



STATEMENT OF
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on

**“Eyes in the Sky: The Domestic Use of Unmanned Aerial Systems
before the House Judiciary Committee, Subcommittee on Crime, Terrorism, Homeland
Security, and Investigations**

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Good morning Chairman Sensenbrenner, Ranking Member Scott, and Members of the Committee. Thank you for the opportunity to testify on behalf of the American Civil Liberties Union (ACLU) its more than half a million members, countless additional activists and supporters, and fifty-three affiliates nationwide, about the privacy and civil liberties implications of the domestic use of unmanned surveillance vehicles, also known as drones, and recommendations for new protections for use of this technology.

I. Introduction

Unmanned aircraft carrying cameras raise the prospect of a significant new avenue for the surveillance of American life. Many Americans are familiar with these aircraft, commonly called drones, because of their use overseas in places like Afghanistan and Yemen. But drones are coming to America. Recently passed legislation requires the Federal Aviation Administration to “develop a comprehensive plan to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system.”¹ This new legislation has dramatically accelerated the deployment of drones and pushed this issue to the forefront. Meanwhile, the technology is quickly becoming cheaper and more powerful, interest in deploying drones among police departments is increasing, and our privacy laws are not strong enough to ensure that the new technology will be used responsibly and consistently with constitutional values. In short, the specter of routine aerial surveillance in American life is on the near horizon — a development that would profoundly change the character of public life in the United States.

We need a system of rules to ensure that Americans can enjoy the benefits of this technology without bringing our country a large step closer to a “surveillance society” in which every move is monitored, tracked, recorded, and scrutinized by the authorities. This statement outlines a set of protections that would safeguard Americans’ privacy in the coming world of drones.

Aerial surveillance from manned aircraft has been with us for decades. One of the first aircraft the Wright brothers built was a surveillance aircraft, and it was sold to the U.S. Army. Many common uses of drone aircraft—search and rescue, fighting wildfires, dangerous tactical police operations—are beneficial. In the 1980s the Supreme Court ruled that the Fourth Amendment does not categorically prohibit the government from carrying out warrantless aerial surveillance of private property.

But manned aircraft are expensive to purchase, operate and maintain, and this expense has always imposed a natural limit on the government’s aerial surveillance capability. Now that surveillance can be carried out by unmanned aircraft, this natural limit is eroding. The prospect of cheap, small, portable flying video surveillance machines threatens to eradicate existing practical limits on aerial monitoring and allow for pervasive surveillance, police fishing expeditions, and abusive use of these tools in a way that could eventually eliminate the privacy Americans have traditionally enjoyed in their movements and activities. In order to prevent this harmful and invasive outcome, Congress must act.

¹ FAA Modernization and Reform Act of 2012, P.L. 112-95, §332, 126 Stat.11, 73. For privacy controls the ACLU recommends the FAA implement as part of its regulatory process please see: <http://www.aclu.org/technology-and-liberty/aclu-comment-faa-unmanned-aircraft-system-test-site-program>

II. *The Technology*

There are hundreds of different types of Unmanned Aerial Vehicles (UAVs), as drones are formally known.² They can be as large as commercial aircraft or as small as hummingbirds, and include human remotely guided aircraft as well as autonomous, self-guided vehicles. They include:

- **Large fixed-wing aircraft.** The largest UAVs currently in use, such as the Israeli-made Eitan, are about the size of a Boeing 737 jetliner. The Eitan's wingspan is 86 feet, and it can stay aloft for 20 hours and reach an altitude of 40,000 feet.³ The Predator B drone, which has been used extensively on overseas battlefields as well as on the U.S.-Mexico border, has a wingspan of 66 feet, and it can stay aloft for over 30 hours and reach an altitude of 50,000 feet.⁴ In Pakistan and Afghanistan, the U.S. military and CIA deploy Predators and Reapers armed with surveillance capability as well as missiles capable of destroying a moving vehicle from thousands of feet in the air.⁵
- **Small fixed-wing aircraft.** Smaller fixed-wing aircraft are the current favorite for domestic deployment. The Houston police department, for example, recently tested the ScanEagle, made by Boeing subsidiary Insitu.⁶ The ScanEagle is 4 ½ feet long with a wingspan of 10 feet, and it can climb to 19,500 feet and stay aloft for more than 24 hours.⁷
- **Backpack craft.** Another class of craft is designed to be carried and operated by a single person. The hand-launched AeroVironment Raven, for example, weighs 4 pounds, has a wingspan of 4.5 feet and a length of 3 feet, can fly up to 14,000 feet and stay aloft for up to 110 minutes. Similar-sized products include a three-foot helicopter called the Draganflyer X6, a one-foot-long, one-pound fixed-wing craft called the AeroVironment Wasp, and a fan-propelled craft called the Honeywell T-Hawk that can "hover and stare." Individual hobbyists have also built a number of drones in this size range.⁸

