

**UNMANNED AERIAL VEHICLES:  
COMMERCIAL APPLICATIONS AND  
PUBLIC POLICY IMPLICATIONS**

---

---

**HEARING**  
BEFORE THE  
SUBCOMMITTEE ON  
COURTS, INTELLECTUAL PROPERTY,  
AND THE INTERNET  
OF THE  
COMMITTEE ON THE JUDICIARY  
HOUSE OF REPRESENTATIVES  
ONE HUNDRED FOURTEENTH CONGRESS  
FIRST SESSION

SEPTEMBER 10, 2015

**Serial No. 114-42**

Printed for the use of the Committee on the Judiciary



Available via the World Wide Web: <http://judiciary.house.gov>

U.S. GOVERNMENT PUBLISHING OFFICE

96-054 PDF

WASHINGTON : 2015

---

For sale by the Superintendent of Documents, U.S. Government Publishing Office  
Internet: [bookstore.gpo.gov](http://bookstore.gpo.gov) Phone: toll free (866) 512-1800; DC area (202) 512-1800  
Fax: (202) 512-2104 Mail: Stop IDCC, Washington, DC 20402-0001

COMMITTEE ON THE JUDICIARY

BOB GOODLATTE, Virginia, *Chairman*

F. JAMES SENSENBRENNER, Jr., Wisconsin	JOHN CONYERS, JR., Michigan
LAMAR S. SMITH, Texas	JERROLD NADLER, New York
STEVE CHABOT, Ohio	ZOE LOFGREN, California
DARRELL E. ISSA, California	SHEILA JACKSON LEE, Texas
J. RANDY FORBES, Virginia	STEVE COHEN, Tennessee
STEVE KING, Iowa	HENRY C. "HANK" JOHNSON, JR., Georgia
TRENT FRANKS, Arizona	PEDRO R. PIERLUISI, Puerto Rico
LOUIE GOHMERT, Texas	JUDY CHU, California
JIM JORDAN, Ohio	TED DEUTCH, Florida
TED POE, Texas	LUIS V. GUTIERREZ, Illinois
JASON CHAFFETZ, Utah	KAREN BASS, California
TOM MARINO, Pennsylvania	CEDRIC RICHMOND, Louisiana
TREY GOWDY, South Carolina	SUZAN DELBENE, Washington
RAUL LABRADOR, Idaho	HAKEEM JEFFRIES, New York
BLAKE FARENTHOLD, Texas	DAVID N. CICILLINE, Rhode Island
DOUG COLLINS, Georgia	SCOTT PETERS, California
RON DeSANTIS, Florida	
MIMI WALTERS, California	
KEN BUCK, Colorado	
JOHN RATCLIFFE, Texas	
DAVE TROTT, Michigan	
MIKE BISHOP, Michigan	

SHELLEY HUSBAND, *Chief of Staff & General Counsel*  
PERRY APELBAUM, *Minority Staff Director & Chief Counsel*

---

SUBCOMMITTEE ON COURTS, INTELLECTUAL PROPERTY, AND THE INTERNET

DARRELL E. ISSA, California, *Chairman*

DOUG COLLINS, Georgia, *Vice-Chairman*

F. JAMES SENSENBRENNER, JR., Wisconsin	JERROLD NADLER, New York
LAMAR S. SMITH, Texas	JUDY CHU, California
STEVE CHABOT, Ohio	TED DEUTCH, Florida
J. RANDY FORBES, Virginia	KAREN BASS, California
TRENT FRANKS, Arizona	CEDRIC RICHMOND, Louisiana
JIM JORDAN, Ohio	SUZAN DELBENE, Washington
TED POE, Texas	HAKEEM JEFFRIES, New York
JASON CHAFFETZ, Utah	DAVID N. CICILLINE, Rhode Island
TOM MARINO, Pennsylvania	SCOTT PETERS, California
BLAKE FARENTHOLD, Texas	ZOE LOFGREN, California
RON DeSANTIS, Florida	STEVE COHEN, Tennessee
MIMI WALTERS, California	HENRY C. "HANK" JOHNSON, JR., Georgia

JOE KEELEY, *Chief Counsel*  
JASON EVERETT, *Minority Counsel*

# CONTENTS

SEPTEMBER 10, 2015

	Page
OPENING STATEMENTS	
The Honorable Darrell E. Issa, a Representative in Congress from the State of California, and Chairman, Subcommittee on Courts, Intellectual Property, and the Internet .....	1
The Honorable Jerrold Nadler, a Representative in Congress from the State of New York, and Ranking Member, Subcommittee on Courts, Intellectual Property, and the Internet .....	3
The Honorable Bob Goodlatte, a Representative in Congress from the State of Virginia, and Chairman, Committee on the Judiciary .....	5
WITNESSES	
Brian Wynne, President and CEO, Association for Unmanned Vehicle Systems International	
Oral Testimony .....	7
Prepared Statement .....	9
Chris Calabrese, Vice President for Policy, Center for Democracy & Technology	
Oral Testimony .....	15
Prepared Statement .....	17
Chris Polychron, 2015 President, National Association of Realtors®	
Oral Testimony .....	27
Prepared Statement .....	29
Tom Karol, General Counsel—Federal, National Association of Mutual Insurance Companies	
Oral Testimony .....	38
Prepared Statement .....	40
LETTERS, STATEMENTS, ETC., SUBMITTED FOR THE HEARING	
The Honorable John Conyers, Jr., a Representative in Congress from the State of Michigan, and Ranking Member, Committee on the Judiciary .....	5
APPENDIX	
MATERIAL SUBMITTED FOR THE HEARING RECORD	
Prepared Statement of the Motion Picture Association of America .....	71



# UNMANNED AERIAL VEHICLES: COMMERCIAL APPLICATIONS AND PUBLIC POLICY IMPLICATIONS

THURSDAY, SEPTEMBER 10, 2015

HOUSE OF REPRESENTATIVES

SUBCOMMITTEE ON COURTS, INTELLECTUAL PROPERTY,  
AND THE INTERNET

COMMITTEE ON THE JUDICIARY

*Washington, DC.*

The Subcommittee met, pursuant to call, at 3:02 p.m., in room 2141, Rayburn House Office Building, the Honorable Darrell E. Issa (Chairman of the Subcommittee) presiding.

Present: Representatives Issa, Goodlatte, Collins, Chabot, Forbes, Poe, Chaffetz, Marino, Nadler, Chu, Richmond, DelBene, Cicilline, Peters, Lofgren, and Johnson.

Staff Present: (Majority) Vishal Amin, Senior Counsel; Eric Bagwell, Clerk; and (Minority) David Greengrass, Counsel.

Mr. ISSA. The Committee will come to order. Members will be joining us throughout the next few minutes, but we will get started because we have a vote likely at 4:30 p.m. And as a result, as I previously announced, our goal is to get all the statements in and questions in so that we not hold you over into the dinner hour.

I want to welcome everyone here today. Today's hearing is on Unmanned Aerial Vehicles: Commercial Applications and Public Policy Implications. And unspoken very clearly in that title is the rights and responsibilities of individuals and the people who are underneath those aerial vehicles.

Today, we will discuss commercial applications for unmanned aerial vehicles, otherwise known as UAVs or drones, and the potential public policy implications. It is my hope that this and future hearings on new technologies will educate Members so they have a more informed understanding of the policy decisions before us.

There is significant potential for UAV markets. Some of that potential has already been realized on the battlefields of Iraq and Afghanistan and in providing safe observation of hurricanes and other activities around the world. But today, drones—drones as small and simple as this few hundred dollar one up to drones costing \$18,000 and more are commercially available. These drones are often used in novel ways never possible before.

This includes and is not limited to one of our testimony today, which will talk about the significance of unmanned aerial vehicles for real estate. The ability to know and see the property you may buy while you are, in fact, thousands of miles away has been a dream for a long time. And until inexpensive unmanned aerial vehicles became available with high-performance cameras, it was impossible to demonstrate from the air how you would get there, what it looked like, the condition of it, or even what the backyard properly looked like in a way in which the potential buyer could appreciate it well before coming to see the property.

Companies like Google, Facebook, and Amazon are investing in developing new drone technologies that have the potential to change how we receive Internet service, various goods, and even how we monitor and access remote places around the world or disaster areas. Responsible drone use across industries, including Internet services, movie and news industries, sports coverage, and more are part of daily operations.

As drone technology has become rapidly more prevalent over the past few years, both the Government and private sector have been faced with challenging questions over privacy, airspace access, and more. Such a debate broadly echoes the theme that this Committee sees in new technology. How do we allow new, innovative technologies to come to market and advance economic interests without stifling private industries through outdated or inflexible regulations?

UAV technology has the potential to deliver genuine services to society, and at the same time, the public and private sectors must work together to protect consumers' safety and privacy. Such a cooperation should focus on flexibility, and I am interested to hear from our witnesses suggestions on how we can balance the needs of consumers and technology developers.

Before I conclude and yield to the Ranking Member, I want to say on a very personal basis that I have seen these vehicles operate. I have had the opportunity to operate some of the small vehicles. I have seen them operate as long ago as the beginning of the Gulf War in 2001.

These and their consumer smaller versions represent a great opportunity, one that more than a decade—or not more than a decade, 6 years ago, Ray LaHood, then the brand-new Secretary of Transportation, said one of his priorities to accomplish during his tenure. He pledged to work on the FAA to develop standards for safety and deployability not just for these smaller ones like the one I held up earlier, but, in fact, for the Global Hawk, the Predator, and other large-scale UAVs.

He is a dear friend of mine, but the FAA let us down. And today, as a private pilot, I find it reprehensible that we are, in fact, constantly talking about the danger of very small ones while the FAA has essentially punted on their responsibility to set standards.

The FAA is not within this Committee's jurisdiction, and we appreciate that. But at the same time, we understand that the possibilities for these vehicles flying typically below 400 feet cannot be stifled by just the inaction of the FAA.

And so, with that, I look forward to my Ranking Member's statement and our witnesses, and I yield to the gentleman from New York.

Mr. NADLER. Thank you, Mr. Chairman.

Today, we examine another emerging technology, unmanned aerial vehicles, UAVS or, as they are commonly referred to, drones. Like the Internet of Things, which was the subject of a recent hearing in our Subcommittee, drone technology holds great promise but also raises significant questions of privacy and security.

Today's hearing is not about our military's use of drones overseas, nor are we considering drone use by domestic law enforcement. Those are important topics that raise many questions to be discussed at another time. Our focus today is on the commercial application of drones in the United States, which raises its own set of important issues.

Once upon a time, if you talked about a remote controlled aircraft, you conjured up images of a child playing with his or her toy airplane in the backyard or in the park. The plane was fairly small, had a limited range, and wouldn't cause much damage except to itself if it fell to the ground or crashed onto your roof. This was hardly something that would concern Congress.

But we are now entering a very different world, where today's remote controlled aircraft may be as heavy as a few hundred pounds, can travel many miles, and might be equipped with sophisticated cameras and sensors, sending images and data to your computer in real time. In some cases, the aircraft might not even be remotely controlled. It might be following a preprogrammed flight path.

And the operator isn't a child in the backyard. It may be a major company delivering packages, monitoring farm land, or reporting on traffic jams. How we address the privacy and safety implications of this new kind of unmanned aircraft is very much the province of Congress, and I hope this hearing will help us answer some of the important questions raised by the commercial use of drones.

Drone technology has the potential to unleash a wave of innovation across numerous industries. For example, real estate agents can provide aerial views of prospective properties. Insurance adjusters can quickly survey flood damage over a wide area.

Companies like Amazon hope to deliver packages by air within 30 minutes, and photographers and film directors can take footage of their subjects from unique angles. An Israeli company recently developed a drone that can quickly deliver a defibrillator to the site of a heart attack victim in the street, along with a camera and a microphone so that the operator can instruct a bystander on how to use the drone to save the person's life while the ambulance and the medical technicians are still on their way.

Meanwhile, entrepreneurs are launching companies that offer drone services for hire or act as brokers between drone operators and businesses that need their services. The possibilities for innovation are almost endless, but so are the questions that these services can raise.

Most critically, how can we assure individuals that their privacy will be protected as these unmanned aircraft fly overhead? Drones have the ability to collect massive amounts of data regarding the people and places below. What sort of notice should be given to the

individuals whose data is collected, whose backyard may be surveilled?

What rights should they have to control how this data is stored, shared, and used? And what sorts of security protocols are in place to protect against this data being compromised by hackers?

Drones also raise significant safety concerns. We are all familiar with the drone that accidentally crashed into the White House lawn in January. Just last week, a drone crashed into the U.S. Open tennis tournament. And last month, a college student mounted a handgun on a drone and posted a video on YouTube of the handgun firing live ammunition from the flying drone.

Although each of these incidents involved privately operated drones, they highlight the danger that can be posed by misuse of this technology. Not only must we protect against drones being used for malicious purposes, we must also ensure that drones are operated safely and do not interfere with other objects in the sky.

In addition, we must seek to minimize the noise or other nuisance that drones may present to individuals on the ground as they pass by. Recognizing the growing potential of drone technology, in 2012, Congress called on the FAA to develop a plan to safely integrate civil use of unmanned aerial vehicles into the National Airspace System.

The FAA has yet to complete this rulemaking, but its proposed rule naturally focuses on issues of safety in the skies as that is the agency's domain rather than on privacy concerns. Therefore, in February, President Obama directed the National Telecommunications and Information Administration to convene a multi-stakeholder process to develop and communicate best practices regarding privacy, civil rights, and civil liberties.

But these best practices would be merely voluntary in nature. Given the vast array of issues raised by the commercial application of drones, it would seem that a mandatory regulatory structure is warranted.

We should also consider where such regulatory power should lie. For example, the FAA regulates the safety of objects in flight, while the Federal Communications Commission regulates the airwaves through which drones are controlled. The Federal Trade Commission plays a strong role in protecting consumer privacy, while the Departments of Justice and Homeland Security take the lead in protecting our security.

These agencies are one problem, and they are in addition to the many laws that have been passed on the State level concerning drones. I hope our witnesses today will help us sort through what a proper regulatory scheme might look like for drones and commercial use and who should administer these laws and regulations.

Despite the many potential benefits of drone technology, there are too many questions that must be answered before we can fully embrace it for commercial use.

I appreciate the Chairman calling this hearing so that we can begin a thoughtful consideration of these important issues. I thank you, and I yield back the balance of my time.

Mr. ISSA. Thank you, Mr. Nadler.



I would now like to recognize the Chairman of the full Committee, Chairman Bob Goodlatte of Virginia, for his opening statement.

Mr. GOODLATTE. Well, thank you, Mr. Chairman. I appreciate your holding this hearing.

And today, we are here to learn more about the commercial applications and policy implications of unmanned aerial vehicles. This new area of technology is of particular interest to the Judiciary Committee, considering our longstanding jurisdiction when it comes to issues pertaining to intellectual property and security.

UAVs have the opportunity to transform a wide range of industries from farmers monitoring their crops to realtors trying to sell a home, to utility companies monitoring power lines, to delivering emergency supplies, to changing the way we view sports or film movies. As this Committee continues to study this new technology, it is important for us to keep in mind the issues surrounding UAVs and be cognizant of their effects on public policy today and in the future.

In particular, we need to examine the privacy and security implications of this technology and look into the security and privacy measures that industry is building now and the measures they intend to implement as open standards are developed. I am hopeful that this new technology will help fuel the engine of American innovation, prosperity, and creativity, and I think we have a great panel with us here today, and I look forward to hearing from our witnesses.

I yield back, Mr. Chairman. Thank you.

Mr. ISSA. I thank the gentleman.

All Members, including the Ranking Member, will have their entire opening statements placed in the record.

Without objection, so ordered.

[The prepared statement of Mr. Conyers follows:]

**Prepared Statement of the Honorable John Conyers, Jr., a Representative in Congress from the State of Michigan, and Ranking Member, Committee on the Judiciary**

The commercial use of unmanned aerial vehicles—or drones—presents substantial public policy considerations but also promises potential benefits.

As we hear from today's witnesses, I would like for us to consider the following points.

**To begin with, unmanned aerial vehicles present potentially serious privacy, safety, and security issues.**

I am already concerned about law enforcement's use of drones for surveillance purposes.

But widely-available drones sold commercially present different but just as important privacy implications.

These drones have the capability to violate the expected privacy of individuals by peeking into windows and take photographs.

Drones can collect data through identification technologies, such as automated license plate scanners and facial-recognition software, that could be used for surveillance purposes.

Not only do drones raise privacy concerns, they also can create safety and security issues.

Just last week, for example, a drone crashed into the stands where thousands were viewing the U.S. Open Tennis Championships. Fortunately, no one was injured.

Earlier this year, drones on two separate occasions crashed onto or were flown over the White House grounds presenting serious national security concerns.

There have also been reports of drones being weaponized, and the resulting shooting down of drones by individuals protecting their privacy or finding the drones a nuisance.

And, there have been numerous reports of drones violating the restricted airspace of commercial and military airplanes.

So, as a starting point, we must protect against the threats to privacy and public safety presented by the use and proliferation of commercial drones and, to that end, have a thorough discussion on how the government can best achieve those goals.

For example, Congress could consider Representatives Poe and Lofgren's H.R. 1835, the Preserving American Privacy Act, and Representative Welch's H.R. 1229, the Drone Aircraft Privacy and Transparency Act. These bills attempt to address privacy concerns.

**At the same time, I believe Congress should consider ways to foster the development of the commercial use of unmanned aerial vehicles as this industry could play a major role in helping to grow our Nation's economy and create new jobs.**

The technologies inherent with drones provide expansive opportunities for innovators and investors.

It is estimated, for instance, that within three years after drones are integrated into the national airspace, the unmanned aircraft industry could generate more than \$16 billion in value to our Nation's economy.

This, in turn, could create thousands of new jobs.

**Finally, I am also particularly interested in hearing how consumers could benefit from unmanned aerial vehicles.**

For example, realtors are utilizing unmanned aerial vehicles to survey land and photograph properties to provide more informative perspectives for potential homeowners and investors.

The news media are using drones to record events that are too dangerous for humans to cover, such as the wildfires that have been ravishing the Western U.S.

And, it is hoped that one day high altitude drones that can stay aloft for significant time periods will provide Internet access to consumers living in remote areas who otherwise would lack such access.

We need to strike a balance that protects the privacy, safety, and security of individuals while encouraging the legitimate and commercial use of unmanned aerial vehicles.

I look forward to hearing from today's witnesses.

Mr. ISSA. We now go to our distinguished panel of witnesses. For all the witnesses, your written statements have been entered into the record in their entirety, and I ask you to please summarize within 5 minutes or less your opening statements.

To help us stay within the time limit, you will see the light on the table. My former Chairman of another Committee, Mr. Ed Towns of New York, often said there is nothing easier for us to understand than the red, green, and yellow light. Green means keep talking if you want to, yellow means go faster, and red means stop. So having quoted my predecessor on another Committee, I would ask you to please abide by the Ed Towns rule.

Pursuant to the Committee's rules, would you please all rise to take the oath and raise your right hand?

Thank you.

Do you solemnly swear or affirm that the testimony you are about to give will be the truth, the whole truth, and nothing, but the truth?

Thank you. Please be seated.

Let the record indicate that all the witnesses answered in the affirmative.

Our witnesses today include Mr. Bryan Wynne, President and CEO of Association of Unmanned Vehicle Systems International; Mr. Chris Calabrese, Vice President of Policy at the Center for Democracy & Technology; Mr. Chris Polychron, the 2015 President of

the National Association of Realtors®; and Mr. Tom Karol, General Counsel at the National Association of Mutual Insurance Companies.

And with that, I would now recognize for 5 minutes Mr. Wynne.

**TESTIMONY OF BRIAN WYNNE, PRESIDENT AND CEO, ASSOCIATION FOR UNMANNED VEHICLE SYSTEMS INTERNATIONAL**

Mr. WYNNE. Chairman Issa, I thank you very much. Ranking Member Nadler and Members of the Subcommittee, I appreciate very much the opportunity to participate in today's hearing regarding unmanned aircraft systems.

I'm speaking on behalf of the Association for Unmanned Vehicle Systems International, the world's largest nonprofit organization devoted exclusively to advancing the unmanned systems and robotics community.

The UAS industry is poised to be one of the fastest growing in American history. During the first decade following UAS integration into the National Airspace System, the industry will create more than 100,000 new jobs and provide more than \$82 billion in economic impact. From inspecting infrastructure to filming movies, the applications of UAS are virtually limitless, enabling researchers, public agencies, and businesses to do things more safely and cost effectively.

