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Protecting Homeowners' Privacy Rights in the Age of Drones: The Role of Community Associations

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PROTECTING HOMEOWNERS' PRIVACY RIGHTS IN THE AGE OF DRONES: THE ROLE OF COMMUNITY ASSOCIATIONS

*Hillary B. Farber, Esq. & Marvin J. Nodiff, Esq.**

ABSTRACT

Homeowners' notions of privacy in their dwellings and surroundings are under attack from the threat of pervasive surveillance by small civilian drones equipped with highly sophisticated visual and data-gathering capabilities. Streamlined rules recently issued by the Federal Aviation Administration ("FAA") have unleashed technological innovation that promises great societal benefits. However, the new rules expose homeowners to unwanted snooping because they lack limits on the distance drones may operate from residential dwellings or time of operations. Indeed, our society should not expect a federal agency to deal effectively with the widely diverse issues of drone technology facing the states, given the different needs of urban and rural communities. The FAA wisely anticipates adopting a multi-layered regulatory framework to address privacy issues. State and local governments, by contrast, are lagging far behind in regulatory efforts, and Fourth Amendment jurisprudence has not kept pace with the privacy issues raised by drones operating in residential areas. Municipalities are best prepared to craft reasonable limitations to safeguard their residents, but few are doing so at the neighborhood level. Fortunately, the sixty-eight million homeowners living in condominium and homeowner associations and cooperatives ("community associations") may look to such quasi-governmental organizations for nimble and responsive action where they live. Community associations have authority and powers similar to municipalities and

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constitute the level of government closest to homeowners. This Article demonstrates that community associations, home to twenty percent of America's homeowners, constitute the level of government most familiar with characteristics of their neighborhoods and are the best positioned entities for safeguarding the privacy expectations of their homeowners as society adjusts to the uncertain and accelerating world of drone technology.

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INTRODUCTION

Perhaps more than any other new technology of previous eras, today's rapid evolution of drone technology diminishes the degree of privacy to which Americans are accustomed. Drones, or unmanned aircraft systems ("UAS"), are capable of flying hundreds of feet in the air while amassing images and data of people and places on the ground. The drone's aerial perspective, along with its ability to hover, gives unprecedented access to places that were once shielded from public view.

In view of drones' extraordinary surveillance, data-gathering, and data-dissemination capabilities, privacy advocates are concerned that

the new FAA rules for commercial drone operators expose individuals to pervasive surveillance.¹ Criminal prosecutions are emerging in courts as controversies grow between drone operators and citizens who object to being surveilled.² These cases will test whether state and local laws adequately ensure basic privacy expectations and norms in the face of drone technology. The extraordinary popularity and access to drones is evidence of how fast-paced and pervasive developments in technology can expose the

1. Gabrielle Orum Hernandez, *Privacy and Data Security Top List of Questions for Legal Experts About Drones*, CORP. COUNSEL (Dec. 5, 2016), <http://www.corpcounsel.com/id=1202773946847/Privacy-and-Data-Security-Top-List-of-Questions-for-Legal-Experts-About-Drones> [<https://perma.cc/79JC-59RW>] (“Because drones are almost always outfitted with cameras, privacy questions rank highly among attorneys looking into drone flight.”); Troy A. Rule, *Take Cover Against This Drone Attack*, WALL ST. J. (Mar. 29, 2016), <https://www.wsj.com/articles/take-cover-against-this-drone-attack-1459291069> [<https://perma.cc/4GG3-YUWK>] (arguing against Congress considering federal preemption of privacy issues, Rule states, “[l]andowners and local governments will have a difficult time keeping unwelcome drones out of backyards and neighborhoods.”); AMANDA ESSEX, NAT’L CONF. OF ST. LEGISLATURES, *TAKING OFF: STATE UNMANNED AIRCRAFT SYSTEMS POLICIES 14* (2016) (“One of the most significant areas of UAS legislation across the country has been related to privacy implications.”); NICOLE DUPUIS, KATHRYN ZICKUHR & ELIAS STAHL, NAT’L LEAGUE OF CITIES, *CITIES AND DRONES 1* (2016) [hereinafter *NLC REP.*] (“[M]uch concern about the increasing popularity of drones has to do with privacy issues that arise when a small device can hover over an area taking aerial photos or video.”); *EPIC v. FAA: Challenging the FAA’s Failure to Establish Drone Privacy Rules*, ELEC. PRIVACY INFO. CTR., <https://epic.org/privacy/litigation/apa/faa/drones/> [<https://perma.cc/43KV-JDD4>] (“Drones’ collection of personal information . . . poses a public safety problem for millions of individuals.”)

2. See Complaint for Declaratory Judgment and Damages at 1, *Boggs v. Merideth*, No. 3:16-cv-6-DJH, 2016 WL 66951 (W.D. Ky. Jan. 4, 2016) (drone operator sues his neighbor for shooting down his drone flying at two hundred feet above ground); *Boggs v. Merideth*, No. 3:16-cv-6-DJH, 2017 WL 1088093 (W.D. Ky. Mar. 21, 2017) (granting defendant’s motion to dismiss for lack of subject matter jurisdiction); Ariel Zangla, *David Beesmer Acquitted in Town of Ulster Drone Surveillance Case*, DAILY FREEMAN (June 22, 2015, 11:55 AM), <http://www.dailyfreeman.com/article/DF/20150622/NEWS/150629926> [<https://perma.cc/5JT4-KWN4>]; Steven Hoffer, *Kentucky Man Arrested for Shooting Down Neighbor’s Drone*, HUFFINGTON POST (Aug. 3, 2015, 12:36 PM), http://www.huffingtonpost.com/entry/man-shoots-neighbors-drone_us_55bf8127e4b0d4f33a034e31 [<https://perma.cc/9UH6-4YJC>]; Steven Miletich, *Man Convicted in Drone Crash That Injured Woman During Seattle’s Pride Parade*, SEATTLE TIMES (Jan. 13, 2017), <http://www.seattletimes.com/seattle-news/crime/man-convicted-in-drone-crash-that-injured-woman-during-seattles-pride-parade/> [<https://perma.cc/EBU5-KNZ6>] (first criminal prosecution in Seattle for misuse of a drone, defendant convicted of reckless endangerment for losing control of his drone at the Gay Pride Parade in Seattle in 2015.); see also Frederick E. Blakelock, *Drone Wars: Will the Litigation Awaken?*, LEXOLOGY (Feb. 16, 2016), <http://www.butler.legal/Drone-Litigation> [<https://perma.cc/HHY8-LT8E>].

limitations of existing laws and challenge prevailing views on what is considered a violation of privacy.

With forecasts that the number of civilian drones in the United States will increase to as many as 4.3 million by 2020,³ the practical implications and regulatory landscape of drones are changing rapidly. The long-awaited FAA Rules (“Rules”), effective August 29, 2016, provide a comprehensive framework for integrating small (under fifty-five pounds) drones into the national airspace by commercial users.⁴

The FAA Rules replace an uncertain and lengthy process of obtaining a waiver, and have unleashed a remarkable growth in drone activity as well as other new sensing devices used to gather information.⁵ These highly anticipated Rules give a green light for users and applications that promise considerable societal benefits. Commercial users include real estate agents, insurers, surveyors, utility and pipeline operators, contractors, researchers in agriculture and national resources, emergency responders, universities, media, videographers, and many more. According to industry projections, over the next ten years the Rules are expected to generate investment of more than eighty-two billion dollars for the United States economy and create more than one hundred thousand new jobs.⁶

According to the FAA, the Rules are intended to ensure safe and efficient drone operations while also promoting technological innovation.⁷ Notwithstanding their stated goal, the Rules impose few limits on the manner of operation aimed specifically at protecting

3. FED. AVIATION ADMIN., FAA AEROSPACE FORECAST FISCAL YEARS 2017-2037 31 (2016).

4. See Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42,064 (June 28, 2016) (codified at 14 C.F.R. pts. 21, 43, 61, et al.).

5. See, e.g., discussion *supra* Section I.A.

6. Press Release, Fed. Aviation Admin., DOT and FAA Finalize Rules for Small Unmanned Aircraft Systems (June 21, 2016); see also Neha Chamaria, *Drone Usage in Agriculture Could Be a \$32 Billion Market*, MOTLEY FOOL (Nov. 25, 2016), <https://www.fool.com/investing/2016/11/25/drone-usage-in-agriculture-could-be-a-32-billion-m.aspx> [<https://perma.cc/MFL5-3M9N>] (“agricultural efficiency is poised to take a big leap with drone technology now that the [FAA] is streamlining regulations . . . [Price Waterhouse Cooper estimates the] market for agricultural drones to be worth a whopping \$32.4 billion, second only to suprastructure . . . Bank of America Merrill Lynch projects agriculture to make up almost 80% of the commercial drone market in the future, with the potential to generate \$82 billion worth of economic activity in the U.S. between 2015 and 2025 . . . [and] Goldman Sachs predicts the agriculture sector to be the largest user of drones in the U.S. and the second largest in the world in the next five years.”).

7. FAA Modernization and Reform Act of 2012, Pub. L. No. 112-95, §332(a)(1) (2012) [hereinafter FMRA].

privacy. Drones may operate anywhere within the pilot's visual line-of-sight, any day of the week, and at any time during daylight hours.⁸

Individuals and residential dwellings are not exempt from these intrusions on privacy. It is common to see news stories of people alarmed by the sight of a drone hovering around their homes and backyards, with cameras peering in windows or invading the privacy of balconies.⁹ Visions of Hitchcock movies are conjured up as drones replace birds in nightmarish attacks. Individuals and society face difficult challenges in adjusting to new technology and unidentified privacy boundaries. According to the CEO of Google X:

Without clear knowledge of the future potential or future unintended negative consequences of new technologies, it is nearly impossible to draft regulations that will promote important advances—while still protecting ourselves from every bad side effect . . . Our societal structures are failing to keep pace with the rate of change.¹⁰

Homeowners are particularly vulnerable because the FAA Rules do not address how close to residential dwellings a drone may fly, nor do they restrict what personal data may be collected or how it may be stored or disseminated. The Rules allow drones to operate every day during daylight hours, with no limitations for holidays, weekends, and other times of day when more people are home from work and school and expect privacy. Instead, homeowners must look to state and local government for protection. However, if state and local governments fail to act, or act too slowly, residents of planned communities,

8. See, e.g., discussion *supra* Section I.B.

9. See, e.g., *Drone Flying in Brooklyn Heights Startles Residents*, NBC 4 N.Y. (Aug. 15, 2015, 3:20 AM), <http://www.nbcnewyork.com/news/local/Brooklyn-Heights-Drone-Startles-Residents-321931492.html> [<https://perma.cc/NE59-RGY9>]; *Leawood Man Says Peeping Tom Flew Drone next to Teen Daughter's Window*, FOX 4 NEWS KAN. CITY (Oct. 9, 2015, 10:37 PM), <http://fox4kc.com/2015/10/09/leawood-man-says-peeping-tom-flew-drone-next-to-teen-daughters-window/> [<https://perma.cc/LZV2-J3HJ>]; James Queally, *L.A. City Attorney Files First Criminal Charges Under New Drone Ordinance*, L.A. TIMES (Jan. 20, 2016, 2:31 PM), <http://www.latimes.com/local/lanow/la-me-ln-city-attorney-drones-20160120-story.html> [<https://perma.cc/B8Q5-YGRV>] (“Two men accused of flying drones in the vicinity of a hospital and police heliports will be the first to face criminal charges under Los Angeles’ new drone restrictions.”); Winnie Wright, *Valdosta Police Officer Fired, Arrested for Eavesdropping with Drone*, WCTV (Sept. 14, 2015), <http://www.wctv.tv/home/headlines/Valdosta-Police-Officer-Fired-Arrested-For-Eavesdropping-With-Drone.html> [<https://perma.cc/T3KC-FCG9>] (reporting a Valdosta Police Department officer was arrested in Lanier County after neighbors reported he eavesdropped on them with a drone.).

