

THE STATE OF DRONES: STATE AUTHORITY TO REGULATE DRONES

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I. INTRODUCTION: UNMANNED AERIAL VEHICLES (AKA, DRONES)¹

The federal government controls the flying skies.² Little room in the realm of airspace regulation is available for states to address questions relating to airplane safety, operations, and services.³ The question of how that state of affairs arose involves a historical narrative of technological development, national assertions of supremacy, political and professional maneuverings, and the strongly asserted analogy of airspace to navigable waterways.

Unmanned aircraft systems are the newest entrant into realms of flight. Though varied in their specific configurations and capabilities, unmanned aircraft systems, known more popularly as drones, are exactly what their name implies: flying vehicles that do not have an onboard pilot.⁴ Originally developed as training aids to facilitate targeting practice in WWII, they have since progressed into sophisticated flying systems that include both those piloted from the ground and those that can pilot themselves based on programmed instructions.⁵

When it comes to drones in the skies, however, and regardless of the federal government's control of the nation's airspace, the federal government has been relatively slow to act. Some have argued that the federal government's failure to act more quickly in this area has slowed development of and deployment of drone

¹ Drones are known by a variety of names, including Unmanned Aerial Vehicles (UAVs), Unmanned Aircraft Systems (UAS), and drones. The term drone is fraught with negative connotations due to the United States use of remote-piloted drones to kill terrorists and others abroad. *See generally* MEDEA BENJAMIN, *DRONE WARFARE: KILLING BY REMOTE CONTROL* vii–viii, 6–7, 85–88 (2013); UNDER THE DRONES: MODERN LIVES IN THE AFGHANISTAN-PAKISTAN BORDERLANDS 6 (Shahzad Bashir & Robert D. Crews, eds., 2012) (using the word drone to refer to unmanned aircraft). I will use the term “drone” here as it is a term frequently used in the popular press, and is also often used by the manufacturers.

² 49 U.S.C. § 40103(a) (2013) (“The United States Government has exclusive sovereignty of airspace of the United States.”).

³ *Id.* § 41713(b)(1) (“Except as provided in this subsection, a State, political subdivision of a State, or political authority of at least 2 States may not enact or enforce a law, regulation, or other provision having the force and effect of law related to a price, route, or service of an air carrier that may provide air transportation under this subpart.”).

⁴ *See* Chris Cole & Jim Wright, *What Are Drones?*, DRONE WARS UK (Jan. 2010), <http://dronewars.net/aboutdrone/>.

⁵ *Id.*; BART ELIAS, CONG. RESEARCH SERV., R42718, PILOTLESS DRONES: BACKGROUND AND CONSIDERATIONS FOR CONGRESS REGARDING UNMANNED AIRCRAFT OPERATIONS IN THE NATIONAL AIRSPACE SYSTEM 1 (2012).

technology, with its attendant benefits, in the United States.⁶ In 2012, Congress passed and the President signed the Federal Aviation Administration Modernization and Reform Act of 2012 (“the 2012 Act”).⁷ Among other things, the 2012 Act directed the Federal Aviation Administration (the FAA) “to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system.”⁸ Since 2012, the FAA has taken a number of actions required or permitted by the legislation.⁹ The FAA’s current drone authority covers some aspects of regulation in relation to some users, but not other relevant aspects, and not as to all users.¹⁰ Even with these legislative and regulatory acts, however, federal drone regulation is considered thin, at best, and the basic structure of the FAA’s drone regulation program—the dissection of drone operations into commercial and non-commercial uses, with the latter allowed and the former allowed only on special application to the FAA—is in question.¹¹

⁶ See generally Nicholas Ryan Turza, *Dr. Dronelove: How We Should All Learn to Stop Worrying and Love Commercial Drones*, 15 N.C. J.L. & TECH. ON. 319, 336, 351, 359 (2014) (asserting that the United States is slow to develop laws pertaining to commercial drone use).

⁷ FAA Modernization and Reform Act of 2012, Pub. L. No. 112-95, 126 Stat. 11 (2012) (codified as amended at 49 U.S.C. § 40101 (2012)).

⁸ *Id.* § 332(a)(1), 126 Stat. at 73 (“Not later than 270 days after the date of enactment of this Act, the Secretary of Transportation, in consultation with representatives of the aviation industry, Federal agencies that employ unmanned aircraft systems technology in the national airspace system, and the unmanned aircraft systems industry, shall develop a comprehensive plan to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system.”).

⁹ See generally *Fact Sheet — Unmanned Aircraft Systems (UAS)*, FED. AVIATION ADMIN. (Jan. 6, 2014), http://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=14153 [hereinafter *Fact Sheet*] (highlighting the requirements of the FAA and some actions that they have taken since the 2012 Act); VERONICA ROSE, CONN. LEGIS. RESEARCH REP. R-0132, INFORMATION ON THE 2012 FEDERAL AVIATION ADMINISTRATION (FAA) MODERNIZATION AND REFORM ACT 2, 4–5 (2014) (describing both the FAA’s requirements under the 2012 Act and the FAA’s progress).

¹⁰ For example, the FAA has implemented a privacy policy for drone sites chosen under the national test site competition, but these regulations are inapplicable to drone operators not involved in that program. See April Glaser & Jennifer Lynch, *The FAA Creates Thin Privacy Guidelines For The Nation’s First Domestic Drone “Test Sites,”* ELECTRONIC FRONTIER FOUND. (Dec. 10, 2013), <https://www.eff.org/deeplinks/2013/12/faa-creates-thin-privacy-guidelines-nations-first-domestic-drone-test-sites>.

¹¹ The FAA currently permits the use of drones by enthusiasts on a non-commercial basis in the space below 400 feet above ground level, but forbids commercial use of drones in that same space. See *Fact Sheet, supra* note 9. Non-commercial use of drones is governed by agency guidance documents along with

It is thus not surprising that states and local governments have stepped into the perceived vacuum, passing laws directed at a variety of aspects of drone regulation.¹² Some of these are suspect on grounds of federal supremacy.¹³ Others are suspect on simple policy grounds, as they put states in the position of limiting what is a growing and likely important aspect of future commerce and development.¹⁴ The laws follow quite expectedly from public and media pressure to react to the perceived threats that drones present to safety, property and privacy.¹⁵

prohibitions on careless or reckless operation. In *Huerta v. Pirker*, an NTSB administrative law judge held that the FAA cannot enforce its rule against careless or reckless operation against model aircraft under current FAA statutory and regulatory authority. *Huerta v. Pirker*, CP-217, 2014 WL 3388631 (N.T.S.B.), at *7–8 (Mar. 6, 2014). The NTSB subsequently reversed the ALJ's decision on appeal and remanded the case to the ALJ for a determination of whether Pirker's operation of the drone was careless or reckless. *Huerta v. Pirker*, CP-217, NTSB Order No. EA-5730, at *12 (Nov. 18, 2014), available at <http://www.nts.gov/legal/pirker/5730.pdf>. Because of the procedural posture of the case, an immediate appeal is unlikely, but the case does not finally settle the matter of FAA authority, as the FAA is expected to issue small drone regulations soon, which may lead to another challenge to the FAA's authority in this area. See Jillian D'Onfro, *The FAA's New Drone Proposal Would Be Bad News for Amazon and Google*, BUS. INSIDER (Nov. 24, 2014), <http://www.businessinsider.com/faa-new-drone-rules-2014-11>.

¹² See generally Allie Bohm, *Status of 2014 Domestic Drone Legislation in the States*, ACLU (Apr. 22, 2014, 10:32 AM), <https://www.aclu.org/blog/technology-and-liberty/status-2014-domestic-drone-legislation-states> (featuring a chart highlighting state legislative activity pertaining to drones as of 2014); Emily Previti, *Drone Rules Get Local Treatment as State, Feds Mull Regulations*, KEYSTONE CROSSROADS, <http://crossroads.newsworks.org/index.php/local/keystone-crossroads/71602-drone-rules-get-local-treatment-as-state-feds-mull-regulations> (last visited Nov. 5, 2014) (“Local governments are confronting drone regulations absent concrete guidelines from state and federal lawmakers.”).

¹³ Both states and local governments have taken drone related legislative and regulatory action. Given that the authority for local regulation of drone activity—or any activity, for that matter—flows from state authority, either recognized in state constitutions or explicitly provided to localities by state legislation, we leave local authority questions aside for this essay to focus on the primary issues that arise at the state level. U.S. CONST. amend. VI, cl. 2; Aaron Sankin, *The Dizzying State of America's Drone Laws*, DAILYDOT, <http://www.dailydot.com/politics/us-state-drone-laws-mess/> (last visited Nov. 23, 2014).

¹⁴ Amazon.com, for example, has publicized its plans to make deliveries of packages via drone, a plan that relies on future regulation that permits such use by commercial entities. See Marcus Wohlsen, *Jeff Bezos Says Amazon Is Seriously Serious About Drone Deliveries*, WIRED (Apr. 11, 2014, 6:30 AM), <http://www.wired.com/2014/04/amazon-delivery-drones/>.

¹⁵ See, e.g., A. Michael Froomkin & Zak Colangelo, *Self-Defense Against Overflying Drones*, WASH. POST (Oct. 3, 2014), <http://www.washingtonpost.com/news/volokh-conspiracy/wp/2014/10/03/self->

The states' desire to act through a range of state legislative and regulatory activities raises the following two questions (among others):

- What actions can states take in relation to drones and their impending integration into the national airspace?
- What actions should states take?

In other words, are states legally permitted to enact laws and promulgate regulations that directly aim at or affect the operation of drones, and, what drone laws will best serve the interests of states and their populations?

Contrary to what one may initially think based on the long established role the federal government has played in regulating flight, there is space in the regulatory landscape for meaningful state regulation of drones and drone-related activities.¹⁶ States can legitimately take a variety of actions that may affect drones, drone operators and drone operations directly, and a variety of actions that are likely to be in the states'—and the citizens'—best interests. These same actions may be in the national interest, as well, especially to the extent that states can play the role of “regulatory laboratories”¹⁷ within the drone regime. Trying regulatory schemes at the state level provides the federal government with data on how the market and market actors react to varying regulatory requirements, as well as allowing states to attempt to address local issues that may be raised in drone use.

In this essay we will outline the various actions that states are likely permitted to take. We will also discuss the legal environment within which these decisions must be made, and especially the legal uncertainties that exist. We will also discuss the reasons why taking certain actions may or may not benefit states and their citizens, taking into account a variety of perspectives relating to economic opportunities, market conditions, safety, privacy, public concerns, and technological opportunities.

First it is necessary to identify the legal boundaries on state

defense-against-overflying-drones/.