As with any emerging technology, there are public policy issues that can help or hinder its growth. Let me explain.

We are less than 3 weeks away from the congressionally mandated deadline of September 30th for the integration of UAS international airspace. The FAA has had more than 3 years to put a small UAS rule in place. There is tremendous pent-up demand for commercial UAS operations, yet the FAA isn't expected to meet this deadline.

Until the small UAS rule is finalized, the primary way commercial operators may fly is through an exemption. That process started in May of 2014. The FAA has received more than 2,700 requests and granted more than 1,400 exemptions.

According to AUVSI's report on the first 1,000 exemptions, businesses in more than 25 industries representing more than 600,000 jobs and \$500 billion in economic impact are now using UAS technology. And we've outlined the top 10 States with exemptions on the screen before you so you can see how they're distributed. Just the top 10.

For example, San Diego Gas and Electric provides energy services to 3.4 million people in southern California. It plans to use UAS to help inspect 26,000 miles of power lines, improving safety and efficiency.

The Associated General Contractors of America represents 26,000 member companies in the construction industry. Some are using UAS to improve project planning and execution. These are only a couple of examples, and you'll hear from more industries on the panel.

It's easy to see the far-reaching benefits UAS will add. At the same time, the absence of Federal regulations means many busi-

nesses remain grounded. The current system of case-by-case approvals isn't a long-term solution.

The lack of regulations—regulations isn't just limiting economic potential of this industry, it's also causing States and municipalities to fill the void with laws they may not have the authority to enforce. The most recent example is California's Senate Bill 142, which would have restricted UAS from flying below 350 feet over private property if it were not for Governor Brown's veto last night.

While my industry supports the safe, nonintrusive use of UAS technology, SB 142 would have created inconsistencies with Federal law. Only the FAA can regulate airspace. States and municipalities cannot. According to the U.S. Code, and I quote, "The United States Government has exclusive sovereignty of airspace of the United States."

It's critical for the Federal Government to assert its preemptive authority over the national airspace. In the absence of FAA action, we may soon be facing a legal quagmire. Challenges to questionable State laws will tie up the courts and at significant expense to taxpayers.

If the FAA feels it needs clarification of its authority, I would urge Congress to provide such clarity and legislatively settle this issue. Putting the small UAS rules in place will also help increase the safety of the airspace. It'll provide the necessary tools and training to create a culture of safety around the use of UAS.

As more commercial UAS operators are certified, they'll join the longstanding aviation community, which I've been part of for more than 20 years as an aircraft owner and instrument-rated general aviation pilot. They will foster the aviation community's principles of airmanship and self-policing to promote safety and discourage careless and reckless operations.

Because safety is essential for all users, AUVSI, in partnership with the Academy of Model Aeronautics and the FAA, last year developed the Know Before You Fly campaign to educate newcomers to the UAS, and I'd be pleased to answer more questions about this and other matters of interest to the Subcommittee.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Wynne follows:]



**PREPARED STATEMENT OF BRIAN WYNNE  
PRESIDENT AND CEO, ASSOCIATION FOR UNMANNED VEHICLE SYSTEMS INTERNATIONAL**

**U.S. House of Representatives  
Committee on the Judiciary  
Subcommittee on Courts, Intellectual Property, and the Internet  
September 10, 2015**

Chairman Issa, Ranking Member Nadler and members of the subcommittee, thank you very much for the opportunity to participate in today's hearing on unmanned aircraft systems (UAS). I am speaking on behalf of the Association for Unmanned Vehicle Systems International (AUVSI), the world's largest non-profit organization devoted exclusively to advancing the unmanned systems and robotics community. AUVSI has been the voice of unmanned systems for more than 40 years, and currently we have more than 7,500 members, including over 600 corporate members, from around the world.

The unmanned aircraft industry is poised to be one of the fastest-growing in American history. Our economic impact study found that during the first decade following UAS integration into the National Airspace System (NAS), the industry will create more than 100,000 high-paying jobs and provide more than \$82 billion in positive impact to the nation's economy.

From inspecting utility infrastructure and surveying bridges to filming television shows and providing farmers with multispectral surveys of their crops, the applications of UAS are virtually limitless and they enable researchers, public entities and businesses to do things previously impossible.

As with any emerging technology, there are public policy issues that can either help or hinder the growth of the industry. Let me explain.

We are less than three weeks away from the congressionally mandated deadline of September 30, 2015 for the integration of UAS into the national airspace. The FAA has had more than three years to put a

small UAS rule in place. There is tremendous pent up demand for commercial UAS operations and yet the FAA is not expected to meet its deadline.

Until the small UAS rule is finalized, the primary way commercial operators may fly is through an exemption process. In May 2014, the FAA announced it would consider granting exemptions for certain low-risk commercial UAS applications under Section 333 of the FAA Modernization and Reform Act of 2012. Since then, the FAA has received more than 2,700 requests and granted more than 1,400 exemptions to businesses looking to use UAS for a number of end-user communities.

On July 23<sup>rd</sup> of this year, AUVSI moderated a panel on Capitol Hill with representatives from five industry associations who represent key commercial operators of UAS technology. Some of their members were granted FAA exemptions and are now flying UAS commercially. They included the Motion Picture Association of America, Associated General Contractors of America, the American Farm Bureau Federation, Edison Electric Institute and the National Association of Realtors. While these industries are among the largest for commercial applications, many more industries want to incorporate UAS into their daily operations.

According to AUVSI's report on the first 1,000 commercial UAS exemptions, which was released today, businesses in more than 25 industries representing more than 600,000 jobs now are using UAS technology. These companies contributed about \$500 billion to the U.S. economy in 2014 and provide essential services to citizens across the nation.

For example:

1. San Diego Gas & Electric (SDG&E) is a public utility that provides energy services to 3.4 million people in southern California. SDG&E, which inspects 26,000 miles of transmission and distribution power

lines, uses UAS to greatly improve safety and efficiency over manual inspections. UAS also allow SDG&E to restore power more quickly after outages, especially when lines may be difficult to access because of extreme weather conditions.

2. Likewise, the Associated General Contractors of America (AGC) has highlighted the areas in which UAS are starting to assist its 26,000 member companies in the construction industry. AGC members, which build everything from roadways and bridges to large-scale building complexes, are using UAS to improve project planning and design, safety, efficiency, quality, and environmental compliance. UAS are also documenting the progress of large construction projects, like the new Kings arena in Sacramento, to make sure each step is delivered properly and on time.
3. The insurance industry is also latching on to UAS as an essential tool for operations. According to the National Association of Mutual Insurance Companies, insurers are using UAS in risk assessments, especially in dangerous places like high-pitched roofs, and to speed up claims adjudication after disasters, when time is most important in helping victims recover from their losses. AIG, State Farm, and USAA are among several insurance companies that have been approved to fly UAS commercially.

These are only a few examples, but it is easy to see the far-reaching benefits UAS will add to the American workforce. Just as microprocessors and wireless telecommunications revolutionized our economy over the past decade, UAS are transforming the way industry operates, and are creating several new ones as well, from startups focused on developing new UAS platforms and components, to entrepreneurs creating new business models that offer specific UAS services.

At the same time, the absence of federal regulations means many businesses remain grounded until the rules are put in place. The current system of case-by-case approvals isn't a long-term solution for the many commercial operators wanting to fly.

The lack of regulations isn't just limiting the economic potential of this industry; it is also causing states and municipalities to fill the void, at times with laws that they may not have the authority to enact. The most recent example is California's Senate Bill (SB) 142, which, if signed into law, would restrict drones from flying below 350 feet over private property.

While my industry supports the safe, non-intrusive use of UAS technology, SB 142 would create inconsistencies with federal law. Only the FAA can regulate airspace; states and municipalities cannot. According to Title 49, Part A, Section 1 of the U.S. Code, "The United States Government has exclusive sovereignty of airspace of the United States."<sup>1</sup> It is critical for the federal government to assert its preemption authority over the National Airspace System. In the absence of FAA action, we may soon be facing a legal quagmire. Challenges to questionable state laws will tie up the courts and at a significant expense to U.S. taxpayers. The Judiciary Committee is positioned to deal with the issue of federal preemption. If the FAA feels that it needs clarification of its authority, I would urge Congress to provide such clarity and legislatively settle this issue.

Putting the small UAS rules in place will also help increase the safety of the U.S. airspace. It will provide the necessary tools and training to create a culture of safety around the use of unmanned aircraft. Meanwhile, as more commercial UAS operators are certified, they will join the long-standing aviation community, which I have been part of for the last 20 years as an instrument-rated general aviation pilot. They will foster the aviation community's principles of airmanship and self-policing to promote safety and thwart careless and reckless operations.

Because safe operations are essential for all users of the national airspace, AUVSI, in partnership with the Academy of Model Aeronautics and the FAA, has developed a UAS safety campaign called "Know

---

<sup>1</sup> <http://www.gpo.gov/fdsys/pkg/USCODE-2011-title49/html/USCODE-2011-title49-subtitleVII-partA-subpartI-chap401-sec40103.htm>



Before You Fly.” Launched last year, this effort educates newcomers to the technology about where they should and shouldn’t fly. Many groups representing the manned aviation community have signed on to the campaign as supporters, including Airlines for America, the Aircraft Owners and Pilots Association, National Air Traffic Controllers Association, National Business Aviation Association, and Helicopter Association International.

It is also vital that Congress passes — and the President signs into law — an FAA reauthorization measure before the current authorization expires on September 30, 2015. This policy measure is critical for accelerating and expanding the commercial use of UAS and the most immediate way to encourage collaboration between governmental and private sector stakeholders. AUVSI has been engaged with the committees and staff leading the FAA reauthorization efforts in both chambers of Congress to address specific recommendations on how this can be accomplished.

As an industry, we want to see the integration of UAS proceed without further delays. Once this happens, we will have an established framework for UAS operations that will allow anyone who follows the rules to fly. It will do away with the case-by-case system of approvals that currently exists, reducing the barriers to UAS operations.

Equally as important, government and industry need to work together to permit expanded uses of UAS technology that pose no additional risk to the airspace system. For example, whether within the context of the rule, through the FAA reauthorization measure or by other means, we need to allow for operations that are beyond-visual-line-of-sight, during the nighttime and over populated areas.

We need to make sure we are doing all we can to support the UAS industry’s growth and development; otherwise we risk stunting a still-nascent industry, and restricting the many beneficial uses of this technology. The longer we take, the more our nation risks losing its innovation edge, along with billions in economic impact.

UAS technology is at an exciting and pivotal stage. The technology is developing rapidly, with new applications being introduced nearly every day, and at a rate much faster than it takes to develop the necessary regulations. We need to ensure the FAA adopts the proper framework to keep up with the rapid development of UAS technology and is sufficiently resourced to work with industry and other stakeholders to perform essential research to maintain the safety of our airspace.

Thank you again for the opportunity to speak today. I look forward to answering any questions the subcommittee might have.

Mr. ISSA. Thank you.  
Mr. Calabrese? Calabrese, I'm sorry.

**TESTIMONY OF CHRIS CALABRESE, VICE PRESIDENT FOR  
POLICY, CENTER FOR DEMOCRACY & TECHNOLOGY**

Mr. CALABRESE. Thank you, Chairman Issa. Oh.

Mr. ISSA. Push the button.

Mr. CALABRESE. Thank you, Chairman Issa, Ranking Member Nadler, and Members of the Committee.

I appreciate the opportunity to testify before you today on unmanned aircraft systems, or drones.

I'm Chris Calabrese. I'm the vice president for policy at the Center for Democracy and Technology.

CDT is a nonpartisan, nonprofit technology policy advocacy organization dedicated to protecting civil liberties, such as privacy and free speech while enabling Government agencies to provide security in the private sector to innovate.

There are three key realities that should drive congressional action around drones. The first is that unmanned aircraft systems are a promising technology but have the potential to erode civil liberties through pervasive surveillance.

The second is that current laws do not provide strong privacy protections from Government or private unmanned aircraft invasions. This lack of privacy protections undermines public trust in drone technology, which holds back the industry.

Third, to earn public acceptance of drones, both Government and the UAS industry should fully address civil liberties issues through a combination of legislation and an industry code of conduct.

CDT hopes and believes that UAS can become a valuable tool for commerce, journalism, disaster relief, scientific research, and more. However, privacy rules are a necessary predicate to all of this.

Without baseline standards, we will continue to see State restricts on drone use as well as public distrust. It is telling that in a recent Pew poll, almost two-thirds of the public thought personal and commercial drone development would be a negative in spite of being generally positive about technology overall.

Drones represent a new privacy threat because they are inexpensive, can stay in the air longer, and surveil previously private locations. In other words, UAS have the potential to be persistent, pervasive, and cheap.

Our fear is that law enforcement might establish a "drone dragnet" that constantly tracks individuals in popular—populated outdoor areas, chilling the public's right to assemble and free association. At the same time, a network of commercial unmanned aircraft could constantly record video footage of anyone who steps out of their home, even if the individual remains on private property.

UAS can also be equipped with a variety of sensors, such as cell phone trackers, enabling even greater tracking. While this scenario is clearly not going to happen tomorrow, there are no existing laws that would prevent it from happening, and the Government does not—or the public does not yet trust the Government or the UAS industry to do anything—or excuse me, to do enough to prevent that reality.

When it comes to Government UAS, CDT believes that prolonged physical surveillance of individuals in public places violates Fourth Amendment principles. However, the Supreme Court has repeatedly said that Americans have no expectation of privacy from aerial surveillance.

The court even held that the Fourth Amendment is not violated when a police helicopter looks into the interior of a private building through a hole in the ceiling without a warrant. Bottom line, there is very little privacy protection from Government UAS even outdoors.

Law enforcement use is the most acute public concern with UAS. To address this public concern, Congress should pass legislation that, among other things, establishes due process protections for UAS. And while I know that's not this Committee's jurisdiction, it's certainly something Judiciary Committee Members are concerned with. Note—and the most important thing is that that legislation be accompanied by a warrant.

When it comes to private sector UAS use, common law privacy torts provide Americans with some protection outside of the home, but only if the conduct is highly offensive to a reasonable person. However, any Government regulation of private UAS must not violate the First Amendment and Americans' right to take photographs in public.

An industry code of conduct would help provide privacy protections from UAS where direct regulation cannot. But it would only be effective if the industry agrees to adopt a strong and enforceable code.

This code should establish reasonable limits on UAS collection and retention of personally identifiable information. It should create a publicly accessible registry that includes data collection practices and—and we should establish cybersecurity standards to prevent hijacking or unauthorized damage to UAS systems.

Thank you for holding this hearing. I appreciate the opportunity to testify.

[The prepared statement of Mr. Calabrese follows:]



Statement of Chris Calabrese  
 Vice President for Policy  
 Center for Democracy & Technology

Hearing on "Unmanned Aerial Vehicles: Commercial Applications and Public Policy Implications" before the U.S. House of Representatives Committee on the Judiciary's Subcommittee on Courts, Intellectual Property, and the Internet.

September 10, 2015

Chairman Issa, Ranking Member Nadler, and members of the Subcommittee:

Thank you for the opportunity to testify on behalf of the Center for Democracy & Technology (CDT). CDT is a nonpartisan, nonprofit technology policy advocacy organization dedicated to protecting civil liberties and human rights, including privacy, free speech and access to information. We applaud the Subcommittee for holding a hearing that covers the challenges of regulating unmanned aircraft systems (UAS) – "drones" – in a manner that preserves both innovation and privacy.

CDT supports the many beneficial applications of UAS, but also acknowledges the potential for UAS to erode civil liberties. Federal and constitutional law do not provide individuals with clear and meaningful privacy protection from government UAS. Common law provides limited privacy protection from private UAS, though any direct privacy regulation of private UAS must be consistent with the First Amendment. Public distrust, rooted in a perceived lack of privacy protection, hampers the domestic UAS industry and the growth of the technology. To reap the full benefits of UAS, Congress and the industry should take steps to address the public's legitimate privacy concerns. CDT recommends Congress pass federal legislation to enact privacy and transparency standards for UAS – especially law enforcement use. CDT also recommends that the UAS industry develops and adopts a strong and accountable code of conduct.

#### **I. UAS Privacy Issues**

CDT readily recognizes that UAS is a valuable technology with many positive uses that pose little threat to privacy. We agree that unmanned aircraft can save lives, promote research, fight fires, make it easier to farm, track wildlife, relay WiFi signals to remote areas, deliver packages, reduce hardship for the many who work in hazardous conditions, and more. CDT wants to see UAS utilized for science, commerce, disaster relief, journalism, education, and recreation. However, despite these clearly beneficial uses, we should not ignore the strong potential for some unmanned aircraft applications to enable pervasive surveillance that degrades civil liberties.

Some have argued that UAS do not raise new privacy issues beyond those posed by manned aircraft, CCTV, or red light cameras. We disagree; because UAS operate from vantage points other systems do not reach, UAS can far exceed the privacy impact of those older technologies. Unlike helicopters, high-grade UAS can quietly monitor a wide area for extended periods of time without refueling. CCTV and red light cameras are limited in their coverage: turn the corner, leave the intersection, or enter your fenced-in yard, and these systems can no longer observe you – but UAS can. It can be very difficult to avoid the gaze of high-flying UAS once an individual is outside. Because UAS are relatively inexpensive, they are likely to be used more frequently by more parties than most other aerial surveillance systems (like a helicopter). Combining UAS with cell tower emulators, facial recognition cameras<sup>1</sup>, license plate scanners<sup>2</sup>, thermal imaging cameras<sup>3</sup>, open WiFi sniffers<sup>4</sup>, and other<sup>5</sup> sensors can make the surveillance all the more intrusive.

As UAS proliferate, many Americans are now facing the significant likelihood of aerial surveillance in public and private property where currently little or no physical surveillance takes place. For example, most public areas in the US are not under constant law enforcement surveillance, but UAS could underpin a network of sensors capable of identifying and tracking individuals and vehicles on a pervasive basis for generalized public safety purposes. Another example: Most Americans do not expect to be recorded while on fenced-in private property, but commercial UAS platforms could take footage of virtually anyone who steps out of her home, even if the individual remains on private property. These may seem like unlikely examples to some. However, few existing laws would stand in the way, and the public does not trust the discretion of government or the UAS industry to prevent such disagreeable scenarios from approaching reality.

In the past year, two incidents demonstrated the potential for large-scale federal law enforcement aerial surveillance. In 2014, it was revealed that Justice Department agencies used aircraft equipped with cell tower emulators to scan the identification numbers of the cell phones over which the aircraft flew.<sup>6</sup> The flying range of the aircraft reportedly covered most of

<sup>1</sup> See Noah Shachtman, *Army Tracking Plan: Drones that Never Forget a Face*, WIREd (Sept. 28, 2011), <http://www.wired.com/dangerroom/2011/09/drones-never-forget-a-face>.

<sup>2</sup> See Kris Gutierrez, *Drone Gives Texas Law Enforcement Bird's Eye View on Crime*, Fox News (Nov. 16, 2011), <http://www.foxnews.com/us/2011/11/16/drone-gives-texas-law-enforcement-birds-eye-view-on-crime>.

<sup>3</sup> See, e.g., Draganflyer X6, Draganfly.com, <http://www.draganfly.com/uav-helicopter/draganflyer-x6/features/flir-camera.php>.

<sup>4</sup> See Gary Mortimer, *Wi-Fi Aerial Surveillance Platform, WASP Drone*, sUAS News (Aug. 15, 2010), <http://www.suasnews.com/2010/08/587/wi-fi-aerial-surveillance-platform-wasp>.

<sup>5</sup> Ryan Calo, *Drones, Dogs and the Future of Privacy*, WIREd (Mar. 8, 2012), <http://www.wired.com/threatlevel/2012/03/opinion-calos-drones-dogs-privacy>.

<sup>6</sup> Devlin Barrett, *Americans' Cellphones Targeted in Secret U.S. Spy Program*, Wall Street Journal, Nov. 13, 2014, <http://www.wsj.com/articles/americans-cellphones-targeted-in-secret-u-s-spy-program-1415917533>. The Dept. of Justice has since announced that the Department will obtain a warrant before using cell tower emulators. *Justice Department Announces Enhanced Policy for Use of Cell-Site Simulators*, Dept. of Justice Office of Public Affairs, Sep. 3, 2015, <http://www.justice.gov/opa/pr/justice-department-announces-enhanced-policy-use-cell-site-simulators>.

the U.S. population, with each flight scanning cell phone data from tens of thousands of individuals with no connection to crime. In 2015, it was revealed that the Federal Bureau of Investigation operated scores of planes for surveillance related to ongoing investigations, usually without court approval.<sup>7</sup> The government used manned flights in these examples, but UAS can make such surveillance more widespread, cheaper, and intrusive.

