize drones to look for search areas to identify if there are any additional patients that we can care for.

Mr. KENNEDY. Similar to what law enforcement is dealing with and requesting actually here today is, you know, our engagement in changing the law and regulations to allow them to utilize these drones more effectively for their work. Are there regulations that need to be changed for first responders, fire departments that utilize these drones as well?

Chief FETTERMAN. Thank you. So when dealing with drone incursions into FTAs we are very fortunate in the County of Orange to have a very good relationship with our Federal partners through our fusion centers and our relationships with the JTTF.

So on the law enforcement side we collaborate very closely with our Federal partners to look for those private drones that may be including into fire traffic areas. They are very helpful when taking care of those and that allows us to get our robust fleet of aircraft, fixed-wing, rotary-wing, back into the firefight.

We are very fortunate under the leadership of Fire Chief Brian Fennessy to have a robust program but also to have very good relationships with our law enforcement partners.

Mr. KENNEDY. Thank you, Chief. At this time FEMA grants, such as assistance to firefighter grants, they do not allow the purchase of these drones. So is the access or lack thereof having a detrimental impact on your department or would you suggest that as we are looking at funding for this technology across the country how we look at including that within those areas as well?

Chief FETTERMAN. So certainly additional funding and support of American-made drones and the proliferation of that American-made technology is fantastic. In the mean time, you know, the Federal Urban Search and Rescue Task Force has worked very closely with all of their local partners when we have a national disaster. We work closely to collaborate and gather information and there is really a partnership from the State, local, and Federal level on local and national-level disaster responses.

Mr. KENNEDY. Thank you, Chief.

Thank you, Chairman. I yield back.

Chairman D'ESPOSITO. The gentleman yields.

I want to thank the witnesses for their valuable testimony and the Members for their questions. The Members of the subcommittee——

Mr. CORREA. Mr. Chair.

Chairman D'ESPOSITO. Sure.

Mr. CORREA. Let me interrupt you.

Chairman D'ESPOSITO. OK.

Mr. CORREA. Just wanted to, without objection, submit for the record a letter from the NFL expressing their concerns with threats posed by illicit unmanned aircraft systems.

Chairman D'ESPOSITO. Without objection.

[The information follows:]

LETTER FROM THE NATIONAL FOOTBALL LEAGUE

May 14, 2024.

The Honorable LOU CORREA,
U.S. House of Representatives, 2301 Rayburn House Office Building, Washington, DC 20515.

DEAR CONGRESSMAN CORREA: On behalf of the National Football League, I write to express our deep concern with the increasing threat posed by illicit unmanned aircraft systems (UAS) that jeopardize the safety and security of the millions of fans who atend our games each year. Under current law, the State and local law enforcement officials who are primarily responsible for security at our games are severely limited in their ability to address the safety threats posted by drones.

The bipartisan Safeguarding the Homeland from the Threats Posed by Unmanned Aircraft Systems Act is legislation that would provide State and local law enforcement officials with the authority to implement counter-UAS detection and mitigation capabilities under a limited pilot program. These narrowly-tailored counter-UAS authorities would ensure that State and local law enforcement have the tools necessary to ensure the safety of our fans and your constituents that attend our games. The bill, which reflects the Biden Administration's counter-UAS National Action Plan, closes critical policy and legal gaps that inhibit a more coordinated, whole-of-government approach to defending the homeland against UAS threats.

We thank you for your attention to this important matter and for your consistent support for the NFL. We urge Congress to enact the bipartisan Safeguarding the Homeland from the Threats Posed by Unmanned Aircraft Systems Act into law so that we can ensure that State and local law enforcement have the proper authority, training, and equipment to effectively protect our fans from this growing threat.

Sincerely,

BRENDON PLACK,
Senior Vice President, Public Policy and Government Affairs.

Chairman D'ESPOSITO. The Members of the subcommittee may have some additional questions for the witnesses and we would ask the witnesses to respond to these questions in writing. Pursuant to committee rule VII(D), the hearing record will be open for 10 days.

Without objection, the subcommittee stands adjourned.

[Whereupon, at 11:51 a.m., the subcommittees were adjourned.]

APPENDIX

QUESTIONS FROM CHAIRMAN AUGUST PFLUGER FOR KAZ DAUGHTRY AND JOHN M. CHELL

Question 1. While drones clearly offer benefits when used in a law enforcement context, they can pose a risk to law enforcement when it is unclear who is piloting them. What tools do law enforcement have at their disposal to properly determine whether UAS are piloted by law enforcement or a third party?

Question 2. What anti-drone defense measures do we employ at major events, such as at ballgames and other sporting events?

QUESTIONS FROM HONORABLE NICK LALOTA FOR KAZ DAUGHTRY AND JOHN M. CHELL

Question 1. Malicious drones pose a significant risk to America's critical infrastructure, airports, and other sensitive sites. How can lawmakers assist State and local law enforcement to effectively address risks posed by illicit drone use?