10. THOMAS L. FRIEDMAN, THANK YOU FOR BEING LATE 33 (2016) (quoting Eric Teller, CEO of Google’s X research and development lab.).

condominiums, and cooperatives—generically known as “community associations”—are well positioned to act through their self-governance powers.¹¹ Created under state laws and recorded governing documents, these associations resemble municipalities. They are empowered to adopt rules and regulations to protect the interests of their homeowner members and the residential community as a whole.¹² Some community associations have features to promote privacy and security, such as suburban “gated communities” and their functional equivalents in urban areas—buildings with limited access and door attendants.¹³

Community associations resemble mini-democracies, as homeowners elect their governing boards and delegate a broad range of powers and duties to the association for governance of the community and protection of their interests.¹⁴ Like local government, community associations have the ability to limit intrusions by drone operations for the purpose of safeguarding homeowner privacy.¹⁵

Associations are better positioned to safeguard homeowners’ privacy interests because they are closer to their residents than any other governmental level and more familiar with the needs and characteristics of their communities.¹⁶ Community associations can be more nimble and responsive to their constituencies than state or local governments. As of 2015, an estimated sixty-eight million Americans (one in every five) live in one of the country’s 338,000 communities that have some form of owners’ association, many of which are situated in urban areas.¹⁷

This Article examines the impact of the FAA Rules on individual privacy rights and how private community associations, akin to local government, may protect homeowners’ privacy. Indeed, due to an association’s familiarity with the physical characteristics of its community and the needs of its residents, the association may be in a better position than local government to adopt rules that are tailored to the particular neighborhood. What reasonable restrictions may associations impose on commercial drone operations within their

11. *See, e.g.*, discussion *supra* Sections V.A, V.B.

12. *See* discussion *supra* Sections V.A, V.B.

13. *See supra* notes 180-81 and accompanying text.

14. *See supra* notes 180-81 and accompanying text.

15. *See* discussion *supra* Section V.C.

16. *See* discussion *supra* Section V.A.

17. CMTY. ASS’N INST., NATIONAL AND STATE STATISTICAL REVIEW FOR 2015 1, <https://www.caionline.org/AboutCommunityAssociations/Pages/StatisticalInformation.aspx> [https://perma.cc/85R6-9T6V].

boundaries, such as limitations based on time, place, and manner? Would such rules promote legitimate property and privacy expectations of homeowners? Would they be preempted by the FAA Rules?

Part I examines the FAA Rules that pertain to drone operation, examining the FAA's surrender of privacy protections to state and local lawmakers. Part II provides an analysis of how current law does not assure protections for individual homeowners from drones flying above and around their homes. Part III explains how, based on a delegation of authority from Congress to the FAA, the FAA Rules will not preempt state and local laws that are designed to protect privacy. Part IV examines how drones have galvanized state and local lawmakers to enact laws to promote privacy. Finally, Part V explains how the structure and governance of community associations enable these "quasi municipalities" to safeguard the interests of their residents when state and local government fail to act.

I. FAA RULES: SAFETY, NOT PRIVACY

The advent of military and commercial aircraft led to Congressional acts which abandoned the ancient rule granting the landowner dominion over the sky above her property, favoring instead a presumption of exclusive federal sovereignty in the interests of public safety.¹⁸

The origin of the current Rules is the FAA Modernization and Reform Act of 2012 ("FMRA") authorizing the FAA to adopt regulations to "safely accelerate the integration of civil unmanned aircraft systems into the national airspace system."¹⁹ Congress directed the FAA to prepare recommendations and projections to define the acceptable standards for operation and certification of civil drones, ensure that they have sense-and-avoid capability, and establish standards and requirements necessary to achieve the safe and routine operation of civil drones in the national airspace.²⁰ The FAA has maintained throughout the rulemaking process that privacy

18. A history of federal control over the national airspace is beyond the scope of this Article. *But see, e.g.*, Air Commerce Act of 1926, Pub. L. No. 69-251, 44 Stat. 568; Federal Aviation Act, Pub. L. No. 85-726, 72 Stat. 737 (1958); *see also* STUART BANNER, WHO OWNS THE SKY?: THE STRUGGLE TO CONTROL AIRSPACE FROM THE WRIGHT BROTHERS ON 16-17 (2008); Troy A. Rule, *Airspace in an Age of Drones*, 95 B.U. L. REV. 155, 203 (2015).

19. FMRA, *supra* note 7, at § 332(a)(1).

20. *Id.*; *see also* Timothy M. Ravich, *Grounded in the Law, in UNMANNED AIRCRAFT IN THE NATIONAL AIRSPACE: CRITICAL ISSUES, TECHNOLOGY, AND THE LAW* 9-15 (Donna a. Dulo ed., 2015).

concerns are not within their mission.²¹ The Rules enable low-risk operations such as line-of-sight and daytime-only requirements, with waivers available to foster innovation in higher-risk applications that could be the subject of further incremental rulemaking.²²

With its focus on safety, the FAA expressly acknowledges that certain matters are outside this area and would not conflict with the Rules. Laws traditionally related to state and local police power—which include land use, zoning, privacy, trespass, and law enforcement operations—are generally not subject to federal regulation.²³ For example, the FAA notes requirements for police to obtain a search warrant, as well as prohibitions against the use of UAS for voyeurism, harassment or interference with an individual who is hunting or fishing, and the attachment of firearms or similar weapons to UAS, all areas of activity governed by the state police power.²⁴

A. Unleashing Technology

Under the Rules, drone operations for commercial uses are permitted once the pilot has completed a written exam, been vetted by the Transportation Security Administration, and obtained a newly created designation: the “Remote Pilot Certificate.”²⁵ A drone operator must be at least sixteen years of age.²⁶ Flights are limited to not more than four hundred feet above ground level,²⁷ must occur only during daylight hours,²⁸ and may not exceed the operators’ line

21. FED. AVIATION ADMIN., SAFETY: THE FOUNDATION OF EVERYTHING WE DO, https://www.faa.gov/about/safety_efficiency/ [<https://perma.cc/8ZRB-NZ2H>] (last modified July 2, 2015) (“[O]ur mission [is] to provide the safest, most efficient aerospace system in the world.”); Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42,064, 42,191 (June 28, 2016) (to be codified at 14 C.F.R. pts. 21, 43, 61, et al.) (“[T]he FAA’s rulemaking authority neither mandates nor permits the FAA to issue or enforce regulations specifically aimed at protecting privacy interests between third parties.”).

22. 14 C.F.R. § 107.51 *et. seq.*; *see also* discussion *supra* Section I.B.

23. OFF. OF THE CHIEF COUNSEL, FED. AVIATION ADMIN., STATE AND LOCAL REGULATION OF UNMANNED AIRCRAFT SYSTEMS (UAS) FACT SHEET 3 (2015) [hereinafter FAA FACT SHEET] (citing *Skysign Int’l, Inc. v. City & Cty. of Honolulu*, 276 F.3d 1109, 1115 (9th Cir. 2002)). The FAA Fact Sheet is incorporated by reference in the FAA Rules. Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42,194.

24. FAA FACT SHEET, *supra* note 23, at 3.

25. 14 C.F.R. § 107.12.

26. *Id.* § 107.61.

27. *Id.* § 107.51(b).

28. *Id.* § 107.29.

of sight.²⁹ All drones must be registered with the FAA and labeled with the registration number.³⁰

The Rules replace a system of individual applications for waivers and simplify the licensing process for commercial operators to fly small unmanned aircraft.³¹ Until these new rules took effect, commercial users could not operate drones without a Certificate of Authorization (“COA”) from the FAA enabling the applicant to carry out a particular operation.³² On average, applicants waited four to six months to obtain a COA from the FAA once they had submitted all documents.³³ The Rules streamline the requirements for pilots by creating an operator’s certification based on a knowledge test that is tailored to the remote control of drones, by no longer requiring a vehicle certification, and by eliminating the waiting period as well as a portion of the bureaucratic process. In the first three months of the Rules, FAA issued nearly 23,000 remote pilot certificates for business uses, a rate of more than three hundred each day.³⁴ This figure reflects the massive backlog of COA applications

29. *Id.* § 107.31.

30. *Id.* § 107.13; 91, 203(a)(2). In January 2016, a month after issuing its hobby and recreation rules, the FAA reported more than 181,000 hobbyist drones had been registered on its web-based system. Yoav Leitersdorf, *The Drone Race Is Off and Running, with Israel in the Lead*, TECHCRUNCH (Sept. 9, 2016), <https://techcrunch.com/2016/09/09/the-drone-race-is-off-and-running-with-israel-in-the-lead/> [<https://perma.cc/4FJF-7BCH>]; see also *Drone Registration Marks First Anniversary*, FED. AVIATION ADMIN., <https://www.faa.gov/news/updates/?newsId=87049> [<https://perma.cc/EN2Q-L66X>] (last modified Dec. 21, 2016) (In the first full year, 616,000 owners and individual drones were registered on FAA’s system.)

31. FED. AVIATION ADMIN., *supra* note 30.

32. FMRA, *supra* note 7, at § 333. Obtaining a COA from the FAA is a lengthy process whereby one must apply for an exemption under FMRA § 333.

33. See Warren Rapp, *New FAA Rules Say Drones Can Take to the Skies—with Restrictions*, CONVERSATION, (Feb. 20, 2015, 6:05 AM), <http://theconversation.com/new-faa-rules-say-drones-can-take-to-the-skies-with-restrictions-37782> [<https://perma.cc/FMT4-E656>]; Ron Smith, *UAV Use Requires Training and Certification*, SW. FARM PRESS (July 5, 2016), <http://www.southwestfarmpress.com/cotton/uav-use-requires-training-and-certification> [<https://perma.cc/45BF-9SUY>]. Not only is time a factor under the current rules, but the FAA is the sole authority to determine how many exemptions to issue, to whom, and for what purpose. See Rapp, *supra*. The time period for evaluating petitions for exemptions is 120 days, and many businesses are forced to employ legal assistance to navigate the administrative process. See Jason Reagan, *UAV Group Offering Section 333 Legal Package*, DRONE LIFE (June 9, 2015), <http://dronelife.com/2015/06/09/uav-group-offering-section-333-legal-package/> [<https://perma.cc/9KJZ-SGXX>]. As of February 18, 2016, 3459 petitions had been granted. *Section 333*, FED. AVIATION ADMIN., https://www.faa.gov/uas/beyond_the_basics/section_333/ [<https://perma.cc/U64F-RDNA>] (last modified Feb. 10, 2017).

34. April Glaser, *The FAA Has Issued Nearly 23,000 Drone Pilot Licenses in Just Three Months*, RECODE (Dec. 19, 2016), <https://www.recode.net/2016/12/19/>

pending before the Rules took effect because commercial users now have the option of operating either under a COA or complying with the Rules without a prolonged delay while the FAA processes an application.³⁵ Already this change to the approval process has resulted in exponential growth and proliferation of commercial drones in the sky.³⁶

Since the implementation of the new FAA Rules there has been a groundswell of innovation in a wide range of commercial activities. For instance, medical supplies are being delivered by drones,³⁷ search and rescue operations are expedited by first responders using drones,³⁸ and new technologies are rapidly expanding.³⁹ Delivery of

14006772/faa-drone-pilot-licenses-three-months-numbers-uav
[https://perma.cc/X5U5-WD65].

35. *Id.*

36. See Rule, *supra* note 18, at 160-62; Hillary B. Farber, *Let's Make It Easy to Be Responsible with Drones*, PROVIDENCE J. (Dec. 29, 2015), <http://www.providencejournal.com/article/20151229/OPINION/151229411> [https://perma.cc/68D8-L4MM].

37. Drones are being tested in Japan to fly medicines, defibrillators and other medical supplies for emergency services, Shusuke Murai, *Drones To Be Tested For Use By Ambulance Crews*, JAPAN TIMES (Aug. 19, 2016), <http://www.japantimes.co.jp/news/2016/08/19/national/science-health/drones-to-be-tested-for-use-by-ambulance-crews/> [https://perma.cc/G8AW-MFML]. In Rwanda, fixed-wing drones will deliver blood and plasma to hospitals in rural areas, cutting waiting times from hours to minutes. Dan Simmons, *Rwanda Begins Zipline Commercial Drone Deliveries*, BBC (Oct. 14, 2016), <http://www.bbc.com/news/technology-37646474> [https://perma.cc/827X-938S]. UNICEF is exploring delivery of HIV test samples in rural Malawi. Cara Anna, *Drones Carrying Medicines, Blood Face Top Challenge: Africa*, ASSOCIATED PRESS (Oct. 9, 2016), <http://bigstory.ap.org/article/e889219-b61494224bd062d63853d7077/drones-carrying-medicines-blood-face-top-challenge-africa> [https://perma.cc/SQD9-Q6EC].