## II. Privacy Laws and Law Enforcement UAS

At present, there are few clear nationwide restrictions on law enforcement use of UAS to monitor Americans outside their homes. There is no federal statutory protection. The FAA Modernization and Reform Act of 2012, which establishes a regulatory roadmap for integrating UAS into US airspace, does not mention privacy or transparency at all.<sup>8</sup> No other federal statute provides privacy protection or prescribes a due process standard for government use of UAS for physical surveillance.

CDT believes prolonged physical surveillance of individuals violates Fourth Amendment principles. However, the federal courts have not provided consistent privacy protection from aerial surveillance. In a series of decisions in the late 1980s, the Supreme Court repeatedly found that individuals have no “reasonable expectation of privacy” – and therefore no Fourth Amendment protection – from warrantless government surveillance conducted from publicly navigable airspace.<sup>9</sup> The Supreme Court even held, in *Florida v. Riley* (1989), that the Fourth Amendment is not violated by warrantless police helicopter surveillance from 400ft of the interior of a private building through a hole in the ceiling.<sup>10</sup>

Courts have slowly begun to express skepticism for the maxim that there is no reasonable expectation of privacy from warrantless government surveillance out of the home. In *United States v. Jones* (2012), the Supreme Court rejected the government’s argument that there is never a reasonable expectation of privacy from warrantless government surveillance out of the home, but the Court ultimately ruled on grounds that attaching a tracking device to a car was a physical trespass.<sup>11</sup> The *Jones* opinion is not a clear signal that the public has meaningful privacy protection from aerial surveillance.<sup>12</sup> More recently, the Eastern District of Washington held, in *United States v. Vargas*, that the government violated the Fourth Amendment through secret video surveillance of the front yard of a suspect’s rural home continuously for more than

<sup>7</sup> Jack Gillum, Eileen Sullivan, and Eric Tucker, *FBI behind mysterious surveillance aircraft over US cities*, Associated Press, Jun. 2, 2015, <http://bigstory.ap.org/article/4b3f220e33b64123a3909c60845da045/fbi-behind-mysterious-surveillance-aircraft-over-us-cities>.

<sup>8</sup> FAA Modernization and Reform Act of 2012, Pub. L. No. 112-05, 126 Stat. 11.

<sup>9</sup> *California v. Ciraolo*, 476 U.S. 207, 222 (1986); *Dow Chem. Co. v. United States*, 476 U.S. 227, 239 (1986).

<sup>10</sup> *Florida v. Riley*, 488 U.S. 445 (1989).

<sup>11</sup> *U.S. v. Jones*, 132 S.Ct. 945 (2012).

<sup>12</sup> “Thus, even assuming that the concurrence is correct to say that “[t]raditional surveillance” of Jones for a 4-week period “would have required a large team of agents, multiple vehicles, and perhaps aerial assistance,” post, at 12, our cases suggest that such visual observation is constitutionally permissible.” *U.S. v. Jones*, 132 S.Ct. 945 (2012).

six weeks.<sup>13</sup> An important, unanswered question is whether any objective reasonable expectation of privacy on outdoor private property will survive in a future in which many UAS regularly traverse the skies.

The Dept. of Justice issued guidance on the domestic UAS that provides only limited privacy protection.<sup>14</sup> The Dept. of Justice guidance states that it will only collect and use information obtained from UAS for an authorized purpose, but this is a very light restraint. The guidance also asks agencies to submit annual privacy reviews, and states that the Dept. of Justice will provide the public with brief descriptions of the types and quantity of its UAS missions. While these steps are positive, they do not provide strong transparency or privacy protections. Similarly, the International Association of Chiefs of Police issued guidelines recommending that agencies secure a search warrant for UAS only if the UAS will intrude upon reasonable expectations of privacy.<sup>15</sup>

### III. Privacy Laws and Private UAS

Common law privacy torts provide Americans with some protection from private sector UAS out of the home. For example, the torts of intrusion upon seclusion and public disclosure of private facts prohibit intrusions and disclosures that would be highly offensive to a reasonable person.<sup>16</sup> Many, though not all, states have voyeurism and Peeping Tom laws that provide additional protections. However, many voyeurism and peeping tom laws apply only to looking within structures or enclosures, require plaintiffs to have a reasonable expectation of privacy, and may include sexual gratification as a component of the perpetrator's intent.<sup>17</sup> Moreover, as camera-equipped UAS proliferate, it may become increasingly difficult to claim that observation from UAS is objectively offensive, or that an individual has a reasonable expectation of privacy,

<sup>13</sup> The court declared that Americans have a reasonable expectation of privacy in the activities occurring in and around the front yard of their homes, and that this expectation prohibits "warrantless, continuous, and covert recording." *United States v. Vargas*, No. CR-13-6025-EFS, slip. op. at 2 (E.D. Wash. Dec. 15, 2014), available at [https://www.efc.org/files/2014/12/15/vargas\\_order.pdf](https://www.efc.org/files/2014/12/15/vargas_order.pdf). The government withdrew its appeal of the ruling.

<sup>14</sup> Department of Justice Policy Guidance, Domestic Use of Unmanned Aircraft Systems (UAS), Dept. of Justice, May 22, 2015, <http://www.justice.gov/file/441266/download>. The Dept. of Justice's guidance was in response to a Presidential Memorandum.

<sup>15</sup> International Association of Chiefs of Police, Aviation Committee, Recommended Guidelines for the use of Unmanned Aircraft, Aug. 2012, pg. 3, [http://www.theiacp.org/portals/0/pdfs/IACP\\_UAGuidelines.pdf](http://www.theiacp.org/portals/0/pdfs/IACP_UAGuidelines.pdf).

<sup>16</sup> "One who intentionally intrudes, physically or otherwise, upon the solitude or seclusion of another or his private affairs or concerns, is subject to liability to the other for invasion of his privacy, if the intrusion would be highly offensive to a reasonable person." Restatement (Second) of Torts Sec. 652B (1977). "One who gives publicity to a matter concerning the private life of another is subject to liability to the other for invasion of his privacy, if the matter publicized is of a kind that (a) would be highly offensive to a reasonable person, and (b) is not of legitimate concern to the public." Restatement (Second) of Torts Sec. 652D (1977).

<sup>17</sup> See Voyeurism Statutes 2009, National District Attorneys Association, Mar. 2009, [http://www.ndaa.org/pdf/voyeurism\\_statutes\\_mar\\_09.pdf](http://www.ndaa.org/pdf/voyeurism_statutes_mar_09.pdf).



even when the observed individual is on private property. These and other<sup>18</sup> civil laws provide Americans with limited protection from some egregious conduct that UAS can enable.

More sweeping government regulation of private UAS must avoid infringing on Americans' longstanding First Amendment right to take photographs of things visible from public places.<sup>19</sup> Some state UAS-specific laws may run afoul of First Amendment protection for photography by private individuals. For example, North Carolina broadly forbids any person from using UAS to capture an image of any individual, or of private property for the purpose of disseminating or publishing the image, unless the image is newsworthy.<sup>20</sup> Texas law forbids capturing an image of an individual or private property "with intent to conduct surveillance."<sup>21</sup> We believe such laws infringe on free expression due to their overbreadth and are skeptical that they would withstand a First Amendment challenge.

CDT supports comprehensive baseline consumer privacy legislation that is tech-neutral, and therefore includes physical surveillance platforms such as UAS. However, the application of any such legislation to private UAS would necessarily be somewhat limited in scope to avoid a First Amendment conflict. While UAS must abide by applicable safety laws, and some UAS platforms could be required to disclose data collection practices, it would likely be generally impermissible to authorize some types of private UAS-based photography and sound recording while restraining others on privacy grounds.<sup>22</sup>

CDT believes a strong and accountable industry code of conduct would be a helpful step towards achieving effective privacy protection from private UAS without infringing on free expression. Unfortunately, the industry code of conduct developed by the Association of Unmanned Vehicle Systems International (AUVSI) does not provide meaningful protection.<sup>23</sup> AUVSI's industry code merely commits to following the law and respecting the privacy of individuals, without further detail. CDT believes more robust and nuanced industry best practices on privacy and transparency are necessary to build public trust in UAS. Pursuant to President Obama's Feb. 2015 Memorandum on domestic use of unmanned aircraft, the National Telecommunications and Information Administration (NTIA) recently held its first of a series of multi-stakeholder meetings with industry, academics, public interest groups and

<sup>18</sup> Nuisance and trespass also provide limited privacy protection. However, claims must typically demonstrate a substantial interference with enjoyment of land, and trespass claims likely do not apply to UAS in publicly navigable airspace. Restatement of Torts (Second), Sec. 159(2) (1965), stating that "Flights by aircraft in the airspace above the land of another is a trespass if, but only if, (a) it enters into the immediate reaches of the airspace next to the land, and (b) it interferes substantially with the other's use and enjoyment of the land."

<sup>19</sup> See Know Your Rights: Photographers, American Civil Liberties Union, Jul. 2014, <https://www.aclu.org/know-your-rights-photographers>.

<sup>20</sup> North Carolina General Statutes, 15A-300.1.

<sup>21</sup> Texas Gov't Code, Sec. 423.003.

<sup>22</sup> See Stephen E. Henderson et al., (2015) "Regulating Drones under the First and Fourth Amendments" *William and Mary Law Review* (forthcoming), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2574378](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2574378).

<sup>23</sup> Unmanned Aircraft System Operations Industry "Code of Conduct," Association for Unmanned Vehicle Systems International, Jul. 2012, pg. 2, <http://higherlogicdownload.s3.amazonaws.com/AUVSI/958c920a-719b-4ad2-9807-f9a4e95d1ef1/UploadedFiles/AUVSI%20UAS%20Operations%20Code%20of%20Conduct%20-%20Final.pdf>.

others to develop privacy best practices for private UAS.<sup>24</sup> Though it is early in the process, CDT is optimistic that the goal of meaningful and effective best practices is achievable – particularly since private UAS operators have significant incentives to seek public acceptance of the technology.

#### IV. Public Trust of UAS

The perceived lack of privacy protection in law has fed widespread public distrust of UAS. A 2014 Pew poll found that nearly two-thirds of surveyed Americans thought the proliferation of personal and commercial UAS would be negative, despite being generally positive about the future benefits of technological advancement.<sup>25</sup> A 2013 poll from Monmouth University found that three-fourths of surveyed Americans say the government should get a warrant to use UAS.<sup>26</sup> Other polls of residents in specific states show even greater discomfort with UAS surveillance and higher levels of support for a warrant requirement.<sup>27</sup> This lack of trust has prompted the patchwork of state laws and hampered public acceptance of UAS.

Public concern and the lack of clear federal privacy protection have prompted several states to take action. Approximately 16 states have enacted UAS privacy laws since 2014, and these laws vary widely.<sup>28</sup> Most of the state laws are focused on law enforcement use, though other states – such as North Carolina and Louisiana – restrict private UAS.<sup>29</sup> Although state UAS

<sup>24</sup> Presidential Memorandum: Promoting Economic Competitiveness While Safeguarding Privacy, Civil Rights, and Civil Liberties in Domestic Use of Unmanned Aircraft Systems, The White House, Feb. 15, 2015, <https://www.whitehouse.gov/the-press-office/2015/02/15/presidential-memorandum-promoting-economic-competitiveness-while-safegua>. See also, Center for Democracy, CDT Comments To NTIA On “Privacy, Transparency, And Accountability Regarding Commercial and Private Use of Unmanned Aircraft Systems,” Apr. 20, 2015, <https://d1ovv0c9tw0h0c.cloudfront.net/files/2015/04/CDT-Submission-to-NTIA-on-Commercial-and-Private-Use-of-UAS.pdf>.

<sup>25</sup> U.S. Views of Technology and the Future, Pew Research Center, Apr. 17, 2014, pg. 3, <http://www.pewinternet.org/files/2014/04/US-Views-of-Technology-and-the-Future.pdf>.

<sup>26</sup> U.S. Supports Unarmed Domestic Drones, But Public Prefers Requiring Court Orders First, Monmouth University, Aug. 15, 2013, pg. 2, <https://www.monmouth.edu/assets/0/32212254770/32212254991/32212254992/32212254994/32212254995/30064771087/409aefb-3897-4360-8a05-03838ba69e46.pdf>.

<sup>27</sup> See, e.g., William Petroski, Iowa Poll: 76% favor requiring warrants for drone surveillance, Des Moines Register, Mar. 11, 2014, <http://www.desmoinesregister.com/story/news/politics/2014/03/11/iowa-poll-76-favor-requiring-warrants-for-drone-surveillance/6311137>. See also, Sakiyama, et al., Nevada vs. U.S. Residents’ Attitudes Toward Surveillance Using Aerial Drones, University of Nevada Las Vegas Center for Crime and Justice Policy, Dec. 2014, [http://www.unlv.edu/sites/default/files/page\\_files/27/NevadaU.S.Residents%27Attitudes.pdf](http://www.unlv.edu/sites/default/files/page_files/27/NevadaU.S.Residents%27Attitudes.pdf). See also, Poll: 72% of North Carolina Voters Support Warrant Requirement for Drone Surveillance, ACLU of North Carolina, Mar. 2014, <http://acluofnc.org/blog/poll-72-of-north-carolina-voters-support-warrant-requirement-for-drone-surveillance.html>.

<sup>28</sup> Current Unmanned Aircraft State Law Landscape, National Conference of State Legislatures, Jun. 9, 2015, <http://www.ncsl.org/research/transportation/current-unmanned-aircraft-state-law-landscape.aspx>. See also 2014 State Unmanned Aircraft Systems Legislation, National Conference of State Legislatures, Sep. 16, 2014, <http://www.ncsl.org/research/civil-and-criminal-justice/2014-state-unmanned-aircraft-systems-uas-legislation.aspx>.

<sup>29</sup> North Carolina General Statutes, Article 16B, Chapter 15A-300.1. Louisiana Revised Statutes, Title 14, Section 337.

privacy laws may reduce public concern within those states, a federal law is preferable to apply to both state and federal UAS, to provide coverage to states that do not have a state UAS law, and to provide greater regulatory certainty to public and private UAS operators.

This negative sentiment can also manifest in more extreme ways – such as shooting down or disabling UAS in mid-flight. Earlier this summer, firefighters in upstate New York repeatedly tried to spray a UAS with their hoses while it filmed them during the aftermath of a house fire.<sup>30</sup> A New Jersey man shot down a UAS last fall.<sup>31</sup> A 2013 Reason-Rupe poll found that nearly half of surveyed Americans believe they should have the right to shoot down UAS over their property.<sup>32</sup> A bill that would have provided civil immunity to individuals that shoot down UAS over their property passed the Oklahoma Senate Judiciary Committee earlier this spring.<sup>33</sup> Such examples demonstrate the degree to which many Americans feel UAS intrude on their peace and privacy.

To foster broader public acceptance of the UAS industry, the government and the industry itself should fully address civil liberties issues. We understand that most unmanned aircraft will not be equipped with sophisticated sensors and tracking systems, and it's clear that most businesses want to be good actors. However, the public wants protections from the most troubling capabilities and uses of this technology that we've seen in both theaters of war and domestically. Congress, Executive Branch agencies, and the private sector have important roles to play in providing protections and preserving public trust.

#### V. Federal UAS Legislation Recommendations

CDT believes Congress should consider legislation regarding UAS to provide privacy where protections are currently weak, to provide regulatory clarity to both businesses and government agencies, and to promote public trust of UAS technology.

The key issue this legislation should address is establishing due process standards for law enforcement use of UAS. While the public has broader concerns with UAS, law enforcement use may be the most acute. The legislation should have a lighter touch for non-law enforcement uses of public UAS, such as scientific research and other uses with a low impact on civil liberties, but legislation should establish transparency requirements for all government

<sup>30</sup> Michael Franco, *Watch firefighters blast drone out of sky with hose*, CNet, Jun. 11, 2015,

<http://www.cnet.com/au/news/watch-firefighters-blast-drone-out-of-sky-with-hose>.

<sup>31</sup> Jeff Goldman, *Man arrested after shooting down neighbor's remote control helicopter, cops say*, NJ.com, Sep. 30, 2014, [http://www.nj.com/cape-may-county/index.ssf/2014/09/man\\_faced\\_with\\_gun\\_charges\\_after\\_shooting\\_down\\_remote\\_control\\_helicopter.html](http://www.nj.com/cape-may-county/index.ssf/2014/09/man_faced_with_gun_charges_after_shooting_down_remote_control_helicopter.html).

<sup>32</sup> Reason-Rupe Public Opinion Survey, February 2013 Topline results, Feb. 25, 2013, Pg. 5. <http://reason.com/assets/db/13620384648046.pdf>.

<sup>33</sup> S.B. 492, 55th Leg., 1st Sess. (Okla. 2015), *available at*, <http://www.oklegislature.gov/BillInfo.aspx?Bill=SB492&Session=1500>. The bill would not affect liability for discharging a firearm, nor liability for violating FAA rules.

("public") UAS. Any provision regulating private use of UAS should be flexible enough to avoid infringing on free expression and violating the First Amendment.

More specifically, CDT recommends that Congress enact federal legislation that

- Requires public UAS to submit a data collection statement as part of the Federal Aviation Administration's (FAA) UAS certification process. The data collection statement should outline the agency's data collection, retention, and use policies, and provide an individual point of contact.
- Requires the FAA to establish a publicly accessible database indexing public UAS licenses and data collection statements. This could be similar to the FAA's database for private aircraft.<sup>34</sup>
- Requires law enforcement agencies to have a warrant for UAS surveillance of individuals or private property.<sup>35</sup> Exceptions to this requirement should include exigent circumstances such as destruction of evidence, hot pursuit of a fleeing suspect, and emergency situations involving imminent danger of death or serious injury. Crime scene photography should be permitted as well. The main goal is to prevent warrantless use of UAS over private property, and warrantless use of UAS for long-term monitoring of public spaces.
- Bans lethal weapons – "firearms" as defined by 18 USC 921 – from public, private, and hobbyist UAS. Exceptions could include testing, training, and military UAS taking off and landing in the US.
- Does not regulate private UAS in a way that violates the First Amendment right to photography in public places. This can be done by mirroring language in existing privacy torts – such as intrusion upon seclusion – banning private UAS use that is "highly offensive to a reasonable person" in circumstances where the person has a "reasonable expectation of privacy." This would be a weak restriction, which is why a code of conduct is important.

Many of these recommendations are articulated in active legislation in both the House and Senate. CDT supports the Preserving American Privacy Act of 2015, sponsored by Reps. Poe and Lofgren, as well as Senator Wyden's "Protecting Individuals From Mass Aerial Surveillance Act of 2015."<sup>36</sup> We believe both bills would establish meaningful protections from overbroad government UAS surveillance while preserving beneficial uses with less impact on civil liberties, such as government research and disaster relief. The Preserving American Privacy Act does include a light restriction on private UAS, but we believe this restriction – which forbids intentionally using UAS, in a manner that would be highly offensive to a reasonable person, to observe an individual engaging in personal activity in circumstances where the individual has a reasonable expectation of privacy – is generally aligned with privacy

<sup>34</sup> FAA Registry, Aircraft Inquiry, Federal Aviation Administration, <http://registry.faa.gov/aircraftinquiry> (last accessed Jun. 12, 2015).

<sup>35</sup> If law enforcement already has a warrant to search property, a separate warrant to use UAS is unnecessary.

<sup>36</sup> "Preserving American Privacy Act," H.R. 1385, 114th Cong. (2015). "Protecting Individuals From Mass Aerial Surveillance Act of 2015," S. 1595, 114th Cong. (2015).

torts and does not, on its face, violate the First Amendment. CDT urges Congress to swiftly advance these bills.

#### **VI. Private UAS Recommendations**

CDT supports comprehensive baseline consumer privacy legislation that includes UAS, but recognizes that First Amendment principles would constrict privacy regulation of UAS-enabled observation. If broadly adopted and faithfully implemented, an industry code of conduct with meaningful privacy, transparency, and accountability requirements could provide protection and foster public trust. CDT supports the NTIA's effort to develop voluntary best practices for UAS, as required by Presidential memorandum on domestic UAS.<sup>37</sup> Because such guidelines would be voluntary, they should not raise the same First Amendment issues associated with formal regulation of data collection by private UAS.

