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Drone Regulation: Federal, State, and Local Efforts to Eyeball Those Eyes in the Sky

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In early 2015, CNN posted a video on YouTube of an unmanned aircraft system (UAS or drone) demonstration that took place *inside* a congressional hearing room in the Rayburn Office Building in Washington, D.C.¹ The brief demonstration went off without incident with the young drone operator showing how slow, stable, and predictable the drone's flight could be in capable hands—even within the physical confines of the hearing room. About fifteen seconds into the video, the slick-looking drone is shown in close-up, flying directly in front of one of the hearing room's stately, wood-paneled walls, which bears the following inscription (or warning, depending on your point of view): *Where there is no wisdom, the people perish.*—Proverbs 29:18.

The juxtaposition of ultra-modern technology and ancient advice in this scene is fitting as stakeholders and regulators at the federal, state, and local levels all struggle to promote the nearly limitless potential of emerging drone technologies, while at the same time acknowledging and addressing the physical dangers and privacy concerns that these mechanical marvels necessarily bring to the table.

And let there be no doubt—these



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concerns are real and compelling. As *Washington Post* reporter Craig Whitlock noted this past summer, “drones have smuggled drugs into an Ohio prison, smashed against a Cincinnati skyscraper, impeded efforts to fight wildfires in California and nearly collided with three airliners over New York City.”² Runaway drones knocked a gay pride parade participant unconscious in Seattle, injured a festival attendee in Albuquerque, and crashed into a woman's car in Tampa after stalking her outside a bar.³ Whitlock also described another unsettling incident in which a Connecticut man strapped a handgun to his drone, then posted an Internet video of the drone firing shots as it hovered in

the air (apparently without violating any laws).⁴ In December 2015, the media reported on an alarming new study by Bard College's Center for the Study of the Drone, which tallied 327 incidents between December 2013 and September 2015 when UAS posed a "proximity danger" to a plane, helicopter, or other manned aircraft.⁵

Much of the recent and generally negative press about UAS has crowded out the good news and limitless potential surrounding drones, which are readily available (and surprisingly affordable) at retail outlets near you or online.⁶ Even FAA Administrator Michael Huerta, who is charged with maintaining the safety of the national airspace (NAS) against the many threats posed by drones, has publicly acknowledged the compelling potential of UAS technology, telling the Senate Committee on Commerce, Science, and Transportation that "[f]rom homeland security, emergency management and law enforcement, to food and package delivery, the potential uses for UAS technology are limitless."⁷

The positive applications for UAS technology are indeed compelling, whether it be helping farmers pinpoint pesticide sprays for their crops, allowing realtors to create visually compelling videos to list properties, allowing utilities to remotely inspect critical infrastructure, helping police locate missing children, allowing SWAT teams and military personnel to scout out dangerous areas, allowing Amazon or Google to one day drop packages on your doorstep within thirty minutes after you hit the "buy" button online, or perhaps allowing Walmart to drop packages at your car after you finish your transaction at the register.⁸

Plus, let's face it—drones are just plain fun to fly. They are no different in that sense than the remote-controlled airplanes that countless Baby Boomers and Gen-Xers hoped to find under the Christmas tree when they were kids. Virtual reality "drone racing" circuits are springing up around the world, allowing ground-based operators equipped with goggles to virtually "see" the twists and turns of the aerial racetrack, as if they were strapped into the cockpits of their crafts themselves. This past summer, the 2015 Fat Shark US National Drone Racing Championships at the California State Fair featured more than 120 pilots and over 60 sponsors.⁹ This fascination with flying toys may explain why the Consumer Electronics Association estimates that some 700,000 drones will be purchased this year with the consumer drone industry expecting a 63 percent increase in drone sales in 2015 alone.¹⁰

Individuals and businesses trying to catch the UAS wave, whether for recreation or for a competitive edge, should remain keenly aware of the federal, state, and local efforts underway to regulate drone use under both existing and proposed rules. This awareness is particularly important in the current climate where the continuous news cycle of bad actors and rogue drones is spurring new regulatory and enforcement developments at a rapid pace.