² See Wikipedia, "List of unmanned aerial vehicles," at

http://en.wikipedia.org/wiki/List_of_unmanned_aerial_vehicles.

³ "Israel unveils world's largest UAV," Homeland Security Newswire, Feb. 23, 2010, online at

<http://homelandsecuritynewswire.com/israel-unveils-worlds-largest-uav>.

⁴ See General Atomics web page on Predator B at http://www.ga-asi.com/products/aircraft/predator_b.php; R.P.G. Collinson, *Introduction to Avionic Systems* (2011), p. 495

⁵ Yochi J. Dreazen, "From Pakistan, With Love: The technology used to monitor the skies over Waziristan is coming to your hometown," *National Journal*, March 13, 2011, online at

<http://www.nationaljournal.com/magazine/drones-may-be-coming-to-your-hometown-20110313>.

⁶ Stephen Dean, "Police line up to use drones on patrol after Houston secret test," *Houston Examiner*, Jan. 11, 2010, online at <http://www.examiner.com/page-one-in-houston/police-line-up-to-use-drones-on-patrol-after-houston-secret-test>.

⁷ Insitu, ScanEagle brochure, online at

<http://www.insitu.com/documents/Insitu%20Website/Marketing%20Collateral/ScanEagle%20Folder%20Insert.pdf>

⁸ AeroVironment brochure, online at http://www.avinc.com/downloads/Raven_Domestic_1210.pdf; AeroVironment web page on the Wasp at http://www.avinc.com/uas/small_uas/wasp/; Carrie Kahn, "It's A Bird! It's A Plane! It's A Drone!" *National Public Radio*, March 14, 2011, online at <http://www.npr.org/2011/03/14/134533552/its-a-bird-its-a-plane-its-a-drone>; "Drones on the home front," *Washington Post*, Jan. 23, 2011, online at <http://www.washingtonpost.com/wp-srv/special/nation/drone-gallery/>

- **Hummingbirds.** A tiny drone called the Nano Hummingbird was developed for the Pentagon's Defense Advanced Research Projects Agency (DARPA) by AeroVironment. Intended for stealth surveillance, it can fly up to 11 miles per hour and can hover, fly sideways, backwards and forwards, for about 8 minutes. It has a wingspan of 6.5 inches and weighs only 19 grams—less than a single AA battery.⁹
- **Blimps.** Some blimps are envisioned as high-altitude craft, up to 300 feet in diameter, that would compete with satellites, while others would be low-altitude craft that would allow the police to monitor the streets. Supporters say they are more cost-effective than other craft due to their ability to stay aloft for extended periods.¹⁰

III. *Drone Capabilities—Today and in the Future*

The aircraft themselves are steadily improving and, as with so many technologies, that is likely to continue. They are becoming smaller. The military and law enforcement are keenly interested in developing small drones, which have the advantages of being versatile, cheap to buy and maintain, and in some cases so small and quiet that they will escape notice.¹¹ They are also becoming cheaper. The amazing continual decreases in the prices of electronics that have become normal in our time all but guarantee that the surveillance technologies attached to UAVs will become less expensive and yet more powerful—and with mass production, the aircraft that carry those electronics will become inexpensive enough for a police department to fill the skies over a town with them.