CDT recommends that the UAS industry work to develop a code of conduct for private UAS that

- Is based on the Fair Information Practice Principles.<sup>38</sup>
- Establishes reasonable limits on UAS collection, use, and analysis of sensitive or personally identifying information.
- Establishes reasonable limits on the retention and sharing of sensitive or personally identifying data collected by UAS.
- Creates a publicly accessible UAS registry that includes a data collection statement detailing the UAS owner's collection and retention practices and providing an individual point of contact.
- Provides for reasonable exceptions to a UAS registry, such as registration by proxy or a full exemption, to protect UAS owners' privacy interests in their identifying information, such as investigative journalists.
- Requires operators to make reasonable efforts to communicate these privacy and transparency policies to external audiences, such as through a privacy policy on a website.
- Provides for a means of reporting nuisances and other complaints related to UAS.
- Requires that UAS operators secure sensitive data collected via UAS.
- Establishes cybersecurity standards to prevent hijacking or unauthorized damage to UAS systems.<sup>39</sup>

<sup>37</sup> Presidential Memorandum: Promoting Economic Competitiveness While Safeguarding Privacy, Civil Rights, and Civil Liberties in Domestic Use of Unmanned Aircraft Systems, The White House, Feb. 15, 2015, <https://www.whitehouse.gov/the-press-office/2015/02/15/presidential-memorandum-promoting-economic-competitiveness-while-safegua>.

<sup>38</sup> Department of Homeland Security, The Fair Information Practice Principles: Framework for Privacy Policy at the Department of Homeland Security (Dec. 2008), [http://www.dhs.gov/xlibrary/assets/privacy/privacy\\_policyguide\\_2008-01.pdf](http://www.dhs.gov/xlibrary/assets/privacy/privacy_policyguide_2008-01.pdf).

<sup>39</sup> Center for Democracy, CDT Comments To NTIA On "Privacy, Transparency, And Accountability Regarding Commercial and Private Use of Unmanned Aircraft Systems." Apr. 20, 2015.

In addition, CDT recommends that the industry explore technical measures to protect individual privacy in physical space. One example is the private sector effort to enable individuals to "geo-fence" their property so that UAS avoids flying over, or avoids retaining data collected over, the delineated area.<sup>40</sup> An example of a technical transparency measure would be to equip UAS with transponders that broadcast a signal identifying the UAS – acting as UAS "license plates" that are easier for individuals to read at a distance than tail markings.<sup>41</sup>

Another technical measure CDT recommends the industry explore is a protocol to allow individuals to communicate privacy preferences to UAS and other devices collecting data in physical space. For example, a UAS equipped with a camera could halt visual observation of individuals who display a particular graphic symbol or color, or who broadcast a "do not track" signal from handheld devices.<sup>42</sup> While such privacy protective measures are available to Internet users in the online context, few comparable measures are available yet to protect privacy in physical space.<sup>43</sup>

### Conclusion

Unmanned aircraft systems have great potential benefit, but also potential for invasion of privacy. For this reason, public trust the UAS industry is strained. Without public trust, industry will struggle with lack of acceptance, a patchwork of state and local laws, and even hostility. Current laws do not adequately protect privacy from broad surveillance by unmanned aircraft systems. A combination of federal legislation for government UAS and best practices for private UAS would be good initial steps. The goal should be to meaningfully protect privacy and enhance transparency while preserving essential law enforcement use and maintaining a light regulatory touch on emergency, scientific, and other uses with low impact on civil liberties. We look forward to working with both the government and the UAS industry to preserve privacy, free expression, security, and innovation.

END

---

<https://d10vv0c9tw0h0c.cloudfront.net/files/2015/04/CDT-Submission-to-NTIA-on-Commercial-and-Private-Use-of-UAS.pdf>.

<sup>40</sup> See, e.g., NoFlyZone, About, <https://www.noflyzone.org/about> (last accessed Jun. 12, 2015).

<sup>41</sup> Joseph Hall, 'License Plates' for Drones?, Center for Democracy & Technology, Mar. 2013,

<https://cdt.org/blog/license-plates-for-drones>.

<sup>42</sup> See, e.g., Jeremy Schiff et al. (2009). Respectful Cameras: Detecting Visual Markers in Real-Time to Address Privacy Concerns. In *Protecting Privacy in Video Surveillance*, Springer, <http://goldberg.berkeley.edu/pubs/respectful-cameras-book-chapter-F08.pdf> (last accessed Jun. 12, 2015).

<sup>43</sup> A system of this kind would have applications beyond UAS, such as facial recognition and other biometric sensors. See, e.g., Harley Geiger, Seeing Is ID'ing: Facial Recognition & Privacy, Comments to the Federal Trade Commission, Center for Democracy & Technology, pg. 17,

[https://www.cdt.org/files/pdfs/Facial\\_Recognition\\_and\\_Privacy-Center\\_for\\_Democracy\\_and\\_Technology-January\\_2012.pdf](https://www.cdt.org/files/pdfs/Facial_Recognition_and_Privacy-Center_for_Democracy_and_Technology-January_2012.pdf).

Mr. ISSA. Thank you.  
Mr. Polychron?

**TESTIMONY OF CHRIS POLYCHRON, 2015 PRESIDENT,  
NATIONAL ASSOCIATION OF REALTORS®**

Mr. POLYCHRON. Chairman Issa and Members of the Subcommittee, my name is Chris Polychron, and I'm the 2015 President of the National Association of Realtors®.

I've been a realtor for 28 years. I'm an executive broker with First Choice Realty in Hot Springs, Arkansas. I specialize in both residential and commercial brokerage.

NAR is America's largest trade association. Realtors are involved in all aspects of residential and commercial brokerage. NAR is America's largest trade association. Realtors are involved, again, in all aspects of commercial real estate.

Realtors are excited about the prospect of using unmanned aircrafts, or UAS, in their businesses, including using UASs for aerial photos, videos, and property inspections. Realtors are early adopters of new technology.

In fact, a realtor from Arizona was the first to successfully apply for and receive a Section 333 waiver. A 2015 AUVSI study determined that of the first 500 waivers, real estate was the leading industry, making up over a quarter of all waivers.

Commercial use of UASs has the potential to create new jobs and businesses specializing in their uses. NAR is excited about the possibilities, but also understands the need to balance them with protecting the privacy and safety of citizens and the national airspace.

As end-users of this technology, realtors want clear regulations that permit the commercial use of UASs in a way that is affordable and safe on the ground and in the national airspace. The potential applications for UASs in real estate are plentiful and will grow.

Currently, UASs can provide the opportunity for real estate practitioners to offer photographs and videos of properties that would otherwise be difficult to obtain. Using UAS technology to do the same thing is typically less expensive, less time-consuming, and less dangerous for everyone involved.

As UAS technology progresses, the type of applications will grow as well. Real estate practitioners are excited about the potential to use the technology to conduct property inspections, appraisals, insurance valuations, and land surveys. And most importantly, to allow consumers to make better-informed decisions.

Citizens' safety and privacy are a primary concern of realtors, and we truly appreciate the steps that the FAA and the National Telecommunications and Information Administration have taken to protect these values. This requires clear regulations and strong education efforts for operators and their clients. Realtors are committed to being safe and responsible UAS end-users.

NAR will continue educating its members about the importance of safe UAS operations. NAR's participation in the Know Before You Fly safety campaign is merely one part of NAR's efforts to talk about UAS safety with being a key priority. Through seminars material and Web site content, NAR has already informed its members about the safety precautions necessary when using UASs.

NAR is pleased that the FAA is moving forward with its rule-making. NAR believes the proposed rules' risk and safety-based approach is common sense and a reasonable one, and NAR supports the FAA's attempt to address different levels of risk posed by different sizes and uses of UAS technology. A "one size fits all" approach will not effectively integrate technology as diverse as UAS into a complex airspace, which is why we are pleased that FAA has proposed a micro UAS category.

UAS will continue to evolve and will require flexible regulations in order for it to meet their full potential. NAR is committed to working with the FAA to create a culture of safety surrounding the use of UAS while still enabling users to easily use UASs.

NAR will continue to educate members on safety and privacy issues surrounding UAS operations, and we look forward to working together with lawmakers on this as well.

Thank you for the opportunity to testify, and I, too, look forward to any questions.

[The prepared statement of Mr. Polychron follows:]





500 New Jersey Avenue, N.W.  
Washington, DC, 20001-2000

Chris Polychron  
2015 President

Dale A. Santos  
Chief Executive Officer

GOVERNMENT AFFAIRS

Jerry Gioia, Senior Vice President  
Gay Weaver, Vice President  
Joe Ventresca, Vice President  
Scott Reiter, Vice President  
Jemie Grogg, Deputy Chief Lobbyist

**TESTIMONY OF**  
**CHRIS POLYCHRON**  
**2015 PRESIDENT**  
**NATIONAL ASSOCIATION OF REALTORS®**

**BEFORE THE**  
**HOUSE JUDICIARY COMMITTEE**  
**SUBCOMMITTEE ON COURTS, INTELLECTUAL PROPERTY AND**  
**THE INTERNET**

**HEARING TITLED**  
**UNMANNED AERIAL VEHICLES:**  
**COMMERCIAL APPLICATIONS AND PUBLIC POLICY**  
**IMPLICATIONS**

**SEPTEMBER 10, 2015**

REALTOR® is a registered collective membership mark which may be used only by real estate professionals who are members of the NATIONAL ASSOCIATION OF REALTORS® and subscribe to its strict Code of Ethics.



## INTRODUCTION

Thank you for the opportunity to testify today. My name is Chris Polychron. I am the 2015 President of the National Association of REALTORS® (NAR). A REALTOR® for 27 years, I am an executive broker with 1<sup>st</sup> Choice Realty in Hot Springs, specializing in residential and commercial brokerage.

NAR is America's largest trade association. REALTORS® are involved in all aspects of the residential and commercial real estate industries and belong to one or more of some 1,400 local associations or boards, and 54 state and territory associations of REALTORS®. REALTORS® practicing commercial and residential real estate across the country are excited about the prospect of using unmanned aircraft systems (UAS) in their businesses, including by using UAS for aerial photography, videography, and property inspection.

REALTORS® are often early adopters of new technology. In fact, a REALTOR® from Arizona was one of the first people to successfully apply for and receive a "Section 333" waiver, currently the only avenue available to fly a UAS for commercial purposes. A 2015 study by AUVSI determined that of the first 500 Section 333 waivers granted by the FAA, real estate was the leading industry, mentioned in 153 of the waivers.<sup>1</sup>

## APPLICATIONS OF UAS TECHNOLOGY IN REAL ESTATE

NAR was pleased when the FAA released its proposed rulemaking on integrating small UAS for commercial use into the National Air Space (NAS) in February 2015, "Operation and Certification of Small Unmanned Aircraft Systems," which proposes requirements governing the use of small UAS which weigh less than 55 pounds.<sup>2</sup> This is the first step toward a regulatory environment where commercial drone use is legal and has prescribed federal guidelines.

Commercial use of UAS technology has the potential to boost the U.S. economy, bringing research and manufacturing jobs to our country along with a new crop of businesses specializing in their uses. NAR is excited about these possibilities, but also understands the need to balance them with protecting the privacy and safety of citizens and other users of the NAS. As end-users of this technology, REALTORS® want clear regulation that permits the commercial application of UAS in a way that is affordable to users and safe for their communities, both on the ground and in the NAS.

The potential applications for UAS technology in the real estate industry are plentiful and growing. They provide the opportunity for real estate practitioners to take unique and informative photographs and videos of properties that in many cases would require many time-consuming trips, or even using a helicopter or small plane to obtain. Using UAS technology to do the same thing is less expensive, less time consuming, and less dangerous to everyone involved.

Residential real estate practitioners can provide potential buyers with dynamic and robust web-based listings and marketing materials for properties through UAS photography and videography. UAS technology can allow photographs to be taken from above a house to present a "bird's eye view" of the property, or from unique angles that are otherwise too difficult or expensive to access. The aerial imagery made possible through UAS technology will bring a new level of sophistication and accessibility to images and information,

<sup>1</sup> "Snapshot of the First 500 Commercial UAS Exemptions," *AUVSI*, accessed September 4, 2015. <http://auvsilink.org/advocacy/Section333.html>.

<sup>2</sup> Pub. L. No. 112-95, sec. 331(6).

allowing the real estate professional to present a detailed portfolio to potential buyers, and thereby creating a more informed consumer before they even set foot on a property. Just as digital photography made it easier to create high-quality, affordable images, real estate practitioners look forward to using UAS technology to take their listings into the next level in technical creativity and quality.

Many structures are not well-suited for conventional photography due to their size, height, or unconventional shape or location. UAS technology will be an important tool especially for commercial real estate practitioners who work with these types of properties, such as shopping centers, office parks, parking structures or large tracts of land which can't easily be captured in a single image. UAS technology will allow the real estate practitioner to safely, quickly, and affordably obtain images that would otherwise be dangerous, difficult, and/or expensive to capture. From these images, potential buyers or tenants will then be able to examine such structures as a large office building, including exterior walls, parking structures, its roof, and other fixtures from the safety and comfort of his or her office or home.

Similarly, building owners and managers can use UAS technology to inspect and maintain properties. Sending a UAS to the roof of a building to examine its condition regularly or after a storm to assess damage is faster and safer than having a person go up to do so. Owners and managers can get information about hard-to-access parts of their buildings faster, cheaper, and more safely by using a UAS instead of a person or a team of people doing what is often dangerous and time-consuming work. This is not only a useful tool for routine maintenance, but an indispensable asset after a vandalism incident, storm, or other natural disaster. Using UAS to conduct inspections in these scenarios will allow owners and managers to get better information about the damage done to the property and communicate it more quickly and efficiently to their insurance providers. Ideally they will be able to get their properties back to normal after a destructive event using the information and images they gather from just one or a few short UAS flights.

The same benefits apply to land sales. Real estate practitioners often work on deals with properties that are hundreds or thousands of acres of farmland, timber, ranches or undeveloped land. Potential buyers can see the topography, geography, and hydrogeology features, as well as examine what plants are growing and what animals live on the property. Reviewing the images collected from a UAS device is more efficient and safer than spending hours or days driving around a property or even flying above it in a chartered plane or helicopter.

Any consumer making a real estate purchase or entering into a lease can benefit from the images obtained by using a UAS. The images are another tool for a real estate professional to help a consumer make an informed decision about the property he or she is considering purchasing. UAS-obtained images are a cost-effective, efficient, and safe way to get more information to the consumer, when compared with current methods for aerial photography.

As UAS technology progresses, the number and types of applications for it will grow as well. Real estate practitioners are already excited about the potential to use this technology to learn more about a property's heat signature and energy efficiency. Just like online listings and 360 degree "virtual tours" changed the way real estate practitioners do business and serve their clients, UAS-obtained imagery is a new advancement that will allow consumers to make better-informed decisions.

### SAFETY AND PRIVACY CONCERNS

Citizen safety and privacy are a primary concern of REALTORS®, and we appreciate the steps that the FAA, as well as the National Telecommunications and Information Administration (NTIA), have taken to ensure that these values are protected. This requires clear regulations and strong education efforts for operators and their clients. REALTORS® are committed to being safe and responsible end-users of UAS technology in their businesses.

NAR is and will continue educating its members about the importance of safety in UAS operations. REALTORS® want to use these services and work with responsible operators or become responsible operators themselves. NAR supports the FAA's efforts to create a safety-focused community of UAS users and service providers. So far, NAR has focused its conversation on UAS use in real estate on safety for all involved. Our participation in the *Know Before You Fly* safety campaign is merely part of our efforts to talk about UAS with safety as a key priority. Through education sessions, materials, and web site content, NAR has informed its members about the safety precautions necessary when using this technology.

Along with protecting the physical safety of citizens on the ground and other users of the NAS, NAR understands the need for regulations that address privacy concerns. Real estate professionals understand, perhaps more than most, the importance to a homeowner of having privacy in his or her home and backyard, or to be able to guard against trespassers on private property. NAR is a participant in the NTIA's Multistakeholder Process to Develop Best Practices for Privacy, Transparency, and Accountability Regarding Commercial and Private Use of Unmanned Aircraft Systems. This group is working toward creating industry best practices for privacy policies regarding commercial UAS use. There are a variety of industries represented in the group and NAR looks forward to the group's final work product.

NAR has been a leader in data privacy and security issues for several years. The NAR Board of Directors adopted data security and privacy policy principles that guide Association activity and member standards. Based on these principles, NAR has been active in both legislative and regulatory activities concerning data privacy and security. In January 2015, NAR updated its *Data Security and Privacy Toolkit*, aimed at educating real estate associations, brokers, agents, and Multiple Listing Services about the need for data security and privacy and assist them in complying with legal responsibilities. The *Toolkit* was created in 2011 to address industry challenges with data privacy and security.

In addition to these efforts, REALTORS® rely on the REALTOR® Code of Ethics to self-govern the membership. This document, first presented in 1913, has been the cornerstone of the REALTOR® brand for millions of professionals, consumers, and the business community. The Code is a living document that is frequently updated to represent the changing needs of the REALTOR®. There are several entries in the Code that address consumer privacy, reflecting REALTORS® longtime sensitivity to the issue.

NAR has three primary focuses relating to protecting citizen privacy and safety in the context of UAS use: operations guidelines and accountability for operators; protecting the safety of bystanders during a UAS flight; and finally the FAA's proposal to create a visual observer position to assist the operator during flights.

#### Operations and Accountability

NAR believes that transparency and accountability of UAS operations are essential to the successful integration of this new technology into the NAS. Just as cars, boats, airplanes and other movable machines have registration requirements, so too should UASs. To know the identity of the owner and operator of the machine is to create a culture of accountability within the UAS user community. NAR supports the FAA's proposed rulemaking registration and marking requirements and believe this is a logical step in furthering the FAA's safety objectives.

#### Bystanders

NAR appreciates the common-sense approach that the FAA has taken in addressing the safety of bystanders to the UAS operation. Prohibiting flight over non-participants, except in the case of people standing under protective structures, is a solid starting point for a discussion on bystander safety. But more guidance is needed in terms of the operator's obligations for communicating with bystanders that a UAS flight will occur in the area. NAR believes that one of the first steps of a safe UAS flight is providing adequate notice to people nearby the operation who are not directly participating in the operation of the UAS. Developing a proper protocol that will acknowledge safety and privacy concerns for both the operator and bystanders is essential for successful integration of UAS into the NAS.

Many real estate applications of UAS technology could take place in populated areas. There is currently no standardized protocol for notice to bystanders before or during a UAS flight. NAR asks the FAA to provide greater detail regarding what is expected of UAS operators when providing notice to, communicating with, and protecting the safety of individuals who are at or near the location of the UAS operation. For example, how much notice is required to clear an area of bystanders before the flight takes place? How should the notice be given? Given that the battery life of many UAS is limited to 30 minutes or less, for how long should an area be required to be cleared of bystanders? Since the UAS has the capability to fly over neighboring structures that are not the dedicated subject of the UAS flight, within what distance should bystanders be provided notice?

The safety of UAS flight over bystanders is a critical element of the safe operation of UAS technology. Until a standardized protocol for notice is developed, notice procedures will vary from operator to operator. As Section 333 waivers become more widely available and until the FAA rules for small UASs are finalized, this will result in a patchwork of practices. Citizens and consumers should be able to have a single set of standards so that notice protocols are predictable across the country. Predictability in the market will lend itself to the accountability and best practices discussed above.

REALTORS® are committed to creating a culture of safety around the use of this technology, and effective communication with non-participants will be very important to the success of this technology. NAR is committed to working with the FAA to identify common fact patterns in these situations and to help create solutions that will work for bystanders and UAS operators alike.

NAR supports policies that lead to predictable uniformity when it comes to safety and privacy of citizens. Consistent application of notice policies for UAS operation is a critical aspect of the safe integration of UAS into the NAS.

#### Operator and Visual Observer

The FAA has proposed creating two new crewmember positions for UAS operators. The operator is the person who manipulates the flight controls of a small UAS. The visual observer is a person who assists the small unmanned aircraft UAS operator in seeing and avoiding other air traffic or objects aloft in flight or on the ground. NAR supports this proposition, as it reflects the unique nature of the UAS operation and the machine itself.