¹⁶ See *Sankin*, *supra* note 13 (citing state activity to regulate drones).

¹⁷ See *New State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932) (“It is one of the happy incidents of the federal system that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country.”).

drone regulation through a review of federal authority to act in this area. What the states have done to regulate drones up to this point follows. An analysis of state authority to act, along with consideration of the question of the propriety of state regulations, what regulations make the most sense and why, closes out the paper. The long and the short of it is that states can and should play a role in a variety of aspects of drone regulation, but that drone regulatory authority should be exercised in the context of the overall state and federal legal and regulatory regimes. At times, separate, standalone drone regulation may not be needed. Instead, assertion of authority over drones may fit within existing legal regimes, such as laws addressing general privacy concerns, and in these cases amending existing laws makes more sense than severing drone regulation from already existing schemes.

II. DRONES AND DRONE REGULATION: THE EXTENT OF FEDERAL AUTHORITY

A. *The March of the Drones*

Drone use in war has a more than eighty year history, and when lighter than air technologies are added to the mix, the history runs even longer.¹⁸ What is relatively new is the desire to bring the drones closer to home, and to change their nature from an instrument of war to one of commerce and recreation.¹⁹ This change is not without its detractors, those who believe drones as a technology have too much of a negative history to be successfully converted to civilian use, but on the whole U.S. industry and civilians see great promise in the coming drone revolution.²⁰

¹⁸ See, e.g., STUART BANNER, WHO OWNS THE SKY?: THE STRUGGLE TO CONTROL AIRSPACE FROM THE WRIGHT BROTHERS ON 45 (2008).

¹⁹ Compare Patrick Hruby, 'Citizen Drone Warfare': *Hobbyist Explores A Frightening Scenario*, WASH. TIMES (Dec. 17, 2012), <http://www.washingtontimes.com/news/2012/dec/17/citizen-drone-warfare-hobbyist-explores-a-frighten/?page=all> (highlighting the use of drones in the commercial atmosphere), with Craig Whitlock, *Book Review: 'Predator: The Secret Origins of the Drone Revolution' by Richard Whittle*, WASH. POST, http://www.washingtonpost.com/opinions/book-review-predator-the-secret-origins-of-the-drone-revolution-by-richard-whittle/2014/09/18/072e8fe2-385d-11e4-bdfb-de4104544a37_story.html (last visited Dec. 16, 2014) (explaining the development of the Predator drone as a war machine).

²⁰ See, e.g., Hruby *supra* note 19.

Drones come in a variety of shapes and sizes, and with varying abilities and configurations.²¹ Some of the best known drone technologies are the military drones used in foreign countries to seek out and kill terrorists.²² It is these drones that people react to most negatively, especially when non-combatants and innocent civilians die either as collateral damage in a successful drone attack, or by mistake when either drone technology or human intelligence kill people not intentionally targeted.²³ Military drones of this type are often fixed wing aircraft, relatively large, with the ability to carry heavy payloads.²⁴ Payloads may include rockets and other weapons, as well as electronics and surveillance technologies.²⁵ With names like “Predator” and “Reaper,” these drones can be found in the skies in a number of foreign countries and are now being deployed to strategic missions within the United States.²⁶

Domestic missions are said to be primarily surveillance missions, including patrolling the U.S. borders with Mexico and Canada, and also tracking drug traffickers attempting to bring illicit drugs into the United States.²⁷

Not all drones are large, however, and not all are based on the fixed wing model. Many drones are quite small, with rotor-based

²¹ Kelsey D. Atherton, *Flying Robots 101: Everything You Need To Know About Drones*, POPULAR SCI. (Mar. 7, 2013, 3:30 PM), <http://www.popsci.com/technology/article/2013-03/drone-any-other-name>.

²² See, e.g., Dan Friedman, *Al Shabab Terrorist Leader Targeted in U.S. Drone Attack*, DAILY NEWS (Sept. 2, 2014, 11:02 PM), <http://www.nydailynews.com/news/world/al-shabab-terrorist-leader-targeted-u-s-drone-attack-article-1.1925684>.

²³ *Global Opposition to U.S. Surveillance and Drones, But Limited Harm to America's Image*, PEW RES. (July 14, 2014), <http://www.pewglobal.org/2014/07/14/chapter-1-the-american-brand/>; see Baraa Shiban, *When Will Drones Stop Killing Innocent People in Yemen?*, CNN, <http://www.cnn.com/2014/01/14/opinion/yemen-drone-strikes-reprieve/> (last updated Jan. 14, 2014).

²⁴ See Atherton, *supra* note 21 (discussing characteristics of the MQ-1B and MQ-9 Reaper).

²⁵ *MQ-1B Predator*, U.S. AIR FORCE (July 20, 2010), <http://www.af.mil/AboutUs/FactSheets/Display/tabid/224/Article/104469/mq-1b-predator.aspx>; *MQ-9 Reaper*, U.S. AIR FORCE (Aug. 18, 2010), <http://www.af.mil/AboutUs/FactSheets/Display/tabid/224/Article/104470/mq-9-reaper.aspx>.

²⁶ Craig Whitlock & Craig Timberg, *Border-Patrol Drones Being Borrowed by Other Agencies More Often Than Previously Known*, WASH. POST (Jan. 14, 2014), http://www.washingtonpost.com/world/national-security/border-patrol-drones-being-borrowed-by-other-agencies-more-often-than-previously-known/2014/01/14/5f987af0-7d49-11e3-9556-4a4bf7bcbd84_story.html.

²⁷ *Id.*

control systems.²⁸ Many of the rotor based systems use four rotors in a quadcopter configuration, allowing for great mobility, speed, and agility in the air.²⁹ Quadcopters are a favorite of hobbyist drone operators, as they often have sufficient power and control to be able to carry a camera and take high-definition images while in flight.³⁰ In addition to drone enthusiast quadcopters, a variety of drones are on sale to the public today that are small, including a number with strong flight characteristics—meaning they are stable in the air and can be readily controlled by a person wielding a remote control—that can fit into the palm of the hand.³¹ Others are even smaller, sitting on the launcher’s fingers prior to lift off.³² The technology within enthusiast drones circles has also progressed dramatically in recent years.³³ Modern, affordable drones often include GPS

²⁸ See Atherton, *supra* note 21.

²⁹ See WILLIAM H. ETTER, JR. ET AL., COOPERATIVE FLIGHT GUIDANCE OF UNMANNED AERIAL VEHICLES I (2011), *available at* http://repository.upenn.edu/cgi/viewcontent.cgi?article=1052&context=mlab_papers.

³⁰ A number of the modern, civilian, hobbyist or professional drones provide streaming video from the drone to the controller during flight, mimicking at least one aspect of the reapers and predators flown by the military abroad. See Ron Wilkins, *Popularity of Unmanned Aircraft Soaring*, JCONLINE (Oct. 24, 2014, 8:00 PM), <http://www.jconline.com/story/news/local/2014/10/24/popularity-unmanned-aircraft-soaring/17863883/>; see also Christopher Drew, *Drones Are Weapons of Choice in Fighting Qaeda*, N.Y. TIMES, Mar. 17, 2009, at A1 (explaining that the Predator and Reaper drones transmit video footage to soldiers on the ground). See generally Christina Zdanowicz, *How to Shoot Amazing Videos from Drones*, CNN, <http://www.cnn.com/2014/05/22/tech/innovation/drone-uav-photography/> (last updated May 22, 2014) (explaining and demonstrating the high-quality video and photography capabilities of drones); *Phantom 2 Vision + - Specs*, DJI, www.dji.com/product/phantom-2-vision-plus/spec (last visited Nov. 18, 2014) (detailing the specifications of one such quadcopter, the Phantom 2 Vision +); *Nano QX FPV BNF W/O Headset with Safe*, BLADE, www.bladehelis.com/Products?default.aspx?ProdID=BLH7280#quickSpecs (last visited Dec. 16, 2014) (detailing the specifications of another such quadcopter).

³¹ See, e.g., Jason Dorrier, *Parrot’s Latest Minidrone Fits in the Palm of Your Hand, Plus Jumping Sumo*, SINGULARITY HUB (Jan. 16, 2014), <http://singularityhub.com/2014/01/16/parrots-latest-minidrone-fits-in-the-palm-of-your-hand-plus-jumping-sumo/>.

³² See, e.g., David Lande, *Tiniest Drone Takes Off, Sort Of*, NAT’L GEOGRAPHIC NEWS (May 2, 2013), <http://news.nationalgeographic.com/news/2013/13/130502--drone-tiny-fly-robobee-harvard-science-robot/> (detailing the development of a drone only half an inch long which can be easily launched from a finger).

³³ See Trevor Timm & Parker Higgins, *Nobody Knows You’re a Drone*, NEW INQUIRY (July 2, 2012), <http://thenewinquiry.com/essays/nobody-knows-youre-a-drone/> (describing how “small circles of technology enthusiasts” have been tinkering with drones and their possibilities much in the way that the computer

technology that allows the controller to plot a path for the drone to fly or allowing for the drone to automatically return to its starting point if contact with the ground controller is lost.³⁴

Companies such as Amazon, Facebook, Google and others are investing in drone development for a variety of tasks, including delivery of retail goods to consumers, creation of sky-based computer networks, and even crop dusting in the agricultural community.³⁵ While there remain questions about whether drones are up to all of these tasks at this time, there is little question that they will be soon if the pace of technological development continues as it has in recent years. Drones will soon be not just the playthings of the techno-nerd and aviation enthusiast; they are likely soon to be a staple of the giants of industry and commerce and will be seen regularly in our skies.

*B. Who Owns the Skies*³⁶

The question of who owns the skies is one that is oft repeated in the drone discussion. The short answer is: The United States of America owns the skies above the United States.³⁷ Federal control of navigable airspace is based in the commerce clause.³⁸ Pursuant to Congressional enactment and regulatory implementation, with the original statute enacted in 1926, the federal government asserted its “complete and exclusive national authority in the air space” over the United States.³⁹ The current

revolution progressed).

³⁴ Bob Hammell, *How Quadcopter GPS Can Make Flying Simple*, QUADHANGER, www.quadhanger.com/blog.php?p=how-quadcopter-gps-can-make-flying-simple (last visited Nov. 9, 2014).

³⁵ See Jillian D’Onfro, *Why Amazon Needs Drones More Than People Realize*, BUS. INSIDER (July 30, 2014, 6:23 PM), <http://www.businessinsider.com/amazon-drones-2014-7>; John Naughton, *Why Facebook and Google are Buying Into Drones*, GUARDIAN (Apr. 19, 2014, 7:05 PM), <http://www.theguardian.com/world/2014/apr/20/facebook-google-buying-into-drones-profit-motive>; see also Mike Hanlon, *Yamaha’s RMAX – The World’s Most Advanced Non-Military UAV*, GIZMAG, <http://www.gizmag.com/go/2440/> (last updated Nov. 19, 2004) (detailing the development of Yamaha’s R-MAX drones, which is primarily used for crop-dusting in Japan).