Question 2. What are the Department's plans for First Person View (FPV) defeat when it inevitably spreads to the United States outside of Ukraine?

Question 3. Given last week's passage of FAA Reauthorization legislation, which includes required rule making for how drones can fly safely in the National Airspace System (NAS) beyond visual line of sight (BVLOS), what are your thoughts on how the FAA rule making should address and differentiate between scheduled flights like deliveries and infrastructure inspections versus drone as a first responder (DFR) operations?

Question 4. Under the current FAA regulatory structure, emergency response entities like police departments must go through an arduous process to receive a Certificate of Authorization (COA) to operate DFR BVLOS without a visual observer. How could we simplify and expedite this process while ensuring safety to enable more State, local, Tribal, and territorial jurisdictions across the country to take advantage of DFR operations, resulting in faster, safer, and more efficient emergency responses?

Answer. Thank you once again for the opportunity to address the Subcommittee on Emergency Management and Technology and the Subcommittee on Counterterrorism, Law Enforcement, and Intelligence. The purpose of this correspondence is to offer further information following our testimony at the May 16, 2024 hearing on Unmanned Aerial Systems: An Examination of the Use of Drones in Emergency Response.

The New York City Police Department effectively leverages technology to protect New York City's approximately 8.3 million residents and almost 62 million annual visitors. Our efforts, including the use of Unmanned Aircraft Systems, commonly referred to as drones, have helped make New York City the safest big city in America.

Safety has, and always will remain top of mind for the Department. In 2023, the NYPD's use of drones increased 419.8 percent compared to 2022. More than simply an eye in the sky, our drones offer police officers situational awareness for incidents as they unfold, delivering live footage of rapidly-evolving situations for our incident commanders. Department policies and procedures regulate use of drones. Drones are not used for warrantless surveillance, routine patrol, traffic enforcement, or immobilizing vehicles of suspects. Drones are not used as equipped with weapons.

Drones have, however, allowed us to address hostage situations; inspect critical infrastructure following a seismic event (the April 12 4.8 magnitude earthquake in New Jersey that reverberated in NYC); patrol our beaches for sharks; prevent overcrowding at large-scale events, such as the New Year's Eve Ball Drop in Times Square; and assess the danger of rapidly expanding crowds at music festivals.

In an effort to support innovation in public safety, 5 NYPD precincts have been selected for the Drone as First Responder Program, more commonly referred to as

DFR. These precincts, chosen based on recent crime trends, will each be outfitted to support 2 drone platforms affixed to their rooftops. Three of these precincts are in Brooklyn, 1 is in the Bronx, and 1 is the Central Park Precinct in Manhattan. The plan, to be rolled out in the coming months, is to deploy these drones in response to certain 9–1–1 calls for service. The pilot however, will be remotely positioned in the Joint Operations Center, at Police Headquarters, rather than on scene.

The information provided by DFR will be shared with responding officers. DFR will enhance officers' situational awareness as they arrive on scene, promote officer safety, and help us deploy resources more effectively.

While drones are a useful public safety tool for local police departments, there are security risks that must be considered. In the wrong hands, drones can pose serious risks to public safety and security. Unauthorized flights of drones may interfere with police operations and hostile drone activity could include the downing of a police drone. At the memorial service held on Long Island for fallen NYPD hero Detective First Grade Jonathan Diller, an unknown drone was flown over the crowd of thousands of police officers. Thankfully, this drone belonged to a neighbor who was simply attempting to get a good look at the mass of blue gathered to honor our fallen brother, but the incident was an important reminder of the damage that can be done by a drone operator with sinister intentions.

Each year, New York City hosts dozens of large-scale events, attracting several hundred thousand individuals to concentrated areas such as Times Square and various avenues and thoroughfares. Currently, the NYPD partners with branches of the United States Military, U.S. Secret Service, and Federal Bureau of Investigation for drone mitigation at such large-scale events. We are aware of the burden this places on the resources of the Federal Government. Notably, even though the FBI conducts mitigation for a handful of events, we need more internal robust options to defend the public against a drone in the hands of a bad actor at dozens of other events, like parades, outdoor concerts, drone and firework shows, and large protests. During the 5 operational days of NYC Fleet Week 2024, we had 45 drone incursions into our detection zones, 11 pilot interdictions in critical zones, and issued 5 summons to operators flying less than ½ mile of either of the 2 ports. In order to alleviate that burden and improve response time to rapidly-evolving situations and unplanned events, such as various protests, the NYPD seeks permission to utilize drone mitigation technology to protect New Yorkers. Our agency can serve as a force multiplier of protection alongside Federal partners as well as a stand-alone resource with our own Drone Mitigation authorization. Allowing local police departments to responsibly deploy this technology will ensure that potentially hostile drones are unable to put American lives at risk. In New York City, it's our job to keep everyone safe, on land, at sea, and in the air. Your continued support and partnership will aid us in accomplishing that mission.