In this regime, the operator would bear the brunt of the regulatory burden via education, certification, and safety compliance. This makes sense, as it would be the operator who has control of the machine. The visual observer is an option the operator can choose, depending on the circumstance of the operation. NAR supports this flexibility, as not all flights will require an observer. NAR also supports the flexibility built into the rule by not requiring the operator to get an airman certificate. Keeping a low regulatory burden for this as-needed position is a reasonable decision.

NAR has submitted comments to the FAA asking the agency to be more specific in what is required for the methods of communication between the operator and visual observer. Operators should have some degree of choice in how they work with a visual observer, who is ostensibly a partner in the operation, but some guidance would be helpful. NAR does not believe that it is necessary that the observer should be required to stand close enough to the operator to allow for unassisted verbal communication, as communication-assisting devices are available, reliable and efficient at enabling communication between the operator and visual observer. Further, the FAA acknowledges that the visual observer could be used to extend the flexibility of the UAS operation, so any requirement to mandate the observer to stand within a certain physical proximity to the operator would defeat that stated purpose.

#### **THE FAA'S PROPOSED RULEMAKING**

NAR is pleased that the FAA is moving forward with its integration of UAS into the NAS. A one-size-fits-all approach will not effectively integrate technology as diverse as UAS into a complex air space. NAR supports FAA's approach to address the varying needs of the UAS community and the NAS.

Creating a regulatory regime in which commercial UAS operations can be safely integrated into the NAS is the first step toward realizing the potential of this technology. The industry best practices that spring up around the rules will be the real proof of success in this arena. These best practices could include operator education, insurance programs and an ongoing dialogue among UAS users, FAA headquarters, and the FAA's regional offices.

The FAA's proposed rulemaking is a good beginning to the process of creating a regulatory regime supporting integration of UAS technology into the NAS. The rule's risk- and safety-based approach comports with what NAR believes is a common sense, reasonable approach to this technology. NAR supports the FAA's attempt to address different levels of risk posed by different sizes and uses of UAS technology. The risk present in a scenario where an operator is using a small, lightweight UAS in a limited flight path to take pictures of a home or commercial building is much different than in situations where bigger, heavier devices are being used.

In the FAA's proposal, there are three areas that will have particular relevance to real estate professionals and how they will be using UAS technology. These areas are the training required for operators, the prohibition on beyond visual line of sight flights, and the creation of a "micro UAS" category to govern the type of smaller and lighter UAS that real estate professionals are likely to be working with.

#### Training of Operator

NAR supports the FAA's proposal to create a separate class of airman certificate for UAS operations, and to establish testing standards within this operator class. This action balances the need for industry standards and regulations with the realities of operating a UAS within the NAS. NAR understands the FAA's role in regulating access to the NAS, both through the machines and technology used, and the people who are operating them. NAR understands that the FAA works cooperatively with other agencies to ensure the safety of the NAS through sharing information such as pilot background checks and operator safety records. We also understand the national security implications of devices and people within the NAS. For these reasons, we support the FAA's efforts to create operational standards and official records for users of UAS technology.

The education, testing, re-testing, reporting, and drug and alcohol screenings contained within the proposal represent a well-structured regulatory regime governing the use of UAS within the NAS. Integrating UAS safety into the successful FAA framework for pilot safety, education and testing is a reasonable and logical step and addresses the national security concerns inherent in operating a UAS in the NAS. NAR believes that industry-wide educational, performance, and accountability standards will make for a safe integration of UAS into the NAS, and will create a well-disciplined industry from the start.

The FAA's proposed testing regime is a practical solution to creating industry safety and knowledge standards while making entrance into the UAS industry a possibility for many. The FAA understands that some operators come to the UAS space with extensive piloting experience, while others may have minimal or no piloting experience. However, the UAS operations contemplated under this rule have very different requirements and challenges than flying a manned vehicle.

Because the FAA already has a testing regime set up for pilots of manned aircraft, it follows that the UAS operators would receive the same treatment. The Initial Knowledge Test, as proposed, covers many of the essential basics required to properly and safely operate UAS. Administering the test at testing centers throughout the United States will ensure uniform test administration, content and standards. Requiring all users of the UAS to demonstrate aeronautical knowledge is a basic effort toward safety that will protect individuals on the ground and UAS operators.

The Recurrent Knowledge Test every 24 months fits in with current FAA safety requirements. The same standard should be extended to UAS operators.

#### Visual Line of Sight/Beyond Visual Line of Sight

NAR recognizes the obstacles in addressing beyond visual line of sight (BVLOS) safety operations. NAR has been working through some of these issues through its participation in the FAA's BVLOS Working Group. Maintaining visual contact with the aircraft is the essential element to the safety precautions built into the observer/operator partnership, especially as most UAS lack sense-and-avoid technology. However, many

applications for UAS use in real estate could be in BVLOS situations, such as filming or photographing a farm, ranch or office building. NAR encourages the FAA to consider alternate solutions.

First, NAR suggests that the FAA consider a tiered system for BVLOS operations depending on the location of the flight path, the population within the flight path, and any other infrastructure or other hazards within the flight path. It's not hard to imagine the hazards of a UAS that has strayed from the operator's sight within a more populous area such as a suburban community or a downtown area. But for many real estate professionals who work in more rural settings and deal with properties such as farmland, ranches or woodlands, the risk is much less. Creating some sort of regulatory framework for situations where a BVLOS flight would be acceptable would solve many challenges for real estate professionals and UAS operators in these situations.

Second, while the FAA has specifically prohibited a 'daisy-chain' of observers working with a single operator of a UAS, NAR suggests that the FAA consider a relay system of operators rather than observers in a BVLOS flight situation. The main difference between the observer and the operator in the schema that the FAA has presented is that the operator actually has control of the machine and visual contact, where the observer has only visual contact with the machine. Since maintaining control of the machine is the key challenge here, it is worth considering the possibility of multiple operators who could relay control of the machine to one another as the circumstance dictates. Many of the larger parcels of land, taller structures and unique structures that real estate professionals work with would be well-suited to UAS imagery, but only if the BVLOS conditions can be addressed. In a relay situation, the multiple operators could together observe and control the machine, rather than merely observe. The real-time corrections necessary to perfect a UAS flight could be made instantaneously, rather than the observer communicating with the operator and there being a lag in the time the correction is orally given and then made within the operation.

The safety challenges surrounding BVLOS operations are complex, and NAR supports the FAA's efforts to work through them. NAR looks to the FAA for leadership to create rules within this rulemaking context that would support the safe use of UAS in a BVLOS setting.

#### Micro UAS Category

NAR is pleased to see that the FAA recognizes the unique nature of micro UAS<sup>3</sup>. Many consumer UAS currently fit into this category and the numbers will only expand as the technology becomes more affordable and easier to use. As many other countries have established this same structure in their UAS regulations, it is only natural that the United States follows suit. Even though the U.S. airspace is distinctive in terms of its complexity and variety, there are regulatory models from other countries already integrating UAS in their airspace and from which the FAA could and does take inspiration. NAR appreciates the FAA's creativity in looking to other, successful regulatory models.

The micro UAS are smaller, lighter, and have shorter battery lives than the UAS contemplated in the NPRM. These are the type of UAS that it is likely most real estate professionals will be using for their operations; in fact, in AUVSI's 2015 study, their data showed that of the first 500 "Section 333" waivers granted, more than half of the approved platforms would fall into the FAA's proposed micro-UAS category.<sup>4</sup> Because the risk

<sup>3</sup> A micro UAS as proposed in the NPRM is a UAS that weighs no more than 4.4 lbs.

<sup>4</sup> "Snapshot of the First 500 Commercial UAS Exemptions," *AUVSI*, accessed September 4, 2015. <http://auvsilink.org/advocacy/Section333.html>.



presented by these micro UAS is lesser than the risk presented by small UAS, NAR supports the FAA's attempts to create a regulatory schema that acknowledges and accommodates the different risk factors.

#### CONCLUSION

NAR is committed to working with the FAA to create a culture of safety surrounding the use of UAS, while still enabling users to employ the technology with ease and efficiency. NAR's participation in the *Know Before You Fly* campaign, the NITTA Multistakeholder Process to Develop Best Practices for Privacy, Transparency, and Accountability Regarding Commercial and Private Use of Unmanned Aircraft Systems, and the FAA BVLOS Working Group are examples of its efforts to raise NAR members' awareness of safety and privacy issues surrounding UAS operations, and we will continue to pursue the conversation on UAS safety in the years ahead. NAR believes that the FAA's proposed rule goes a long way toward successfully integrating UAS into the NAS. Thank you for allowing me to share the views of the National Association of REALTORS®, and we look forward to working with you as well.

Mr. ISSA. Thank you.  
Mr. Karol?

**TESTIMONY OF TOM KAROL, GENERAL COUNSEL—FEDERAL,  
NATIONAL ASSOCIATION OF MUTUAL INSURANCE COMPANIES**

Mr. KAROL. Thank you, Chairman Issa, Ranking Member Nadler, and Members of the Subcommittee.

On behalf of the National Association—

Mr. ISSA. If you could—

Mr. KAROL. Sorry.

Mr. ISSA. Yeah, add a little mike and pull it, pull it a little closer, too. Perfect.

Mr. KAROL. Thank you, Chairman Issa, Ranking Member Nadler, and Members of the Subcommittee, on behalf of the National Association of Mutual Insurance Companies, for the opportunity to testify today.

NAMIC is the largest and most diverse property casualty trade association in the Nation with more than 1,300 property casualty insurance companies. NAMIC members serve more than 135 million auto, home, and business policyholders with more than \$208 billion in premiums, accounting for 48 percent of the automobile/homeowners market and 33 percent of the business insurance market.

The development of commercial UAS is accelerating. More and more sectors are contemplating the use of UAS, but regulations and laws in the United States have not kept up. NAMIC believes a reasonable, effective, and efficient regulation of the commercial use of UAS is not only possible, but should be a primary goal of policymakers in all levels of government.

NAMIC members themselves are exploring the use of UAS to help appraise property, evaluate risk, and assess damage more quickly and accurately for policyholders. UAS can significantly reduce, if not eliminate, the dangers inherent in important tasks that our insurance personnels now put themselves in precarious positions, including roof inspections, damage assessments, and disaster response.

A number of companies have already obtained Section 333 exemptions for insurance services from the Federal Aviation Administration. Additionally, NAMIC has had very productive meetings with the FAA in exploring the use of UAS in disaster situations, where the speed of processing and payment is paramount to victims of the disaster.

At present, however, Federal and State UAS restrictions can limit, if not preclude, practical UAS by insurance companies. Our consumers have also asked NAMIC members about providing insurance coverage for their personal and commercial use of UAS. Insurance coverage for both the UAS itself and liability for any damage or loss are key parts of responsible commercial use.

While many insurance companies are willing, few now offer such coverage. This is primarily due to the lack of legal and regulatory clarity at all government levels. Insurance contracts need to comport with Federal, State, and local law and regulations, which are presently in a state of flux. Insurance contracts that address liabil-

ity and compensation depend on civil law and judicial determinations, which may or may not apply to commercial UAS usage.

Until standards of UAS liability are better defined, it will be extremely difficult for insurance companies to understand and provide such risks. Furthermore, these standards must be integrated into an existing system of privacy and property rights at the appropriate Federal and State and local level.

The question of liability may seem fairly close if a UAS crashes into a house or a person, but basic questions about property, privacy, and negligence need to be resolved for NAMIC members to understand the risks, underwrite the coverage, and price policies for those coverages.

For example, if a UAS flies on your lawn, at what level do you consider that UAS to be trespassing upon your property? If a UAS is flying in your backyard and you or your family feel threatened, can you hit it with a baseball bat or a 9-iron?

In making decisions concerning underwriting risks and paying claims related to UAS, it will be critical to understand the application of specific torts as well as the State and Federal laws that can permit UAS use and/or generate lawsuits or fines against a UAS.

For example, concerning trespass and personal injury liability, an FAA designation of UAS navigable airspace will greatly inhibit, if not preclude, allegations that a UAS in that airspace trespassed on private property or violated privacy. The FAA has opined that UAS navigable airspace extends from the ground up, which could practically eliminate private property rights. It could also eliminate State jurisdiction over UAS.

California legislature, on the other hand, has recently passed a law that defines a UAS flight of less than 350 feet over private property as trespassing.

While certain legal questions remain surrounding UAS damage and injury, there is potential liability for harm from even the smallest UAS. Among the host of other issues, it will be important to address the question regarding the duties of a UAS operator to limit the foreseeable risk to others.

In conclusion, there will always be risks associated with the commercial use of UAS. The FAA's issuance of final rules on small UAS will eliminate some of the more significant barriers for UAS insurance at the Federal level. However, NAMIC members—for NAMIC members to provide comprehensive liability coverage for this emerging area, it will require the further development of Federal, State, and local regulations, as well as standards of liability, negligence, and property rights.

NAMIC is committed to working with Federal, State, and local regulators in an effort to promote responsible UAS regulatory developments that protects aircraft, people, business, and property. As UAS regulations and civil liability standards evolve, NAMIC will work to ensure the development of regulations provide for the necessary clarity and breadth that its members need to serve and protect the policyholders.

Again, on behalf of the more than 1,300 members of NAMIC, I thank you for the opportunity to testify today and look forward to any questions you may have.

[The prepared statement of Mr. Karol follows:]



Statement  
of the  
National Association of Mutual Insurance Companies  
to the  
United States House of Representatives  
Committee on the Judiciary, Subcommittee on Courts, Intellectual  
Property, and the Internet  
Hearing on  
Unmanned Aerial Vehicles: Commercial Applications and Public Policy  
Implications  
2141 Rayburn House Office Building  
September 10, 2015

**Introduction**

The National Association of Mutual Insurance Companies (NAMIC) is pleased to provide testimony on the impact of public policy on the commercial potential and insurability of unmanned aircraft systems (UAS).

NAMIC is the largest and most diverse property/casualty trade association in the country, with 1,300 member companies including regional and local mutual insurance companies on main streets across America and many of the country's largest national insurers. NAMIC members serve more than 135 million auto, home and business policyholders, with more than \$208 billion in premiums accounting for 48 percent of the automobile/homeowners market and 33 percent of the business insurance market.

The development of commercial uses for unmanned aircraft systems is accelerating. More and more sectors are contemplating the use of UASs, but regulations and laws in the U.S. have not kept up with that development. NAMIC believes that a more reasonable, effective, and efficient regulation of the commercial use of UASs is not only possible, but should be a primary goal of policymakers at all levels of government.

Insurance companies are also a great example of how this innovation can benefit an industry as they explore how UASs can help better appraise property, evaluate risk levels, and assess damage more quickly and accurately for policyholders. A number of property/casualty insurance companies already have been granted Federal Aviation Administration (FAA) Section 333 exemptions, which provide companies the opportunity to better determine how UASs can serve policyholders in the normal course of business, or in disaster situations. Important tasks that formerly required employees to put themselves in precarious positions - such as roof inspection, damage assessment, and disaster recovery - can now be accomplished using UASs to significantly reduce, if not eliminate, dangers to individuals and property.

**The Role of Insurance in the Commercial Use of UAS**

Understanding how insurance will facilitate the expansion of the use of UASs begins with the concept of risk. The effective response to risk combines two elements: efforts or expenditures to lessen the risk, and the purchase of insurance against whatever risk remains. Proactive risk management involves carefully analyzing a situation to determine the major risks and then taking steps to minimize potential damage. Currently, the FAA is attempting to minimize the potential risks and subsequent damage to the national airspace and other aircraft - which is the FAA's primary role - and secondarily, to minimize risk and damage as well as to protect individuals and property on the ground.

Once reasonable FAA rules mitigating the potential risk of a multitude of aircraft and UASs occupying common airspace are defined, insurance coverage can be used to manage the residual risk. It is important to understand that successful risk management through insurance depends to

a great degree on whether laws and regulations clearly operate to establish liability, including liability for damage by UASs, by UAS pilots and facilities operators, or by people who hijack UASs or interfere with UAS controls under defined tort standards, including product liability and negligence. Until standards of UAS liability are better defined, it will be extremely difficult for insurance companies to understand and provide coverage for UAS risks and liability.

There are fundamental questions that must be resolved for insurers to properly understand potential risks, underwrite coverages, and properly price policies for those coverages. Consider that the FAA says that the national airspace extends to the ground, even on private property, and that the FAA has set no minimum height at which that a UAS must fly. Can a UAS fly in national airspace 400 feet, 100 feet, 25 feet, or two feet over private property without trespassing? Can states preclude UAS flights on state roads, or is that national airspace? The FAA has also said that it "understands and accepts" that a person flying a UAS "may lose sight of the unmanned aircraft for brief moments of the operation." If that UAS hits a person in that brief moment, is this assault, negligence, or merely conduct that the FAA has deemed "understandable and acceptable?"

The questions do not stop at those of simple safety, but also extend into the critical realm of privacy. This fact was clearly recognized in President Obama's February 2015 executive order directing the Department of Commerce through the National Telecommunications and Information Administration, in consultation with other interested agencies and private sector stakeholders, to develop a framework regarding privacy, accountability, and transparency for commercial and private UAS use. Insurance should certainly be included in any such endeavor and NAMIC is pleased to be participating in these discussions.

This is certainly a positive step, but the combined efforts of the FAA and Commerce Department will not be able to address all of the necessary regulatory and enforcement questions. Specific standards for privacy, trespass, negligence, and recklessness may be the province of state and local law and judicial interpretations. Numerous and unpredictable questions that will result from commercial UAS operations will probably come before state or local government authorities and courts, particularly when it comes to liability and insurance coverage. A jurisdictional system of authority must be established to ensure that federal, state and local authorities are properly recognized and that the rules they establish for UAS use are not in conflict.

#### **Underwriting UAS Policies**

There are inherent risks in the operation of UASs, which will be amplified and exacerbated by the proliferation of their numbers, uses, and capabilities. The requisite combination of an aircraft, control hardware, control software, and a communication link – in addition to potentially hazardous payloads – makes risk assessment, management, and coverage extremely complex.

UAS insurance policies will contractually specify the extent and limitations of coverage, as well as exclusions, restrictions, and prohibitions. For most commercial coverage, policy terms are based on the work of underwriters evaluating the range of risks – their likelihood and severity – to adequately price and offer liability insurance. This information, however, does not exist for UASs. A November 2014 study of UAS liability and insurance in Europe – where commercial UAS use has been permitted for years – concluded that there is insufficient reliable data on UAS incidents or accidents available either in public form or from commercial sources, and that the lack of this information impedes the assessment of damage caused by UASs.

The existence and extent of insurance coverage for recreational and commercial use of UASs in the United States are not very clear. While various internet sites purport to be, or link to, insurance companies that offer UAS insurance in various capacities, the actual coverage available is uncertain. It has been estimated that underwriters now insure only three percent of UAS applicants.

The standard commercial general liability policy that most businesses purchase covers bodily injury and property damage caused by an “occurrence,” which it defines as “an accident, including continuous or repeated exposure to the same generally harmful conditions.” As a rule, however, most, if not all, such commercial general liability policies have exclusions for damage caused by the operation of aircraft. Commercial property insurance policies also have various forms of aircraft exclusions, including policies that may specifically exclude coverage while a UAS is off the ground.

Most homeowners’ insurance policies also exclude coverage for aircraft, with the exception of “model or hobby aircraft not used or designed to carry people or cargo.” If a UAS has an attached camera or other equipment/payload, it may not be covered because the attachment may be considered cargo.

The only currently available insurance for UAS commercial operators may be specialized liability policies too complex or expensive for general use. Such coverage, if available, is generally written on an aircraft liability form meant to insure small piloted planes.

#### **Legal and Operational Questions Surrounding Insurance Coverage for UAS**

While it remains to be seen if any of these coverage options will prove viable as UAS use expands, another fundamental complication has been created by the lag between innovation and regulation which could undermine virtually any UAS insurance policy. The FAA currently restricts the commercial use of UASs, but the breadth of the interpretation of the term “commercial” is very broad. The FAA position is that a farmer using a UAS to look at his own garden is a recreational user, but that same farmer using a UAS to view crops he intends to sell is a commercial user.

The FAA has also taken the position that reckless recreational UAS use is a violation of FAA rules. Property/casualty insurance policies – commercial or otherwise – often include a criminal act exclusion that excludes coverage for bodily injury caused by, or reasonably expected to result from, a criminal act or omission of the insured. The criminal act exclusion generally applies regardless of whether the insured person is actually charged with or convicted of a crime, and may include a criminal act committed by or at the direction of any insured. There are also state statutes that prohibit insurance payment for illegal activities. As such, until regulations have been established, any commercial use by any company that has not received an exemption from FAA may, in theory, be uninsurable.