³⁶ This sub-heading pays homage to Stuart Banner’s thorough review of the development of modern control of the skies above the United States. BANNER, *supra* note 18.

³⁷ 49 U.S.C. § 40103(a) (2012) (“The United States Government has exclusive sovereignty of airspace of the United States.”).

³⁸ See *United States v. Causby*, 328 U.S. 256, 271–72 (1946) (Black, J., dissenting).

³⁹ *Id.* at 260 (majority).

statute provides:

- (a) Sovereignty and Public Right of Transit.—
- (1) The United States Government has exclusive sovereignty of airspace of the United States.
 - (2) A citizen of the United States has a public right of transit through the navigable airspace.⁴⁰

A navigable airspace is defined as “airspace above the minimum altitudes of flight prescribed by regulations under this subpart . . . including airspace needed to ensure safety in the takeoff and landing of aircraft.”⁴¹ The statute places the Federal Aviation Administration in the position of defining the boundaries of navigable airspace, which it has set at the low end as being 1,000 feet above the highest nearby obstacles in congested areas and 500 feet above ground level in other, uncongested, areas.⁴² Pathways to landing and takeoff are also considered part of the navigable airspace.⁴³ That the federal government has the authority to regulate navigable airspace is not seriously in dispute, nor is its authority to regulate nearly all aspects of airlines and aircraft,⁴⁴ and to preempt regulations that would impose a patchwork of controls over manned flight operations.⁴⁵ How far the federal government can go, or, more

⁴⁰ 49 U.S.C. § 40103(a)(1)–(2) (2012).

⁴¹ *Id.* § 40102(a)(32).

⁴² *Id.* § 40103(b)(1); *see also* 14 C.F.R. § 91.119 (providing, in part, as follows: “Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes: (a) Anywhere. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface. (b) Over congested areas. Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. (c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.”).

⁴³ *Id.* § 40102(a)(32).

⁴⁴ *Id.* § 41713 (“Preemption of authority over prices, routes, and service”). *But see* Jol A. Silversmith, *You Can’t Regulate This: State Regulation of the Private Use of Unmanned Aircraft*, 26 AIR & SPACE L. 1, 23 (2013) (While noting that, “in the context of aviation, federal preemption long has been understood to sweep with a wide broom[,]” Silversmith acknowledges, “based on the definition of ‘air carrier’ and related terms in 49 U.S.C. § 40102, UAVs used for surveillance do not appear to invoke this statute.”); *Huerta v. Pirker*, CP-217, 2014 WL 3388631 (N.T.S.B.), at *7–8 (Mar. 6, 2014), *available at* <http://www.nts.gov/legal/pirker/Pirker-CP-217.pdf>.

⁴⁵ *Burbank v. Lockheed Air Terminal Inc.*, 411 U.S. 624, 639 (1973) (“If we

precisely, how low the federal government can go for purposes of aviation regulation, remains a highly contested question.

United States ownership of and exercise of control over U.S. airspace has not always been a settled point. Much has been written on the development of manned flight and the legislative and regulatory regime enacted to address flight's development and growth. The ground is well trodden, and it is not necessary to repeat that entire history to understand the issues confronting us today. Instead, we will begin with the case most often cited as critical to the development of the modern doctrine of federal control over airspace: *United States v. Causby*.⁴⁶ Like the development of airspace regulation itself, much has also been written about *Causby* since its issuance, and there has been somewhat of a revival of discussion about it recently given the current issues surrounding drones. It is necessary, however, to spend some time coming to grips with what the Supreme Court said in *Causby* and how *Causby* has been interpreted both by the Supreme Court and by other courts. We will explore the argument that while *Causby* explicitly set out a new rule justifying the federal government's control over U.S. airspace, the rule may not apply easily to drones given the way in which the rule developed and was applied to aircraft in the mid-twentieth century.

C. *Understanding United States v. Causby as Applied to Drones*

The year was 1942.⁴⁷ The Causbys owned a 2.8 acre farm that was 2,220 feet from the end of an airport runway in active use by the U.S. military.⁴⁸ The runway flight path brought planes over the property at a height of eighty-three feet, which was sixty-three feet above the Causbys' barn and eighteen feet above the highest tree on the property.⁴⁹ Planes using the runway scared

were to uphold the Burbank ordinance and a significant number of municipalities followed suit, it is obvious that fractionalized control of the timing of takeoffs and landings would severely limit the flexibility of FAA in controlling air traffic flow. The difficulties of scheduling flights to avoid congestion and the concomitant decrease in safety would be compounded.") (citations omitted).

⁴⁶ 328 U.S. 256 (1946).

⁴⁷ *Id.* at 259.

⁴⁸ *Id.* at 258.

⁴⁹ *Id.*

the Causbys' chickens and many of them died, some by throwing themselves against the chicken coop walls in fright.⁵⁰ The Causbys claimed the over-flights destroyed their ability to use the farm to raise chickens and sued the U.S. government, which held a lease on the airport, alleging a taking of their property under the Fifth Amendment to the U.S. Constitution.⁵¹

When the case reached the U.S. Supreme Court, the Court was confronted with a case that, on then understood property grounds, should have been an easy win for the plaintiffs. Under established common law doctrine, an owner of land owned the surface of the land and all that column of space⁵² from the surface down to the center of the earth and up to the heavens.⁵³ As the government's planes had intruded into this column of space, the government had physically invaded the Causbys' property interests.⁵⁴ Permanent or continuing physical invasions of property by government are, and have been, *per se* takings under Supreme Court precedent.⁵⁵ Put another way, if the government was flying its planes through the plaintiffs' property, it owed them compensation. The Causbys' case, it was argued, should fall under this precedent and a physical taking should be found.⁵⁶

But the Supreme Court made quick work of the trespass based takings argument. The Court noted the problems that would arise if the *ad coelum* doctrine could be used to stop flights, especially in a time of war.⁵⁷ These include the near impossibility

⁵⁰ *Id.* at 259.

⁵¹ *Id.* at 258–59.

⁵² See BANNER, *supra* note 18, at 17 (as it turns out, the column would actually be cone shaped, not column shaped); see also Lee Anne Fennell, *Property and Precaution*, 4 J. TORT L. 1, 19 (2011) (presenting a law that states “landowners cannot exclude ordinary aircraft overflights” has taken away what used to be protected under *ad coelum* doctrine). Any difference is not relevant in *Causby*.

⁵³ *Causby*, 328 U.S. at 260–61 (citing EDWARD COKE, INSTITUTES ch. 1, § 1 (4a) (19th ed. 1832); WILLIAM BLACKSTONE, COMMENTARIES 18 (Lewis ed. 1902); JAMES KENT, COMMENTARIES, 621 (Gould ed. 1896) (The phrase used at common law was “*Cujus est solum ejus est usque ad coelum.*”).

⁵⁴ *Id.* at 261–62.

⁵⁵ *E.g.*, *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, 426 (1982) (“[A] permanent physical occupation authorized by government is a taking”); *Pumpelly v. Green Bay Co.*, 80 U.S. 166, 180 (1871) (“[O]verflowing land by means of a dam . . . is taking private property”).

⁵⁶ *Causby*, 328 U.S. at 258–61.

⁵⁷ The Court noted, “To recognize such private claims to the airspace would clog these highways, seriously interfere with their control and development in the public interest, and transfer into private ownership that to which only the public has a just claim.” *Id.* at 261.

of airlines being required to identify and pay all the landowners below their flights paths, an outcome that would almost certainly have stopped airline development in its tracks.⁵⁸ It then said of the *ad coelum* doctrine: “[T]hat doctrine has no place in the modern world.”⁵⁹ And with one paragraph, *ad coelum* fell. The Court went on, however, to define the boundaries of what remained of the old doctrine: “The landowner owns at least as much of the space above the ground as he can occupy or use in connection with the land.”⁶⁰ In finding a taking had occurred, however, the Court muddied the waters as to how, who, and for what purposes control of airspace should play out in the future.

The muddying comes from a series of statements and propositions that, if viewed at face value, may appear contradictory. The Court began by noting that United States sovereignty over navigable airspace had been asserted by Congress, asserting both control over navigable airspace and the public’s right to travel in it.⁶¹ Congress had left the definition of navigable airspace to the Civil Aeronautics Authority.⁶² That agency had set general lower limits of 500 feet or 300 feet depending on the aircraft in question.⁶³ The government argued that these steps prohibited any claim for a taking based on aircraft operations undertaken at these heights.⁶⁴

The Court, however, instead used the scenario of planes landing and taking off, and noted that though these were legal actions, they were undertaken outside of, or, more precisely, underneath navigable airspace as the Authority had determined it, and that as such these actions were subject to a takings analysis.⁶⁵ Rather than rely on a simple physical invasion based method of determining a taking, the Court concluded that the test should be a different one where the interest intruded upon was the space above the land, rather than the immediate land itself and ruled that “[f]lights over private land are not a taking, unless

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ *Id.* at 264.

⁶¹ *Id.* at 260.

⁶² *Id.*

⁶³ *Id.* at 263–64.

⁶⁴ *Id.* at 260.

⁶⁵ *Id.* at 264 (“Hence, the flights in question were not within navigable airspace Congress placed within the public domain. If any airspace needed for landing and taking off were included, flights which were so close to the land as to render it uninhabitable would be immune. But the United States concedes, as we have said, that in that even there would be a taking.”).

they are so low and so frequent as to be a direct and immediate interference with the enjoyment and use of the land.”⁶⁶ The Court reiterated this test when Congress and federal regulators changed the definition of navigable airspace to include the airspace needed for takeoff and landing,⁶⁷ rejecting as it had in *Causby* the idea that the government could set the lower limit of navigable airspace to any level it wanted.⁶⁸ The Court stated, “[i]f that agency prescribed 83 feet as the minimum safe altitude, then we would have presented the question of the validity of the regulation.”⁶⁹ The *Causby* “so low and so frequent” test is the test used most frequently today to determine whether overflights are takings under the Fifth Amendment.⁷⁰ The Federal Circuit Court of Appeals has developed a three-step test to determine whether a taking has occurred based on the *Causby/Griggs* analysis: “(i) whether the planes flew directly over the plaintiff’s land; (ii) the altitude and frequency of the flights; and (iii) whether the flights directly and immediately interfered with the plaintiff’s enjoyment and use of the land.”⁷¹

The difficulty with this test is that it combines elements of trespass—a physical invasion of the landowner’s property—with elements of nuisance—a requirement of interference with the enjoyment and use of the land.⁷² Making this more difficult to

⁶⁶ *Id.* at 266.