Federal Regulation and Enforcement

UAS first appeared in the NAS on a limited basis in the early 1990s.¹¹ More recently, recognizing the potential benefits afforded by drone operations, Congress passed the FAA Modernization and Reform Act of 2012, which required the FAA to develop a plan to integrate UAS into the NAS by September 30, 2015.¹²

The FAA missed that deadline. As the Office of Inspector General noted in a June 2014 Audit Report, the FAA faced significant barriers to completing the integration plan within the congressionally imposed timetable.¹³ The inspector general noted two primary, technological barriers that have delayed the FAA's goals: (1) the lack of mature "see and avoid" technologies to allow UAS to detect other aircraft operating in nearby airspace and maneuver to avoid them, and (2) the lack of mature technologies to prevent so-called "lost link" scenarios—potentially catastrophic disruptions between the ground-based operator and the aircraft. But not all of the barriers to integration have been technology-based. The inspector general also noted that the FAA has not achieved consensus on defining minimum performance and design certification standards, developed standardized air traffic control procedures specific to UAS, or established a sufficient framework for sharing and analyzing safety data from UAS operators.¹⁴

Although the FAA has not yet finalized the integration plan and rules demanded by Congress, it is important for all drone users (whether recreational or commercial) to understand how the FAA's *existing* regulatory scheme already impacts UAS. Simply put, FAA policy prohibits the use of unmanned aircraft for commercial purposes without specific authorization. And as the FAA explains on its website, there are currently only three ways to obtain FAA approval to operate a UAS for business purposes:

- (1) Special Airworthiness Certificates—Experimental Category (SAC-EC) for civil aircraft to perform research and development, crew training, and market surveys. However, carrying persons or property for compensation or hire is prohibited.
- (2) Obtain a UAS type and airworthiness certificate in the Restricted Category (14 C.F.R. § 21.25(a)(2) and § 21.185) for a special purpose or a type certificate for production of the UAS under 14 C.F.R. § 21.25(a)(1) or § 21.17.
- (3) Petition for Exemption with a civil Certificate of Waiver or Authorization (COA) for civil aircraft to perform commercial operations in low-risk, controlled environments.¹⁵

The COA exemption process (Item 3), discussed in greater detail below, has become a particularly popular method for companies to obtain FAA permission for commercial drone activities.

Moreover, despite the delay in promulgating final integration rules, and in light of the broad breadth of potential uses for small UAS (sUAS), the FAA has affirmatively acted on its congressional mandate and taken several concrete steps to help facilitate UAS integration into the NAS, including:

- (1) **FAA issued a notice of proposed rulemaking** (NPRM) on February 23, 2015, seeking to amend its regulations and to adopt rules integrating sUAS (less than 55 lbs.) into the NAS consistent with the requirements under the Act.¹⁶ The NPRM sought comment on proposed operating requirements to add a new Part 107 to Title 14 of the Code of Federal Regulations to allow for routine civil operation of small UAS. The proposed rules sought to limit UAS to daylight-only operations, confined areas of operation, and visual-line-of-sight operations. The proposed rules also seek to address aircraft registration and marking, NAS operations, operator certification, visual observer requirements, and operational limits to ensure that the operation of UAS does not pose a threat to national security. The 60-day public comment period for the small UAS NPRM closed on April 24, 2015.
- (2) **FAA selected six test sites** to remain in place until at least February 2017 to gather operational data and help to test UAS technologies. After consultation with NASA and the Department of Defense, FAA selected test site proposals submitted by the University of Alaska (with test site range locations in Alaska, Hawaii, and Oregon); the State of Nevada; New York's Griffiss International Airport (Oneida County); the North Dakota Department of Commerce; Texas A&M University; and Virginia Tech.¹⁷ FAA also released a privacy policy that applies to these UAS test sites, requiring test site operators (in publicly available and written policies) to comply with all local, state, and federal laws concerning privacy and civil liberties.
- (3) **FAA established a process to issue exemptions** (COAs) under Section 333 of the FAA Modernization Reform Act of 2012, which grants the Secretary of Transportation the authority to determine whether a UAS requires an airworthiness certificate to operate safely. Until the FAA's rules can be finalized, which is not expected to occur until the summer of 2016, the exemption process provides a means to obtain authorization to perform commercial operations for certain UAS that meet established criteria and can be determined not to

create a hazard to users of the NAS or pose a threat to the public or national security. There have been over 2,000 exemptions granted to date with numerous applications still pending. The exemptions and pending applications are available on the FAA's website, along with a running total of exemptions granted.¹⁸