38. In the wake of flooding caused by Hurricane Matthew in early October 2016, Verizon and Allstate used drones to inspect areas too damaged for safe access on the ground. April Glaser, *Drones Are Playing A New Role In The Recovery Efforts After Hurricane Matthew*, RECODE (Oct. 16, 2016), <https://www.recode.net/2016/10/16/13295382/drones-hurricane-matthew-insurance-telecom> [https://perma.cc/6EDA-XR69]. During the Baton Rouge flooding in August 2016, film company Atmosphere Aerial flew drones to locate stranded persons. Kelsey D. Atherton, *Baton Rouge Drone Company Films Louisiana Flooding*, POPULAR SCI. (Aug. 17, 2016), <http://www.popsci.com/baton-rouge-drone-company-films-flooding> [https://perma.cc/7KGD-DP2T]. Drones helped response teams after the devastating 6.2 earthquake in Italy. *Airbnb, Drones Help Rescue Efforts After Italy Quake*, CNN (Aug. 25, 2016), <http://www.cnn.com/videos/cnnmoney/2016/08/25/italy-earthquake-tech-cnnmoney.cnn> [https://perma.cc/FGJ8-U5PJ]. In Ohio, first responders take courses in drone operations. Matt Wright, *First Responders Train to Use Drones*, FOX 8 CLEVELAND (Oct. 4, 2016), <http://fox8.com/2016/10/04/first-responders-train-to-use-drones/> [https://perma.cc/3QNC-YCWN].

39. An anti-drone system launched by ApolloShield can send drones back to their base if they're flying where they are not authorized or wanted. Lora Kolodny, *ApolloShield's New System Detects And Sends Unwanted Drones Home*, TECHCRUNCH (Aug. 17, 2016), <https://techcrunch.com/2016/08/17/apollo-shield->

goods, new data-sensing devices, and other innovations promise to change our daily lives.⁴⁰ Insurers are using drones to inspect damages and public agencies are using drones to carry out everyday functions.⁴¹ Some universities now offer drone specific study

launches-system-that-sends-unwanted-drones-home/ [https://perma.cc/M5FU-AXVU]. Intel Corporation has unveiled the “Aero Ready to Fly” quadcopter drone platform for app developers that will support “plug and play” options. Bill Carey, *Intel Unveils ‘Aero’ Drone Development Platform*, BUS. AVIATION (Aug. 19, 2016), <http://www.ainonline.com/aviation-news/business-aviation/2016-08-19/intel-unveils-aero-drone-development-platform> [https://perma.cc/2PF5-GN8Y]. Wireless charging, solar and docking stations on cell towers could extend the typical twenty to thirty minute battery life for longer flights. April Glaser, *Wireless Charging Could Keep Drones In The Air For Much Longer*, RECODE (Oct. 12, 2016), <https://www.recode.net/2016/10/12/13257790/wireless-charging-drones-air-longer-solar-power-batteries> [https://perma.cc/QL2-VRHF].

40. Most Americans are skittish about drone deliveries. According to a survey by the U.S. Postal Service published in October 2016, fifty-seven percent of people are either neutral about drone deliveries or think it is a bad idea, and seventy-five percent of people think drone delivery is five years away at best. Brian Fung, *How People Actually Get On Board With New Technologies*, WASH. POST (Oct. 12, 2016), <https://www.washingtonpost.com/news/the-switch/wp/2016/10/12/americans-are-skittish-about-drones-delivering-their-packages/> [https://perma.cc/FZ7S-SDBT]. Even so, Amazon’s Prime Air has a not-so-secret laboratory near Cambridge, England developing drones to deliver packages to homes. Sam Shead, *We Found Amazon’s Secret Drone Testing Site Hidden In The English Countryside*, BUS. INSIDER UK (Aug. 23, 2016), <http://www.businessinsider.com/amazon-secret-drone-testing-site-cambridge-discovered-2016-8/> [https://perma.cc/2QXT-EPRL]; see also, Freya Leng, *Inside Amazon’s Prime Air Secret Drone Testing Facility*, CAMBRIDGE NEWS (Oct. 14, 2016), <http://www.cambridge-news.co.uk/news/cambridge-news/inside-amazons-prime-air-secret-12038662> [https://perma.cc/8FBG-WES7]. Tokyo expects deliveries to high-rise condominium balconies by the end of 2019. Kyodo, *Chiba Drone Alliance Pushes For Delivery Service By 2019*, JAPAN TIMES (Oct. 7, 2016), <http://www.japantimes.co.jp/news/2016/10/07/business/chiba-drone-alliance-pushes-delivery-service-2019/> [https://perma.cc/7YPK-3SLP]. People are using drones to catch their cheating partners. Marianne Garvey, *More People Are Using Drones To Catch Their Cheating Partners*, BRAVO TV (Aug. 31, 2016), <http://www.bravotv.com/blogs/more-people-are-using-drones-to-catch-their-cheating-partners> [https://perma.cc/SM7C-K2RW].

41. Jonathan Vanian, *Allstate Just Used Drones to Inspect Homes in Texas*, FORTUNE (Sept. 2, 2016), <http://fortune.com/2016/09/02/allstate-drone-home-inspection-insurance/> [https://perma.cc/3SKN-73JZ] (Allstate has been testing drones to inspect roofs for hail damage to more quickly handle customer insurance claims). Police investigating fatal DUI crash scene in Renton, Washington took only one hour rather than three hours. Alison Grande, *Renton Police: Drones Save Time, Help Investigators*, KIRO 7 (Oct. 4, 2016), <http://www.kiro7.com/news/local/renton-police-drones-save-time-help-investigators/453514035> [https://perma.cc/KLN6-FWVP]. Connecticut’s Department of Transportation has tested using drones to inspect bridges. Kimberly Drelich, *Connecticut DOT Tests UAV on Gold Star Bridge*, DAY (Aug. 24, 2016), <http://www.govtech.com/public-safety/Connecticut-DOT-Tests-UAV-on-Gold-Star-Bridge.html> [https://perma.cc/3L8H-PJ9M].

programs⁴² and sports teams and leagues are employing drones.⁴³ Even cities are ranked for their drone “friendliness.”⁴⁴

B. FAA’s Focus on Safety

Under FMRA, Congress directed the Secretary of Transportation to issue “a final rule on small unmanned aircraft systems that will allow for civil operations of such systems in the National Airspace System (“NAS”).”⁴⁵ FMRA directs the FAA to determine whether “certain unmanned aircraft systems may operate *safely* in the national airspace system” and, if so, to “establish requirements for the *safe* operation of such aircraft systems in the national airspace system.”⁴⁶

In response to its Notice of Proposed Rulemaking in early 2015,⁴⁷ the FAA received approximately 4600 public comments.⁴⁸ The FAA’s focus on safety is illustrated by a brief review of the major requirements in the Rules: visual line-of-sight, no flight over persons not directly participating in the operation, daylight hours only,

42. Indiana State University, Kansas State Polytechnic University, North Dakota University, Oklahoma State University, and other colleges and universities offer drone-related programs. The University of Missouri offers engineering studies and related programs in the School of Journalism. *16 Top Drone Programs at Universities and Colleges*, DRONETHUSIAST <http://www.dronethusiast.com/top-universities-unmanned-aerial-system-programs/> [<https://perma.cc/3Y2R-JSLS>].

43. The first “Drone Nationals” were held in the USA in July 2016, the same year the Drone Racing League was founded, and an Australian team built a racing drone that hit two hundred kilometers per hour. Peter Farquhar, *This Australian Team Just Launched A Giant Racing Drone That Can Hit 200km/h*, GIZMODO (Aug. 24, 2016), <https://www.gizmodo.com.au/2016/08/this-australian-team-just-launched-a-giant-racing-drone-that-can-hit-200kmh/> [<https://perma.cc/794J-T6QX>]. ESPN will broadcast races sponsored by the Drone Racing League in fall 2016. Darren Rovell, *Drone Racing League, ESPN Reach Broadcasting Agreement*, ESPN (Sept. 14, 2016), http://www.espn.com/moresports/story/_/id/17544727/drone-racing-league-espn-announce-broadcasting-agreement [<https://perma.cc/75QW-4ZAV>]. Kansas University Jayhawks football team prepares video of its practices. Benton Smith, *Game Of Drones: KU Football Adds New Technology To Video Preparation*, KU SPORTS (Aug. 23, 2016), <http://www2.kusports.com/news/2016/aug/23/game-drones-ku-football-adds-new-technology-video-/> [<https://perma.cc/46R5-ZQTM>].

44. The “friendliness” ranking is based on number of drones, jobs, stadiums, airports, and incidents per drone. The five most drone friendly cities are San Francisco, Raleigh, Las Vegas, Albuquerque, and San Jose. Tucson has the lowest number of reported drone incidents per capita in 2014 and 2015. Allee Manning & Tal Reznik, *Drone Zone: The Five Best Cities for Fliers*, VOCATIV (Aug. 24, 2016), <http://www.vocativ.com/350441/drones-zone-the-5-best-cities-to-for-fliers/> [<https://perma.cc/JA3B-DVA3>].

45. FMRA, *supra* note 7, at §§ 332(b), 333.

46. FMRA, *supra* note 7, at § 333(c) (emphasis added).

47. Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 9544.

48. *Id.*

maximum ground speed one hundred miles per hour, maximum altitude four hundred feet above ground level, no operation from moving vehicle, and preflight equipment inspection. All of these elements are designed to create a regulatory framework for low-risk commercial drone operations in the national airspace.⁴⁹

The FAA expects further incremental changes in the Rules as more data becomes available. The waiver of certain provisions may create a laboratory to develop more data to support incremental future changes. “Because UAS constitute a quickly changing technology, a key provision of this rule is a waiver mechanism to allow individual operations to deviate from many of the operational restrictions of this rule if the Administrator finds that the proposed operation can safely be conducted under the terms of a certificate of waiver.”⁵⁰

A waiver may authorize “a deviation from any regulation specified in section 107.205”⁵¹ including the following regulations: operation from a moving vehicle,⁵² daylight operation,⁵³ visual line of sight operation,⁵⁴ visual observer,⁵⁵ operation of multiple drones,⁵⁶ yielding the right of way,⁵⁷ operation over people,⁵⁸ operation in certain airspace,⁵⁹ and operating limitations for small unmanned aircraft.⁶⁰ The requirements subject to waiver are listed in the Rules.⁶¹

C. Enforcement: More Safety Than Privacy

Not only are privacy protections absent from the Rules, but the FAA’s strategy to enforce the Rules relies on uncertain local

49. 14 C.F.R. §§ 107.1, *et. seq.*

50. Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42,066.

51. 14 C.F.R. § 107.200.

52. *Id.* § 107.25.

53. *Id.* § 107.29.

54. *Id.* § 107.31.

55. *Id.* § 107.33.

56. *Id.* § 107.35.

57. *Id.* § 107.37(a).

58. *Id.* § 107.39.

59. *Id.* § 107.41.

60. *Id.* § 107.51.

61. *Id.* § 107.205. Three companies have been granted exemption from visual line-of-sight requirement for such tasks as cleanup and repair after storm damage and monitoring widespread crop conditions: CNN, BNSF Railway, and drone data company PrecisionHawk. Associated Press, *Drone Operators Seek Permission To Fly Out Of Direct Sight*, CNBC (Sept. 19, 2016), <http://www.cnbc.com/2016/09/19/drone-operators-seek-permission-to-fly-out-of-direct-sight.html> [<https://perma.cc/N8MK-42FB>].

resources to respond to complaints relating to safety, but not privacy. When the FAA adopted its rules for hobbyists and recreational users, it announced a memorandum to guide its relationship with local enforcement agencies entitled “Law Enforcement Guidance for Suspected Unauthorized UAS Operations.”⁶² Citing concerns for unauthorized drone operations that threaten safety and security, the FAA maintains that it cannot delegate authority for enforcement, but also concedes it lacks the personnel to police the Rules.⁶³ To address this gap, the FAA proposes forming a partnership with state and local law enforcement agencies which “are often in the best position to deter, detect, immediately investigate, and, as appropriate, pursue enforcement actions to stop unauthorized or unsafe drone operations.”⁶⁴

However, enforcement of the FAA Rules relies on uncertain and untested resources and processes. First, a drone operator must be observed violating the regulations by “careless and reckless” operation that endangers individuals and property on the ground, in which event the witness would contact law enforcement to gather evidence and interview witnesses.⁶⁵ Next, local law enforcement and first responders would follow the FAA’s guidance for identifying and interviewing witnesses, identifying operators, viewing and recording the location of the event, identifying sensitive locations, identifying events or activities, notifying an FAA Regional Operation Center (“ROC”), and collecting evidence.⁶⁶ Local agencies would then refer the matter to the nearest ROC for further investigation.⁶⁷ Civil penalties are available to the FAA, such as warning notices, letters of correction, and other penalties including suspension of the remote pilot’s certificate.⁶⁸

62. *Law Enforcement Engagement with Suspected Unauthorized UAS Operations*, FED. AVIATION ADMIN., U.S. DEP’T OF TRANSP. (Dec. 14, 2015), https://www.faa.gov/uas/resources/law_enforcement/ [https://perma.cc/9CXW-DY4Z].