⁶⁷ *Griggs v. Allegheny Cnty.*, 369 U.S. 84, 88 (1962) (“At the time of the *Causby* case, Congress had placed the navigable airspace in the public domain, defining it as ‘airspace above the minimum safe altitudes of flight prescribed’ by the C.A.A. We held that the path of the glide or flight for landing or taking off was not the downward reach of the ‘navigable airspace.’ Following the decision in the *Causby* case, Congress redefined ‘navigable airspace’ to mean ‘airspace above the minimum altitudes of flight prescribed by regulations issued under this chapter, and shall include airspace needed to insure safety in take-off and landing of aircraft.’ By the present regulations the ‘minimum safe altitudes’ within the meaning of the statute are defined, so far as relevant here, as heights of 500 feet or 1,000 feet, ‘except where necessary for take-off or landing.’”) (footnotes omitted) (internal citations omitted).

⁶⁸ *Id.* at 88–89; *Causby*, 328 U.S. at 264 (“If any airspace needed for landing or taking off were included, flights which were so close to the land as to render it uninhabitable would be immune. But . . . in that event there would be a taking. . . . The Civil Aeronautics Authority has, of course, the power to prescribe air traffic rules. But Congress has defined navigable airspace only in terms of one of them – the minimum safe altitudes of flights.”).

⁶⁹ *Causby*, 328 U.S. at 263.

⁷⁰ *Id.* at 266.

⁷¹ *Andrews v. United States*, 108 Fed. Cl. 150, 155–56 (Fed. Cl. 2012) (footnote omitted) (internal citation omitted); see *Brown v. United States*, 73 F.3d 1100, 1102 (Fed. Cir. 1996) (citing *Causby*, 328 U.S. at 266).

⁷² See RESTATEMENT (SECOND) OF TORTS § 158 (1965); PAUL M. COLTOFF ET.

conceptualize are additional statements in the Court's decision in *Causby*. For example, the Court held that actionable overflights are to be considered the same as physical invasions of the land itself.⁷³ By analogizing to physical invasions, the Court makes the requirement of injury on the part of the landowner suspect. If overflights are physical invasions, it adds an extra—and new—requirement of injury to state a cause of action, as opposed to using the injury in determining the damages award.⁷⁴ Why this method was chosen by the Court is not clear, and the remainder of the opinion does little to clarify it. In discussing the physical/injury based distinction, for example, the Court states:

We would not doubt that if the United States erected an elevated railway over respondents' land at the precise altitude where its planes now fly, there would be a partial taking, even though none of the supports of the structure rested on the land. The reason is that there would be an intrusion so immediate and direct as to subtract from the owner's full enjoyment of the property and to limit his exploitation of it. While the owner does not in any physical manner occupy that stratum of airspace or make use of it in the conventional sense, he does use it in somewhat the same sense that space left between buildings for the purpose of light and air is used. The superadjacent airspace at this low altitude is so close to the land that continuous invasions of it affect the use of the surface of the land itself. We think that the landowner, as an incident to his ownership, has a claim to it and that invasions of it are in the same category as invasions of the surface.⁷⁵

This passage seems to argue both that the airspace is necessary to enjoy the land, and that owners have a claim to that airspace, but by the rule developed, that claim is only actionable where use of the land is injured. This conclusion would seem to indicate that the claim is divorced from an owner's underlying land-based intrusion claim, but is only a relative of it. Physical

AL., AMERICAN JURISPRUDENCE: NUISANCES § 1 (2d ed.).

⁷³ *Causby*, 328 U.S. at 264–265 (“We think that the landowner, as an incident to his ownership, has a claim to it and that invasions of it are in the same categories as invasions of the surface.”).

⁷⁴ “[I]t is the character of the invasion, not the amount of damage resulting from it, so long as the damage is substantial, that determines the question whether it is a taking.” See *id.* at 266 (quoting *United States v. Cress*, 243 U.S. 316, 328 (1917)); RESTATEMENT (SECOND) OF TORTS § 159 (1965) (stating the typical elements of making out a claim for harm resulting from intrusions onto land).

⁷⁵ *Causby*, 328 U.S. at 264–65 (footnotes omitted).

invasion of the land itself is a trespass,⁷⁶ and when undertaken by the government is likely to be a taking,⁷⁷ but physical invasion of the airspace above the land is not so easily established as a taking.⁷⁸ How they are then in the “same category” as invasions surface is left unclear.

Adding to the difficulty here is the Court’s earlier takings decision in *Portsmouth Harbor Land & Hotel Co. v. United States*,⁷⁹ cited approvingly in *Causby*.⁸⁰ In *Portsmouth*, the Court held in favor of a hotel and resort complex in a takings claim in which the United States military was firing large guns across the resort’s property.⁸¹ After twice rejecting claims by the resort when the firing happened only infrequently and sporadically, the Court in 1922 held:

If the United States, with the admitted intent to fire across the claimants’ land at will should fire a single shot or put a fire control upon the land, it well might be that the taking of a right would be complete. But even when the intent thus to make use of the claimants’ property is not admitted, while a single act may not be enough, a continuance of them in sufficient number and for a sufficient time may prove it.⁸²

In effect, where the government admits an intent to fire weapons over a landowner’s property and at least one shot has been fired, the basis of a taking has been made out.⁸³ A taking may also be claimed where the government’s intent to so fire has not been admitted where the acts show actual firing has occurred, where the incidents of actual firing can be combined together to prove that intent.⁸⁴ We must consider this result—that intent to invade the airspace over property on a repeated basis—alongside that reached in *Griggs*, noted above.⁸⁵ The Court in *Griggs* decided that, even with the federal government’s redefinition of

⁷⁶ 87 C.J.S. *Trespass* § 1.

⁷⁷ *Causby*, 328 U.S. at 261.

⁷⁸ *Id.* at 266 (“Flights over private land are not a taking, unless they are so low and so frequent as to be a direct and immediate interference with the enjoyment and use of the land.”).

⁷⁹ 260 U.S. 327 (1922).

⁸⁰ *Causby*, 328 U.S. at 262–63.

⁸¹ *Portsmouth Harbor Land & Hotel Co.*, 260 U.S. at 328–30.

⁸² *Id.* at 329–30.

⁸³ *Id.* at 330 (“As we have said the intent and the overt acts are alleged as is also the conclusion that the United States has taken land.”).

⁸⁴ *Id.* at 329–30.

⁸⁵ See *Griggs v. Allegheny Cnty.*, 369 U.S. 84, 88–89 (1962).

the navigable airspace to include landing and takeoff altitudes, low level flights may still result in a taking:

[A]s we said in the *Causby* case, the use of land presupposes the use of some of the airspace above it. Otherwise no home could be built, no tree planted, no fence constructed, no chimney erected. An invasion of the “superadjacent airspace” will often “affect the use of the surface of the land itself.”⁸⁶

In this statement, the Court impliedly rejects the argument made by the government in *Causby* that operating within the navigable airspace immunizes overflights from takings claims.⁸⁷ Yet takings claims based on overflights appear to be based not on the fact of a physical intrusion into property owned by the underlying property owner, but rather on the diminution in value or use of the underlying property resulting from overflights that are low enough and frequent enough.⁸⁸ This follows from *Causby* and *Griggs* despite this conclusion’s relative novelty at the time of its adoption.⁸⁹

The Courts have generally been able to address overflight takings issues as they arise without stifling flight technologies and operations. With drone technology expanding in use, however, the *Causby* line of reasoning takes on a new importance. Discussions of drone overflights of private land have begun in much the same way that dirigible and airplane overflights did at start of the twentieth century. The debate has begun with discussions of how drone overflights may violate underlying property owner’s rights.⁹⁰ The drones overflight issue seems to strike closer to home than airplane flights did, and landowners

⁸⁶ *Id.* (internal citations omitted).

⁸⁷ See *United States v. Causby*, 328 U.S. 256, 260, 264 (1946).

⁸⁸ See *id.* at 261.

⁸⁹ For a view that *Causby* did not take the significant step in relation to the *ad coelum* doctrine outlined here, and instead that U.S. law had not accepted or applied the full *ad coelum* doctrine at the time *Causby* was decided, see, Eric R. Claeys, *On the Use and Abuse of Overflight Column Doctrine*, 2 BRIGHAM-KANNER PROP. RTS. CONF. J. 61, 61–63 (2013). Professor Caeyes refers to the popular understanding as the *ad coelum* fable. My position does not conflict with Professor Caeyes’ in any way relevant to the analysis here as I am not concerned with overflights at higher levels or even with any strict application of *ad coelum*; I have used the classical approach to *Causby* and *ad coelum* to set the stage.

⁹⁰ See GREGORY MCNEAL, DRONES AND AERIAL SURVEILLANCE: CONSIDERATIONS FOR LEGISLATORS 5, 8–10 (2014), available at <http://www.brookings.edu/research/reports2/2014/11/drones-aerial-surveillance-legislators>.

have even responded to drones by shooting them out of the sky.⁹¹

There is a significant difference between *Causby's* determination of rights in airspace regarding airplane overflights and our need to predict law's reaction to drones today: we have the *Causby* line of cases, and state and federal enactments since it was decided, to help us along the way. Application of *Causby's* rule to drones, however, raises questions distinct from those addressed in *Causby* itself. For example, drones can be small enough to fit in your hand, and many of the current drones are less than two feet across.⁹² These drones do not need a runway to take off, and so may launch in space that is neither within the safe altitude for flight set by the FAA (and thus navigable airspace) nor within a takeoff or landing zone.⁹³ Their small size may mean that they may not even be noticed, let alone that they would intrude on the use and enjoyment of the underlying property. This possibility increases in likelihood as the drone's flight altitude increases. Some currently available drones would be hardly seen at a height of 100 feet, let alone destroy the use of the underlying property.⁹⁴

As it stands now there is considerable uncertainty as to how drone flights over private property will be handled. *Causby* could reasonably be read to allow such overflights so long as they do not interfere with the use and enjoyment of the underlying landowner.⁹⁵ *Causby* may also be read to allow states to step in and set navigable airspace for drones below that limit set by the FAA for other aircraft, though if such a determination ends with drones interfering with use and enjoyment of land it would likely be held to constitute a taking of property under the Fifth Amendment.⁹⁶ So long as the height set by a state meets the *Causby* overflight test, however, it is likely to be upheld.⁹⁷

⁹¹ See, e.g., Fromkin & Colangelo, *supra* note 15.