Drones are also becoming smarter. Artificial intelligence advances will likely help drones carry out spying missions. Korean researchers, for example, are working to teach robots how to hide from and sneak up upon a subject.¹² They also will have better staying power, with a greater ability to stay aloft for longer periods of time. Mechanisms for increasing time aloft could include solar power, or the use of blimps or gliders.¹³

⁹ W.J. Hennigan, "It's a bird! It's a spy! It's both," Los Angeles Times, Feb. 17, 2011, online at <http://articles.latimes.com/2011/feb/17/business/la-fi-hummingbird-drone-20110217>.

¹⁰ On high-altitude blimps see Elliott Minor, "Interest Growing in 'Security' Blimps," Associated Press, April 27, 2004, available online at http://www.rustysforum.com/cgi-bin/domains.com/rustysforum/frc_bb/ultimatebb.cgi?ubb=next_topic&f=1&t=000807&go=older; on low-altitude blimps see e.g. James Nelson, "Utah city may use blimp as anti-crime spy in the sky," Reuters, Jan. 16, 2011, online at <http://www.reuters.com/article/2011/01/16/us-crime-blimp-utah-idUSTRE70F1DJ20110116>.

¹¹ W.J. Hennigan, "It's a bird! It's a spy! It's both," Los Angeles Times, Feb. 17, 2011, online at <http://articles.latimes.com/2011/feb/17/business/la-fi-hummingbird-drone-20110217>.

¹² M. Ryan Calo, "Robots and Privacy," April 2010, online at <http://ssrn.com/abstract=1599189>.

¹³ "Gliders Emerge As Surveillance UAVs," Aviation Week, June 8, 2010, online at http://www.aviationweek.com/aw/generic/story_generic.jsp?topicName=ila_2010&id=news/awx/2010/06/08/awx_06_08_2010_p0-232627.xml; James Nelson, "Utah city may use blimp as anti-crime spy in the sky," Reuters, Jan. 16, 2011, online at <http://www.reuters.com/article/2011/01/16/us-crime-blimp-utah-idUSTRE70F1DJ20110116>; Ned Smith, "Solar-powered UAV can stay aloft 5 years," TechNewsDaily, Sept. 22, 2010, online at http://www.msnbc.msn.com/id/39313306/ns/technology_and_science-tech_and_gadgets/t/solar-powered-uav-can-stay-aloft-years.

Although the primary uses of drones so far have been military, even on overseas battlefields their main use is surveillance. The larger drones can be fitted with weapons or other heavy payloads, but all of them can carry cameras and other imaging technologies that have developed amazing capabilities in recent years and are likely to become even more capable in the near future.

Except for possibly the very lightest craft, drones can carry the full range of advanced surveillance technologies that have been developed—and are likely to be developed—including:

- **High-power zoom lenses.** UAVs can carry increasingly powerful lenses that allow significant zooming, increasing the chance that individuals will come under scrutiny from faraway aircraft without knowing it. And the density of photo sensors is growing at an exponential pace (in line with Moore’s law), allowing for higher and higher resolution photos to be taken for the same price camera.¹⁴
- **Night vision.** Infrared and ultraviolet imaging enable night vision by capturing light outside the spectrum visible to the human eye. Infrared imaging (also known as thermal imaging) shows heat emitted by an object, and so is especially suited for identifying humans and animals in the dark.¹⁵ Ultraviolet (UV) imaging can detect some materials not visible in natural or infrared light, and can also be used to enhance detail; for instance, it can be used to image surface textures not apparent in visible light.¹⁶ Moving forward, thermal imaging is likely to improve—for example becoming more sensitive and available at higher resolutions.
- **See-through imaging.** The military is developing radar technologies that can see through ceilings and walls and allow the tracking of human targets even when they are inside buildings.¹⁷ A technology called Synthetic Aperture Radar, for example, can see through cloudy and dusty conditions and through foliage, and has the potential to penetrate the earth and walls.¹⁸

¹⁴ Nathan Myhrvold, “Moore’s Law Corollary: Pixel Power,” New York Times, June 7, 2006, online at <http://www.nytimes.com/2006/06/07/technology/circuits/07essay.html>. Moore’s law is the observation that the number of transistors that can be placed on an integrated circuit—and therefore broadly speaking the power of computers—doubles approximately every two years. It has held true for over 50 years.

¹⁵ NASA Science Mission Directorate, “Infrared Energy,” Mission: Science, 2010, online at http://missionscience.nasa.gov/ems/07_infraredwaves.html.