63. FED. AVIATION ADMIN., *LAW ENFORCEMENT GUIDANCE FOR SUSPECTED UNAUTHORIZED UAS OPERATIONS* 1, 5 (Dec. 14, 2015), https://www.faa.gov/uas/resources/law_enforcement/media/FAA_UAS-PO_LEA_Guidance.pdf [https://perma.cc/EH4A-JC99] [hereinafter *FAA LAW ENFORCEMENT GUIDANCE*].

64. *Id.*

65. *Id.*

66. *Id.* at 6-8.

67. *Id.* at 7. The FAA has nine Regional Operation Centers operating twenty-four hours a day, seven days a week. Location, states covered by each ROC, and contact information are listed as Attachment B. *Id.* at 13.

68. *Id.* at 5.

The FAA's concern for safety rather than privacy is further illustrated by its focus on "careless and reckless" operations that endanger individuals and property on the ground, and is reflected in its prohibition against drones flying "over persons not directly involved in the operation."

To protect their privacy, individuals have little choice but to turn to state and local government. The community associations that represent sixty-eight million residents living across the United States are best positioned to act as an effective source of regulatory authority and enforcement at the neighborhood level.

II. SURVEILLANCE AND PRIVACY EXPECTATIONS UNDER CURRENT LAW

The combination of the aerial perspective and the sensing devices that can be mounted to drones create the potential for significant intrusions into the privacy of citizens. Similar to an iPhone, the drone's utility and reach are greatly expanded by new applications such as hi-tech sensing devices that can be installed. These applications transform the fundamental function of the drone—to fly and hover—by converting it into a surveillance tool with sophisticated means to gather, store, and transmit data. Most drones are equipped with cameras with high powered zoom lenses and photo sensors for high-resolution imagery. Even the least expensive commercially-available drone has the ability to transmit real-time video or data to the ground control unit. As the price increases, so does the technology. It is common for government issued drones to be equipped with global positioning systems, Wi-Fi sniffers, license plate readers, infra-red sensors, night vision cameras, and even facial recognition technology.⁶⁹

What rights and legal remedies do people have when they are viewed on their own property from the low-level sky? Emerging drone technologies that enable an operator to hover in navigable low-level airspace above fenced-in backyards, and potentially peer into windows, pose significant challenges to legal precedent that has only considered manned aircraft. Quite distinct from their manned counterparts, the helicopter and airplane, drones can weigh less than a pound and fly undetected over people and places. Modern technology often outpaces the law, and drones are no exception. Drones pose new challenges to the legal framework which has been

69. See Hillary B. Farber, *Keep Out!: The Efficacy of Trespass, Nuisance and Privacy Torts As Applied To Drones*, 33 GA. ST. U. L. REV. 359, 370 (2017).

used for half a century to assess the reasonableness of an individual's expectation of privacy.

Historically, Fourth Amendment jurisprudence does not recognize an expectation of privacy when one is being viewed from a public vantage point.⁷⁰ In 1967, the Supreme Court in *Katz v. United States*⁷¹ departed from a property-rights based analysis for assessing when a violation of one's privacy has occurred, adopting instead a "people" oriented approach. Rather than link reasonable expectations of privacy to possessory interests in land, the Court reasoned that the Constitution protects "people not places." The Court held a government agent eavesdropped on Katz's conversation by placing a recording device on the outside of a public phone booth, violating the Fourth Amendment.⁷² Critical to the Court's decision was Katz's concerted effort to conceal his conversation from the "uninvited ear."⁷³ The government's interception of the communication was an intrusion of a justifiable expectation of privacy. As Justice Harlan wrote in his famous concurrence establishing the requirements to a reasonable expectation of privacy, "there is a twofold requirement, first that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as 'reasonable.'"⁷⁴

Applying *Katz* to three cases in the 1980s involving aerial surveillance, the Court found persons had no reasonable expectation of privacy from police surveillance at altitudes of four hundred and one thousand feet because the contents of the property were easily viewed from navigable airspace.⁷⁵ In *California v. Ciraolo*, the police received an anonymous tip that the defendant was growing marijuana in his backyard.⁷⁶ The backyard was surrounded by a fence and protected from view at ground level.⁷⁷ Without a warrant, police flew an airplane over Ciraolo's house at one

70. *Dow Chem. Co. v. United States*, 476 U.S. 227 (1986); *California v. Ciraolo*, 476 U.S. 207 (1986); *United States v. Knotts*, 460 U.S. 276 (1983).

71. 389 U.S. 347 (1967).

72. *Id.*

73. *Id.* at 352 ("What [Katz] sought to exclude when he entered the booth was not the intruding eye—it was the uninvited ear.").

74. *Id.* at 361.

75. *Florida v. Riley*, 488 U.S. 445 (1989); *Dow*, 476 U.S. 227; *Ciraolo*, 476 U.S. 207.

76. 476 U.S. at 209.

77. *Id.*

thousand feet, within navigable airspace.⁷⁸ From the plane, officers were able to see marijuana plants growing in his backyard. Police, acting upon this newly discovered information, sought a warrant for the premises. Ciralo was charged and convicted of cultivating marijuana.⁷⁹ Although the Court recognized that Ciralo possessed a subjective expectation of privacy in his backyard because he had erected a fence to block his illegal cultivation from view, the Court deemed his expectation to be one society was not willing to recognize.⁸⁰ Ciralo's expectation of privacy was unreasonable in light of the fact that his backyard could be viewed by any member of the public from an elevated position or an aircraft in navigable airspace.⁸¹ Presciently however, the Court noted that "[a]erial observation of curtilage may become invasive, either due to physical intrusiveness or through modern technology which discloses to the senses those intimate associations, objects or activities otherwise imperceptible to police or fellow citizens."⁸² Unquestionably, the advent of the drone has made that prediction a reality.

Florida v. Riley,⁸³ another case involving aerial surveillance with the naked eye, presented the question of "[w]hether surveillance of the interior of a partially covered greenhouse in a residential backyard from the vantage point of a helicopter located 400 feet above the greenhouse constitutes a 'search' for which a warrant is required under the Fourth Amendment."⁸⁴ Relying upon its ruling three years earlier in *Ciralo*, the Court declined to recognize a reasonable expectation of privacy because the observations were made in public airspace.⁸⁵ Under the *Katz* analysis,⁸⁶ the Court stated that Riley had no reasonable expectation of privacy under the circumstances of that case.⁸⁷

In *Dow Chemical v. United States*, the Environmental Protection Agency ("EPA") was denied access to Dow's manufacturing plant for

78. *Id.*

79. *Id.* at 210.

80. *Id.* at 211.

81. *Id.* at 213 ("The Fourth Amendment protection of the home has never been extended to require law enforcement officers to shield their eyes when passing by a home on public thoroughfares.").

82. *Id.* at 215 n.3 (quoting Brief for Petitioner, 14-15).

83. 488 U.S. 445, 449 (1989).

84. *Id.* at 448-49.

85. *Id.* at 449.

86. *Id.* at 450-51.

87. *Id.*

inspection.⁸⁸ Dow had erected fences to obstruct view of the plant from the perimeter of the property, and the plant's operations took place inside the buildings.⁸⁹ The EPA hired a commercial photographer to take pictures of the plant from the sky.⁹⁰ The Supreme Court concluded that taking aerial photographs of an industrial plant complex from publicly navigable airspace did not constitute a search under the Fourth Amendment.⁹¹ In reaching its conclusion, the Court's analysis included the locale of the photographic images, the technology, and the level of detail in the photos. Although the aerial photography captured buildings and equipment not visible from ground level outside the plant's walls, the Court noted that the photographs themselves did not reveal detailed information that would rise to the level of constitutional protection.⁹² Perhaps foreshadowing the inevitable advancement in aerial photography, the Court acknowledged that surveillance of private property with highly sophisticated surveillance equipment not generally available to the public might implicate Fourth Amendment protections.⁹³

The common thread in these cases is that a warrant is not required to obtain data from navigable airspace while in compliance with FAA rules; indeed, the Court compared the airspace to a public thoroughfare.⁹⁴ However, the dissent in *Ciraolo* complained that "although we may expect planes or helicopters to pass overhead, we do not expect that those pilots will intently focus on our domestic and commercial activities."⁹⁵ Unlike planes and helicopters, drones, with their hovering capability and on-board sense enhancing devices, are designed to record people and places below.

88. 476 U.S. 227, 229 (1986).

89. *Id.*

90. *Id.*

91. *Id.* at 239.

92. *Id.* at 238 ("But the photographs here are not so revealing of intimate details as to raise constitutional concerns. Although they undoubtedly give EPA more detailed information than naked-eye views, they remain limited to an outline of the facility's buildings and equipment. The mere fact that human vision is enhanced somewhat, at least to the degree here, does not give rise to constitutional problems.").

93. *Id.*

94. *California v. Ciraolo*, 476 U.S. 207, 213 (1986).

95. Marc Jonathan Blitz, James L. Grimsley, Stephen E. Henderson, & Joseph T. Thai, *Regulating Drones Under the First and Fourth Amendments*, 57 WM. & MARY L. REV. 49, 136, 142 (Mar. 5, 2015) [hereinafter *Regulating Drones*] (citing J. Powell's dissent in *Ciraolo*).

Beyond the government's use of manned aircraft, the Court considered, in *Kyllo v. United States*, whether the use of sense-enhancing technology that gathered information about activities inside the home without physically trespassing onto one's property constituted a search.⁹⁶ Federal agents suspected Kyllo of growing marijuana in his house and used a thermal-imaging device in an agent's car parked across the street to detect abnormal heat levels coming from inside the house.⁹⁷ The Court held that the search violated the Fourth Amendment because "the Government use[d] a device that [was] not in general public use, to explore details of the home that would previously have been unknowable without physical intrusion."⁹⁸ The Court relied heavily on the fact that this technology was not in the general public use,⁹⁹ leading the Court to conclude that the government's actions constituted a search.¹⁰⁰

More recently, the Court discussed the impact of technology in *United States v. Jones*.¹⁰¹ The police attached a global positioning system device ("GPS") to the car of the defendant's wife. Gathering information over a period of four weeks, the police found that Jones made multiple trips to a drug house and used that data as the basis for obtaining a search warrant.¹⁰² However, rather than base its determination on technology, the Court relied on narrow tort law to reject that approach, finding that the GPS device was impermissibly affixed to the car used by Jones, constituting a physical trespass.¹⁰³ As Justice Sotomayor so poignantly described in her concurrence, a vast amount can be learned about a person simply by tracking their movements.¹⁰⁴

96. 533 U.S. 27 (2001).

97. *Id.* at 36.

98. *Id.* at 40.

99. *Id.* at 38.

100. *Id.* at 33-34.

101. 565 U.S. 400, 402-04 (2012).

102. *Id.* at 402.

103. *Id.* at 404-05. In 2014 the Court considered the privacy expectations of cell phone use when it determined that a warrantless search of a phone violated the Fourth Amendment. *See Riley v. California*, 134 S.Ct. 2473 (2014). Chief Justice Roberts emphasized the pervasiveness of cell phones and their capacity to retain and transport "the privacies of life." *See id.* at 2479. The Court's unanimous decision signaled a growing recognition that technology challenges our existing framework for assessing the reach of the Fourth Amendment.

104. "GPS monitoring generates a precise, comprehensive record of a person's public movements that reflects a wealth of detail about her familial, political, professional, religious, and sexual associations The Government can store such records and efficiently mine them for information years into the future. And because GPS monitoring is cheap in comparison to conventional surveillance techniques and,

Search and seizure cases under the Fourth Amendment¹⁰⁵ provide a starting point for understanding privacy in the context of surveillance and data gathering by drones. The Court's Fourth Amendment jurisprudence suggests that citizens have little protection from government aerial surveillance. *Kyllo*, decided in 2001 when thermal imaging technology was not in general public use, may be of little help today in the context of drones which are widely available throughout the world.¹⁰⁶ Moreover, *Jones* did not address the non-physical nature of the intrusion. Because modern technologies such as GPS-enabled smartphones and drones can conduct surveillance without any physical intrusion onto one's property, such technologies add a new dimension to Fourth Amendment privacy considerations.¹⁰⁷

Most recently, the Court has recognized a violation of the Fourth Amendment when the government uses drug-sniffing forensic dogs within the curtilage of one's home.¹⁰⁸ The Supreme Court found no distinction between narcotic detection dogs and other forms of sense-enhancing technologies, such as GPS and thermal imaging devices, when searching for evidence of criminal activity.¹⁰⁹ Using a police-trained drug detection dog to roam around the perimeter of one's

by design, proceeds surreptitiously, it evades the ordinary checks that constrain abusive law enforcement practices" *Jones*, 565 U.S. at 415-16 (Sotomayor, J., concurring) (citations omitted).