⁹² William D'Urso, *Drone Maker Hunts New Business*, ORANGE COUNTY REG. (Aug. 28, 2014, 5:16 PM), <http://www.ocregister.com/articles/drone-633147-aerovironment-company.html>; Nabiha Syed & Michael Berry, *Journo-Drones: A Flight over the Legal Landscape*, 30 COMMS. LAW. 3 (2014), available at http://www.lskslaw.com/documents/CL_Jun14_v30n4_SyedBerry.pdf.

⁹³ See ALISSA M. DOLAN & RICHARD M. THOMPSON II, CONG. RESEARCH SERV., R42940, INTEGRATION OF DRONES INTO DOMESTIC AIRSPACE: SELECTED LEGAL ISSUES 12 (2013).

⁹⁴ See, e.g., Dorrier, *supra* note 31.

⁹⁵ See Part II.B (discussing *Causby*).

⁹⁶ See Part II.B (discussing *Causby*).

⁹⁷ See ALISSA M. DOLAN & RICHARD M. THOMPSON II, CONG. RESEARCH SERV., R42940, INTEGRATION OF DRONES INTO DOMESTIC AIRSPACE: SELECTED LEGAL

Federal law would not appear to preclude such an action, and it would provide the federal government with lead time to more fully study the issue of drone flights using the experience generated by actual drone usage to set eventual federal rules.⁹⁸

It is possible, however, that the Supreme Court would step back from the injury requirement introduced in *Causby* when confronted with drone flights, returning instead to an intrusion based analysis more in keeping with property based notions of vindicating property owners' rights traditionally implicated in such holdings. This could also open up an even greater role for states as the takings analysis would more closely track the fact of the physical invasion and focus less on policy needs related to establishing navigable airspace.

As drones are likely to be operated locally, often staying within states and even specific jurisdictions within them,⁹⁹ the need for national rules need not be emphasized. Instead, drone operators can adapt to local controls, even if they exist in a patchwork across jurisdictions. Longer flights which do cross jurisdictional boundaries are likely to take place at higher altitudes and to follow more traditional flight patterns including takeoffs and landings from established locations, subjecting them to FAA control.¹⁰⁰ All of these elements together indicate that states may indeed have a significant role to play in regulating drone flights, especially in the short term.¹⁰¹

ISSUES 10 (2013).

⁹⁸ This argument mirrors that made by Margot Kaminski as to drones and privacy in her article. See Margot E. Kaminski, *Drone Federalism: Civilian Drones and the Things They Carry*, 4 CAL. L. REV. CIRCUIT 57, 59–60, 73 (2013).

⁹⁹ See, e.g., Peter Finn, *Domestic Use of Aerial Drones by Law Enforcement Likely to Prompt Privacy Debate*, WASH. POST (Jan. 23, 2011, 12:56 AM), <http://www.washingtonpost.com/wp-dyn/content/article/2011/01/22/AR2011012204111.html> (detailing an example of domestic police using drones to surveil a prospective criminal).

¹⁰⁰ See *US Getting Near-Daily Reports of Drones Flying Near Aircraft Without Permission*, GUARDIAN (Nov. 12, 2014, 12:07 PM), <http://www.theguardian.com/world/2014/nov/12/us-daily-reports-drones-flying-airplanes-without-permission>.

¹⁰¹ A word of caution is in order here: to the extent that the federal government asserts its authority over drone operations, it is likely, based on doctrinal and historical analysis, to be upheld in that assertion by the courts. See generally *City of Burbank v. Lockheed Air Terminal*, 411 U.S. 624, 639–40 (1973) (“We are not at liberty to diffuse the powers given by Congress to FAA . . . by letting the States or municipalities in on the planning. If that change is to be made, Congress alone must do it.”); *Fact Sheet*, *supra* note 9 (asserting that the FAA’s authority preempts state or local government laws when it comes to operation of an aircraft, airworthiness standards, or pilot requirements).

III. STATES AND DRONES TODAY

States have already taken a variety of steps in relation to drone regulation, and there are other areas in which states are likely to want to regulate drones in the future. State drone regulatory activities can be placed into one of a number of loose categories:

- 1) Encouragement and assistance of drone-based industries within the state;
- 2) Placing limitations on public entity drone use;
- 3) Controlling private use of drones: concerns over operation, privacy and surveillance; and,
- 4) Defining property rights and trespass.

For now we will simply describe these drone-related controls and how they fit into the regulatory landscape. We will then consider likely state authority, or lack of state authority, to enact legislation or regulation in each of these categories given the outline of federal authority above.

A. Supporting Drones: Economic Incentives

Domestic use of drones has been on the federal radar for some time. Predicted to have an economic impact of over \$82 billion between 2015 and 2025,¹⁰² with total job creation during that period estimated to be in excess of 100,000 jobs and tax revenue to the states totaling \$635 billion,¹⁰³ states are understandably interested in ensuring they receive a portion of the drone economy's benefits. This shows not only in official statements from state and local leaders regarding drones and drone development¹⁰⁴ and funds allocated to drone development,¹⁰⁵ but

¹⁰² DARRYL JENKINS & BIJAN VASIGH, *THE ECONOMIC IMPACT OF UNMANNED AIRCRAFT SYSTEMS INTEGRATION IN THE UNITED STATES 2* (2013).

¹⁰³ *Id.*

¹⁰⁴ A number of states have adopted resolutions supportive of the drone industry. See H.R. 381, 2013 Leg., Reg. Sess. (Ala. 2013); A.J.R. 6, 2013 Leg., Reg. Sess. (Cal. 2013); S. Con. Res. 16, 2013 Leg., Reg. Sess. (Cal. 2013); H.R. 80, 152d Gen. Assemb., Reg. Sess. (Ga. 2013); H.R. 81, 152d Gen. Assemb., Reg. Sess. (Ga. 2013); S.R. 172, 152d Gen. Assemb., Reg. Sess. (Ga. 2013); S. Con. Res. 103, 62d Leg., Reg. Sess. (Idaho 2013); H.R. 280, 2013 Leg., Reg. Sess. (Mich. 2013); H. Con. Res. 3012, 63d Leg., Reg. Sess. (N.D. 2013); S. Con. Res. 7, 77th Leg., Reg. Sess. (Nev. 2013); see also Rich Williams, *Current Unmanned Aircraft State Law Landscape*, NCSL (Sept. 16, 2014), <http://www.ncsl.org/research/civil-and-criminal-justice/current-uas-state-law-landscape.aspx> (including reviews of state legislation in both 2013 and 2014).

also in state responses to the Federal Aviation Administration's Test Site competition, a competition required by two different Congressional Acts.¹⁰⁶ The competition sought applications from those interested in and capable of setting up drone test ranges.¹⁰⁷ The legislation required that the FAA award operational status to six such ranges.¹⁰⁸

At the first stage of the competition, fifty applications for test range status were received, and states and local governments were involved as partners and supporters in a number of these applications.¹⁰⁹ The initial group of applicants was reduced to twenty-five by the FAA, which ultimately awarded six sites with test range status.¹¹⁰ All six sites are currently in operation (or, in the parlance of the FAA, all six are now "standing up").¹¹¹

The number of filed applications, including those at the initial stage, show state and local interest in ensuring their role in the drone economy.¹¹² In addition, state and local governments in the

¹⁰⁵ See, e.g., S.B. 1221, 27th Leg., Reg. Sess. (Haw. 2013) (allocating \$100,000 in funds to develop drone-related degree and training programs); H.B. 100, 2013 Leg., Reg. Sess. (Md. 2013) (\$500,000 allocated to the state's unmanned aerial test facility); Assemb. B. 507, 2013 Leg., Reg. Sess. (Nev. 2013) (allocating \$4,000,000 to the Governor's UAV program); S.B. 2018, 63d Leg., Reg. Sess. (N.D. 2013) (allocating \$4,000,000 if the state is chosen as an FAA test site).

¹⁰⁶ FAA Modernization and Reform Act of 2012, Pub. L. No. 112-95, § 332(c), 126 Stat. 11, 74-75 (2012); National Defense Authorization Act for Fiscal Year 2014, Pub. L. No. 113-66, § 145, 127 Stat. 672, 699-700 (2013).

¹⁰⁷ Unmanned Aircraft System Test Site Program, 78 Fed. Reg. 12259 (proposed Feb. 22, 2013); see also *Press Release - FAA Announces Request for Proposals for Unmanned Aircraft Systems Research and Test Sites*, FED. AVIATION ADMIN. (Feb. 14, 2013), http://www.faa.gov/news/press_releases/news_story.cfm?newsId=14313 (explaining that the FAA solicited proposals from universities, state and local governments, and other public entities, all of which would be capable of setting up a UAS test site).

¹⁰⁸ FAA Modernization and Reform Act § 332(c)(1),(4).

¹⁰⁹ See *Federal Aviation Administration, Online Public Engagement Session: UAS Test site Privacy Policy*, FED. AVIATION ADMIN. (Apr. 3, 2013), <http://www.faa.gov/uas/media/uastranscription.pdf>.

¹¹⁰ *Fact Sheet - FAA UAS Test Site Program*, FED. AVIATION ADMIN. (Dec. 30, 2013), https://www.faa.gov/news/fact_sheets/news_story.cfm?newsid=15575.

¹¹¹ *Press Release - FAA Announces Virginia Tech UAS Test Site Now Operational*, FED. AVIATION ADMIN. (Aug. 13, 2014), http://www.faa.gov/news/press_releases/news_story.cfm?newsId=16875 (describing the Virginia Tech site as "the last of six nationwide to be declared operational.").