¹⁶ Austin Richards, “Digital Reflected-Ultraviolet Imaging,” Advanced Imaging, Apr. 2006, online at <http://www.uvcorder.com/pdf/ADI0406%20Component%2018-20.pdf>.

¹⁷ See e.g., William Saletan, “Nowhere To Hide,” Slate.com, Sept. 17, 2008, online at http://www.slate.com/articles/health_and_science/human_nature/2008/09/nowhere_to_hide.html Greg Miller and Julian E. Barnes, “Special drones pursue militias,” Los Angeles Times, Sept. 12, 2008, online at <http://articles.latimes.com/2008/sep/12/world/fg-pakistan12>.

¹⁸ “Ground Moving Target Indicator (GMTI) Radar Discrimination of Combatants versus Animals in Severe Clutter,” DARPA, undated document (topic number SB082-019), online at http://www.dodsbir.net/sitis/archives_display_topic.asp?Bookmark=32303. Sandia National Laboratories, “Synthetic Aperture Radar Applications,” undated, online at <http://www.sandia.gov/radar/sarapps.html>; Alicia Tejada, “MIT Develops New Radar Technology: Military Could See Through Walls,” ABC News, Oct. 20, 2011, online at <http://abcnews.go.com/Technology/radar-technology-mit-walls/story?id=14773871>.

- **Video analytics.** This field seeks to apply artificial intelligence techniques not just to collect but also to “watch” video. The technology has been improving rapidly, and can recognize and respond to specific people, events, and objects.¹⁹ One of the most significant uses would be to continually track individuals or vehicles as they move about, using face recognition or other bodily characteristics.²⁰ It might also be used to identify particular movement patterns as “suspicious,” or to identify and flag changes in routines, buildings or grounds.²¹ Computers performing these tasks have a distinct advantage over human observers, because as one observer summed it up, “machines do not blink or forget. They are tireless assistants.”²²

The PBS series NOVA, “Rise of the Drones,” recently aired a segment detailing the capabilities of a powerful aerial surveillance system known as ARGUS-IS. This system, which is basically a super-high, 1.8 gigapixel resolution camera that can be mounted on a drone, demonstrates many of these capacities. The system is capable of high-resolution monitoring and recording of an entire city. To witness a demonstration of this capacity please see:

http://www.youtube.com/watch?feature=player_embedded&v=13BahrckMU8

IV. *UAVs and Possible Harms*

With the federal government likely to permit more widespread use of drones, and the technology likely to become ever more powerful, the question becomes: what role will drones play in American life? Based on current trends—technology development, law enforcement interest, political and industry pressure, and the lack of legal safeguards—it is clear that drones pose a looming threat to Americans’ privacy. The reasons for concern reach across a number of different dimensions:

- **Mission creep.** Even where UAVs are being envisioned for search and rescue, fighting wildfires, and in dangerous tactical police operations, they are likely to be quickly embraced by law enforcement around the nation for other, more controversial purposes. The police in Ogden, Utah think that floating a surveillance blimp above their city “will be a deterrent to crime when it is out and about.”²³ In Houston, police suggested that drones could possibly be used for writing traffic tickets.²⁴ The potential result is that they become commonplace in American life.

¹⁹ Vigilant Video, online at <http://www.vigilantvideo.com>

²⁰ Noah Shachtman, “Army Tracking Plan: Drones That Never Forget a Face,” *Wired.com*, Sept. 28, 2011, online at <http://www.wired.com/dangerroom/2011/09/drones-never-forget-a-face/>.

²¹ On change detection, see Sandia National Laboratories, “Synthetic Aperture Radar Applications,” undated, online at <http://www.sandia.gov/radar/sarapps.html>.

²² Steve Lohr, “Computers That See You and Keep Watch Over You,” *New York Times*, Jan. 1, 2011, online at <http://www.nytimes.com/2011/01/02/science/02see.html>.

²³ James Nelson, “Utah city may use blimp as anti-crime spy in the sky,” Reuters, Jan. 16, 2011, online at <http://www.reuters.com/article/2011/01/16/us-crime-blimp-utah-idUSTRE70F1DJ20110116>.