105. U.S. CONST. amend. IV (guaranteeing "the right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures."). See also Hillary B. Farber, *Eyes in the Sky: Constitutional and Regulatory Approaches to Domestic Drone Deployment*, 64 SYRACUSE L. REV. 1, 34-42 (2014).

106. The sale of small drones in the U.S. is projected to triple to seven million units in four years. See ESSEX, *supra* note 1.

107. See, e.g., Bill McNeil, *The Top Five Things You Need to Know About Drones and GIS*, DIRECTIONS MAG. (Aug. 25, 2014), <http://www.directionsmag.com/entry/top-five-things-you-need-to-know-about-drones-and-gis/414810> [<https://perma.cc/C3SB-3NGP>].

108. *Florida v. Jardines*, 133 S.Ct. 1409 (2013); see also, *United States v. Whitaker*, 820 F.3d 849 (7th Cir. 2016); *United States v. Burston*, 806 F.3d 1123 (8th Cir. 2015).

109. See *Jardines*, 133 S.Ct. at 1417 ("[We] find irrelevant the State's argument (echoed by the dissent) that forensic dogs have been commonly used by police for centuries. This argument is apparently directed to our holding in *Kyllo v. United States* . . . that surveillance of the home is a search where 'the Government uses a device that is not in general public use' to 'explore details of the home that would previously have been unknowable without physical intrusion.' But the implication of that statement (*inclusio unius est exclusio alterius*) is that when the government uses a physical intrusion to explore details of the home (including its curtilage), the antiquity of the tools that they bring along is irrelevant.") (citations omitted).

home to discover incriminating evidence is a violation of one's reasonable expectation of privacy.¹¹⁰

Beyond privacy expectations in the area immediately surrounding single-family detached dwellings, the courts have addressed surveillance in common areas leading to individual dwelling units in multi-family buildings. In *United States v. Whitaker*, the Seventh Circuit considered whether the warrantless use of a drug-sniffing dog to search a common hallway outside of the defendant's apartment unit violated the defendant's reasonable expectation of privacy.¹¹¹ Although hallways and common areas of buildings are not usually considered to be curtilage,¹¹² and the police entered the building with the consent of the property manager, the Seventh Circuit held that the use of a warrantless dog sniff just outside of the defendant's apartment door constituted an unreasonable search in violation of the Fourth Amendment.¹¹³

State courts have also begun to address this issue of privacy in common areas of multi-family buildings. In *State v. Rendon*, a Texas court held that the use of a drug-sniffing dog in the hallway in an apartment complex just outside of the defendant's door violated the defendant's reasonable expectation of privacy.¹¹⁴ The physical characteristics of apartment buildings and condominium buildings are indistinguishable with respect to the relationship of common areas and individual dwelling units. Indeed, a Connecticut court held in *State v. Kono* that the use of a drug-sniffing dog outside the door of

110. *Id.*

111. *Whitaker*, 820 F.3d 849.

112. *See generally* *United States v. Barrios-Moriera*, 872 F.2d 12 (2d Cir. 1989) ("Here the police entry was into a common hallway, an area where there is no legitimate expectation of privacy."); *United States v. Carriger*, 541 F.2d 545 (6th Cir. 1976) ("[T]here could be no reasonable expectation of privacy in the building stairwell."); *United States v. Cruz-Pagan*, 537 F.2d 554 (1st Cir. 1976) ("[A] person cannot have a reasonable expectation of privacy in such a well-travelled common area of an apartment house or condominium.").

113. *Whitaker*, 820 F.3d at 855. *See also* *Burston*, 806 F.3d at 1128 ("[W]e hold the dog sniff was an illegal search in violation of Burston's Fourth Amendment rights under *Jardines*."); *United States v. Thomas*, 757 F.2d 1359 (2d Cir. 1985) ("Because of defendant[s] heightened expectation of privacy inside his dwelling, the canine sniff at his door constituted a search."); *State v. Rendon*, 477 S.W.3d 805 (Tex. 2015) ("[W]e . . . narrowly hold that the curtilage extended to appellee's front-door threshold located in a semi-private upstairs landing and that the officers' conduct in bringing a trained narcotics-detection dog into that constitutionally protected area constituted an unlicensed physical intrusion in violation of the Fourth Amendment.").

114. *Rendon*, 477 S.W.3d at 811.

defendant's condominium unit constituted an illegal search despite the dog being in the common hallway of the condominium.¹¹⁵

These cases illustrate the difficulties facing courts in protecting residents' privacy expectations in the context of enhanced sensing devices, including trained drug-sniffing dogs, even when direct physical intrusion into the dwelling does not occur. The drones' highly sophisticated sensing devices coupled with their ability to fly and hover virtually unnoticed, will inevitably surpass society's comfort level as expectations of privacy intersect with technological intrusions that require no physical penetration. Whether it involves technology storing our most personal information or turning outward to capture, record, and store data of people and places, the approach that has shaped our Fourth Amendment jurisprudence over the past fifty years is quickly becoming outdated.

Those who are watching drones fly over their yards, around their homes, and peer in windows and skylights are asking what legal recourse they have to curtail drone use by private actors.¹¹⁶ An effective legal framework is needed to provide certainty and predictability for the rapidly emerging tensions caused by drones: whether reasonable limitations should be imposed on day, time, and distance of operations, whether images of persons on the ground should be allowed without consent, and whether a property owner may destroy a drone that intrudes on her property.¹¹⁷

Traditional common law torts designed to protect privacy such as trespass, nuisance, and intrusion upon seclusion are limited in significant ways when applied to drone technology.¹¹⁸ This is due, in large part, to a drone's ability to operate at high elevations that would presumably be beyond the vertical property rights of the property owner. Drones also all but eviscerate the physical trespass issue due to their capabilities and on board instruments. Technologies such as Wi-Fi sniffers, license plate readers, night vision cameras, facial recognition technology and other biometric devices, and high-

115. *State v. Kono*, No. CR12026461, 2014 WL 7462049 (Conn. Super. Ct. Nov. 18, 2014), *aff'd*, 152 A.3d 1 (Conn. 2016).

116. See Farber, *Keep Out!*, *supra* note 69 (discussing the limitations of the common law torts of trespass, nuisance, and intrusion upon seclusion when applied to unmanned aerial surveillance).

117. See Alison Dolan & Richard Thompson II, CONG. RES. SERV., *Integration of Drones Into Domestic Airspace: Selected Legal Issues* 29 (2013); Froomkin & Colangelo, *Self Defense Against Robots and Drones*, 48 CONN. L. REV. 1 (2015); *Regulating Drones*, *supra* note 95; Rule, *supra* note 18. See also *supra* text accompanying notes 9-13.

118. See Farber, *Keep Out!*, *supra* note 69, at 379-405.

powered telephoto lenses remove the necessity of physical trespass to collect images, data, and information. Indeed, a cause of action that is dependent on proximity to real property is of little or no utility in the drone context.¹¹⁹

Because drones are an efficient and effective means of surveillance, and for many just a fun recreational gadget, the potential for intrusion into places where many people believe they have a reasonable expectation of privacy is likely to grow as drones proliferate.¹²⁰ In the short term, residents should look to state and local government for new regulations that would provide more immediate constraints on these aerial observers than the courts. And the sixty-eight million people living in community associations may be able to turn to their associations for even quicker and more effective responses than local law enforcement to unwanted drone activity. The scope of state and local approaches to the problem, including community associations, available under the FAA Rules to safeguard privacy, is discussed below.

III. STATE AND LOCAL LAWS TO PROTECT PRIVACY WILL NOT BE PREEMPTED BY THE FAA RULES

The Rules do not preempt state and local government regulations to safeguard privacy rights so long as such regulations do not conflict with the Rules. The FAA seeks to balance safety against promoting technological innovation, leaving safeguards for privacy, land use, zoning, trespass, and law enforcement operations to state and local government: “The FAA will address preemption issues on a case-by-case basis rather than doing so in a rule of general applicability.”¹²¹

Prior to release of the FAA Rules, Congress debated, but declined to adopt, a reauthorization amendment for FAA described as

119. *Id.* at n.240 (“A property owner may have an actionable claim against a drone operator in instances where a drone flies within fifty feet of a house, but the same drone flying autonomously at a higher altitude can see through windows and skylights and listen in on wi-fi signals”); *Regulating Drones*, *supra* note 95, at 89.

120. Researchers at the University of Las Vegas, Nevada Center for Crime and Justice Policy conducted an on-line survey of 534 adults in the United States and their perceptions and attitudes toward unmanned aerial vehicles. The results showed that eighty-eight percent of U.S. adults viewed drone use as an invasion of personal privacy, which far surpassed the concerns expressed about public and personal safety. MARI SAKIYAMA ET AL., NEVADA VS. U.S. RESIDENTS’ ATTITUDES TOWARD SURVEILLANCE USING AERIAL DRONES 3 (2014), https://www.unlv.edu/sites/default/files/page_files/27/NevadaU.S.Residents’Attitudes.pdf [https://perma.cc/2YR4-L5JC].

121. Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42,064.

“contentious legislation aimed at preventing states and cities from adopting drone laws amid an ongoing battle pitting the federal government and drone industry against local lawmakers.”¹²² When this legislation was headed to the Senate for debate after approval by the Senate Committee on Commerce, Science, and Transportation, one commentator observed:

Federal drone-manufacturing standards could let companies mass produce drones eligible for sale in all the states. However, many other aspects of civilian drone regulation involve questions that only states and local governments are equipped to address Centralized federal agencies are incapable of tailoring drone-use restrictions to fit the unique characteristics and preferences of every local jurisdiction.¹²³

While the drone industry expressed concern for potential confusion that could result from a patchwork of state laws, some senators noted the diversity of issues involving drone operations and advocated that the states’ ability to address such issues should be preserved.¹²⁴

Stakeholders and observers have expressed differing views of the FAA’s decision in the Rules against federal preemption of privacy issues. Supporting the FAA’s deference to state and local government, the National League of Cities (“NLC”) stated, “Privacy issues are one of the biggest concerns that the public has about drones.”¹²⁵ “In short, people are increasingly aware of the technological potential for mass, persistent, and pervasive surveillance”¹²⁶ However, other stakeholders argue for broad federal preemption to protect privacy. The Electronic Privacy Information Center (“EPIC”), a privacy advocacy organization in Washington, D.C., contends that privacy issues are within the spectrum of safety and should have been included in the Rules. On August 22, 2016, EPIC sued the FAA for a judicial determination

122. Bart Jansen, *Senate Debates Contentious Provision Against State Drone Laws*, USA TODAY (Apr. 13, 2016), <https://www.usatoday.com/story/news/2016/04/13/senate-drops-provision-against-state-drone-laws/82990972/> [<https://perma.cc/9DPE-84KS>].

123. Rule, *supra* note 1.

124. Citing complaints dealing with privacy and safety, such as drones grounding planes that fight wildfires in California, Sen. Diane Feinstein (D-Cal.) stated, “[r]eckless drone use varies significantly in different states and even within a state, which is why we need to maintain the ability for states to set their own standards of drone operation.” Jansen, *supra* note 122.

125. NLC REP., *supra* note 1, at 14.

126. *Regulating Drones*, *supra* note 95, at 131.

that FAA is required to include adequate safeguards for privacy in the Rules.¹²⁷

“It’s not surprising the FAA really didn’t want to grapple with privacy issues” concludes one commentator, “[b]ut [what is] startling about the new rules is that they do, in fact, address privacy, albeit obliquely, and in a way that keeps the door open to some welcome decisions about who owns the sky when that sky is low to the ground.”¹²⁸ The need for an effective regulatory framework to guard individuals against the prospect of pervasive surveillance due to accelerating drone operations cannot be denied. As one commentator stated, the “Orwellian image of an all-seeing eye in the sky is approaching technological feasibility.”¹²⁹

The FAA acknowledges that privacy concerns have been raised, but maintains that such concerns were beyond the scope of the Rules.¹³⁰ The FAA defers to the multi-stakeholder process led by the National Telecommunications and Information Administration (“NTIA”) to develop best practices.¹³¹ In summary, NTIA recommends “operators provide notice to individuals before taking their picture or operating a drone near them, to not harass people with a drone, and to not fly over people’s property without permission.”¹³² The NTIA report contains best practices and does not constitute enforceable regulations. To protect privacy rights, some observers prefer congressional action based on greater

127. Brief for Petitioner at 6, *Elec. Privacy Info. Ctr. v. Fed. Aviation Admin.*, Nos. 16-1297, 16-1302, 2017 WL 840362 (D.C. Cir. Mar. 2, 2017) (“As the FAA has refused to issue any privacy-related rules and refused to conduct a comprehensive rulemaking, contrary to the FAA Modernization Act and to EPIC’s Rulemaking Petition, the Court must now order the agency to do so.”).