There are key similarities and differences between FAA's current exemption regime and the agency's proposed rules.¹⁹ For example, although COAs under the current exemption regime require a "visual observer" in addition to the pilot-in-charge of the UAS, no visual observer would be required under FAA's proposed rules—a boon to small businesses that might be dissuaded from using UAS if the costly visual observer requirement were maintained.²⁰ And while COAs currently prohibit the pilot-in-charge from operating UAS from any moving device or vehicle, FAA's proposed rules would permit UAS to be operated from a moving vehicle over water.²¹

- (4) **FAA established a task force** with U.S. Transportation Secretary Anthony Foxx to develop recommendations for a registration process for UAS. The task force, announced on October 19, 2015,²² is composed of 25 to 30 representatives from various stakeholders and had a November 2015 deadline to report on recommendations for UAS registration; which aircraft should be exempt from registration requirements (such as toys and certain other small UAS); options for a streamlined registration system; and additional safety recommendations. The FAA released the task force's recommendations on November 21, 2015.²³ Just three weeks later, the FAA announced its Small UAS Registration (Interim Final) Rule, incorporating many of the task force's suggestions into a "streamlined and user-friendly web-based" registration system for owners of UAS weighing between 250 grams and 55 pounds.²⁴ Under this rule, any owner of a UAS who has previously operated it exclusively as a model aircraft before December 21, 2015, must register by no later than February 19, 2016 (for a five-dollar fee, which the FAA is waiving until January 20, 2016, to encourage registration). The required registration information under the UAS Registration Rule includes the owner's name, home address, and e-mail address, with owners assigned a unique Certificate of Aircraft Registration/Proof of Ownership number that must be marked on the aircraft. The owner/

operator must carry the registration when operating the UAS. Owners using sUAS for recreation will have to register only once and may use the same identification number for all of their model sUAS. The online registration system does not yet support registration of UAS for any purpose other than recreation, although the FAA hopes to add that capability by Spring 2016. With respect to enforcement, the interim final rule provides that “[i]f an individual or entity is found to have not registered the aircraft prior to its operation, the FAA’s compliance philosophy will be applied appropriately.”²⁵

Critically, FAA’s delay in promulgating final UAS integration rules has not prevented it from undertaking recent and well-publicized enforcement actions against what it considers to be rogue drone operators in the NAS. In early October, for example, FAA proposed a \$1.9 million civil penalty against SkyPan International, Inc., which allegedly conducted dozens of unauthorized, commercial UAS operations in airspace over Chicago and New York between 2012 and 2014 before obtaining an airworthiness certificate, effective registration, or COA for those operations.²⁶ According to SkyPan’s website, imagery from its UAS are used “to design, engineer, monetize, negotiate, build, market and sell or lease commercial and residential real estate.” SkyPan has posted an “FAA response” on its website, saying:

“SkyPan proactively contacted the FAA in 2005, 2008, and 2010 to explore special permitting for its commercial UAS activity, by discussing regulatory and suggested technical parameters with FAA officials in Illinois, New York and Washington, D.C., and in 2015 was awarded a ‘333’ exemption to the FAA’s blanket ban on commercial UAS operation.”

...

“SkyPan desires and intends to continue to provide this valuable service to the American real estate industry, and in order to do so will continue to work with the FAA to resolve the technical and legal parameters of SkyPan’s unique and exclusive over-private-property operations in its commercial UAS enterprise. We look forward to reaching a comprehensive regulatory agreement on and certification of SkyPan methods and foresee that such a measure will become the template for a crucial and evolving American industry.”²⁷

No matter how this recent enforcement action by the FAA ultimately shakes out, it is certainly a “shot across the bow” from FAA that should give pause to any companies currently utilizing UAS for commercial purposes.

State and Local Regulation

To fill the current regulatory void at the federal level, various state and local officials have proposed or enacted new statutes and ordinances or applied existing ones to regulate drone use and curtail what they deem to be problematic UAS operations.

The National Association of Mutual Insurance Companies (NAMIC) prepared a useful compendium²⁸ of applicable state laws in connection with the National Telecommunications and Information Administration (NTIA) Multi-Stakeholder Meeting on Privacy, Transparency, and Accountability Regarding Commercial and Private UAS, which was convened in response to a presidential memorandum encouraging the development of a framework regarding privacy, accountability, and transparency for commercial and private UAS operations.