²⁴ Stephen Dean, “Police line up to use drones on patrol after Houston secret test,” *Houston Examiner*, Jan. 11, 2010, online at <http://www.examiner.com/page-one-in-houston/police-line-up-to-use-drones-on-patrol-after-houston-secret-test>.

- **Tracking.** The Justice Department currently claims the authority to monitor Americans' comings and goings using cell phone and GPS tracking devices—under uncertain legal standards. Fleets of UAVs, interconnected and augmented with analytics software, could enable the mass tracking of vehicles and pedestrians around a wide area.
- **New uses.** The use of drones could also be expanded from surveillance to actual intervention in law enforcement situations on the ground. Airborne technologies could be developed that could, for example, be used to control or dispel protesters (perhaps by deploying tear gas or other technologies), stop a fleeing vehicle, or even deploy weapons.²⁵

In addition, drones raise many of the same issues that pervasive video surveillance brings in any context. For example:

- **Chilling effects.** What would be the effect on our public spaces, and our society as a whole, if everyone felt the keen eye of the government on their backs whenever they ventured outdoors? Psychologists have repeatedly found that people who are being observed tend to behave differently, and make different decisions, than when they are not being watched. This effect is so great that a recent study found that “merely hanging up posters of staring human eyes is enough to significantly change people’s behavior.”²⁶
- **Voyeurism.** Video surveillance is susceptible to individual abuse, including voyeurism. In 2004, a couple making love on a dark nighttime rooftop balcony, where they had every reason to expect they enjoyed privacy, were filmed for nearly four minutes by a New York police helicopter using night vision. This is the kind of abuse that could become commonplace if drone technology enters widespread use. (Rather than apologize, NYPD officials flatly denied that this filming constituted an abuse, telling a television reporter, “this is what police in helicopters are supposed to do, check out people to make sure no one is ... doing anything illegal”).²⁷
- **Discriminatory targeting.** The individuals operating surveillance systems bring to the job all their existing prejudices and biases. In Great Britain, camera operators have been found to focus disproportionately on people of color. According to a sociological study of how the systems were operated, “Black people were between one-and-a-half and two-

²⁵ Joseph Nevins, “Robocop: Drones at Home,” Boston Review, January/February 2011, online at <http://www.bostonreview.net/BR36.1/nevins.php>.

²⁶ Sander van der Linden, “How the Illusion of Being Observed Can Make You a Better Person,” Scientific American, May 3, 2011, online at <http://www.scientificamerican.com/article.cfm?id=how-the-illusion-of-being-observed-can-make-you-better-person>; M. Ryan Calo, “People Can Be So Fake: A New Dimension to Privacy and Technology Scholarship,” 114 Penn St. L. Rev. 809, online at <http://www.pennstatelawreview.org/articles/114/114%20Penn%20St.%20L.%20Rev.%20809.pdf>.

²⁷ “Did NYPD Cameras Invade A Couple’s Privacy?” WCBS-TV report, Feb. 24, 2005, video no longer available online; Jim Dwyer, “Police Video Caught a Couple’s Intimate Moment on a Manhattan Rooftop,” *New York Times*, Dec. 22, 2005, online at <http://www.nytimes.com/2005/12/22/nyregion/22rooftop.html>.

and-a-half times more likely to be surveilled than one would expect from their presence in the population.”²⁸

- **Institutional abuse.** In addition to abuse by the inevitable “bad apples” within law enforcement, there is also the danger of institutional abuse. Sometimes, bad policies are set at the top, and an entire law enforcement agency is turned toward abusive ends. That is especially prone to happen in periods of social turmoil and intense political conflict. During the labor, civil rights, and anti-Vietnam war movements of the 20th century, the FBI and other security agencies engaged in systematic illegal behavior against those challenging the status quo. And once again today we are seeing an upsurge in spying against peaceful political protesters across America.²⁹
- **Automated enforcement.** Drones are part of a trend toward automated law enforcement, in which cameras and other technologies are used to mete out justice with little or no human intervention. This trend raises a variety of concerns, such as the fact that computers lack the judgment to fairly evaluate the circumstances surrounding a supposed violation, and may be susceptible to bugs and other software errors, or simply are not programmed to fairly and properly encapsulate the state of the law as passed by legislatures.³⁰