128. David Schneider, *Maybe Drone Privacy Shouldn’t Be a Federal Case*, IEEE SPECTRUM (Aug. 30, 2016), <http://spectrum.ieee.org/automaton/robotics/drones/maybe-drone-privacy-shouldnt-be-a-federal-case> [<https://perma.cc/GS7C-9GZY>].

129. *Regulating Drones*, *supra* note 95, at 58 (citing Craig Timberg, *New Surveillance Technology Can Track Everyone in an Area for Several Hours at a Time*, WASH. POST (Feb. 5, 2014), https://www.washingtonpost.com/business/technology/new-surveillance-technology-can-track-everyone-in-an-area-for-several-hours-at-a-time/2014/02/05/82f1556e-876f-11e3-a5bd-844629433ba3_story.html [<https://perma.cc/L7UF-PCR7>]).

130. Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42,190.

131. *Multi-Stakeholder Process: Unmanned Aircraft Systems*, NAT’L TELECOMM. & INFO. ADMIN., U.S. DEP’T OF COM. (June 21, 2016), <https://www.ntia.doc.gov/other-publication/2016/multistakeholder-process-unmanned-aircraft-systems> [<https://perma.cc/45CB-SZVF>].

132. NLC REP., *supra* note 1, at 14-15.

efficiency¹³³ while others look to state and local government based on greater effectiveness.¹³⁴

Since the FAA Rules focus on safety and efficiency for commercial drones in the low-level airspace, many important regulatory matters are left to state and local government so long as they do not conflict with the Rules. The following sections describe the boundary between matters preempted by the FAA and those left to state and local government.

A. Matters Preempted by FAA

The FAA defines its statutory authority as follows: “(1) [t]o ensure the safety of aircraft and the efficient use of airspace; and (2) to govern the flight of aircraft for the purposes of navigating, protecting and identifying aircraft, and protecting individuals and property on the ground,” as the FAA “finds necessary for safety in air commerce and national security.”¹³⁵

According to the FAA, “[s]tate and local restrictions affecting UAS operations should be consistent with the extensive federal statutory and regulatory framework pertaining to control of the airspace, flight management and efficiency, air traffic control, aviation safety, navigational facilities, and the regulation of aircraft noise at its source.”¹³⁶ Federal registration is required to “help protect public safety in the air and on the ground,” and “is the exclusive means for registering UAS . . . and no state or local government may impose an additional registration requirement . . . without first obtaining FAA approval.”¹³⁷

Focused on safety, the FAA seeks a uniform regulatory framework, warning against the potential for state and local regulations that would conflict with federal regulations and could adversely affect the safety of flight and persons and property on the ground. “Substantial air safety issues are raised when state or local governments attempt to regulate operation or flight of aircraft,” and “a patchwork quilt of differing restrictions could severely limit the

133. *Regulating Drones*, *supra* note 95, at 136, 142.

134. *See, e.g.*, NLC REP., *supra* note 1, at 8.

135. Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42,068 (citing FMRA section 333 and 49 U.S.C. §§ 40103(b)(1-2), 44701(a)(5)). The FAA describes the scope of its authority as “to regulate the areas of airspace use, management and efficiency, air traffic control, safety, navigational facilities, and aircraft noise at its source.” FAA FACT SHEET, *supra* note 23, at 1.

136. FAA FACT SHEET, *supra* note 23, at 1.

137. *Id.* at 2.

flexibility of FAA in controlling the airspace and flight patterns, and ensuring safety and an efficient air traffic flow.”¹³⁸

Certain matters are subject to consultation with the FAA. State and local governments should consult with the FAA when considering laws dealing with “restrictions on flight altitude, flight paths; operational bans; any regulation of the navigable airspace;” for example, “a city ordinance banning anyone from operating UAS within the city limits, within the airspace of the city, or within certain distances of landmarks.”¹³⁹

While uniform national equipment standards for drones are important to manufacturers engaged in interstate commerce and marketing, the FAA is wary of state and local government adding technology requirements that would protect privacy interests. The FAA Fact Sheet observes, “[m]andating equipment or training for UAS related to aviation safety such as geo-fencing would likely be preempted.”¹⁴⁰ A “geo-fence” is a virtual barrier which is able to prevent drones from either entering or exiting a geographic area defined by the property owner or aircraft operator using GPS or other technology.¹⁴¹ “Courts have found that state regulation of mandatory training and equipment requirements related to aviation safety is not consistent with federal regulatory framework.”¹⁴²

B. Matters Not Preempted by FAA

In its commentary to the Rules, the FAA concedes that, “certain legal aspects concerning small UAS may be best addressed at the State or local level.”¹⁴³ “Adjudicating private property rights is beyond the scope of this rule,” including such matters as trespass, and the “FAA will address preemption issues on a case-by-case basis rather than doing so in a rule of general applicability.”¹⁴⁴

138. *Id.* at 2-3 (citing *Montalvo v. Spirit Airlines*, 508 F.3d 464 (9th Cir. 2007)); *Arizona v. United States*, 567 U.S. 387 (2012); *French v. Pan Am Express, Inc.*, 869 F.2d 1 (1st Cir. 1989).

139. FAA FACT SHEET, *supra* note 23, at 3.

140. Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42,135.

141. *Id.*

142. FAA FACT SHEET, *supra* note 23, at 3 (citing *Med-Trans Corp. v. Benton*, 581 F. Supp. 2d 721, 740 (E.D.N.C. 2008)); *Air Evac EMS, Inc. v. Robinson*, 486 F. Supp. 2d 713, 722 (M.D. Tenn. 2007).

143. Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42,194.

144. “[T]he provisions of this Rule are not the only set of laws that may apply With regard to property rights, trespassing on property (as opposed to flying in the

An individual's right to privacy is an important field that FAA identifies as not preempted by the Rules. By adopting this approach, the FAA not only recognizes that privacy issues historically have been the domain of state and local government, but also invites state and local governments to exercise their ability to enact laws and ordinances that are tailored to their particular communities, with effective enforcement, and provide recourse for persons whose privacy may be affected through another's use of a UAS.¹⁴⁵

IV. STATE AND LOCAL GOVERNMENTAL REGULATORY ACTIVITIES

The Congressional decision against federal preemption¹⁴⁶ and the parallel approach taken in the FAA Rules set the foundation for the potential regulatory roles of state and local governments, suggesting that "a well-structured federal, state, and local drone regulatory system is legally defensible and could be far more efficient and effective than a purely federal regime."¹⁴⁷ The absence of federal preemption of privacy invites a discussion of the type of regulatory approaches that are available to state and local government, and the appropriate level of government to best safeguard privacy expectations.

While several measures have been introduced in Congress over recent years involving the issues of federal preemption and protecting privacy from drone operations,¹⁴⁸ numerous state laws and local governmental ordinances were adopted prior to the FAA Rules and more are expected going forward. In 2015, according to the National Council of State Legislatures, forty-five states considered laws to restrict drone operations.¹⁴⁹ At present, thirty-one states have new

airspace above a piece of property) without the owner's permission may be addressed by State and local trespassing law." *Id.* at 42,119.

145. *Id.*

146. *See, e.g., supra* notes 121-34 and accompanying text.

147. Troy A. Rule, *Drone Zoning*, 95 N.C. L. REV. 133, 146 (2016) [hereinafter *Drone Zoning*].

148. *See, e.g.,* Drone Aircraft Privacy and Transparency Act of 2015, H.R. 1229, 114th Cong. (2015); Preserving Freedom from Unwarranted Surveillance Act of 2013, S. 1016, 113th Cong. (2013); Drone Aircraft Privacy and Transparency Act of 2013, H.R. 1262, 113th Cong. (2013).

149. ESSEX, *supra* note 1, at 13 ("[S]everal states have acted to address various concerns related to civilian small drone operation within their borders. In 2013, 43 states considered bills and resolutions, 13 states enacted 16 bills and 11 states adopted resolutions. In 2014, 35 states considered legislation, 10 states enacted 11 bills and three adopted resolutions. In 2015, 45 states considered 153 bills and resolutions, 17 states enacted 23 bills and four adopted resolutions.").

laws regulating drones, with titles and preambles reflecting concerns over privacy; sixteen of these states restrict private operators.¹⁵⁰ California banned drones and other devices from making audio, photo, or video images, of another person engaging in a personal or familial activity where such person had a “reasonable expectation of privacy,” including activities on residential property.¹⁵¹ Paparazzi in California were prohibited from operating drones over celebrities’ homes to take photographs or videotape.¹⁵²

Municipalities have been slow to act. Some cities have banned drones from flying in certain areas.¹⁵³ Palm Beach was forced to revise its ordinance banning drone flights within city limits because it

150. *See, e.g.*, H.B. 255, 28th Leg. (Alaska 2014); FLA. STAT. § 934.50 (2015); S.B. 1134, 62d Leg., 1st Reg. Sess. (Idaho 2013); H.B. 1009, 118th Gen. Assemb. (Ind. 2014); H.B. 2289, 85th Gen. Assemb. (Iowa 2014); H.B. 1029, 2014 Reg. Sess. (La. 2014); S.B. 744, 2013 Gen. Assemb. (N.C. 2014); H.B. 2710, 77th Leg. Assemb. (Or. 2013); H.B. 912, 83d Leg. (Tex. 2013); S.B. 167, 2014 Gen. Sess. (Utah 2014); S.B. 1331, S.B. 1331, 2013 Gen. Assemb., Reg. Sess. (Va. 2013); S.B. 196, 2013–2014 Reg. Sess. (Wis. 2014).

151. CAL. CIV. CODE § 1708.8(b); *see also* Daniel Siegal, *Calif. Gov Signs Privacy Bill To Block Drone Snooping*, LAW360 (Oct. 1, 2014), <https://www.law360.com/articles/583288/calif-gov-signs-privacy-bill-to-block-drone-snooping> [<https://perma.cc/HNZ5-7M6Z>].

152. AirTalk, *Analyzing Governor Brown’s Choice To Sign One Drone Bill, Not Others*, KPCC (Oct. 7, 2015), <http://www.scpr.org/programs/airtalk/2015/10/07/44743/analyzing-governor-browns-choice-to-sign-one-drone/> [<https://perma.cc/3CZS-CDL8>].

153. *See* Sara Jerde, *2 N.J. Schools Ban Drones From Their Grounds*, NJ.COM (Aug. 29, 2016), http://www.nj.com/bergen/index.ssf/2016/08/2_north_jersey_schools_ban_drones_from_their_grounds.html [<https://perma.cc/2BN9-W9LK>] (Two New Jersey schools banned drones flying on school property without approval by the school district.); Kevin Kelly, *Menlo Park Bans Drones At All City Parks*, MERCURY NEWS (Aug. 26, 2016), <http://www.mercurynews.com/2016/08/26/menlo-park-bans-drones-at-all-city-parks-2/> [<https://perma.cc/59X6-RESU>] (The Menlo Park neighborhood of San Jose, known as “the nation’s hottest market for commercial drones”, adopted an ordinance banning drones in all city parks to protect migratory birds.); Parker Leavitt, *Scottsdale Bans Flying Drones In Mcdowell Sonoran Preserve*, ARIZ. REPUBLIC (Sept. 22, 2016), <http://www.azcentral.com/story/news/local/scottsdale/2016/09/22/scottsdale-bans-flying-drones-mcdowell-sonoran-preserve/90430458/> [<https://perma.cc/3XQ4-JPJP>] (The Scottsdale City Council bans drones in parks and preserves.); Sandy Mazza, *Hawthorne Lays Down New Restrictions On Drone Use*, DAILY BREEZE (Nov. 10, 2016), <http://www.dailybreeze.com/government-and-politics/20161110/hawthorne-lays-down-new-restrictions-on-drone-use> [<https://perma.cc/K9CN-7Q87>] (Hawthorne California, restricts drone flights in the area.); Michael Olohan, *Franklin Lakes Puts Limits On Private Drone Use*, NORTHJERSEY.COM (Aug. 25, 2016), <http://archive.northjersey.com/news/public-safety/drones-have-their-limits-1.1649899> [<https://perma.cc/7CPX-W37V>] (The Franklin Lakes Borough Council in New Jersey restricts flights during daylight hours over private property without the owner’s permission.).

conflicted with the FAA Rules.¹⁵⁴ Under an ordinance adopted by the City of Los Angeles, criminal charges were filed in January 2016 against two civilian pilots for allegedly flying their drones within three miles of several hospital heliports and a police helicopter base, “controlled airspace” under the ordinance.¹⁵⁵

Drones raise safety, privacy, nuisance and trespassing concerns, all of which are compounded by the lack of accountability associated with most drone operations today.¹⁵⁶ The NLC claims municipalities are best positioned to regulate drones and protect community interests: “While careful to stake its federal authority, the FAA expects complimentary and ever-evolving local laws and ordinances to be put in place.”¹⁵⁷

As a practical matter, a multi-level government framework may be the most effective approach. One commentator, prior to the FAA’s publication of the Rules, observed that the cases cited in the December 2015 FAA Fact Sheet involved aircraft near airports or at higher altitudes, circumstances primarily applicable to traditional aircraft, and argued:

The FAA’s line of reasoning becomes far more questionable when applied to regulations of small civilian drones traveling very short distances and staying low to the ground and far from ordinary air traffic. Local drone restrictions . . . would not materially impact the FAA’s ability to continue controlling conventional air traffic flight patterns or maintaining safety near airports or aboard traditional aircraft and should thus arguably fall outside of the agency’s exclusive regulatory field.¹⁵⁸

At least one commentator was relieved to see the FAA Rules not preempt other levels of government in protecting privacy. “[T]he air at very low altitudes, lower than manned aircraft would reasonably fly, is not public airspace and . . . the right to decide what goes on there is better left to property owners and local communities. One of

154. Aleese Kopf, *Palm Beach Drone Ordinance Violates FAA Authority, Needs Revision*, PALM BEACH DAILY NEWS (Sept. 11, 2016), <http://www.palmbeachdailynews.com/business/palm-beach-drone-ordinance-violates-faa-authority-needs-revision/upPdyN9cJppmk0Z1h3Vg9I/> [<https://perma.cc/JU6Z-HHBY>].