The NAMIC compendium of state laws notes that since 2013, no fewer than 27 states have passed legislation with respect to drones and that in 2015 alone, no fewer than 45 states considered 156 different bills related to drones. The compendium illustrates the widely varying approaches that state legislators have taken to date. Some merely prohibit the use of drones for voyeurism. Others enact procedures and standards for law enforcement’s use of drones. Other proposed bills specify that only the state may regulate drones, thereby preempting county and municipal authority. Others prohibit drone use only for certain specified activities, such as hunting or trapping. The NAMIC state-law compendium is a tangible reminder that when analyzing proposed commercial applications for UAS technology, particularly as the FAA continues to finalize its own rules, companies must keep up with regulatory activity at the state level and not just at the federal level.

The State of California, for example, gained recent press for Assembly Bill No. 856, which was signed by Governor Brown on October 6, 2015. The Legislative Counsel’s Digest of that bill demonstrates how California is ensuring that actionable invasions of privacy, without a doubt, include *airborne* UAS invasions:

“Under existing law, except as specified, a person is liable for physical invasion of privacy when that person knowingly enters onto the land of another person without permission or otherwise trespasses to capture any type of visual image, sound recording, or other physical impression of a person engaging in a private, personal, or familial activity and the invasion occurs in a manner that is offensive to a reasonable person. Under existing law, a person is liable for constructive invasion of privacy for the same activity, as specified, through the use of any device, regardless of whether there is a physical trespass. Existing law subjects a person who commits physical or constructive invasion of

privacy to specified damages and civil fines.”

“This bill would expand liability for physical invasion of privacy to additionally include a person knowingly entering into the airspace above the land of another person without permission, as specified.”²⁹

City councils have been active in the UAS space as well. An August 7, 2015, article from the *Gotham Gazette*, for example, summarized two bills introduced by New York City Council members who are impatient with the FAA’s regulatory delays and seek to impose numerous restrictions on drone use in the city.³⁰

Finally, it is important to remember that local law enforcement can apply existing criminal laws to drone users. A *Columbus Dispatch* article reported on a Clark County, Ohio, man who was charged with a felony (obstructing official business) when he failed to land a camera-equipped drone at an accident scene after being instructed to do so by first responders.³¹

New Frontiers for UAS

The foregoing discussion scratches only the surface of the many issues, promises, and pitfalls being considered by federal, state, and local policymakers and stakeholders concerning UAS. The regulatory approaches will necessarily and constantly evolve as new and previously unknown applications for UAS technologies are conceived and developed by creative (or criminal) minds across the country and around the world.

Innovators are constantly redefining the frontiers of drone use. For example, consider the wireless telecommunications field: using drones to inspect critical wireless telecommunication infrastructure (such as cell towers) and thereby reducing the need for risky tower climbs by human beings may now seem almost like old news. But wireless providers are moving well beyond that. They are partnering with NASA to explore whether and how cell towers could support communications and surveillance of UAS at low altitudes, or “geo-fencing” efforts, to keep drones away from sensitive or dangerous areas.³² They are considering whether UAS might be employed as temporary “cell sites on wings” after disasters that knock out existing towers.³³ And they are actively participating in NTIA’s stakeholder meetings about the many privacy issues implicated by drones.³⁴

In sum, this is an exciting but also unsettled time for UAS. One thing, however, seems certain. Very soon—likely long before we expect—a YouTube video of a drone demonstration in a congressional hearing room will seem quaint, much like the grainy black and white films we now see of the original Model T Fords rolling slowly off the assembly line.

Endnotes

1. CNN, *Drone Flies Inside Congressional Hearing* (Jan. 26,

2015), https://www.youtube.com/watch?v=gKirBqXAAws&feature=player_embedded (accessed Nov. 3, 2015). This URL links the reader to the brief hearing excerpt uploaded by CNN. The C-SPAN network posted video of the full hearing of the House Science, Space & Technology Committee. C-SPAN, Congressional Hearing on Drone Research and Development (Jan. 23, 2015), available at https://www.youtube.com/watch?v=_GfjmUX4oHM&feature=player_embedded (accessed Nov. 3, 2015).

2. Craig Whitlock, *Rogue Drones a Growing Nuisance Across the U.S.*, WASH. POST (Aug. 10, 2015), available at https://www.washingtonpost.com/world/national-security/how-rogue-drones-are-rapidly-becoming-a-national-nuisance/2015/08/10/9c05d63c-3f61-11e5-8d45-d815146f81fa_story.html (accessed Nov. 3, 2015).