QUESTIONS FROM HONORABLE NICK LALOTA FOR KEVIN FETTERMAN

Question 1. Given last week's passage of FAA Reauthorization legislation, which includes required rule making for how drones can fly safely in the National Airspace System (NAS) beyond visual line-of-sight (BVLOS), what are your thoughts on how the FAA rule making should address and differentiate between scheduled flights like deliveries and infrastructure inspections versus drone as a first responder (DFR) operations?

Answer. To streamline DFR operations, the FAA should stand up a DFR Priority and Preemption ADHOC Committee or an Aviation Rulemaking Committee (ARC). This group could develop a process for standards which focus on identifying priority and preemption for emergency vs. non-emergency operations. They could also identify how to better utilize remote ID to assist with DFR priority and preemption operational efforts.

Question 2. Under the current FAA regulatory structure, emergency response entities like police departments must go through an arduous process to receive a Certificate of Authorization (COA) to operate DFR BVLOS without a visual observer. How could we simplify and expedite this process while ensuring safety to enable more State, local, Tribal, and territorial jurisdictions across the country to take advantage of DFR operations, resulting in faster, safer, and more efficient emergency responses?

Answer. Public safety operates at its best when we can follow clear and defined standards. Examples of this are the FAA's First Responder Tactical BVLOS waiver guide. For DFR flights, there are insufficient guides and standards. If DFR programs had more robust guidance and checklists to follow, public safety agencies are more likely to stand up a successful DFR program. Additionally, consideration should be given to the development of performance-based FAA guidance on system/

service parameters and pilot certifications programs/processes that would allow flights without the issuance of COAs. This could be based on previously-approved systems or operational procedures (much like manned helicopters).

Another strategy to make DFR programs more accessible would be for the FEMA Criteria Development Panel to recommend and FEMA to approve the increase in priority of NDAA-compliant drones within Federal grant programs. Other internal process strategies should also be developed to make these drones easier to acquire through Federally-funded programs.

These critical life-saving operations could thrive if robust standards are established, and purchase authority is made easier for public safety agencies.

QUESTIONS FROM HONORABLE NICK LALOTA FOR RAHUL SIDHU

Question 1. Given last week's passage of FAA Reauthorization legislation, which includes required rule making for how drones can fly safely in the National Airspace System (NAS) beyond visual line-of-sight (BVLOS), what are your thoughts on how the FAA rule making should address and differentiate between scheduled flights like deliveries and infrastructure inspections versus drone as a first responder (DFR) operations?

Answer. Given the immediacy of emergency response, and the variety of potential destinations at any given moment, and taking into consideration the public safety aspect of each mission, the FAA should have an appropriate amount of flexibility and latitude in crafting rules that are specific to public safety.

These rules should be prioritized over commercial operations and acknowledge the incredible safety record of the millions of public safety flights to date.

Putting advanced beyond visual line-of-sight (without the need for visual observers) public safety operations on hold while needlessly waiting for a fully-developed, accident-free drone integration into the air space, will frustrate agencies trying to improve safety in their communities. Carving out air space specific for communities utilizing DFR-type public safety drone operations (for example 300–400 AGL), with commercial operations restricted to traffic lanes above and or below these levels, can reduce the chance of a collision from extremely unlikely to virtually non-existent.

The FAA has long touted the air safety of General Aviation (GA), but even this, with virtually 100 percent compliance in pilot and aircraft certification, suffers from hundreds of fatal accidents each year. Comparatively, with statistical data currently in the possession of the FAA, UAS operations, in general, have proven to be orders of magnitude safer. This existing safety record can support FAA efforts to better balance the cost-benefit analysis of life-saving drone operations vs the air space risk posed by responsible and accountable public safety drone operations.

Question 2. Under the current FAA regulatory structure, emergency response entities like police departments must go through an arduous process to receive a Certificate of Authorization (COA) to operate DFR BVLOS without a visual observer. How could we simplify and expedite this process while ensuring safety to enable more State, local, Tribal, and territorial jurisdictions across the country to take advantage of DFR operations, resulting in faster, safer, and more efficient emergency responses?

Answer. The FAA can follow the example set by simplified application processes for the Tactical Beyond Visual Line-of-Sight (TBVLOS) and First Responder Beyond Visual Line-of-Sight (FRBVLOS) waivers, and allow agencies to rapidly receive approval for standardized DFR and other advanced BVLOS-type missions without the need for human visual observers. The replacement of humans as the detect-and-avoid solution with a layered approach to air space hazard mitigation, including ADS–B and radar sensors, should be accepted as a better alternative.