One point that is often made about new surveillance technologies is that, while they may increase government surveillance of individuals, they can also increase individuals’ ability to record the activities of officials, which can serve as a check on their power. Too often, however, the authorities seek to increase their surveillance over individuals (for example, by installing surveillance cameras throughout public spaces) while restricting individuals’ ability to use that same technology as a check against their power (for example, by attempting to prevent individuals from videotaping police³¹). Already, security experts have started expressing concern that unmanned aircraft could be used for terrorism³²—which naturally raises the question: will individuals be able to make use of the new technology for their own purposes, or will government seek a monopoly over the new technology by citing fears of its use for terrorism?

V. *The Fourth Amendment and the Use of Drones*

The Supreme Court has never taken a position on whether the Fourth Amendment places limits on government use of UAV surveillance. However, it allowed some warrantless aerial surveillance from *manned* aircraft.

²⁸ Clive Norris and Gary Armstrong, “The Unforgiving Eye: CCTV Surveillance in Public Spaces,” Centre for Criminology and Criminal Justice at Hull University, 1997.

²⁹ See ACLU “Spyfiles” web site at www.aclu.org/spyfiles.

³⁰ Danielle Keats Citron, “Technological Due Process,” 85 *Washington University Law Review* 1249 (2008), online at <http://lawreview.wustl.edu/inprint/85/6/Citron.pdf>.

³¹ See Jay Stanley, “You Have Every Right to Photograph That Cop,” ACLU, online at <http://www.aclu.org/free-speech/you-have-every-right-photograph-cop>.

³² Agence France Press, “Flying Robot Attacks ‘Unstoppable’ Say Experts,” Agence France Press, May 11, 2006, available online at <http://www.rense.com/general71/sspm.htm>.

- In the 1986 decision **California v. Ciraolo**, the Supreme Court focused on whether an individual has a privacy interest in being free from aerial surveillance of his backyard. The police had received a tip that Dante Ciraolo was growing marijuana in his backyard, but high fences prevented them from viewing his backyard from the street. The police borrowed a plane, flew it over the backyard and easily spotted marijuana plants growing there. Ciraolo argued that his Fourth Amendment rights were violated because the government did not get a warrant. The Court rejected this argument, explaining that there was no intrusion into his privacy because “[a]ny member of the public flying in this airspace who glanced down could have seen everything that these officers observed.”³³
- **Dow Chemical Co. v. United States**, also decided in 1986, the Supreme Court addressed whether the Environmental Protection Agency violated Dow’s Fourth Amendment rights when it employed a commercial aerial photographer to use a precision aerial mapping camera to take photographs of a chemical plant. The Court found no violation, in part because the camera the EPA used was a “conventional, albeit precise, commercial camera commonly used in mapmaking,” and “the photographs here are not so revealing of intimate details as to raise constitutional concerns.” However, the Court suggested that the use of more sophisticated, intrusive surveillance might justify a different result. It wrote, “surveillance of private property by using highly sophisticated surveillance equipment not generally available to the public, such as satellite technology, might be constitutionally proscribed absent a warrant.”³⁴
- In **Florida v. Riley**, decided in 1989, the police had received a tip that Michael Riley was growing marijuana in a greenhouse on the property surrounding his home. The interior of the greenhouse was not visible from the ground outside the property, and the greenhouse had a ceiling, though two panels in the ceiling were missing. A police officer flew over the greenhouse and spotted marijuana through the openings in the roof. While no reasoning commanded a majority of the Court, four justices concluded that its decision in *Ciraolo* applied because Riley had left part of the greenhouse open to public view, and so the search was constitutional.³⁵

Because of their potential for pervasive use in ordinary law enforcement operations and capacity for revealing far more than the naked eye, drones pose a more serious threat to privacy than do manned flights. There are good reasons to believe that they may implicate Fourth Amendment rights in ways that manned flights do not.