¹¹² See, e.g., Mark Weiner, *Schumer: FAA Should Make Central New York a National Test Site for Drones*, SYRACUSE.COM (Sept. 16, 2013, 5:34 PM), http://www.syracuse.com/news/index.ssf/2013/09/schumer_faa_should_make_central_new_york_a_national_test_site_for_drones.html (explaining that New York

areas covered by the “losing” applications have stated their intent to pursue alternative paths to drone development within their jurisdictions.¹¹³ Other states are studying drone issues,¹¹⁴ or creating task forces,¹¹⁵ and committees¹¹⁶ to study drones. Even when regulating drones, states are careful at times not to overlook the economic benefits of drone development, as was Utah when it noted that its law regulating drone use was not intended “to prohibit or impede the public and private research, development, or manufacture of unmanned aerial vehicles.”¹¹⁷ Regardless of their concerns about privacy, surveillance and potential invasiveness of use, states are keenly aware of the economic stakes involved in the game of drones.¹¹⁸

B. Controlling Public Use: Law Enforcement and Government Use

A number of states have enacted legislation that limits public use of drones, especially in terms of law enforcement and a number of states have placed explicit restrictions on drone use by

Senator Charles Schumer advocated for the FAA to accept a joint New York-Massachusetts proposal); *Leaders Welcome FAA Nod to Test Unmanned Aircraft; Virginia Tech Positioned to Lead New Industry*, VIRGINIA TECH NEWS (Dec. 30, 2013), www.vtnews.vt.edu/articles/2013/12/123013-research-faa.html (explaining that the proposal submitted by the Mid-Atlantic Aviation Partnership was supported by the Governors of Virginia and New Jersey); *Municipal League Backs University Bid for Designated FAA Drone Test Site*, FOCUS DAILY NEWS, focusdailynews.com/municipal-league-backs-university-bid-for-designated-faa-drone-test-site-p11266-1.htm (last visited Nov. 17, 2014) (reporting that the Texas Municipal League, an association of local government officials in Texas, had endorsed the Texas test site proposal backed by Governor Rick Perry).

¹¹³ See, e.g., Adam Wilmoth, *FAA Skips Oklahoma in Drone Test Site Selection*, NEWSOK (Dec. 30, 2013), <http://newsok.com/faa-skips-oklahoma-in-drone-test-site-selection/article/3919182>.

¹¹⁴ See, e.g., S. Res. 27, 118th Gen. Assemb., 1st Reg. Sess. (Ind. 2013) (requiring a study of drone issues from its legislative council).

¹¹⁵ H. Con. Res. 6, 28th Leg., 1st Reg. Sess. (Alaska 2013) (relating to a Task Force on Unmanned Aircraft Systems); H. Con. Res. 15, 28th Leg., 2d Reg. Sess. (Alaska 2014) (continuing support of the Unmanned Aircraft System task force).

¹¹⁶ OHIO REV. CODE ANN. § 122.98 (LexisNexis 2014) (creating an aerospace and aviation technology committee).

¹¹⁷ S.B. 167, Gen. Sess. (Utah 2014).

¹¹⁸ “Game of Drones” was the title of the conference at which this article was presented as a working paper. The conference took place on March 20, 2014, and the title was created by Albany Government Law Review conference organizer and then Albany Law School student Devlyn Tedesco (Albany Law School, class of 2014).

state and local law enforcement.¹¹⁹ These vary from requiring a warrant for drone operations by enforcement entities¹²⁰—though many warrant requirement statutes provide exceptions in certain defined circumstances¹²¹—to reporting on drone use by public entities¹²² and controlling collection, use, and retention of drone gathered information.¹²³ Some states have set up administrative agency procedures for authorizing drone use by public entities,¹²⁴ and another has instituted training and licensing procedures applicable to public use of drones.¹²⁵ State level prohibitions on all use of drones by state and local public entities have also been enacted which may be styled either as “prohibitions”¹²⁶ or “moratoria.”¹²⁷ These may be limited in their application, for example, to a prohibition on using drones for traffic law enforcement,¹²⁸ and the state legislation may provide many exceptions to the prohibitions.¹²⁹

¹¹⁹ See *Current Unmanned Aircraft State Law Landscape*, NCSL (Sept. 16, 2014), <http://www.ncsl.org/research/civil-and-criminal-justice/current-uas-state-law-landscape.aspx> (listing various states that have provided regulations on drone use).

¹²⁰ H.B. 255, 28th Leg., Reg. Sess. (Alaska 2014) (to be codified at ALASKA STAT. § 18.65.902); FLA. STAT. § 934.50 (2014); IDAHO CODE ANN. § 21-213 (2014); S.B. 1587, 98th Gen. Assemb., Reg. Sess. (Ill. 2013); IND. CODE § 35-33-5-9 (2014); H.F. 2289, 85th Gen. Assemb., Reg. Sess. (Iowa 2014) (codified at IOWA CODE § 808.15); MONT. CODE ANN. § 46-5-109 (2013); N.C. GEN. STAT. ANN. § 15A-300.1 (West 2014); OR. REV. STAT. ANN. § 837.320 (West 2014); TEX. GOV'T CODE ANN. § 423.002 (West 2013); UTAH CODE ANN. § 63G-18-103 (West 2014); WIS. STAT. § 175.55 (2014).

¹²¹ Alaska allows collection with a warrant or by using a judicially recognized warrant exception, H.B. 255, 28th Leg., Reg. Sess. (Alaska 2014) (to be codified at ALASKA STAT. § 18.65.902), while Iowa allows collection of information without a warrant if the information is obtained in a manner consistent with state and federal law, H.F. 2289, 85th Gen. Assemb., Reg. Sess. (Iowa 2014) (codified at IOWA CODE § 808.15).

¹²² Illinois requires reporting of all law enforcement agency drone ownership, including number of drones owned, S.B. 1587, 98th Gen. Assemb., Reg. Sess. (Ill. 2013), and Texas requires reporting of drone ownership in communities with populations of more than 150,000 people, TEX. CODE ANN. § 423.008 (2013).

¹²³ Alaska regulates retention of drone collected information. ALASKA STAT. ANN. § 18.65.903 (West 2014). Utah has established standards for retention designed to reduce inappropriate use. UTAH CODE ANN. § 63G-18-104 (West 2014).

¹²⁴ North Carolina has established a procedure whereby the Chief Information Officer can grant exceptions from the state's moratorium on such use. 2013 N.C. Sess. Laws 41.

¹²⁵ 2014 N.C. Sess. Laws 229–30.

¹²⁶ IOWA CODE ANN. § 321.492B (West 2014).

¹²⁷ S.B. 1331, 2013 Reg. Sess. (Va. 2013).

¹²⁸ IOWA CODE ANN. § 321.492B (West 2014).

¹²⁹ Exceptions to the prohibitions may include procedures for waiver, such as

These attempts to restrict public use of drones often occur both due to legislators' own reactions to drone use and the surveillance possible with them and to public pressure on elected officials to control the new technologies.¹³⁰ The restrictions will most likely have no effect on federal operations, whether administrative, law enforcement, or otherwise, as federal officers are most likely not bound by state restrictions in this regard.¹³¹

C. Controlling Private Use: Operation, Surveillance, Privacy & More

As with public entities and especially law enforcement, states have created a variety of structures and restrictions on private commercial and non-commercial drone use. Some of these are aimed directly at maintaining the privacy of those who might be seen, recorded or otherwise subject to surveillance with drone technology, while others are aimed at non-privacy uses.¹³² General schemes have been set up to regulate private drone users,¹³³ though laws with more specific objectives and aimed at specific activities are more the norm. Interestingly, a repeated concern for state legislatures has been the use of drones to undertake surveillance on or to interfere with those engaged in hunting and fishing.¹³⁴ Hunting or fishing by drone has also been prohibited,¹³⁵ and a number of states prohibit outfitting drones by adding weapons to them.¹³⁶

Surveillance and privacy concerns also form a core of provisions found in state legislation. These laws may prohibit photography and surveillance on private property without the permission of

that provided by North Carolina's Chief Information Officer approval process. 2013 N.C. Sess. Laws 41.

¹³⁰ Somini Sengupta, *Lawmakers Set Limits on Police in Using Drones*, N.Y. TIMES, Feb. 16, 2013, at A1.

¹³¹ See Seth P. Waxman & Trevor W. Morrison, *What Kind of Immunity? Federal Officers, State Criminal Law, and the Supremacy Clause*, 112 YALE L.J. 2195, 2206 (2003).

¹³² Robert Holly, *States Restrict Drone Use Because of Privacy Concerns*, MIDWEST CENTER FOR INVESTIGATIVE REPORTING (Mar. 21, 2014), <http://investigatamidwest.org/2014/03/21/states-restrict-drone-use-because-of-privacy-concerns/>.

¹³³ See, e.g., IDAHO CODE ANN. § 21-213 (2014).

¹³⁴ See 720 ILL. COMP. STAT. ANN. 5/48-3(b)(10) (LexisNexis 2014); see also TENN. CODE ANN. § 70-4-302 (2014).

¹³⁵ N.C. GEN. STAT. § 14-401.24 (2014).

¹³⁶ *Id.*; H.B. 2710, 77th Leg. Assemb., Reg. Sess. (Or. 2013); S.B. 196, 2013 Leg., Reg. Sess. (Wis. 2013).

the property owner,¹³⁷ and may also prohibit distribution of photographs and video obtained illegally by drone.¹³⁸ The privacy concerns related to drones have attracted significant attention in the literature, and I leave the consideration of those concerns to the established discourse.¹³⁹

D. The State Role in Defining Property & Trespass Rights

In addition to directly legislating public and private use controls, states have taken steps to stake a place for their citizens as owners of the skies above their properties. Some of the legislation in this area is directly related to drones, but other elements were put in place in response to the development of manned flight in the early 1900s. These provisions may recognize that air travel is lawful, for example:

Flight in aircraft over the lands and waters of this state is lawful, unless at such a low altitude as to interfere with the then existing use to which the land or water, or the space over the land or water,

¹³⁷ H.A. 1009, 118th Gen. Assemb., 2d Reg. Sess. (Ind. 2014) (enacted as amended at IND. CODE § 35-33-5-9 (2014)); H.B. 1029, 2014 Leg., Reg. Sess. (La. 2014); N.C. GEN. STAT. § 14-401.25 (2014); S.B. 1892, 2013 Gen. Assemb., Reg. Sess. (Tenn. 2013); S.B. 196, 2013 Leg., Reg. Sess. (Wis. 2013); H.B. 912, 83rd Leg., Reg. Sess. (Tex. 2013).

¹³⁸ N.C. GEN. STAT. § 15A-300.1 (2014); S.B. 1892, 2013 Gen. Assemb., Reg. Sess. (Tenn. 2013); H.B. 912, 83rd Leg., Reg. Sess. (Tex. 2013).