### *1. Damage to or by the UAS*

In making decisions concerning underwriting UAS risks and paying claims related to UASs, it will be critical to understand the application of the specific torts, as well as state and federal laws that could permit UAS use and/or generate lawsuits or fines against a UAS operator. To illustrate the complexity of insuring a UAS, consider automotive insurance coverage. Insurers consider the manufacturer, model, and value of the vehicle as well as the operator's gender, age, driving record, and other factors. Accepted underwriting standards are considered, with relevant minimum and state regulatory coverage requirements, to determine how to price and provide a policy. With UASs, the relevant pools are too small, and the actuarial classes and policyholder risk matrices are not particularly relevant.

UAS insurance contracts may specify matters as simple as whether the UAS is insured both in the air and on the ground, and as complex as defining the permissible operations of the UAS covered under the policy. It has been said that UASs exist for missions that are too "dull, dirty, or dangerous." Insuring a UAS includes understanding just how dirty and dangerous is the work for which the UAS will be used and how the operations will be conducted to minimize unknown and unacceptable risk. For example, the price of a policy covering an FAA-certified pilot taking pictures with a UAS over a wheat field would likely be different than one insuring Uncle Ernie spotting bluefish at a populated ocean resort.

When a UAS crashes or is lost, any responsibility for the loss by the manufacturer or software provider will be more difficult, if not impossible, to establish. The legal and practical ability of an insurer to pursue reimbursements for UAS manufacturer defects or product liability is murky. It can be complicated by the possibility of damage to the system resulting from a failure.

In considering UAS coverage, there is also an interesting and unresolved question of UASs and local rights of land owners to prevent or impede UASs from being on, over, or near their property. Deer Trail, Colo., decided not to offer hunting licenses for shooting down UASs that might fly into the hamlet's airspace, but local interpretations of the extent of property owners' rights to take action against UAS operators for trespass, invasion of privacy, and nuisance may impact the physical risk to UAS loss or damage and insurance risk.



## ***2. Regulatory Liability***

With respect to recreational UAS use, the FAA's authority to "take enforcement action against anyone who operates a UAS or model aircraft in a careless or reckless manner" was affirmed in November 2014 by the National Transportation Safety Board. The NTSB directed an administrative law judge to decide whether the aircraft was operated carelessly or recklessly, but confirmed the authority of the FAA to issue an assessment order and fine the operator \$10,000 for reckless operation of an unmanned aircraft.

The FAA has proposed regulations for small UASs, but it maintains that all other commercial UAS operations are not in a regulatory "gray area" and that the FAA "is responsible for the safety of U.S. airspace from the ground up." The FAA asserts that it has a number of enforcement tools available, including a verbal warning, a warning letter, and an order to stop the operation. The FAA has reportedly looked for companies offering commercial UAS services and warned them to stop doing so, in some cases threatening "enforcement action."

Recall, however, that the FAA determination and definition of commercial vs. hobby UAS use are through a Notice of Interpretation with Request for Comment, rather than statute or regulations that the FAA is still drafting. There are many issues concerning UAS use and FAA authority that have not been codified in law or promulgated in federal regulations, raising numerous questions of the enforcement authority of the FAA in this regard and the impact of the notice on insurance coverage provisions.

## ***3. Trespass and Privacy Liability Considerations***

The Congressional Research Service has deemed privacy the most contentious UAS issue. Property/casualty insurance policies, particularly for commercial UASs, may include, or specifically exclude, coverage for and indemnification of tortious liability, including civil actions for trespass and privacy violations. Property lines are not always clear, and a shift of wind could inadvertently blow a UAS over a property line. These issues and the attendant liability and coverage depend highly on legal concepts of property and airspace that are evolving with UAS use.

Trespass in airspace requires the property owner to have possessory rights to the airspace allegedly violated by the UAS. To constitute an actionable trespass, an intrusion has to subtract from the owners use of the airspace above his property that he can actually use. With respect to privacy, there is no right to be alone in public nor is there any privacy invasion if a photograph is taken in a public place.

In 1587, matters were simple and clear under the common law – the owner of a piece of land also owned everything above and beneath it, *Cujus solum ejus est usque ad coelom* – from heaven to hell. Modern law has greatly muddied these legal waters. In 1946, the U.S. Supreme Court determined that Congress had declared a public right of transit in navigable airspace and national

sovereignty in that airspace. The court declined, however, to draw a clear line as to where that airspace began over a property. In the almost 70 years that have passed since that decision, that clear line remains undrawn.

Congress did declare a public right through “navigable airspace” and defined that space as the minimum safe operating altitude including airspace needed for takeoffs and landings. Now that many readily available UASs can take off and land on coffee tables, the forthcoming UAS regulations will require some official determination that FAA jurisdiction is either from the ground up or from some point in the air. This determination will not only be critical to define federal and state UAS jurisdictions, as well as personal rights, but will also directly impact liability of UAS operators for trespass, privacy issues, and cybersecurity.

An FAA designation of UAS navigable airspace will generally inhibit, if not preclude, allegations that a UAS in that airspace trespassed on private property or violated privacy. Should the FAA define UAS “navigable airspace” as “from the ground up,” the FAA may practically eliminate private property limits – as well as state jurisdiction – on UASs.

There is a bill proposed in California that would define trespass as the “knowing entry upon the land of another also to include operation of an unmanned aerial vehicle below the navigable airspace overlaying the property.” That means flying a UAS over private property – below what the FAA deems “navigable airspace” – could at some point constitute trespassing in California. The problem is that there may be no airspace below FAA jurisdiction. The FAA has opined that it is not taking specific views on whether or how the federal government should regulate privacy or the scope of data that can be collected by manned or unmanned aircraft. Numerous federal and state legislative proposals regarding UASs and privacy have been made, however. The Preserving American Privacy Act would prohibit UASs from capturing data in undefined “highly offensive” ways; the UAS Aircraft Privacy and Transparency Act would require UAS operators to submit a “data collection statement” to the FAA.

#### ***4. Personal Injury/Property Damage***

The law – through statute, regulation, or judicial decision – will generally seek to constrain and direct human action and social behavior by considering the risks posed to people and property, and the law has a long history of managing the risks of things falling out of the sky. Statutes and regulations will attempt to provide strict liability standards for certain injuries or damages from a UAS, but with rapidly evolving technology and very limited experience and expertise, there will undoubtedly be a wider range of practical and legal questions that will have to be addressed under common law claims, with judges making decisions on duty, breach, causation, and damages.

Then there is the concept of negligence per se, which results from the violation of a law meant to protect the public, such as a speed limit or building code. Unlike ordinary negligence, a plaintiff alleging negligence per se need not prove that a reasonable person should have acted differently

– the conduct is automatically considered negligent – and the focus of a lawsuit will be whether it proximately caused damage to the plaintiff. Some courts may apply FAA interpretations and state regulations to establish negligence per se and some may not. In the most relevant example, one court may deem commercial UAS operation as negligence per se in violation of the FAA notice, while another court may require plaintiffs to prove duty, breach, causation, and damages.

### **Conclusion**

When damage or injuries result from a UAS, a key question will be who is responsible and liable for damages. NAMIC member companies can provide comprehensive policyholder protection, but many serious questions about UAS regulations and civil liability will impede their ability if gone unanswered. If the regulation of UASs and related civil liability remain unclear and incomplete, it will be very difficult for insurers to meet policyholder needs.

There will always be risks in the commercial use of UASs, and property/casualty insurance will be a critical consideration. The proposed FAA rules eliminate many of the more significant barriers for UAS insurance at the federal level, but practical and commercially viable responsible insurance coverage for this emerging area will require more development of federal, state, and local regulations, as well as related standards of liability, negligence, and property rights.

NAMIC is committed to working with its members and federal, state, and local regulators to promote responsible UAS development that protects aircraft, people, businesses, and property. As UAS regulations and civil liability standards evolve, NAMIC will work to ensure that these regulations provide the necessary clarity and breadth that its members need to provide policyholder protection.

Again, on behalf of myself, NAMIC and our 1,300 member companies, I thank you for the opportunity to testify today and I will be happy to address any question you may have.

Mr. ISSA. Thank you.

And before I recognize the Ranking Member, do you want to clarify the status of that law in California?

Mr. KAROL. I believe it was vetoed by Governor—

Mr. ISSA. That is correct. It was vetoed. So it was rejected by Governor Brown last night.

I now take have the pleasure of—

VOICE. Are you sure?

Mr. ISSA. Yeah. They do those things at night in California. We work all the time.

Now I recognize the gentleman from New York, and it was definitely night in New York when he did it, for 5 minutes.

Mr. NADLER. Well, thank you very much.

Mr. Wynne, you make a strong argument that the FAA's proposed rule regarding drones should be enacted without delay. But the FAA's proposal focuses on safety in the skies rather than on the privacy implications of the vehicles they would regulate. Do you think there is also a role for Government regulation of the data that may be collected by the drones?

Mr. WYNNE. Absolutely, sir. I think that those regulations also need to apply to body cameras and to license plate readers and all kinds of other technologies. There's nothing specific about drones, which are just platforms for data collection that—that—

Mr. NADLER. Do you think they should be the same regulations?

Mr. WYNNE. I beg your pardon?

Mr. NADLER. They should be the same regulations, regardless of the platform?

Mr. WYNNE. I think we have this problem. We're all in favor of privacy, and it's in our code of conduct. So the question is how do we do that in a way that's technology neutral and that it actually doesn't inhibit this technology?

Mr. NADLER. But if—if I am wearing a body camera, I can't enter your backyard. A drone can surveil—can engage in surveillance of your backyard. So you don't think that it might be necessary to have somewhat different regulations?

Mr. WYNNE. Well, forgive me, sir. I was trying to address your question about data retention and such.

Mr. NADLER. Oh, okay.

Mr. WYNNE. I think—I think the question—you know, I have—actually, the partner in my airplane is chief of police in Arlington County, and this is the question that we talk about a good deal. The retention of the data, the protection of that data, how that data is utilized, transparency, et cetera. These are things the industry is for and has to be for.

We will not be a sustainable industry if we don't take care of our customers' data.

Mr. NADLER. Now any—thank you.

Anyone who lives near an airport, and certainly my constituents in New York who suffer from tourist helicopters buzzing in the sky, can tell you that noise pollution is a real problem. If commercial drone use increases substantially, as you envision, what sort of regulation should we put in place to protect against noise pollution and other nuisances caused by drones, particularly in residential neighborhoods?

Mr. WYNNE. Well, I think there's a good—a very robust conversation going on right now about where drones, the commercial drones would fly, what kind of flyways would be created, et cetera. One thing I'm absolutely certain of is they will make less noise than helicopters.

Mr. NADLER. Well, that is not saying much.

Mr. WYNNE. This is a very robust conversation inside the helicopter community. Many helicopter operators would like to utilize drones because they are less expensive and somewhat more capable for certain kinds of missions and certainly safer than a 3,000-pound vehicle in the air.

So, so I think we've got the same kinds of conversations going on that we always have in aviation. Noise abatement is—is an extremely important topic, and it's one that will be. As we have more and more drones in the air, it will be—

Mr. NADLER. You are going to have to deal with it. Thank you.

Mr. Calabrese, in your testimony, you point out that Americans have a First Amendment right to take photographs of things visible—visible from public places, and you warn that some drone-specific privacy laws may run afoul of the First Amendment. Do you think the First Amendment poses a barrier to reasonable restrictions on how data collected by drones is used, stored, or shared?

Mr. CALABRESE. I don't think it's a barrier so much as something, a balancing that we need to do between our right to privacy and our right to the First Amendment. I think, as an initial matter, it's not the subject of this discussion, but certainly, we could require a warrant for law enforcement use. That has nothing to do with the First Amendment.

Secondly, industry could adopt voluntary codes of conduct, and I urge them to do so. We're part of the NTIA process. That also would not violate the First Amendment.

And then I think that there are non—you know, we can have neutral regulations that, for example, protect data or make people reveal exactly who was flying a drone, their privacy policies, all of those issues can obviously be addressed in a way that doesn't affect the First Amendment. But there are going to be some areas—

Mr. NADLER. Yes, well, let me ask you a specific on that. You say that Americans have a First Amendment right to take photographs of things visible from public places?

Mr. CALABRESE. Correct.

Mr. NADLER. Is 200 or 300 feet above my backyard, which is fenced in, a public place when that drone may be looking at my children playing in the backyard or my wife sunbathing there, or whatever?

Mr. CALABRESE. It's a very difficult question. I mean, there are some, obviously, privacy torts that would apply here, as well as the peeping tom laws. But I mean, it's worth remembering that the Rodney King video was shot from a balcony. You know, there are going to be places, times, when you are going to be above a fence, and things are going to happen, and they are going to have—deserve First Amendment protection. So it's not an easy question.

Mr. NADLER. And finally, I think my—I see my time is running out. But what rights do an individual whose data is captured by a drone have to determine how this data is used, if any?

Mr. CALABRESE. Right now, very few rights.

Mr. NADLER. Right, right. Let me rephrase the question. What rights should they have?

Mr. CALABRESE. I believe they should have the right to know what's being collected in most cases. They have the right, you know, and I believe that what we should do or I hope we can do is find a way to get all of these advantages, many of which have nothing to do with data collection about individuals, and then limit this data collection and agree to not collect it or not store it. So we can get all of this advantage without the privacy invasions.

Mr. NADLER. Thank you.

Mr. ISSA. Thank you.

We now go to the gentleman from Georgia, Mr. Collins.

Mr. COLLINS. Thank you, Mr. Chairman.

I think it is going to be a continuing thing, but I don't think there is very many probably on the panel that would not see the benefits of a drone and the benefits to business, benefits to many others. As someone in the military who actually also worked with them in Iraq, the benefits on the military are substantial.

And I think the interesting issue, and I think it is going to be drumbeat by both sides here today, though, goes back to these issues of privacy, these issues of how we store, how we do these things. And I think, going off of what the gentleman from New York was just talking about, is really we are in a society today in which big data, big collections have sort of blurred those lines of what is a public—public or what is a reasonable expectation of privacy?

We have been going through this for a while. In fact, Justice Sotomayor in *U.S. v. Jones* made an interesting statement. She quoted Justice Alito, "As Justice Alito incisively observes, the same technology advances that have made both possible nontrespassory surveillance techniques will also affect the Katz test by shaping the evolution of societal privacy expectations." That is already happening now.

And so, the questions that I want to go off of is, you know, the difference between one shot and a video, one picture as opposed to a tracking? How do we, you know, look at ongoing behavior? I think it is—and I would like to get—this will be a free for all. I will just let anyone jump in on this.

Mr. Calabrese, if you want to start or wherever. It is a fine line here. I am out doing this, and I decide, well, I just want to give this to another agency. Or I want to share this. Where—where are we headed here with who can access this, and what is appropriate?

Mr. CALABRESE. It's a wonderful question. Thank you.

Sir, clearly, the Supreme Court is grappling with this question of what I would call a mosaic whereas we're collecting so much information that we have a detailed profile about someone's life. That's something that we are very worried about in a wide variety of contexts and technologies.

I think here there are so many beneficial uses that, hopefully, we can avoid the mosaic. I mean, if you go to Google Street View, you'll see people's faces are blurred. You know, there are ways that technology can also be used to protect privacy in data collection.

Most of the uses that I've heard here are not things where someone wants to be invading someone's privacy in their backyard.

And I would hope that what we can do is have industry agree that they're going to, for example, not create a pervasive surveillance, that they're going to discard information immediately that has nothing to do with what they are trying to accomplish so we can sort of avoid this pervasive surveillance.

Mr. COLLINS. But what if they don't? I think that is the question.

Mr. CALABRESE. Right.

Mr. COLLINS. And Mr. Polychron, from a realtor's perspective, I know there is a—you could see it sort of from a we are just looking at land or looking at this. But what if there is an action or a data kept that is breached? It is hacked. It is something that gets in, and we are keeping data.

Why are we keeping data? How long are we keeping data that may or may not deal with realty or anybody else that wants to deal with this? I would like your perspective—

Mr. POLYCHRON. In other words, if they accidentally get something?

Mr. COLLINS. It gets out there or is used. The data retention part is becoming the issue, and I think the concern I have, and again, looking at that, how do we protect against that and especially in light of a mosaic that is developing out there?

Mr. POLYCHRON. Well, you know, speaking from a realtor viewpoint, I mean, we have a code of ethics from 1908, which private property rights is the central tenet of that document. And I feel like realtors are going to respect privacy. I—the rules that we set to engage that I think are going to be very important.

Mr. COLLINS. And I am—and I am dealing with realtors, a great realtor right now in some different areas, and I am not questioning the realtors. And I am also questioning the concern here is what about the retention? How long is that property pic used or that video used that could have something? Could it be turned over?

Is that—you know, it is just a lot of issues. Mr. Karol, anything to weigh in on this? And I am just trying to get a good perspective here because it is an interesting issue.

Mr. KAROL. With respect to at least the commercial use by our members, the insurance members, we're focusing very hard on the technological side of that to capture data that is not personal information. If we're looking at hail damage to a roof, we're looking at technology that will capture spectrographic components of that roof to show damages and wouldn't capture images of people.

And to try to define what is private and personal information and what is not private and personal information and to collect that for our commercial purposes to collect only that information in which relates to our business. We don't—we understand very highly the protections with respect to information on the financial side, and we want very strongly to avoid that.

Mr. COLLINS. All right. Mr. Polychron, do you have something?

Mr. POLYCHRON. I was just thinking, I mean, bottom line is we're going to be taking pictures of houses—

Mr. COLLINS. Mm-hmm.

Mr. POLYCHRON [continuing]. Primarily. We're—we're—I mean, I don't know—

Mr. COLLINS. Well, I think you may have one of the more unique—and I am not going to, you know, say realty has this difference. I think it is just a blending of the whole, you know, issue and how do we deal with it going back to really right now on a Federal level you said mosaic, but there is just—there is a—the courts are having to piece together law as we go, and I think that is the concerning part here on how we go in with that.

Mr. Chair, I know my time is up. But I will—much more we could describe it. I will yield back.

Mr. ISSA. You know, ending on the term “mosaic” is always a winner. [Laughter.]

With that, we go to the gentlelady from California, Ms. Chu.

Ms. CHU. Mr. Wynne, I want to ask you about a rather serious issue we are dealing with in California. We see several wildfires each year, and the severity ranges with each one. Some can be put out rather quickly without much harm, while others may destroy homes and even take lives.

Combating the fire from the air is rather common. However, in recent years, firefighters have had to ground their aircraft because they see drones in the area. These aerial attacks are called off when the drones are spotted because the consequences of a collision are too great.

So I wanted to know whether your organization has looked into this issue, and if so, do you think the FAA should address this?

Mr. WYNNE. Yes, ma'am, I sure do. And my son is a firefighter and, believe it or not, actually aspires to being in a place where he can fight wildland fires, which, unfortunately, is a growing business.

I have phenomenal respect for people that fly and drop fire retardant on fires, not only doing something very useful and very valuable for public safety, but they're doing something that's highly, highly dangerous to do. So this is extremely important for us to get right.

Anyone that puts an aircraft in danger, a manned aircraft in danger or any aircraft in danger, is violating FAA rules already. It's careless and reckless. And so, the FAA already has the capability of doing something about this today.

In addition to that, in most instances for wildfires, there's a temporary flight restriction, TFR, put up around the fire, particularly when there's air operations going on. So anyone that's flying in that TFR that's unauthorized is automatically breaking the law, and they should be prosecuted for doing that.

The irony here, ma'am, is that—is that, and there's a great YouTube video now from a wildfire, I believe in Washington State, just this past week where they were utilizing a UAS to look down on operations to make certain that they were putting their fire retardant in the right place. This technology can be used and will be used and is being used by firefighters to create greater situational awareness.

It's a tremendous tool for the person that's in charge of that operation on the ground who's responsible for lives and property. So we want to be responsible users, and we want those who are flying recklessly and carelessly to be prosecuted.



Ms. CHU. So the tool is already there to remove those drones or at least to prosecute against them in these wild—

Mr. WYNNE. I'm sorry, ma'am. I can't quite hear—

Ms. CHU. The tool is already there?

Mr. WYNNE. Yes, ma'am. I believe they are.

Ms. CHU. Okay. Mr. Polychron, you state that there is currently no standardized protocol for notice to bystanders before or during a drone flight, and this is a question about bystanders. And you asked the FAA to provide greater detail regarding what is expected of the drone operators when providing notice to and protecting the safety of individuals who are near the location of a UAS operation.