155. Martyn Williams, *Criminal Charges Filed Against Two LA Drone Pilots*, PC WORLD (Jan. 21, 2016), <http://www.pcworld.com/article/3024956/legal/criminal-charges-filed-against-two-la-drone-pilots.html> [<https://perma.cc/3GV3-KNGX>].

156. See NLC REP., *supra* note 1, at 1.

157. *Id.* at 24.

158. *Drone Zoning*, *supra* note 147, at 13.

the reasons for doing so is that it would allow landowners and communities to protect their privacy as they see fit.”¹⁵⁹

However, despite such strong arguments supporting the autonomy of local communities to determine appropriate privacy safeguards for homeowners, some states have enacted laws in which the state preempts local governmental action in the field of drone operations. First among such states was Oregon¹⁶⁰ which passed legislation in 2013 specifying that only the state legislature can regulate drone operations and that local governments are precluded from taking action.¹⁶¹ Maryland,¹⁶² Virginia,¹⁶³ and Arizona¹⁶⁴ have passed similar laws prohibiting local action.

State preemption of local communities to determine appropriate regulations to safeguard homeowners’ privacy fails to recognize vast differences within states, most noticeably between rural and urban areas. The premise of state preemption, that “one size fits all,” disregards the advantageous role of the local governments closest to and most familiar with homeowners’ needs. Local governments, including community associations, are in the best position to craft regulations that are appropriately tailored to protect homeowners’ privacy expectations at the neighborhood level.

Further, state preemption undermines enforcement by local authorities. As the NLC argues, “[s]tate action to strip cities of the right to regulate these devices leaves a significant enforcement gap cities should be prepared to assert their authority if state lawmakers move to preempt it, and should advocate that lawmakers allow cities to reclaim their rights to protect their communities.”¹⁶⁵

The NLC notes that although the FAA Rules do not preempt municipalities in the fields of privacy, land use, zoning, trespass, and law enforcement operations, the FAA still expects municipalities to consult them when they consider ordinances regulating flight altitude, flight paths, operational bans, or any regulation of the navigable airspace.¹⁶⁶ “To protect communities, promote innovation, and avoid

159. Schneider, *supra* note 128.

160. Or. H.B. 2710 (Or. 2013).

161. News Release, Or. Legislature (Apr. 15, 2013).

162. S.B. 370 (Md. 2015).

163. Va. H.B. 412 (Va. 2016).

164. Ariz. S.B. 1449 (2016).

165. NLC REP., *supra* note 1, at 18.

166. Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42,194.

preemption,” according to the NLC, cities should focus on two issues in drone-related ordinances:

- (1) Use land use and zoning powers to designate when and where drones may take off, land, and operate, as well as operational limitations or criteria. To promote transparency, these zones can be communicated electronically and/or otherwise published on the city website so residents can easily comply with city law.
- (2) Create an ordinance that punishes operators for operating an unmanned aircraft in a manner that recklessly endangers persons or property while considering appropriate enforcement infrastructure.¹⁶⁷

The NLC recommends a two-tiered regulatory structure to protect privacy interests: (a) technology-neutral laws that prohibit particular acts such as invasion of privacy rather than prohibit the particular method or device (e.g., drones, binoculars), imposing similar penalties on the act regardless of the device (consultation with FAA not required), and (b) technology-specific laws that specifically curtail or prohibit the use of drones in certain sites or for certain purposes (consultation with FAA recommended).¹⁶⁸

Noting the FAA general counsel’s recognition that “cities have the authority to make reasonable time, manner and place restrictions on the operation” of drones, NLC states, “a regulation governing where an aircraft can takeoff and/or land will be constitutionally valid unless it is found to be ‘clearly arbitrary and unreasonable, having no substantial relationship to the public health, safety, moral or general welfare.’”¹⁶⁹

It is well recognized that local governments have broad authority to enact regulations “with the stated purpose of protecting public safety, public health, aesthetics, and the general welfare.”¹⁷⁰ “This includes regulations that prohibit an aircraft from taking off or landing in certain areas, and regulations that prohibit certain in-flight activities that are directed at the local population.”¹⁷¹ It follows that a state or municipality has the “lesser-included power to condition what steps be taken to perform such takeoffs and landings, to include requiring notice be filed with the city prior to takeoff and landing.”¹⁷²

167. NLC REP., *supra* note 1, at 8.

168. *Id.* at 24.

169. *Id.* at 9 (citing *Vill. of Euclid v. Ambler Realty Co.*, 272 U.S. 365, 385 (1926)).

170. NLC REP., *supra* note 1, at 9 (citations omitted).

171. *Id.* (citations omitted).

172. *Id.* (citations omitted).

However, if public government fails to act, residents may look to local leaders closer to home, such as their own community associations, to safeguard their privacy interests, as discussed below.

V. COMMUNITY ASSOCIATIONS IN THE GOVERNMENTAL ROLE

Community associations are the governing entity for condominiums, planned communities, and cooperatives. Commonly referred to as “common-interest communities” (“CICs”), they resemble local government for their broad authority to protect the best interests of their residents, maintenance of infrastructure, architectural control akin to zoning, and other similarities. Nationally recognized practitioner and researcher Wayne S. Hyatt describes CICs as private real estate developments created under state law by a set of recorded documents typically known as a “declaration” for condominiums and “covenants, conditions and restrictions” (“CC&Rs”) for planned communities, governed and operated by an owners’ association commonly known as “community associations.”¹⁷³

The governing documents set forth the powers and duties of the parties and their relationships: developer, homeowners, and the association. While associations vary in name and legal structure, they share three common characteristics. First, all owners are automatically members of the association bound by the governing documents by virtue of ownership of a lot or unit within the CIC. Second, the association provides maintenance of infrastructure and common improvements, insurance, and other services for property other than the individual lots or units. Finally, the owners have a mandatory obligation to pay assessments.¹⁷⁴

As a form of homeownership, CICs governed by their community associations have grown rapidly in popularity during recent decades as monitored by the Community Associations Institute (“CAI”). The CAI is a national nonprofit organization created in 1973 by the Urban Land Institute and the National Association of Home Builders and provides information and resources for volunteer leaders, managers, and others involved in operating associations.¹⁷⁵

173. See WAYNE S. HYATT, *CONDOMINIUM AND HOMEOWNER ASSOCIATION PRACTICE: COMMUNITY ASSOCIATION LAW* 19 (3d ed. 2000).

174. *Id.* at 7-8.

175. *About Community Associations Institute*, CMTY. ASS’N INST., <https://www.caionline.org/AboutCAI/Pages/default.aspx> [https://perma.cc/DA5S-V9V7]. See generally CMTY. ASS’N INST., <http://www.caionline.org> [https://perma.cc/ZVH9-B5KL].

CAI estimates that in 1970, there were 10,000 community associations in the United States with 700,000 units and 2.1 million residents; as of 2015, the numbers had soared to approximately 338,000 associations, 26.2 million units, and sixty-eight million residents.¹⁷⁶ The number of community associations in the U.S. in 2016, according to CAI, is between 342,000 and 344,000.¹⁷⁷ Of these, homeowner associations (planned communities) account for approximately fifty-one to fifty-five percent, condominiums for forty-two to forty-five percent, and cooperatives for three to four percent.¹⁷⁸

Planned communities are larger than some cities and towns and are responsible for many of the same functions, such as roadways, storm water management, and recreational facilities. The Foundation for Community Association Research estimates there are as many as nine thousand “large-scale” associations—one thousand lots or units and one thousand acres, and a minimum annual operating budget of two million dollars.¹⁷⁹

One advantage of CICs is the ability to limit access to the community’s private streets, walkways, and entrance ways. A 1999 survey in California indicated:

California and Florida are the leading gated community states, with Texas a distant third. Long Island, New York has noted a drastic increase in gated projects; Chicago and Atlanta report similar trends. It is clear that an increasing number of people are choosing to live in gated communities and many, if not most of those, are also affiliated with community associations.¹⁸⁰

By limiting access, gated communities primarily foster a sense of security for the individual residents, but they also promote a sense of privacy.¹⁸¹

For high-rise residential buildings in densely populated urban areas, the functional equivalent of the gated community is the access-

176. CMTY. ASS’N INST., *supra* note 17, at 1-2. The top seven states account for fifty percent of the total number of community associations and forty-one percent of the residents living in CICs: Florida, California, Texas, Illinois, North Carolina, New York, and Massachusetts.

177. *Id.*

178. *Id.*

179. FOUND. FOR CMTY. ASS’N RES., LARGE SCALE ASSOCIATION SURVEY RESULTS (June 2016), http://www.cairf.org/research/factbook/large_scale_survey.pdf [<https://perma.cc/33LU-J839>] [hereinafter FCAR LARGE-SCALE ASS’NS].

180. Janet L.S. Powers, *Barbarians at the Gate . . . Again: A Legal Overview of the Gated Community Association*, 2 J. OF CMTY. ASS’N L. 17 (1999).

181. *Id.* at 18.

controlled entry door and front-desk attendant common in vertical condominiums and cooperatives. The ability to ban door-to-door solicitors is a further advantage of all forms of access-controlled communities. Residents' expectation of privacy in such access-controlled communities should extend to protection against intrusions from above in the form of drones.

A. Community Associations Resemble Local Government

Vested with broad authority to govern in the best interests of its homeowner members, the community association exists at the neighborhood level and, for homeowners, constitutes the closest and most intimate level of local government in the multi-level structure of American governance.

“[T]he community association is an entity created and operated under state law with powers and responsibilities to operate, preserve, regulate and maintain the property . . . [with] the capacity to provide governmental and social services for its members and to create a sense of community within the development.”¹⁸² “Community associations are housing management organizations that deliver three core services to their residents . . . governance, community, and business services.”¹⁸³ Over the past several decades, local governments have shifted many responsibilities for services and related governance authority to community associations to pursue a land development model that benefits the municipality by increasing its property tax base while minimizing services to homeowners in these communities. For example, “in its governing role, the community association preserves and enforces the land use plan through architectural, environmental, design, land use, occupancy, and other restrictions.”¹⁸⁴ Many local governments require community associations to furnish and pay for maintenance and repair of infrastructure, streets, snow and ice removal, storm water management, trash collection, public lighting, green space, and other services historically furnished and paid by the local city or county government.¹⁸⁵

182. HYATT, *supra* note 173, at 30.

183. FOUND. FOR CMTY. ASS'N RES., *THE COMMUNITY ASSOCIATION FACT BOOK* 2015, 9 (2016) [hereinafter *FCAR FACT BOOK* 2015].

184. HYATT, *supra* note 173, at 30.

185. *See, e.g.*, Mark Weiss & John Watts, *Community Builders and Community Associations: The Role of Real Estate Developers in Private Residential Governments*, in *RESIDENTIAL COMMUNITY ASSOCIATIONS: PRIVATE GOVERNMENTS IN THE INTERGOVERNMENTAL SYSTEM?* 100, 102 (1989).