The current level of statistical safety for all drone operations world-wide, let alone those by responsible, well-trained, and accountable public safety agencies, is significantly better than crewed operations. The FAA uses fatal accidents per flight hour as a current measure of air space safety. The FAA receives all flight and accident data from compliant public safety agencies under the COA process today. Therefore, the FAA already has in its possession significant data to assist in determining the existing safety of public safety drone operations, including those agencies with BVLOS approval (now over 600 for TBVLOS and about 50 for FRBVLOS).

The FAA should publish the current safety record of public safety UAS operations Nation-wide (fatalities per flight hour). The results would serve to better justify efforts by the FAA to move toward a more balanced approach in considering air space risk vs community risk. UAS operations have proven life-saving, with hundreds, and likely thousands of lives saved by public safety drone use. This, in contrast to the known risks posed by UAS thus far, seems to favor further enablement of public safety BVLOS operations.

QUESTIONS FROM HONORABLE NICK LALOTA FOR MICHAEL ROBBINS

Question 1. Malicious drones pose a significant risk to America's critical infrastructure, airports, and other sensitive sites. How can lawmakers assist State and local law enforcement to effectively address risks posed by illicit drone use?

Answer. Lawmakers can assist State and local law enforcement to effectively address risk posted by illicit drone use in numerous ways, including:

(a) Passing the recently introduced Counter-UAS Authority Security, Safety, and Reauthorization Act of 2024. The bill has multiple provisions that would help to ensure Federal law enforcement, in coordination with State and local law enforcement, have tools to effectively address risk posed by illicit drone use. This includes ensuring key Preventing Emerging Threats Act authorities never lapse and are consistently reauthorized and, when prudent, expanded.

(b) Ensuring full funding of the Federal Aviation Administration's (FAA) Know Before You Fly (KBYF) campaign, which helps to educate the public about drone regulations, including air space awareness and Remote ID compliance, to mitigate careless and/or clueless drone flyers around critical infrastructure, airports, and other sensitive sites.

Question 2. Given last week's passage of FAA Reauthorization legislation, which includes required rule making for how drones can fly safely in the National Airspace System (NAS) beyond visual line-of-sight (BVLOS), what are your thoughts on how the FAA rule making should address and differentiate between scheduled flights like deliveries and infrastructure inspections versus drone as a first responder (DFR) operations?

Answer. AUVSI applauds the recent passage of the FAA Reauthorization Act of 2024 and thanks Congress for its leadership. There is no denying that BVLOS will unlock the potential of the UAS industry and allow it to scale to new heights, including for companies conducting scheduled flights and those pursuing drone as a first responder (DFR) operations. Specifically, to the greatest extent possible, the FAA should seek to adopt the BVLOS Aviation Rulemaking Committee's (ARC) recommendations for safely integrating more advanced and scalable drone operations. Going forward, FAA rule making should rely upon a risk-based and performance-based approach to beyond visual line-of-sight (BVLOS) operations.

The language in the FAA Reauthorization Act of 2024 Section 930 requires a Notice of Proposed Rulemaking (NPRM) no later than 4 months after enactment (September 16, 2024) and a final rule no later than 16 months after issuing the NPRM. AUVSI will be doing everything in our power to ensure the FAA sticks to those critical time lines, and to ensure key Members of Congress/committees are conducting robust oversight of the process and time lines.

While BVLOS operations will vary based on the various segments of the industry, it will be critical that the rule hews as closely to the ARC report as possible. This includes critically ensuring that the general aviation community is properly equipped with Automatic Dependent Surveillance—Broadcast (ADS–B) or other similar safety technologies so aircraft can properly deconflict in the National Airspace System (NAS).

Question 3. Under the current FAA regulatory structure, emergency response entities like police departments must go through an arduous process to receive a Certificate of Authorization (COA) to operate DFR BVLOS without a visual observer. How could we simplify and expedite this process while ensuring safety to enable more State, local, Tribal, and territorial jurisdictions across the country to take advantage of DFR operations, resulting in faster, safer, and more efficient emergency responses?

Answer. As noted in the question, under the current FAA regulatory structure, which lacks the required Part 108 rule to allow for BVLOS drone as a first responder (DFR) operations to scale, emergency response entities like police departments must go through an arduous process to receive a Certificate of Authorization (COA) to operate DFR BVLOS without a visual observer. Specifically, the FAA must approve an alternative means of compliance to the 14 CFR 91.113 "see and avoid" requirement to move toward "detect and avoid." To simplify and expedite this process to ensure safety while also enabling more State, local, Tribal, and territorial jurisdictions across the country to take advantage of DFR operations, the FAA must employ a risk-based approach to approving air space awareness technology for detect and avoid. Air space awareness, through various detect and avoid technologies including ADS–B in, radar, optical, and acoustic sensors are more reliable and effective than human visual observers (VO).

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