Government use of UAVs equipped with technology that dramatically improves on human vision or captures something humans cannot see (such thermal or x-ray images) should be scrutinized especially closely by the courts. This follows from the Supreme Court’s statement in *Dow Chemical* that using sophisticated technology not generally available to the public may be considered a search under the Fourth Amendment. It is also suggested by the 2001 case *Kyllo v.*

³³ 476 U.S. 207 (1986).

³⁴ 476 U.S. 227 (1986).

³⁵ 488 U.S. 445 (1989).

United States, in which the court rejected the use of thermal imaging devices to peer into a suspect's home without a warrant.³⁶

Further, the Supreme Court has suggested that the pervasive or continuous use of a surveillance technology may heighten Fourth Amendment concerns. In *United States v. Knotts*, the Supreme Court addressed whether attaching primitive "beeper" tracking technology to a car violated the driver's Fourth Amendment rights.³⁷ Although it concluded that the use of the beeper in that case did not violate the Fourth Amendment, it held that if "such dragnet type law enforcement practices" as "twenty-four hour surveillance of any citizen of this country" ever arose, it would determine if different constitutional principles would be applicable.

Similarly, in *US v. Jones*, decided last year, a concurrence joined by 5 justices found that GPS tracking of a car implicated an individual's reasonable expectation of privacy and noted "society's expectation has been that law enforcement agents and others would not—and indeed, in the main, simply could not—secretly monitor and catalogue every single movement of an individual's car for a very long period."³⁸ While this decision may eventually play a role in regulating drone usage, the technology is moving far more rapidly than our jurisprudence, and it is critical that Congress not delay action, especially with a looming 2015 deadline set by the FAA Reauthorization Act.

VI. Recommendations

UAVs can be an extremely powerful surveillance tool, and their use must be subject to strict limitations, as should all government power. Like any tool, UAVs have the potential to be used for good or ill. With implementation of good privacy ground rules, our society can enjoy the benefits of this technology without having to worry about its darker potential. Placing reasonable limitations on law enforcement is by no means a new idea. For example authorities may take a thermal image of someone's home only when they get a warrant. Congress should impose appropriate rules, limits and regulations on UAVs as well in order to preserve the privacy Americans have always expected and enjoyed.

At a minimum, Congress should enact the following core measures to ensure that this happens:

- **Usage restrictions.** UAVs should be subject to strict regulation to ensure that their use does not eviscerate the privacy that Americans have traditionally enjoyed and rightly expect. Innocent Americans should not have to worry that their activities will be scrutinized by drones. To this end, the use of drones should be prohibited for indiscriminate mass surveillance, for example, or for spying based on First Amendment-protected activities. In general, drones should not be deployed except:
 - where there are specific and articulable grounds to believe that the drone will collect evidence relating to a specific instance of criminal wrongdoing or, if the

³⁶ 533 U.S. 27 (2001).

³⁷ 460 U.S. 276, 283-84 (1983).

³⁸ 132 S.Ct. 945.

drone will intrude upon non-public spaces where the government has obtained a warrant based on probable cause; or

- where there is a geographically confined, time-limited emergency situation in which particular individuals' lives are at risk, such as a fire, hostage crisis, or person lost in the wilderness; or
 - for reasonable non-law enforcement purposes by non-law enforcement agencies, where privacy will not be substantially affected, such as geological inspections or environmental surveys, and where the surveillance will not be used for secondary law enforcement purposes.
- **Image retention restrictions.** Images of identifiable individuals captured by aerial surveillance technologies should not be retained or shared unless there is reasonable suspicion that the images contain evidence of criminal activity or are relevant to an ongoing investigation or pending criminal trial.
 - **Public notice.** The policies and procedures for the use of aerial surveillance technologies should be explicit and written, and should be subject to public review and comment. While it is legitimate for the police to keep the details of particular investigations confidential, policy decisions regarding overall deployment policies—including the privacy trade-offs they may entail—are a public matter that should be openly discussed.
 - **Democratic control.** Deployment and policy decisions surrounding UAVs should be democratically decided based on open information—not made on the fly by police departments simply by virtue of federal grants or other autonomous purchasing decisions or departmental policy fiats.
 - **Auditing and effectiveness tracking.** Investments in UAVs should only be made with a clear, systematic examination of the costs and benefits involved. And if aerial surveillance technology is deployed, independent audits should be put in place to track the use of UAVs by government, so that citizens and other watchdogs can tell generally how and how often they are being used, whether the original rationale for their deployment is met, whether they represent a worthwhile public expenditure, and whether they are being used for improper or expanded purposes.
 - **Ban on weaponization.** Weapons developed on the battlefield in Iraq and Afghanistan have no place inside the U.S. The national consensus on this issue is reflected by the fact that the Heritage Foundation and the International Association of Chiefs of Police join us in supporting sharp limits on weaponized drones.³⁹