¹³⁹ See, e.g., Hillary B. Farber, *Eyes in the Sky: Constitutional and Regulatory Approaches to Domestic Drone Deployment*, 64 SYRACUSE L. REV. 1, 29, 31 (2014); Brandon Nagy, *Why They Can Watch You: Assessing the Constitutionality of Warrantless Unmanned Aerial Surveillance by Law Enforcement*, 29 BERKELEY TECH. L.J. 135, 136–37 (2014); Jennifer O'Brien, *Warrantless Government Drone Surveillance: A Challenge to the Fourth Amendment*, 30 J. MARSHALL J. INFO. TECH. & PRIVACY L. 155, 166–67 (2013); Chris Schlag, *The New Privacy Battle: How the Expanding Use of Drones Continues to Erode Our Concept of Privacy and Privacy Rights*, 13 U. PITT. J. TECH. L. & POL'Y 1, 12–13, 15 (2013); Michael J. Schoen & Michael A. Tooshi, *Confronting the New Frontier in Privacy Rights: Warrantless Unmanned Aerial Surveillance*, 25 AIR & SPACE L. 1, 21 (2012); John Villasenor, *Privacy, Security, and Human Dignity in the Digital Age: Observations from Above: Unmanned Aircraft Systems and Privacy*, 36 HARV. J.L. & PUB. POL'Y 457, 508 (2013); Ben Jenkins, Note, *Watching the Watchmen: Drone Privacy and the Need for Oversight*, 102 KY. L.J. 161, 161–62 (2014); Ajoke Oyegunle, Comment, *Drones in the Homeland: A Potential Privacy Obstruction Under the Fourth Amendment and the Common Law Trespass Doctrine*, 21 COMMLAW CONSPICUOUS 365, 366, 377, 384–85 (2013); Ian F. Rothfuss, Comment, *An Economic Perspective on the Privacy Implications of Domestic Drone Surveillance*, 10 J.L. ECON. & POL'Y 441, 458 (2014); Michael J. Sheehan, Note & Comment, *U.S. Citizens' Fourth Amendment Rights & Unmanned Aerial Vehicles: An Appeal for Bright-Line Legislative Action*, 32 TEMP. J. SCI. TECH. & ENVTL. L. 255, 275, 286 (2013).

is put by the owner, or unless so conducted as to be imminently dangerous to persons or property lawfully on the land or the water beneath.¹⁴⁰

Provisions may also define the extent of ownership of land within the jurisdiction: “The owner of realty has title downwards and upwards indefinitely; and an unlawful interference with his rights, either below or above the surface, gives him a right of action.”¹⁴¹

These statements are not surprising, and the Supreme Court in *Causby* recognized the importance of state property rules for purposes of the Fifth Amendment takings analysis.¹⁴² The state basis of property definitions in takings jurisprudence is well established, though a state may not simply define into existence new property rights nor abrogate established property rights as it desires.¹⁴³ The North Carolina statute at question in *Causby* explicitly recognized federal supremacy as to air flight,¹⁴⁴ leading

¹⁴⁰ N.J. STAT. ANN. § 6:2-6 (West 2014); see AZ. REV. STAT. § 28-8277 (LexisNexis 2014); DEL. CODE ANN. tit. 2, § 304 (2014); MINN. STAT. § 360.012 (2014); MASS. GEN. LAWS ANN. ch. 90, § 46 (West 2014); N.C. GEN. STAT § 63-13 (2014); GA. CODE ANN. § 6-2-5 (2014).

¹⁴¹ GA. CODE ANN. § 51-9-9 (2014); see also GA. CODE ANN. § 44-1-2(b) (2014) (“The property right of the owner of real estate extends downward indefinitely and upward indefinitely.”); CA. CIV. CODE § 659 (Deering 2014) (“Land is the material of the earth, whatever may be the ingredients of which it is composed, whether soil, rock, or other substance, and includes free or occupied space for an indefinite distance upwards as well as downwards, subject to limitations upon the use of airspace imposed, and rights in the use of airspace granted, by law.”); MINN. STAT. § 360.012 (2014) (“Subdivision 1. *State*. -- Sovereignty in the space above the lands and waters of this state is declared to rest in the state, except where granted to and assumed by the United States pursuant to a constitutional grant from the people of this state. Subd. 2. *Landowner*. -- The ownership of the space above the lands and waters of this state is declared to be vested in the several owners of the surface beneath, subject to the right of flight described in subdivision 3. . . . Subd. 6. Application of state laws. -- All crimes, torts, and other wrongs committed by or against a pilot, passenger, or other person while in flight over this state shall be governed by the laws of this state; and the question whether damage occasioned by or to an aircraft while in flight over this state constitutes a tort, crime, or other wrong by or against the owner of such aircraft shall be determined by the laws of this state.”).

¹⁴² *United States v. Causby*, 328 U.S. 256, 265–66 (1946) (“If we look to North Carolina law, we reach the same result.”).

¹⁴³ *Id.* at 265 (“while the meaning of property as used in the Fifth Amendment was a federal question, ‘it will normally obtain its content by reference to local law.’”).

¹⁴⁴ *Id.* at 266 (“Sovereignty in the airspace rests in the State ‘except where granted to and assumed by the United States.’ The flight of aircraft is lawful ‘unless at such a low altitude as to interfere with the then existing use to which the land or water, or the space over the land or water, is put by the owner, or

the Court to conclude that North Carolina did not contest the federal right to control navigable airspace.¹⁴⁵ Whether a change in language would push the Court in another direction is a question that has not yet been raised or decided.

In addition to statutory provisions relating to sovereignty and property definitions, states may be inclined to provide additional rights to landowners, or to clarify existing principles to provide a stronger cause of action for drone based actions. Oregon, for example, has passed a law that specifically provides landowners and land possessors with a legal cause of action if an operator flies a drone over their properties at a height of less than 400 feet after having done so at least once before and after having been notified by the owner not to do so again.¹⁴⁶

It may also be fair to read the state prohibitions on surveillance as being within this “land rights” category. Many of the privacy

unless so conducted as to be imminently dangerous to persons or property lawfully on the land or water beneath.’ Subject to that right of flight, ‘ownership of the space above the lands and waters of this State is declared to be vested in the several owners of the surface beneath’”) (internal citations omitted).

¹⁴⁵ *Id.*

¹⁴⁶ OR. REV. STAT. § 837.380 (2013) provides:

- (1) Except as provided in subsection (2) of this section, a person who owns or lawfully occupies real property in this state may bring an action against any person or public body that operates a drone that is flown at a height of less than 400 feet over the property if:
 - (a) The operator of the drone has flown the drone over the property at a height of less than 400 feet on at least one previous occasion; and
 - (b) The person notified the owner or operator of the drone that the person did not want the drone flown over the property at a height of less than 400 feet.
- (2) A person may not bring an action under this section if:
 - (a) The drone is lawfully in the flight path for landing at an airport, airfield or runway; and
 - (b) The drone is in the process of taking off or landing.
- (3) A prevailing plaintiff may recover treble damages for any injury to the person or the property by reason of a trespass by a drone as described in this section, and may be awarded injunctive relief in the action.
- (4) A prevailing plaintiff may recover attorney fees under ORS 20.080 if the amount pleaded in an action under this section is \$10,000 or less.
- (5) The Attorney General, on behalf of the State of Oregon, may bring an action or claim for relief alleging nuisance or trespass arising from the operation of a drone in the airspace over this state. A court shall award reasonable attorney fees to the Attorney General if the Attorney General prevails in an action under this section.

provisions, however, are based not specifically on property rights but instead focus on expectations of privacy and permission to be captured on video or in photographs, and as such they fit better within the conception of direct restrictions on drone operators outlined above.¹⁴⁷ Regardless of categorization, however, it is clear that there already exist significant state statements of law and policy relating to ownership of and control over the airspace, and that while states may recognize the right to navigate in the national airspace claimed by Congress, they have also retained claims, both on their own behalf and on the behalf of their citizens, to whatever rights remain outside of that Congress's control.¹⁴⁸

IV. ANALYZING STATE AUTHORITY

A. *Incentives and the Drone Industry*

The incentives and involvement provided by state and local governments that participated in drone test site applications, together with state and local government activities related to more general economic and regulatory incentives, are designed to encourage businesses to move to or establish themselves within a particular jurisdiction.¹⁴⁹ None of these incentives were considered out of the ordinary on the part of state or local governments in this regard. Like using eminent domain to secure the land for a new factory,¹⁵⁰ or the provision of tax incentives to an employer who promises to create jobs, state and local activity,¹⁵¹ support for or participation in drone applications was simply another part of state activities related to economic development.

Without some allegation of improper economic incentives or other prohibited activity, the ability of states to seek to grow

¹⁴⁷ See *supra* Part III.C

¹⁴⁸ See *Fact Sheet - Unmanned Aircraft Systems (UAS)*, FED. AVIATION ADMIN. (Jan. 6, 2014), http://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=14153.

¹⁴⁹ See *supra* Part III.A.

¹⁵⁰ *Poletown Neighborhood Council v. Detroit*, 304 N.W.2d 455, 457 (Mich. 1981) (land taken by eminent domain to build a General Motors factory), *overruled by* *County of Wayne v. Hathcock*, 684 N.W.2d 765, 788 (Mich. 2004); *Bugryn v. City of Bristol*, 774 A.2d 1042, 1044–45 (Conn. App. Ct. 2001) (taking of land by eminent domain to build an industrial park).

¹⁵¹ See, e.g., *Start-Up NY*, NEW YORK STATE, <http://startup.ny.gov/business-growth> (last visited Nov. 17, 2014).

economic opportunities for their citizens is an accepted part of government's role.¹⁵² Indeed, such activity is often seen as a core government responsibility.¹⁵³ As such, incentives for development of drone economic activity are likely to be largely immune to legal attack and are likely to remain within state powers.

B. Self-Regulation: States, Local Governments, and Public Business

States have the authority to regulate their own affairs. Authority not provided to the federal government by the Constitution remains with the states.¹⁵⁴ That authority allows states to set restrictions on actions taken on their behalf. So long as state laws and policies are not in conflict with Constitutional guarantees or relevant federal policies, states can restrict or otherwise place limitations on the actions of those who act on their behalf.¹⁵⁵

For our purposes here, a number of states have provided for limited uses or imposed requirements on public uses of drones, especially for law enforcement purposes.¹⁵⁶ These laws do not conflict with any federally recognized rights or laws, and as such, are within the power of the states to enact and enforce.¹⁵⁷ They

¹⁵² See, e.g., *Kelo v. City of New London*, 545 U.S. 469, 484 (2005) ("Promoting economic development is a traditional and long-accepted function of government."); see also *Minn. Energy & Econ. Dev. Auth. v. Printy*, 351 N.W.2d 319, 340 (Minn. 1984) ("It is well settled that economic development financing is a proper function of government.").

¹⁵³ *Printy*, 351 N.W.2d at 340 ("the highest appellate courts of 22 jurisdictions have upheld the validity of legislation authorizing government industrial development bonds or other types financial assistance . . .").

¹⁵⁴ U.S. CONST. amend. X.