Local jurisdictions often require builders and developers to create community associations for new housing, thus requiring “associations to assume many responsibilities that traditionally belonged to local and state government.”¹⁸⁶ As Hyatt observes, “[l]ocal governments may find that common interest communities allow the government to shift responsibility for ‘public’ facilities to the private sector.”¹⁸⁷

Some large-scale communities such as Reston, Virginia, Columbia, Maryland, and The Woodlands, Texas, have more residents than many cities and operate as “mini-towns.”¹⁸⁸ “Large-scale associations . . . maintain [more] miles of streets and paths/trails as compared to local governments or other organizations.”¹⁸⁹

While not a perfect analogy, Hyatt finds, “There is sufficient basis . . . to argue that the community association is, at some level, a quasi-government, paralleling the powers, duties and responsibilities of a municipal government,” electing its leaders, maintaining infrastructure, offering limited immunity for acts within the scope of authority, exercising architectural controls analogous to building permits and zoning variances, and imposing and collecting assessments.¹⁹⁰ Community associations, acting as self-governing organizations with rulemaking and financial authority, provide residents with a viable alternative to local government for safeguarding privacy expectations.

B. Rulemaking and Financing of Community Associations

Similar to local public government, community associations are vested with the authority to adopt rules and regulations to carry out their governance responsibilities in the best interests of the community as a whole, and to provide financial stability to carry out essential functions.

1. Reasonable Rules

Courts have upheld the authority of association boards, under the reasonableness standard, to adopt rules “to promote the health, happiness and peace of mind of a majority of the unit owners.”¹⁹¹ Similar to local government, an association’s recorded governing

186. FCAR FACT BOOK 2015, *supra* note 183, at 23.

187. HYATT, *supra* note 173, at 8.

188. FCAR LARGE-SCALE ASS’NS, *supra* note 179, at 4-5.

189. *Id.* at 20.

190. Wayne S. Hyatt, *The Identity Crisis of Community Associations: In Search of the Appropriate Analogy*, 27 REAL PROP. & TR. J. 589, 635 (1993).

191. *Hidden Harbor Est. v. Norman*, 309 So. 2d 180, 182 (Fla. Dist. Ct. App. 1975).

documents and board rulemaking touch a broad range of interests to preserve the community and protect property values, such as architectural design, use of units and common areas, and vehicles and parking. The board has substantial discretion to determine reasonableness of rules in a given context.¹⁹² “Courts determine reasonableness by assessing both the substantive and the procedural aspects of rulemaking.”¹⁹³ The boundaries of the board’s rulemaking power are determined by the governing documents and applicable statutes.¹⁹⁴

The standard of judicial review is analogous to local government. “When the [association] directors undertake quasi-governmental rulemaking and punitive tasks, the propriety of those actions should be subject to review in much the same manner as for a governmental entity.”¹⁹⁵

2. *Financing the Association*

Another similarity is that community associations, like local government, require financial stability to ensure sufficient funds to maintain infrastructure and deliver essential services. Resembling local governmental reliance on property taxes, the primary source of revenue for associations is mandatory assessments paid by the homeowners. Each homeowner is obligated to pay assessments to the association, which relies on full and prompt payment to provide services for the community.¹⁹⁶

To provide an effective collection tool, the uniform property acts prepared by the Uniform Law Commissioners¹⁹⁷ include a lien priority for assessments that a homeowner fails to pay—typically limited to six months of delinquent assessments—as a “limited lien

192. Ryan v. Baptiste, 565 S.W.2d 196 (Mo. Ct. App. 1978).

193. HYATT, *supra* note 173, at 99.

194. Makeever v. Lyle, 609 P.2d 1084, 1088-89 (Ariz. 1980).

195. Karyn A. Kennedy, *The Community Association Chameleon: A Study of the Multiple Roles of the Board of Directors and the Applicable Standards of Judicial Review*, 4 J. OF CMTY. ASS’N L. 51 (2001).

196. JOINT EDITORIAL BD. FOR UNIF. REAL PROP. ACTS, THE SIX-MONTH “LIMITED PRIORITY LIEN” FOR ASSOCIATION FEES UNDER THE UNIFORM COMMON INTEREST OWNERSHIP ACT 1 (June 1, 2013) [hereinafter JEB REP.].

197. UNIFORM L. COMM’N, ACTS <http://www.uniformlaws.org/Acts.aspx> [<https://perma.cc/ZE4Y-PBDM>] (listing, among others, the Uniform Condominium Act, Uniform Planned Community Act, and Uniform Common Interest Ownership Act).

priority,” senior to the first mortgage loan.¹⁹⁸ The limited lien priority has been adopted in twenty-one states and the District of Columbia.¹⁹⁹ The courts have compared the association’s priority to the high status granted to local government property tax liens. The rationale behind granting senior lien priority for a limited amount of association assessments, similar to local government taxes, is based on the principle that collectability is vital to the association, because the revenue supports delivery of essential common services such as maintenance and repair of the infrastructure serving homeowners.²⁰⁰

Budget shortfalls due to an association’s inability to collect assessments fully and promptly would result either in (a) reduced maintenance and services, which would impact property values and compromise the collateral of all lenders in the community, or (b) increased assessments for the other owners who already are paying their fair share, also impacting the ability of borrowers to repay loans to lenders in the community.²⁰¹

Thus, community associations and municipalities share similar financial structures as a foundation of their autonomy, and rely on effective collection tools to foster financial stability.

C. Protecting Privacy in Community Associations

If state and local governments fail to exercise their power to protect citizens’ privacy in residential communities, or fail to act in timely manner, community associations are well-positioned to safeguard such expectations. The community association is a quasi-government operating at the neighborhood level, closest to its residents. Unlike other levels of government that cannot be expected to have detailed knowledge of local residential communities, associations are more familiar with the physical characteristics and demographics of their particular communities and the needs of their residents.²⁰² With authority for self-governance, the power to adopt

198. *See, e.g.*, UNIFORM L. COMM’N, UNIFORM COMMON INTEREST OWNERSHIP ACT §§ 3-116 (2014), http://www.uniformlaws.org/shared/docs/Common%20Interest%20Ownership/2014_UCIOA_Final_08.pdf [<https://perma.cc/QL5M-3QDG>].

199. FCAR FACT BOOK 2015, *supra* note 183, § 12.3.

200. SFR Investments Pool 1, LLC v. U.S. Bank, N.A., 334 P.2d 408, 413-14 (Nev. 2014). The Massachusetts Appeals Court stated, “we acknowledge the legislative concern for prompt collection of common expense assessments. Failure . . . to pay . . . would have a serious financial impact on the stability of a condominium association.” *Blood v. Edgar’s, Inc.*, 632 N.E.2d 419 (Mass. App. Ct. 1994) (describing assessments as the “life’s blood” of the association).

201. JEB REP., *supra* note 196, at 1.

202. Just as one might expect the elected officials of New York City to be more familiar with their city than state officials in Albany, we can also expect the elected

rules in the best interests of the community, and greater familiarity with the needs of their particular communities, associations have a unique platform and perspective to protect the privacy expectations of their members.

It follows that community associations are best positioned to design limitations on drone operations to protect privacy expectations. But exactly what measures could be taken by the community association to protect residents' privacy while avoiding conflict with the FAA Rules?

The scope of association rulemaking differs among forms of CICs. The most notable difference flows from how ownership of the property is split. In planned communities, the homeowner owns her lot and dwelling unit, inside and out, whether the unit is detached or attached (including side-by-side attached townhomes), and common property is owned by the association. In condominiums, the owner owns a cube of airspace above the ground which comprises the unit, and all the owners own the remainder of the property ("common elements") as tenants in common. Finally, in cooperatives, a corporation (typically nonprofit) owns the entire property, and the owners are shareholders owning stock in the corporation coupled with the exclusive right to occupy a unit.²⁰³

In each form of CIC, a degree of authority to regulate activity and conduct outside the dwelling unit is delegated to the association and the extent and nature of such authority typically is tailored to the form of the community depending on whether the CIC is a planned community, condominium, or cooperative. For example, a horizontal planned community with large lots and detached dwellings differs sharply from a vertical high-density condominium community with stacked units in close proximity to each other. Thus, the scope of regulations should reflect the CIC's form, and the substance of the regulations should be tailored to the unique physical characteristics and needs of residents in the particular community.²⁰⁴

All forms of CICs are found in urban areas. Size matters: the size of urban communities varies widely, from modest apartment conversions as small as two or three units to high-rise buildings containing hundreds of stacked units. The number of units, proximity

leaders of community associations will have more knowledge of their particular communities than officials at other levels of government. It follows that community associations are more familiar with the physical characteristics and demographics of their particular communities and the needs of their residents.

203. FCAR FACT BOOK 2015, *supra* note 183, § 5.4.

204. *See, e.g.*, discussion *supra* Section V.B.1.

and density of residents, and the demographics of the community are important factors to consider in determining the scope of regulations and how they should be tailored to the particular community.

Recognizing the FAA Rules allow commercial drone operations anywhere, any time during daylight hours, and any day of the week, community associations—similar to municipalities—could adopt reasonable limitations related to time, place, and manner without intruding on the FAA’s authority.²⁰⁵ The FAA preempts safety, efficiency, and operational matters, as well as equipment requirements (such as geo-fencing) and registration and training of operators.²⁰⁶ The FAA expects “consultation” if state or local government is considering restrictions on flight altitude, flights paths, operational bans, or any regulation of the navigable space.²⁰⁷

Considering the guideposts for regulatory approaches available to local government, an urban community association could adopt certain limitations to protect privacy rights that would be narrowly tailored to the form and physical characteristics of the community, the extent and nature of recreational and other amenities, and the concerns of the residents, without intruding on FAA-preempted matters or prompting consultation with the FAA:

1. Create “No Fly Zones” limiting the distance a drone may fly near a building, and limited common areas of the dwelling units such as individual balconies, decks and patios, swimming pools, walk or bike paths, and other common amenities.
2. Create “No Fly Times” limiting the time drones could operate based on certain days of the week such as weekends and holidays, or during certain hours of the day.
3. Limit certain activities such as voyeurism and making photographic and video images or audio tapes of persons not involved in the drone operation or certain locales. Such limitations should be technology-neutral—they should apply to all methods and devices presenting similar privacy concerns in addition to drones, such as model airplanes, binoculars, and telescopes.
4. Incorporate the FAA Rules to foster enforceability by local authorities for violations by commercial operators.
5. Adopt enforcement tools and procedures similar to other association rules affecting use of common areas for violations by homeowners or members.

205. *See, e.g.*, discussion *supra* Part IV.

206. *See supra* notes 140-42 and accompanying text.

207. *See supra* note 139 and accompanying text.

6. Provide notice to the public by posting the rules on the association's website and local government website.

7. Provide notice to affected parties such as real estate agencies, surveyors, and other affected businesses.

CONCLUSION

The launch of the FAA Rules for small commercial drones has unleashed enormous innovation promising societal benefits in health care, emergency response, agriculture, natural resources, infrastructure, and countless other fields. The projected economic growth for the drone industry and society continues to soar.

At the same time, the phenomenal pace of drone technology has exposed limitations in our existing laws and Fourth Amendment jurisprudence. The FAA Rules, focused on safety without regard for privacy, permit commercial drones to fly all day, every day, with no limitations on distance from residential dwellings, and no protection against the threat of pervasive, unwanted intrusions on privacy or dissemination of personal information. To the extent that judges and lawmakers want to maintain a semblance of privacy around the home and its curtilage, state and local governments should adopt laws and ordinances that impose reasonable restrictions on drone operations and are tailored to the needs of residential neighborhoods while leaving space for the development of the many benefits that drones offer.

The overarching objective in protecting homeowners' privacy expectations is that restrictions on drone operations must be thoughtfully tailored to the unique characteristics of individual residential communities and the needs of homeowners at the neighborhood level. This objective is best achieved by fostering the autonomy of local government, including community associations, to craft and enforce local regulations without federal or state intrusions on such autonomy.

For those sixty-eight million Americans living in planned communities, condominiums, and cooperatives across the country, the community association is the level of government best positioned to safeguard their privacy rights. As the governing body at the neighborhood level closest to its residents, with powers and duties similar to municipalities, the community association can efficiently institute limitations on where, when, and by whom drones can be used within the boundaries of the community. Reasonable limitations on drone use would protect homeowners' privacy expectations and the use and enjoyment of their property. Simultaneously, these privacy

protections would not conflict with federal regulations designed to ensure safety in our low-level national airspace.