So, in other words, a drone could be taking pictures, but there are bystanders that have not given their permission to be filmed, and so do you or the NAR have a suggested protocol that the FAA should consider?

Mr. POLYCHRON. I do not think we have a protocol at this time. I see your question. I understand your question. And I can certainly tell you I think we should.

Ms. CHU. Mr. Calabrese or Wynne?

Mr. CALABRESE. I will just—I think that one of the things that we need to deal with as a baseline matter, which is sort of a privacy issue, but it's also a notice issue, is just knowing who's flying a drone, you know? And just having an ability to recognize and know whether that's the CNN drone or your realtor's drone, know where the data is going. And then you have the opportunity to contest it or say, "I think that this was improperly collected of my private property" and, you know, is a tort that maybe I can bring a civil suit.

But the baseline is that I know the data collection practices. I know who is doing the collection. I know where it's going.

Ms. CHU. Yes. And Mr. Calabrese, we have talked about the drone that can look into the backyard from 200 feet above. Of course, on the other hand, the human eye and the helicopters can be doing exactly the same thing. Should there be restrictions, and does the industry code of conduct developed by the Association of Unmanned Vehicles System International provide meaningful protections?

Mr. CALABRESE. I mean, with all due respect to AUVSI, I don't think that their current code does provide enough protection. And we can—and I hope that the industry will do more as part of the NTIA process.

We're really concerned that drones are different than being in an airplane. They're just much less expensive. They have the potential, for example, if they're a blimp, to stay up much longer, and they have just the potential to be much more invasive.

We're not picking on the technology. All technology can be good or bad, but this deserves some regulation.

Ms. CHU. Thank you. I yield back.

Mr. ISSA. Thank you.

We now go to the gentleman—oh, I am sorry. We now go to Mr. Marino. Thank you for being so prompt.

Mr. MARINO. Chairman, I am sorry. I was delayed longer than I thought I was going to be, and I am sure the questions I was thinking of asking are already asked.

Mr. ISSA. None of the good questions have been answered yet. They are all available to you.

Mr. MARINO. Okay. I will be very brief. Thank you.

I apologize if this question was asked, but who are we going to put in charge of making certain that whoever—if I own a drone and I am out there flying it, who is responsible for having that information, and do we want people to have that information?

As I read an article in the newspaper not too long ago, that there was a drone flying over a man's property while his teenage girl—daughter and her girlfriends were in the swimming pool. And the drone was hovering over, obviously, watching the girls. The guy went in and got a shotgun and shot it out of the air.

Now he got arrested for that. I don't know the details of was it in the city or how it worked, but how do we keep people accountable for and know who has a drone if we are going to down that road? Anyone, please?

Mr. KAROL. I believe what he was arrested for was discharging the firearm in an area that was not allowed. I don't think he was charged with firing at the drone.

But I think your question goes to the fundamental concept of the property rights because the property rights, to a large extent, decide the privacy rights. If the drone is where it's allowed to be by the property owner, then the privacy issue becomes substantially different than if it's not allowed to be there.

So that if the property owner allows the drone to be on that property, that's one area. But if it's—and to some extent, it's very different if, for example, an insurance capability, if an adjuster is on the roof taking pictures of the damage from the roof, it's no different than if the drone is up there taking pictures.

So that the property owner has given his permission and the access from that permission so that the privacy of that area is defended thereon.

Mr. MARINO. Mr. Wynne and Mr. Polychron—am I pronouncing that name correctly?

Mr. POLYCHRON. Polychron.

Mr. MARINO. Polychron, okay. I have a question that we wrote down. We know that while the FAA drags out the proposed rule-making process, UAV innovation continues to move forward abroad. This not only hurts innovation in the drone industry itself, but the industries who would benefit most as well, two of which are critical in my district, agriculture and energy.

Where do you believe the U.S. currently stacks up, and what impact could this drag have on our economy and jobs if the regulatory environment continues as it is, as it currently stands? So, Mr. Wynne and then—

Mr. WYNNE. I'm having a little difficulty hearing, sir. Was it the question was—

Mr. MARINO. I am sorry.

Mr. WYNNE [continuing]. Are we falling behind?

Mr. MARINO. Are we falling behind?

Mr. WYNNE. I think we are—

Mr. MARINO. Nicely put.

Mr. WYNNE [continuing]. To some extent. I don't think it's irreparable at this stage in the game. So it's not an argument that I'm

fond of trotting out. We spend a lot of time working with our counterparts overseas, and ultimately, our objective is to have global harmonization of regulations around the world.

So, so in some respects, if we could get the FAA to finish the rules that have been proposed, some ways we kind of zoom ahead of some countries that are out there, and I think that would allow us to unlock a great deal of value for a number of industries, including the energy sector and the agriculture sector, which I heard you refer to.

Mr. MARINO. Okay. And my last question. It was mentioned that the FAA has received more than 2,700 requests for exemptions to be able to fly drones, only 1,400 of which were granted in the absence of a finalized rule. What does this mean to us as far as moving ahead in the process? Anyone again?

Mr. WYNNE. Well, I think the significance of the numbers right now is that, you know, we're operating—we're regulating by exemption, and we'll never keep up. There is vastly more people out there, whether they're real estate—real estate brokers or—large utility companies or insurance companies that want to fly.

So we're just scratching the surface. There is a—I want to say a more bureaucratic process in place now than there will be once we have final regulations. But one way or the other, it's no way to regulate. We don't want to be regulating by exemption.

We want to basically put the rules out there. We want to encourage certification of operators. We want to train operators. We want to stand up an aviation community here that can actually act safely and responsibly under FAA regulations.

Mr. MARINO. Sir?

Mr. POLYCHRON. I would like to add that from a realtor's standpoint, time is a deal killer. That's just a saying that we use in our business.

Because only a few realtors are, you know, permitted to do this under the Section 333, it puts some of us at a disadvantage if we cannot present a listing in a manner that someone does. So from a competitive standpoint, time is of the essence.

Mr. MARINO. Okay. Thank you. And again, I apologize if these questions are already asked.

And Chairman, thank you very much. You have been more than fair to me. I yield back.

Mr. ISSA. I thank the gentleman for yielding back, and we will take that extra time and go to the gentleman from Louisiana for 5 minutes.

Mr. RICHMOND. Thank you, Mr. Chairman.

And I guess I will kind of start where Mr. Marino went a little bit about who is flying the drone and not in terms of data collection, but about public safety. And we have dealt with this issue in homeland security also because the question arises, can an individual or law enforcement shoot down a drone if they determine that that drone is a safety risk?

And the information we have, and I would like your opinion on it, is that law enforcement can't do anything with it because it is considered an aircraft. Is that consistent with what you all see and hear?

Mr. KAROL. I'll take a shot. My understanding is that the FAA rules prohibit the interference with an aircraft, but at the same time, at the State level, there are privacy rights. And under the basic restatement of torts, if something trespasses, you have the right to protect yourself.

So, again, it goes to the central issue we have is it's not particularly clear to us which law would prevail there. Because the State law that says that you have the right to protect your own property supersedes the FAA's interference with an aircraft provision. It's very difficult to understand.

Mr. RICHMOND. Well, I will tell you the testimony that we heard, and the example was if a drone was flying over a high school football game and law enforcement could not determine whether it was adversarial or just a hobbyist flying a plane over. And their comment was if we found out it was adversarial, we do not have the permission to take it down.

And I guess I am giving you all that charge because I think as we push Government to rush to some sort of rules, we have to also look at the safety concerns that are there also. You can go on YouTube right now, and you can look at a Russian assault rifle attached to the drone that they sell in Sam's Club, and it is shooting mannequins.

And the question for me while we rush to get things to market in all due speed, to make sure that we have policies that also protect our families. So when we were—and I started getting interested when you started talking about the ability to know who is flying the drone. And maybe that technology about who is flying the drone can help us in terms of knowing where they are and help us decipher some other intentions.

So I just want us to think about that because from a homeland security standpoint, we are absolutely terrified in the position of how do we protect mass gatherings and other things when we start talking about unmanned aircrafts and not only the privacy concerns, but the safety.

And Mr. Karol, just with the 10th anniversary of Katrina, I just can't help but to say I would be very excited about using unmanned aircraft to assess property damage so that you all could get the information very quickly. I would also be in favor of you delivering the checks that way, too— [Laughter.]

So that people could get them in a very quick manner. But I think what my biggest charge to you all, then I will yield back the rest of my time, is that I think that industry is going to have to get together and figure out some parameters because, as Government makes the rules, we can't make them fast enough to keep up with technology.

And we are going to have to find a balancing act between the commercial interests, public safety, public privacy, and all of those things. And I think that if we can get the interested parties at the table to really start digging into that, it may help us along in terms of how quickly we can get to a comfort zone.

Because I will just tell you—and my colleague Ms. Jackson Lee from Texas is also on Homeland—we have very—we have a lot of unreadiness coming from Homeland Security Committee in terms

of the safety of unmanned aircrafts and how we protect our citizenship. So, hopefully, you all can help us in that respect.

And with that, Mr. Chairman, I will yield back.

Mr. ISSA. I thank you.

We now go to the gentlelady from Washington, a tech leader in her own right, Ms. DelBene.

Ms. DELBENE. Thank you, Mr. Chair.

And thanks to all of you for being here with us today.

Mr. Wynne, you talked about a code of conduct, and Mr. Calabrese, you also talked about the code of conduct and also kind of the Know Before You Fly program. Could you describe in a little more detail what is in the code of conduct, and also Know Before You Fly, what is made up as part of that program?

Mr. WYNNE. I'd be happy to provide our code of conduct for the record, ma'am. And, but the—by and large, we've covered that a little bit in my earlier—I mean, at the end of the day, it's really about common sense.

There's—you know, I think, by and large, as I indicated, this is an industry that recognizes that if it doesn't fly safely and responsibly, it will not be sustainable. We will have all kinds of challenges not only at the Federal level, but at every State level and potentially at the municipal level.

We do have a code of conduct. You know, the word "potential" is being used a lot on this panel. Potential for this, the potential for that. I would urge us not to try and solve, you know, create solutions for problems that don't yet exist. But I would commit to you that this—I represent a community that will fly safely and responsibly, and as our code of conduct needs to be strengthened, it will be strengthened.

One of the reasons why we need regulations from the FAA is because we need more trained operators out there. As with aviation, it is a self-policing community. We do not tolerate careless and reckless behavior. If I see someone doing something careless and reckless with an aircraft, I report them. I talk to them, and I report them.

Know Before You Fly is a campaign that was largely stood up in conjunction with the Academy of Model Aeronautics and the FAA to train nonaviators, which are the people that anyone can now walk into an Apple store and buy a drone and go fly. But that doesn't mean that they're in a place where they should.

So the whole idea is to try and train people about where it's appropriate to fly and where it's not appropriate to fly. And there are an increasing number of tools that are available to the general public and to nonaviators, things that I just have on my iPad already, which would allow me to look at and see how far am I from an airport, for example, and so forth.

There is also technology that is coming into these different devices that will help for, you know, to make certain that the device won't fly—

Ms. DELBENE. Yes, I was going to ask you about that. So you could use technology to limit, using GPS and other things, to limit where a device was able to go. Are folks looking at implementing that type of technology so that even if you wanted to, you couldn't go, for example, into airspace that is—that is off limits?

Mr. WYNNE. That's never a substitute for airmanship and education. But those technologies increasingly are going to be leveraged going forward. They can also be disabled by people who wanted to do that.

So, again, it's important to have trained operators out there. And increasingly, not only will our community have its own code of conduct and its own safety best practices, but every single industry that's utilizing this technology will be doing the same thing.

Ms. DELBENE. Mr. Calabrese, any comment?

Mr. CALABRESE. Yeah, I think it's important to say that we don't have codes of conduct that are really robust yet. And clearly, we need them. And I think there's a great example is the delivery aspect of drones, right?

No one sees a lot of data collection need in the delivery of things. I mean, there may be some, but it's relatively limited. So why don't we find ways that we can constructively say we may have drones all over the place in 5 years delivering my packages, but none of them are going to be collecting data. Or if they are, we have the flexibility to say it's immediately deleted.

So, you know, we're not trying to be overly prescriptive. CDT believes in the power of technology to make things better. But we also believe that we have to be responsible about the data we collect, and so a lot of these industries, and we've already heard that, can do more to collect less, if you will. And so, I think we all need to push for codes that do that, and Congress needs to step in if they don't.

Ms. DELBENE. Well, we know that we are behind on some laws, even things like Electronic Communications Privacy Act. So we have a lot of work to do to make sure our laws are up to date with the way technology works, and this is another place where we want to make sure we support innovation, but also make sure we protect privacy and safety.

And that is why I think it is very, very important that we continue to work hard on all these efforts so that we have—we understand there are incredible uses like agriculture or wildfires, as you brought up, in Washington State. We have—there are important uses, but we also have to make sure we have consumer protections in place as well.

Thank you, Mr. Chair. I yield back.

Mr. ISSA. I thank the gentlelady.

We now go to my colleague and seatmate on many airplane flights from California, Mr. Peters.

Mr. PETERS. Thank you, Mr. Chairman.

You know, this expectation of privacy thing is I feel like I am in a really complicated law school exam. But let me first ask about wildfires, just to follow up on Ms. Chu.

Has someone talked about the balance between interfering with firefighting and the ability to assist with firefighting and how that might be arbitrated? Anybody?

So I am sorry. So in terms of the use of UAS, we have already seen instances where they have interfered with, you know, people are looking, interfering with firefighting. There has been a number of efforts. I think those are more simple to deal with restricting the use of these vehicles in the course of a wildfire.

Has someone—are you aware of any efforts or any models, you think, to talk about how it is useful to use these implements or this equipment in the course of helping with firefighting?

Mr. WYNNE. As I indicated, there are firefighting departments that are already embracing and leveraging the technology, but it has to be authorized use. You know, if there's an air boss at a site, then, you know, they're going to leverage that technology.

If someone gets in the air that's not in positive control of the air boss, that's a problem.

Mr. PETERS. Is it in process with the FAA? Do you know that those discussions are taking place now?

Mr. WYNNE. Well, you know, I've discussed this with the Administrator. You know, at this point, if there is a TFR up, we just—you know, it's a little bit like the campaign about the Super Bowl, right?

Mr. PETERS. Right.

Mr. WYNNE. It was a very successful campaign because nobody flew at the Super Bowl.

Mr. PETERS. Right. Okay.

Mr. WYNNE. We were discussing the potential for doing things at—you know, broader for sporting events, not unlike the problem with laser pointers. There's got to be a very targeted campaign, no pun intended. And now there is a very good campaign—If You Fly, We Can't—by those that are fighting wildfires. And that's, you know, whatever is in the air. They need to be in control of it—

Mr. PETERS. Right.

Mr. WYNNE. - when it's inside of that space.

Mr. PETERS. Let me go back to Mr. Marino's swimming pool example. I think it is a little bit different when you think about expectation of privacy to envision someone looking at you from a balcony rather than high above the sky. And is it were you just going to expand expectation of privacy so that there is no expectation of privacy? Is that what is going to happen?

Mr. CALABRESE. I certainly hope not. I've spent my whole career trying to avoid that outcome, and I do think the technology allows you to be more invasive, and so you need to be—you need better protections. The reality is that the First Amendment makes this hard.

I mean, we have First Amendment protections. You can take video from a public place. That's—that is a cherished First Amendment value, and we just never had a circumstance where you could take so much video and keep it forever. And I think—

Mr. PETERS. From a place where you are not even visible.

Mr. CALABRESE. What's that?

Mr. PETERS. From a place where you are not even visible to the person being filmed.

Mr. CALABRESE. And there are—there are tricky First Amendment questions there. So I guess what I would say is we look at privacy torts. We look at things like peeping tom laws. We start there. Then we look at data collection generally and whether we can, for example, create technologies where you can geotag a space and say, "No drones allowed in this space."

Mr. PETERS. Yes.

Mr. CALABRESE. And then, you know, keep people out. So there are ways that we have to try to do this, but we do have to navigate the First Amendment.

Mr. PETERS. So here is another question that occurred to me, just the two of you gentlemen talking about your two proposed—or your two issues, is suppose, you know, you have real estate agents flying around. There is no intention on their part to be deleting this data, but they're also filming swimming pools at the same time.

Mr. CALABRESE. Certainly I just would say to Mr. Polychron, given that the realtors have said pretty clearly they don't want to photograph people, maybe it becomes we have a code—

Mr. POLYCHRON. Yeah, let me go a step further. In our code of ethics, there is also, of course, we protect—

Mr. PETERS. Is your microphone on, sir?

Mr. POLYCHRON [continuing]. Their information, and data is very private. So at the same time, I know that our staff is working with the NTIA to try to establish an industry standard.

When I spoke earlier to Mr. Marino, we haven't done that yet, but we are working on it. So we are very cognizant of privacy and always have been and will continue to be.

Mr. PETERS. But that doesn't really—that doesn't answer what the standard is going to be and how you are going to come to—how you come to balancing that. I mean, you are going to—you want to capture pictures of real estate. I mean, I suppose there are ways to delete—

Mr. POLYCHRON. It is not our intent to take pictures of—let's just say we would love to take a picture of that swimming pool while no one's there. But I don't think—

Mr. PETERS. Good luck this week in San Diego finding a swimming pool with nobody in it. So—

Mr. POLYCHRON. Or in Arkansas, as far as that goes. But you can do that.

Mr. PETERS. Okay. All right. Well, thank you, Mr. Chairman. I yield back.

Mr. ISSA. I thank the gentleman.

We now go—we are on a California roll. We now go to the gentlelady from just north of our districts, Ms. Lofgren.

Ms. LOFGREN. Well, thank you.

I think this has been a very useful hearing. Getting back to the security/privacy question, what—what is the industry doing, either, you know, the association or the realtors, to make sure that the data that is collected is encrypted and secure from hacking?

Mr. POLYCHRON. As I just stated, in our code of ethics, our data and information is very private. And I would go a step further to tell you that if I had a client and I was abusing this privilege, they wouldn't be my client very long.

Ms. LOFGREN. Well, I don't mean—certainly I don't question your intent. The question really is about the technology. Is your data encrypted or not?

Mr. POLYCHRON. Encrypted from what standpoint? Just—

Ms. LOFGREN. Well, you can encrypt data so that it can only be opened with a key. Is it encrypted, or is it kept open in the—

Mr. POLYCHRON. Well, I mean, when you look at the data of a listing, I mean, you know, I'm going to—



Ms. LOFGREN. No, no, what you are collecting.

Mr. POLYCHRON. You're going to be able to look at it on Realtor.com or Zillow as well, a lot of that information. So it can't be encrypted.

Ms. LOFGREN. Well, yes, it could, and then you could—

Mr. POLYCHRON. Well, I mean right now.

Ms. LOFGREN. And you could selectively make available—if you get pictures of, you know, people in a pool, you are not going to delete that necessarily. But you are not going to make it available because you want—you know, you respect. I don't question your ethics at all. I am just asking about the technology.

Mr. KAROL. I can speak for the insurance industry at least. What has been done so far is predominantly the capture of single pieces of property—of data from that single pieces of property in a unit underneath the UAS, which is then directly loaded into the systems of the insurance company, which is not open to anyone else.

So that there is no distribution of that data. It's used internally for appraisal values and damage assessment. So there's no—there's no openness to that system that would require any sort of encryption to prevent any problem.

Ms. LOFGREN. Well, I question that because look at the number of, well, material that was supposed to be secure but was hacked, and when it was hacked, it was available because it wasn't encrypted, including, unfortunately, a lot of information—sensitive information that the Government held that was supposed to be secure.

Mr. CALABRESE. Yeah, I mean, CDT certainly believes that we do need encryption between the device—

Ms. LOFGREN. Well, I was going to ask about that, too.

Mr. CALABRESE. Right, yeah. I mean, it's between the aircraft and the operator that the information needs to be encrypted so it can't be intercepted so the control of the aircraft itself can't be taken over by someone else. I mean, clearly, encryption needs to be a best practice.

It seems like maybe we've got a ways to go before we get that—get there in terms of how the devices are operating now.

Ms. LOFGREN. It sounds like we do. In terms of—that was the other question, I guess, for the association. What—is the control encrypted, and is there authentication between the control link of the operator and the vehicle?