³⁹ International Association of Chiefs of Police, Aviation Committee, Recommended Guidelines for the use of Unmanned Aircraft. August 2012, see: http://www.theiacp.org/portals/0/pdfs/IACP_UAGuidelines.pdf; Paul Rosenzweig, Steven P. Bucci, Ph.D., Charles "Cully" Stimson and James Jay Carafano, Ph.D., *Drones in U.S.*

State legislatures are already responding to the need to safeguard against drone surveillance. According to the National Conference of State Legislatures, during the current legislative session 42 states have considered 95 different bills and resolutions concerning drones.⁴⁰ The vast majority of these bills are focused squarely on privacy issues associated with drone use. Already, Florida⁴¹, Idaho⁴², Montana⁴³, and Virginia⁴⁴ have enacted drones legislation; a bill awaits the governor's approval in Tennessee⁴⁵; and legislation has passed one chamber in Illinois⁴⁶, Missouri⁴⁷, North Dakota⁴⁸, and Texas.⁴⁹ The amount of progress on drones this legislative session is impressive given that this is the first session in which state legislatures have considered the issue. The astonishing level of activity strongly indicates just how concerned state legislators and their constituents are about ensuring that any drone use respects individuals' privacy rights and expectations

The House Judiciary Committee has before it a very strong and privacy-protective solution to the problems created by drone use: H.R. 637, the Preserving American Privacy Act of 2013. This bipartisan measure, sponsored by Rep. Ted Poe (R-TX) and co-sponsored by numerous other members of the Judiciary Committee, sharply limits the potential misuse of drones by the government while still allowing responsible private sector use of the technology. It requires judicial approval for all drone flights by the government, limits unnecessary information collection, creates a suppression remedy for wrongly collected evidence, bans the weaponization of drones and establishes reporting requirements for drone use. Under the legislation the Attorney General may also withdraw licensing for government drones if they operate outside of allowable parameters.

Drone technology certainly has beneficial uses – for search and rescue missions, firefighting, dangerous police tactical operations – but also poses significant possible harms if left unchecked. Ultimately this powerful new technology should only be used if subject to an equally powerful framework that regulates its use in order to avoid abuse and invasions of privacy.

Airspace: Principles for Governance, The Heritage Foundation, September 20, 2012, see:

<http://www.heritage.org/research/reports/2012/09/drones-in-us-airspace-principles-for-governance>

⁴⁰National Conference of State Legislatures, 2013 Unmanned Aircraft Systems (UAS) Legislation,

<http://www.ncsl.org/issues-research/justice/unmanned-aerial-vehicles.aspx>

⁴¹<http://flsenate.gov/Session/Bill/2013/0092/BillText/er/HTML>

⁴²<http://www.legislature.idaho.gov/legislation/2013/S1134.htm>

⁴³<http://data.opi.mt.gov/bills/2013/billpdf/SB0196.pdf>

⁴⁴<http://leg1.state.va.us/cgi-bin/legp504.exe?131+ful+CHAP0755>

⁴⁵<http://wapp.capitol.tn.gov/apps/BillInfo/Default.aspx?BillNumber=SB0796>

⁴⁶

<http://www.ilga.gov/legislation/BillStatus.asp?DocNum=1587&GAID=12&DocTypeID=SB&LegID=72407&SessionID=85&SpecSess=&Session=&GA=98>

⁴⁷<http://www.house.mo.gov/billsummary.aspx?bill=HB46&year=2013&code=R>

⁴⁸<http://www.legis.nd.gov/assembly/63-2013/bill-actions/ba1373.html>

⁴⁹<http://www.capitol.state.tx.us/BillLookup/Actions.aspx?LegSess=83R&Bill=HB912>