3. *Id.*

4. *Id.*

5. *New Drone Study Finds 327 “Close Encounters” with Manned Aircraft*, NPR (Dec. 11, 2015), available at <http://www.npr.org/sections/thetwo-way/2015/12/11/459366656/new-drone-study-finds-327-close-encounters-with-manned-aircraft> (accessed Dec. 14, 2015) (citing Arthur Holland Michel & Dan Gettinger, *Drone Sightings and Close Encounters: An Analysis*, Ctr. for the Study of the Drone at Bard College (Dec. 11, 2015)).

6. A search for the term “drone with camera” on Amazon.com (in all departments) found more than 3,500 results on August 17, 2015, with drone prices ranging from less than \$100 to thousands of dollars. The same search on January 2, 2016, achieved over 7,600 results.

7. *Future of Unmanned Aviation in the U.S. Economy: Safety and Privacy Considerations: Hearing Before the Senate Committee on Commerce, Science, and Transportation*, 113th Congress, January 15, 2014 (statement of Michael P. Huerta, Adm’r, Fed. Aviation Admin.), available at http://www.commerce.senate.gov/public/_cache/files/2b62541a-5da5-4789-b73e-47aeeb4e9563/6FCB190A4E43D1D3368571B90E1B6245.huerta-testimony.pdf (accessed Nov. 3, 2015) [hereinafter Huerta Statement].

8. *Amazon Unveils Futuristic Plan: Delivery by Drone*, CBS NEWS (Dec. 1, 2013), available at <http://www.cbsnews.com/news/amazon-unveils-futuristic-plan-delivery-by-drone/> (accessed Nov. 3, 2015).

9. 2015 Fat Shark US National Drone Racing Championships, available at <http://dronenationals.com/> (accessed Nov. 5, 2015).

10. Consumer Electronics Association (CEA), Press Release, CEA Named to the UAS Registration Task Force (Oct. 29, 2015), available at <http://www.ce.org/News/News-Releases/Press-Releases/2015-Press-Releases/CEA-Named-to-Unmanned-Aircraft-Systems-%28UAS%29-Regis.aspx> (accessed Nov. 3, 2015).

11. Fed. Aviation Admin., *Integration of Civil Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS) Roadmap* (1st ed. 2013) at 4, available at http://www.faa.gov/uas/media/UAS_Roadmap_2013.pdf (accessed Nov. 10, 2015).

12. The Act and Conference Report are available at <http://www.gpo.gov/fdsys/pkg/CRPT-112hrpt381/pdf/CRPT-112hrpt381.pdf> (accessed Nov. 3, 2015). Subtitle B (§§ 331–336) is the portion of the Act pertaining to UAS.

13. OFFICE OF INSPECTOR GENERAL AUDIT REPORT, FAA FACES SIGNIFICANT BARRIERS TO SAFELY INTEGRATE UNMANNED AIRCRAFT SYSTEMS INTO THE NATIONAL AIRSPACE SYSTEM, REP. NO. AV-2014-061 (June 26, 2014), *available at* <https://www.oig.dot.gov/library-item/31975> (accessed Nov. 3, 2015).

14. *Id.*

15. Fed. Aviation Admin., *Unmanned Aircraft Systems Frequently Asked Questions*, *available at* <http://www.faa.gov/uas/faq/> (accessed Nov. 5, 2015).

16. The Small UAS NPRM is available on the FAA's website: <http://www.faa.gov/uas/nprm/> (accessed Nov. 3, 2015).

17. Huerta Statement, *supra* note 7.

18. Fed. Aviation Admin., *Unmanned Aircraft Systems, Key Initiatives, Section 333*, *available at* http://www.faa.gov/uas/legislative_programs/section_333/ (accessed Nov. 3, 2015).

19. *Overview of Current FAA's UAV Exemption Regime v. FAA's Proposed Rules*, Cooley LLP, *available to* Inspire Pilots.com forum members at <http://www.inspirepilots.com/threads/drones-as-disruption-conference.7272/> (accessed Nov. 10, 2015). Anne Swanson distributed this helpful handout, which outlines the key similarities and differences between the existing COA regime and the FAA's proposed rules, to attendees at the November 6, 2015, *Ohio State Law Journal* symposium on UAS (Drones as Disruption). She is an attorney at Cooley LLP, who advises clients on the COA process; a former ABA Delegate; and a panelist at the symposium.