Mr. WYNNE. I'm going to say yes because there is a strong desire, a requirement really, to keep the control in one place. So, you know, this is probably point number one, the reliability, the fidelity of the link is also extremely important and as well as building in safeguards, in fact, if that connection is lost. But we don't want anyone hacking that link.

Ms. LOFGREN. Right. Do you know that is there an industry standard? Or if I go down to the Apple store and buy a drone, is the link between the controller and the unit authenticated and encrypted, do you know? I mean, is—

Mr. WYNNE. I'm going to—I can't answer that question specifically, but I will follow up for the record with an answer.

Ms. LOFGREN. Okay. I just think that there are a lot of difficult questions that have been gone through, and some of these ques-

tions are policy, but the implementation of that policy is going to be technological. And you know, so often, we think about the technological protections after the fact, and it would be really super to think about them before the problem occur in this instance.

And I am going to yield back because we are going to have votes in 10 minutes, and I want my colleague—

Mr. ISSA. And with one intermission, he will be next. With that, we go to the gentleman from Texas, Mr. Poe.

Mr. POE. I thank the Chairman.

Thank you all for being here.

Mr. Calabrese, it is good to see you again. Thanks for coming to Houston during our privacy forum, and thank you for your work on the Preserving American Privacy Act that I am a sponsor and Ms. Lofgren is the cosponsor on the minority side.

Privacy is an issue with me. Technology in the United States is the best, I think, in the world, especially even in this area, and we are moving faster than anyone ever thought, at least I thought we would, in the area of drones.

We have had the issue of drones pending in the Judiciary for a while, a year at least. We have the domestic use of drones regarding private companies and people, and then we have Government use of drones. And we leave all of this drone regulation up to the FAA, of all people, to decide who gets a drone and when they get a drone.

Do you think that we should let a Government agency determine and determine the Fourth Amendment right of privacy, whatever it means? Mr. Calabrese?

Mr. CALABRESE. Well, of course, we're strong supporters of your bill. So I think you already know the answer. The central tenet of your legislation, at least from our perspective, is, you know, get a warrant to use a drone if you're the police. And we think that is a constitutional standard that has, you know, long served us and should continue to be the standard.

So when it comes to law enforcement use, and I think that is a lot of the public concern in this area, we should have a warrant standard. It doesn't mean that we don't have exceptions for things like exigency and emergencies and, you know, hot pursuit and consent. But the standard should, by and large, be a warrant-based standard.

I think that deals with a lot of the problems on the law enforcement side, and then, you know, once we've dealt with that and once the Government is not going to kick down your door, then we can take on some of these other thornier questions about commercial data collection and getting the right standards in place for that.

Mr. POE. My question is should we just let the FAA deal with this? And then the courts decide years from now was this a violation or not of the Fourth Amendment when the police or a private citizen using a drone got information? Should we just let the courts decide? I mean, that is what we hear around here all the time. Let the courts decide.

Mr. CALABRESE. Yeah, no. Congress. Congress should step in. Clearly, they have a constitutional role in this process, and I don't think the FAA is going to feel like it has the ability to dictate Fourth Amendment standards to local law enforcement, and I

think that's why Congress needs to make clear right now what the right standard is.

Mr. POE. I agree with you. I think that Congress has an obligation to set the standards, the rules, whatever they are, protect the right of privacy, but also put everybody on notice what the rules are, what the law is.

I would think that the folks in the drone industry would like to know when and when they cannot use one of these even in civilian areas. And I think that is our obligation, along with the other privacy issues that are pending that we have not resolved as well.

In your testimony, you mention now that 16 States have privacy laws regarding drones. What about letting the States just make up their mind? What is privacy in Texas may not be privacy in California or whatever. So should we just let all 50 States and the territories make the decision as to drone regulation regarding the issue of privacy?

Mr. CALABRESE. You know, that's a tough question. I mean, I—some of the—some of the State laws have been really progressive. Some of them have raised concerns, frankly, around First Amendment issues. I think CDT believes that until we get the floor of a search warrant across the country, Americans won't have the privacy they deserve from Government access to their personal lives. So I think that's the standard.

Whether it comes to the States or the Federal Government I think is less important, though I think the way things are going right now, we really are going to need a Federal fix.

Mr. POE. Congress sets the right of privacy, whatever expectation of privacy is, makes it law, and then everybody is on notice. And for the record, I am a big supporter of the use of drones. Everybody just needs to know what the rules are, but Congress needs to come up with what the rules are.

And I will yield back to the Chairman.

Mr. ISSA. I thank the gentleman.

We now go to another gentleman from Georgia, Mr. Johnson, for 5 minutes.

Mr. JOHNSON. Thank you, Mr. Chairman.

In addition to insurers and realtors and retailers like eBay, you know, you got law enforcement, all of these operations using drones. And you have even got hobbyists out there who have their drones. And so, everybody is participating in the use of drones in the airspace, and it creates—in addition to privacy issues, it creates safety issues and other areas of interest.

It is an important issue that needs to be regulated. Now the problem that we have here in Congress is that we are in the midst of an anti-regulatory crusade. There are those who adhere to the Grover Norquist philosophy of making Government so small that you can strangle it in the bathtub. In other words, people who don't believe that Government, that the Federal Government should be involved in anything other than the defense of the Nation. Everything else left up to the States and the private sector.

And speaking of Grover Norquist, in the 114th Congress, 218 Republicans, that is just one over the number it takes to constitute a majority in the House of Representatives. So they can pass whatever they want to pass. Two hundred eighteen have signed onto the

Grover Norquist “no new tax money” pledge, and 49 in the Senate have done so, just shy of a majority.

And so, we are in the midst of an anti-regulatory, anti-Federal Government binge among those who are in control, and that bumps up against this 2012 order for us. We knew it was coming. We knew all of these segments would be flying drones. We knew what was coming, but yet what did we do?

We passed the Budget Control Act of 2011, the Ryan Budget Control Act, the Republican Budget Control Act, sequestration, cutting 10 percent for year after year. And so, if that is not stifling the private sector as it seeks to develop the drone business, I can’t think of anything—I don’t know what else is stifling the private sector.

And then we are hearing on this very Committee, we—during this same session of Congress, we are doing everything we can to gum up the regulatory workings of Government. We don’t want the Government to issue the regulations.

We have passed out of this Committee what is called the REINS Act, which purports to rein in an out-of-control Government seeking to over regulate, when we know we don’t have the regulations that we need in this particular area that you all are here concerned with. We voted out the ALERRT Act. Both of these acts would essentially stop the rulemaking process.

So while we are having this hearing and we are talking about the need for the rules, overall, we are doing everything we can to not do anything in this area. And so, what is at risk is the health, safety, and welfare of the citizens, and it is also the ability of our country to compete on a global level.

Mr. Wynne, do you agree that these budget cuts have prevented the expansion of private industry?

Mr. WYNNE. Congressman, I certainly agree that this is a community that’s asking for regulation, and Congress has mandated that this area be regulated.

Mr. JOHNSON. We are working at cross purposes with that objective. Mr. Calabrese, how do you see it?

Mr. CALABRESE. I have to admit I’m not familiar with the REINS Act. So I can’t really comment on its—

Mr. JOHNSON. Well, but you do understand the financial implications of the—of the Ryan Republican Budget Control Act of 2011, do you not?

Mr. ISSA. The time of—the gentleman’s time has expired, but to the extent that you are very familiar with that, you may answer. [Laughter.]

Mr. CALABRESE. I am going to take the opportunity to pass on that. Sorry, Mr. Johnson.

Mr. JOHNSON. Well, I know it is a difficult question to answer, but I think we—

Mr. ISSA. It is perhaps too complex for a drone hearing.

Mr. JOHNSON. Well, I do think we must look at things overall. We must look at it holistically. What is the role of the Federal Government in the affairs of the Nation? I think that is basically the overarching issue, and right now, our Government is gummed up with gridlock. We can’t even pass a budget for the next fiscal year, 2016.

We are going to put it all on the line because we want to defund Planned Parenthood. So while we have these important—

Mr. ISSA. Would the gentleman wrap up this? The gentleman's time has expired.

Mr. JOHNSON. I will, and I appreciate the Chairman's ability to let me speak. And so, with that, I think I have made my point, and I will yield back.

Mr. ISSA. I thank the gentleman. He did make his point.

And with that, I would like to make my point. So, Mr. Karol, if you would pick up that piece of Styrofoam. I am not going to ask you to estimate the exact weight, but does it weigh practically nothing in your hand?

Mr. KAROL. Practically nothing.

Mr. ISSA. Okay, and the rest of it is here balanced on this pencil, and I am going to guess it weighs a pound and a half, 2 pounds. We have been talking about a lot of things here. I think Mr. Calabrese or, actually, Mr. Wynne I am going to start with, aren't we talking about a multitude of different products here? I just want to go through it.

We are talking about things like this, which are really, they are the equivalent of the toy that we all grew up with, extremely light-weight, really doesn't—couldn't get over 400 feet, can't go a long distance. Notwithstanding that it might have a camera mounted on it, this is, in fact, an extension of what children grew up with, remote controls that were available 50 years ago. Is that right?

Mr. WYNNE. Well, I don't think so, actually. I think it looks a little bit like what my son used to play with, but honestly, it's a little bit like the difference between a plug-in phone and an iPhone.

Mr. ISSA. Well, but and I want to make sure I get to the point, which is—and Mr. Karol, I started with you—from a safety standpoint, the damage that this product would do from a safety standpoint, if it falls on your roof and so on, is substantially similar perhaps to what that old little alcohol-fired plane that I grew up flying would do, right?

Mr. KAROL. That particular drone, yes, sir.

Mr. ISSA. Okay. So the first question we have to ask is are we addressing products based on their risk of safety, right, is something that your company deals with?

Mr. KAROL. That's correct, Mr. Chairman.

Mr. ISSA. Okay. And the second one, of course, is the FAA. And I heard a lot of comments. I don't know how many pilots are in the room. If there are, they are all better pilots than I am. But for four decades, I have been flying, nearly. And during those years, the one thing I knew was that my floor was 500 feet.

And the ceiling of these products is 400 feet, and there is a reason for that, which is that I am not allowed to come down except by an airport into the remote control toy airspace, and these products, if they want to remain unregulated, have to stay below where I am allowed to fly. Again, reasonable safety standard today.

Is that correct, in your estimation?

Mr. KAROL. I think for that particular aircraft, yes. But I think that there are many other different aircrafts.

Mr. ISSA. Right. And we are talking about heavier aircraft, the 30-pound, 40-pound drone is still covered by the 400-foot lid. But

there is a different question of if it falls. So I want to go through a number of quick questions.

Mr. Calabrese, you are not an advocate of the status quo. That is a given. But let me ask a couple of questions. Today, the realtors, or association represented by Mr. Polychron next to you, if they have the permission of the owner and they fly only over the owner's airspace or ground space, unless they have the waiver for commercial use, they are breaking the law.

Flying this product or one very similar over somebody's own private property with their permission, they have to get a kind of a weird exemption that says they can use it for commercial purposes. It takes time. They have to describe in detail.

Wouldn't you agree that the private use or even the commercial use over one's own property is an example where perhaps the Government needs to weigh in and say you know what, commercial use with the owner's permission in which you are only flying over their land, we never should have had regulations over it. Is it really any different than if I raise a balloon up that has a camera on it?

And I would just like to get your comments on it because I want to try and divide the concerns we all have with a question of are we even approaching this based on intrusion into my privacy versus the right of a landowner to regulate what goes on in their own area?

Mr. CALABRESE. So certainly from a privacy point of view, and I can't speak to the safety issues, you've always had the ability to consent to sort of essentially your own—giving up your own personal information, and I think it probably is an appropriate—I'm sure I could think of a fact pattern where it wasn't the case.

But by and large, you can certainly make a case that that falls under consent and that collection is appropriate. You know, typically, the drones are not limited in that way. So that makes it harder. But certainly, that's a place to start.

Mr. ISSA. Sure. Well, and I am going to ask you to answer sort of on behalf of realtors. If in the near future, the FAA looks and says if a commercial use is only over somebody's own property, now that would include I am a farmer. I am flying it over my own property. But that is a commercial use when I do so. If I am exclusively flying over my own property, taking my own risk and so on, do I need a commercial waiver or, in fact, should we take those out and eliminate the bureaucracy of it?

And in your case, if you are only photographing and flying over the property of the client, if you will, is there really any reason in your estimation that that isn't a consent for these products? And let us assume for a moment we are talking about the 30-pound aircraft and below.

Mr. POLYCHRON. I would concur explicitly that I would want the right to do that, yes, sir.

Mr. ISSA. Okay. And I am going to close fairly quickly, even though there is nobody else left. But with just a couple of quick questions.

Mr. Calabrese, you had a lot of concerns. Let us talk about privacy for a moment. I am going to ask you because this Committee does have beyond the commercial questions of this hearing, we cer-

tainly are the Committee of people's civil rights and people's constitutional rights, including privacy.

These vehicles, large and small, represent a cheap and easy extension of a problem that is as old as the Brownie instamatic camera, isn't it?

Mr. CALABRESE. Yes.

Mr. ISSA. And we are dealing with something where, in your estimation, I am leading you, but that this Committee should look at a privacy questions, and my question to you in a more open format is should we look at them, assuming that these are going to make it pervasive. But should we look at them equally based on, if you will, the body camera, this product, the man who simply has a hillside and a telephoto lens that looks down on your backyard?

Should we be looking at those holistically, and should this Committee begin to look at that in light of, if you will, the pervasiveness of high-resolution, long-range capable cameras?

Mr. CALABRESE. Certainly the Committee should explore all the new technologies. I mean, that's something that we've talked about for a while. I mean, a great example of this is—that we haven't talked so much about is stingray devices that can capture cell phone and can be used to learn your location from your cell phone.

Mr. ISSA. We have been working pretty good on those in Congress.

Mr. CALABRESE. Yeah, they're—yeah, you're making some headway. You're definitely raising some attention.

So I do think that all of these need to be addressed. I don't think they all need to be addressed together. I mean, I think that's a very big bite. And nor are they all the same. They don't raise the same issues.

So I guess I would encourage Congress to continue to look at some of these different things. Mr. Poe's bill, I think, is a great way to say let's have the warrant standard for Government access, and then we can, again, deal with some of the trickier issues around how private collection happens.

Mr. ISSA. Okay. And I am going to follow up quickly on the warrant, and if somebody else wants a second round, I am going to give them that until the bell rings.

But you mention warrant, and that is an area of interest to me. Let us assume for a moment that police have a myriad of good reasons and other law enforcement, safety, and so on to fly, just to see what is happening. In other words, to be in the air to see if there is a fire, to be in the air for other reasons, and that those reasons are broadly in the public interest. Would you agree that that can happen?

Mr. CALABRESE. Sure.

Mr. ISSA. So, again, this Committee, the Committee of the Constitution, you suggested that we look at it. You mentioned Judge Poe's bill. Aren't you also in a sense saying that we need to address the question of if you collect it through other purposes, but you are law enforcement, public safety, that you are perfectly willing to collect it. But you have still got to get a warrant and recollect it in order to be able to use it.

Is that sort of implied in yours that we will collect all the time, but the question of, for example, knocking on the door is a question

of, jeez, somebody reported that we saw something. What is the basis then to enter the home?

Because this is going to happen. There is no question at all you are going to have drones in the air on behalf of public safety.

Mr. CALABRESE. So there's a lot there. Thank you for the opportunity to address it.

I think, first of all, talking about non-law enforcement use is not talking about warrant. So if we're talking about how the police—or excuse me, how like a firefighter can use a drone, we're talking about Government use, but not law enforcement use, and I don't think we're talking about a warrant.

I do think that we can see exceptions to the warrant requirement. So if you're flying for, for example, in a public place and you see a criminal activity or you see a fleeing suspect, you can continue to follow them the same way law enforcement could continue to follow them. We have clear rules around exigency there.

We also could, I think, see some exceptions for if we had a suppression remedy, for example. So I'm a law enforcement. I'm looking for a missing person. I'm not looking for criminal conduct, and I happen to find some.

If there is a clearly defined non-law enforcement, but police activity, you may be able to do that collection. It may fall under an exception or may or may not be admissible in court. I mean, there are fine gradations that we have to have here.

So I don't want to oversimplify the issue, but I do think that given the ability and the possibility of persistent long-term surveillance, something I think the public rightly fears, they should have the security of when they see that drone up there, knowing that the police have gotten a neutral third-party judge to approve that kind of surveillance on them and that there's a good reason for it.

Mr. ISSA. Thank you. And I am going to quickly close with a story.

Last weekend, I was at my home in the backyard, and a drone flew over, and it hovered over my backyard. Now as far as I could tell, it is a Phantom 3 Professional. And it had a camera onboard, nicely stabilized, and it hovered over exactly where it could see me. And then it went away, and I jumped up, followed it, found that one of my neighbors had a friend, a very adult friend, who had flown it on this mission.

I have no idea what he is going to do with it. Being a politician, I am going to assume that it will show up somewhere, some day, somehow. What was interesting for me was I know how easily violated people feel when there is a camera that is no more able to track me than across a ravine, somebody with a long-range camera would, but it felt very personal.

So as a Member of one of the Committees that has been called on to have a likely series of hearings on this, I want to make it clear today was about commercial, and I brought up one of the many points of are there exemptions where we can carve some of the commercial out so that we take that out of the clutter. And we start viewing some of the issues that are particularly important to Mr. Marino, as a former prosecutor, and others on the Committee, and we start dealing with the privacy, the warrant questions and so on, that come from it.



So although this hearing was limited in scope, I want to thank you all for helping us expand our understanding and, of course, probably define some of the future areas of other hearings of this Committee.

I want to ask all of you if you have additional comments or statements, I will keep the record open for 5 remaining days so that you can add supplemental material and would also ask that if we receive any questions, would you be glad to respond to those in writing from Members that were not able to be here today?

I want to thank you for the answer in the affirmative, and looking left and right, we stand adjourned.

[Whereupon, at 4:44 p.m., the Subcommittee was adjourned.]



## A P P E N D I X

---

### MATERIAL SUBMITTED FOR THE HEARING RECORD

#### **Prepared Statement of the Motion Picture Association of America**

The Motion Picture Association of America is excited to be on the forefront of small unmanned aircraft system innovation. The MPAA has worked closely with the Federal Aviation Administration and sUAS operators to secure cinematography as among the first approved commercial applications of unmanned aircraft in the United States. Incorporating sUAS in domestic film and television production is not only safely advancing aerial photography and helping tell stories in new and exciting ways. It is also starting to generate the economic benefits that the technology can bring our country by reducing costs and keeping film productions here at home rather than sending these jobs overseas.

As the voice of the motion picture, home video and television industries, the MPAA submits this statement on behalf of its members: Paramount Pictures Corp., Sony Pictures Entertainment Inc., Twentieth Century Fox Film Corp., Universal City Studios LLC, Walt Disney Studios Motion Pictures, and Warner Bros. Entertainment Inc. The film and television industry is currently employing sUAS under exemptions the FAA granted vendors to use the aircraft in scripted, closed-set filming. The controlled nature of our sUAS use greatly limits exposure to the general public, minimizing any safety or privacy concerns.

When the first handful of sUAS operators received exemption approval from the FAA last year at this time, Senator Dodd, MPAA's Chairman and CEO, called the announcement "a victory for audiences everywhere as it gives filmmakers yet another way to push creative boundaries and create the kinds of scenes and shots we could only imagine a few years ago." The MPAA and its members look forward to the continued development of this budding sector of the film industry as we work with the FAA to establish formal rules allowing the continued use of sUAS in domestic movie and television production.

Filming with sUAS is already authorized abroad and we have now built a positive safety track record here at home, having completed a growing number of successful flights. One of the small businesses we work with that received an exemption from the FAA in September 2014, has already completed more than 60 film projects to date totaling more than 1,200 successful flights. Advancing such domestic use will help keep production revenues from leaving our shores, promote jobs, expand the U.S. aviation industry, and provide real-world experiences in controlled environments to help pave the way for other uses of sUAS.

Looking ahead, we asked the FAA earlier this year in the formal rulemaking proceeding to allow additional flexibility, such as night flying, for filming in controlled environments as technology advances. We are in the initial stages of sUAS cinematography in the United States and, as use grows, the capabilities of the systems will likely evolve rapidly and beyond what we can predict now.

We thank Chairman Issa and Ranking Member Collins and the other members of the Committee for their attention to this matter. We are excited to continue our work to further integrate the use of sUAS into domestic film and television productions, and are eager to see how the creative minds of our industry use the technology to the benefit of audiences around the world.

○