¹⁵⁵ See, e.g., Leslie Daunt, *State vs. Federal Law: Who Really Holds The Trump Card*, HUFF. POST (Jan. 28, 2014, 4:13 PM), http://www.huffingtonpost.com/lesley-daunt/state-vs-federal-law-who_b_4676579.html (explaining that the Supremacy Clause provides that when federal and state laws are in conflict, federal law is superior); Jennifer Daw Holloway, *What Takes Precedence: HIPAA or State Law?*, AM. PSYCHOL. ASS'N, <http://www.apa.org/monitor/jan03/hipaa.aspx> (last visited Dec. 27, 2014) (explaining that in the context of HIPAA, a federal law, "[t]he general standard is that if a state law is more protective of the patient, then it takes precedence over HIPAA[.]").

¹⁵⁶ Rich Williams, *2014 State Unmanned Aircraft Systems (UAS) Legislation*, NCSL (Sept. 16, 2014), <http://www.ncsl.org/research/civil-and-criminal-justice/2014-state-unmanned-aircraft-systems-uas-legislation.aspx>.

¹⁵⁷ WELLS C. BENNET, *CIVILIAN DRONES, PRIVACY, AND THE FEDERAL-STATE BALANCE* 4–5 (2014) ("First, with some important federal-level exceptions, the law of 'private' privacy and aerial surveillance largely is state law.").

are matters of local control. Even the requirement that public drone operators have a state issued operator's license, after undergoing required training, is squarely within a state's authority to regulate its own affairs.¹⁵⁸

The larger question here, then, is whether it is good policy for states to enact such restrictions. To the extent that such enactments are spurred out of immediate public and media reaction to the use of drones, short term restrictions on such use to allow for their study and the development of suitable rules makes sense. The moratorium is a well-established method that allows government to undertake the development of good policy positions. Short term moratoria might be put to good use in studying both the practical effect of and public perception of drone use by government entities.

Permanent restrictions, or restrictions established without review timeframes, provide less of a chance for review and revision. To the extent that drone restrictions are enacted in response to uncertainty as to the technology's potential for misuse,¹⁵⁹ further study seems warranted. Such concerns may be well founded, but the technology itself has not been in use for a sufficient period of time to be able to seriously gauge the true potential for use and abuse. A conservative approach to regulation as implemented through time-limited rules makes the most sense at this point in time.

C. Controlling Private Use

Controls over private use raise greater concerns than those exercised over public use, which is squarely within the authority of the states.¹⁶⁰ Some kinds of controls that states may wish to implement may be outside of their authority, preempted by the

¹⁵⁸ H.B. 1099, 2014 Gen. Assemb., 2013 Sess. (N.C. 2014).

¹⁵⁹ See generally Bill McCleery, *Police Drones are Helpful Tool but Come with Concerns*, INDY STAR (Aug. 17, 2014, 10:14 PM), <http://www.indystar.com/story/news/2014/08/17/police-drones-helpful-tool-come-concerns/14204901/> (explaining that the information collected from drones by police agencies has the potential for misuse).

¹⁶⁰ See generally *Unmanned Aircraft Systems*, FED. AVIATION ADMIN., <https://www.faa.gov/uas/> (last updated Sept. 25, 2014) (stating that public entities that want to fly a UAS require Certificates of Airworthiness (COA) which are issued by the Federal Aviation Administration (FAA)); *Public Operations (Governmental)*, FED. AVIATION ADMIN., https://www.faa.gov/uas/public_operations/ (last updated Aug. 8, 2014) (further describing the FAA's COA permitting process for the public operation of UAS).

federal government's authority in this arena. Others would be better implemented through a harm based approach, by enacting laws that aim at the ultimate harm to be prevented rather than at specific technologies.

As Margot Kaminski has outlined, federal law does not currently preclude state laws that purport to regulate drone use in the privacy realm.¹⁶¹ That does not mean, however, that Congress could not enact laws preempting states from regulating in this area. To the extent authorized by statute, the FAA may also step into this field. If this occurs, state attempts to control drone facilitated privacy violations may lose significant ground. If Congress or the FAA enact specific controls on drones and privacy, state laws that regulate on that same topic are likely to be suspect. In contrast, state laws aimed more generally at protecting privacy have a greater chance of surviving a federal preemption challenge.

The same "harm based" approach holds true for laws and regulations aimed at protecting those who hunt and fish from surveillance or harassment, another area in which states have already acted.¹⁶² The threat to those who hunt and fish is broader than just drone surveillance. Photographers with long telephoto lenses and activists who hide wirelessly operated or other remote cameras to capture hunting and fishing activities pose the same threat of surveillance as drone cameras.¹⁶³ It makes sense to attack the harm here and not the technology, and in so doing to avoid at least some of the problems of potential federal preemption that technology targeted laws present.

Another area in which states have already acted is in prohibiting the weaponization of drones.¹⁶⁴ There is no federal

¹⁶¹ See Kaminski, *supra* note 98, at 65.

¹⁶² Michael Berry & Nabiha Syed, *State Legislature Governing Private Drone Use*, VOLOKH CONSPIRACY (Sept. 25, 2014), <http://www.washingtonpost.com/news/volokh-conspiracy/wp/2014/09/25/state-legislation-governing-private-drone-use/>.

¹⁶³ See generally Lindsey Bever, *Seattle Woman Spots Drone Outside Her 26th-Floor Apartment Window, Feels 'Violated,'* WASH. POST (June 25, 2014), <http://www.washingtonpost.com/news/morning-mix/wp/2014/06/25/seattle-woman-spots-drone-outside-her-26th-floor-apartment-window-feels-violated/> (stating that a drone outside of woman's window made her feel as if her privacy was violated); *Photography, the Law and Photographers Rights*, BOBATKINS.COM, http://www.bobatkins.com/photography/tutorials/photography_law_rights.html (last visited Nov. 15, 2014) (explaining that one may not use a telephoto lens in an area where there is a reasonable expectation of privacy).

¹⁶⁴ See generally Joe Wolverton, II, *States and Cities Step Up and Resist Drone Surveillance*, NEW AM. (Feb. 11, 2013),

law at this time that would preempt state laws in this area, and the harm itself is not conducive to broader interpretation.¹⁶⁵ In other words, the harm is making drones more dangerous. Unless individuals begin to weaponize other technologies, such as bicycles and automobiles, a more broadly written law is not necessary. It is possible, however, that this perceived danger is a chimera, a likely unfulfilled possibility feared primarily because of the military origins of drones. To the extent that this is true, such enactments add little value to the overall social welfare. They are, instead, reactionary capitulation to public fear, rather than a reaction to true factual developments. Building the record that such possibilities are more than remote should therefore be the required foundation for state laws banning such drone uses.¹⁶⁶

D. Defining Property Rights: Takings & Trespass

In *Causby*, the Supreme Court noted that its analysis was consistent with North Carolina's recognition of federal supremacy over navigable space.¹⁶⁷ This seems to be a critical point. While states cannot by legislative or regulatory fiat remove authority from Congress to regulate interstate commerce, they can and should define the contours of property for purposes of takings analysis and trespass law. Laws that state clearly the state's claim to its airspace, either on its own behalf or behalf of its citizens landowners and possessors, have a role to play in determining the existence of takings and the contours of trespass law. Oregon's law attempts to make the trespass calculation explicit, and to set up clear, understandable standards for action, provides one model for action here.¹⁶⁸ While the factual basis for a claim under the statute may be difficult to ensure—identifying

<http://www.thenewamerican.com/usnews/constitution/item/14483-states-and-cities-step-up-and-resist-drone-surveillance> (stating that Virginia and Montana have planned to pass legislation outlawing the weaponization of drones).

¹⁶⁵ See generally Press Release, European Section Global Anti-Drone Network, "Ban Weaponized Drones!": Anti-Drone Movement Spreads in Europe (Dec. 19, 2013), available at <http://truth-out.org/speakout/item/20740-ban-weaponized-drones-anti-drone-movement-spreads-in-europe> (showing that the United States federal government has not yet banned weaponized drones).

¹⁶⁶ To the extent that these restrictions are aimed at public uses of drones, such as those made by law enforcement, they would again be squarely within the authority of state governments to make, and may go far to reassuring the populace that government use of drones does not have a nefarious purpose behind it.

¹⁶⁷ *United States v. Causby*, 328 U.S. 256, 266 (1946).

¹⁶⁸ OR. REV. STAT. § 837.380 (2013).

the operator of a drone may not be easy, and proving who was operating a drone at various points in time may be even harder—providing a clear, defined method for vindicating rights is a worthwhile endeavor for states to pursue.

States may thus contribute to the law in this area either through specific provisions guaranteeing rights of action against drone users under specified circumstances, or through provisions that assert state sovereignty to the extent allowed under federal law. Asserting that control makes sense both from a political and a policy standpoint.

V. DRONES: FINAL THOUGHTS

There is considerable room for states to act in relation to drones and the effects that their widespread use will have on our lives. States should take up this charge and act where they can, being cautious of the effects of regulation on the economic and development opportunities within their jurisdictions. In addition to the areas outlined above, states should be aware of other areas that may affect drone use. For example, drone-launching facilities should be defined in zoning codes so that they cannot be sited in inappropriate locations. Zoning laws are up to this task, but the explicit inclusion of drone facilities within the definitions of businesses or industrial uses, or as commercial or industrial activities, for zoning purposes would help ensure that zoning laws are properly applied to their activities. As drone launching and returning activities are likely to generate noise, may make neighbors feel disconcerted and uneasy, and may also pose increased risks of flight accidents, devising appropriate zoning rules is one step that states and localities can take now to ensure appropriate integration of drones into the local community.¹⁶⁹

As with any new technological development, however, there is

¹⁶⁹ While the federal government does not control zoning laws at the state or local level, where local zoning frustrates or conflicts with important federal policies, the federal government may have the authority to preempt local control or to require that it be exercised according to federally set standards. See Howard Beckman, *Federal Preemption of Actions Related to Airport Noise*, AVIATION NOISE LAW (Aug. 2, 2012), <http://airportnoiselaw.org/preempt.html>. This occurred with the siting of cell phone facilities. The federal government's authority to set in place minimum standards in that regard was upheld by the Supreme Court. See *City of Arlington v. Fed. Comm'n Comm'n*, 133 S. Ct. 1863, 1873 (2013). For further discussion of land use planning and drones, see Wendie L. Kellington & Michael Berger, *Why Land Use Lawyers Care About the Law of Unmanned Systems*, 37 ZONING AND PLAN. L. REP. 1 (2014).

a tendency on the part of regulators to focus too strongly on the technology and to miss the way the technology fits into the existing regulatory scheme. States would do well to be cautious in this regard. Regulating to the ultimate harm will allow states to implement regulations that fit with existing state legal and policy priorities, while not ignoring current developments. Where necessary, drone specific regulations make sense, but generally following the path of integrating such regulations into existing frameworks is the better path to take.