20. *Id.*

21. *Id.*

22. Fed. Aviation Admin., Press Release, U.S. Transportation Secretary Anthony Foxx Announces Unmanned Aircraft Registration Requirement: New Task Force to Develop Recommendations by November 20 (Oct. 19, 2015), *available at* http://www.faa.gov/news/press_releases/news_story.cfm?newsId=19594 (accessed Nov. 5, 2015).

23. Fed. Aviation Admin., *Unmanned Aircraft Systems (UAS) Registration Task Force (RTF) Aviation Rulemaking Committee (ARC) Task Force Recommendations—Final Report* (Nov. 21, 2015), *available at* https://www.faa.gov/uas/publications/media/RTFARCFinalReport_11-21-15.pdf.

24. Fed. Aviation Admin., Press Release, FAA Announces Small UAS Registration Rule (Dec. 14, 2015), *available at* http://www.faa.gov/news/press_releases/news_story.cfm?newsId=19856 (accessed Dec. 14, 2015).

25. Fed. Aviation Admin., Interim Final Rule, Registration and Marking Requirements for Small Unmanned Aircraft (effective Dec. 21, 2015), *available at* http://www.faa.gov/news/updates/media/20151213_IFR.pdf (accessed Dec. 14, 2015).

26. Fed. Aviation Admin., Press Release, FAA Proposes \$1.9 Million Civil Penalty Against SkyPan International for Allegedly Unauthorized Unmanned Aircraft Operations (Oct. 6, 2015), *available at* http://www.faa.gov/news/press_releases/

[news_story.cfm?newsId=19555](http://www.faa.gov/news_story.cfm?newsId=19555) (accessed Nov. 5, 2015).

27. SkyPan FAA Response, *available at* http://skypanintl.com/about_new.html (accessed Nov. 5, 2015).

28. Nat'l Ass'n of Mut. Ins. Cos., *A Compendium of State Laws and Proposed Legislation Related to Unmanned Aerial Systems/Drones* (Sept. 2015), *available at* http://www.ntia.doc.gov/files/ntia/publications/namic-ntia-drones_final.pdf (prepared for National Telecommunications and Information Administration (NTIA) Multi-Stakeholder Meeting on Privacy, Transparency, and Accountability Regarding Commercial and Private UAS—Aug. 3, 2015) (accessed Nov. 5, 2015).

29. Assembly Bill No. 856, which was approved by the Governor on October 6, 2015, and filed with the Secretary of State on the same date, amends CAL. CIV. CODE § 1708.08. See http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB856 (accessed Nov. 5, 2015).

30. Catie Edmondson, *No Fly Zone: Council Members Push Helicopter, Drone Regulations*, *Gotham Gazette* (Aug. 7, 2015), *available at* <http://www.gothamgazette.com/index.php/government/5841-no-fly-zone-council-members-push-helicopter-drone-regulations> (accessed Nov. 5, 2015).

31. Holly Zachariah, *Man Charged in Use of Camera Drone at Accident*, COLUMBUS DISPATCH (Apr. 15, 2014), *available at* <http://www.dispatch.com/content/stories/local/2014/04/15/man-charged-in-use-of-camera-drone-at-accident.html> (accessed Nov. 5, 2015).

32. Mark Harris, *NASA and Verizon Plan to Monitor US Drone Network from Phone Towers*, GUARDIAN (June 3, 2015), *available at* <http://www.theguardian.com/technology/2015/jun/03/verizon-nasa-drones-cellphone-towers> (accessed Nov. 5, 2015).

33. David Brancaccio, *Send in the Phone Drones*, Marketplace.org (Nov. 1, 2012), *available at* <http://www.marketplace.org/topics/tech/weather-economy/send-phone-drones> (accessed Nov. 10, 2015).

34. CTIA—The Wireless Association, Comments re: Privacy, Transparency, and Accountability Regarding Commercial and Private Use of Unmanned Aircraft Systems, NTIA Docket No. 150224183-5183-01 (Apr. 17, 2015), *available at* http://www.ntia.doc.gov/files/ntia/ctia_comment.pdf (accessed Nov. 10, 2015).