

Chicago-Kent College of Law

Scholarly Commons @ IIT Chicago-Kent College of Law

All Faculty Scholarship

Faculty Scholarship

October 2015

One centimeter over my back yard: where does federal preemption of state drone regulation start?

Henry H. Perritt Jr.

IIT Chicago-Kent College of Law, hperritt@kentlaw.iit.edu

Follow this and additional works at: https://scholarship.kentlaw.iit.edu/fac_schol



Part of the [Air and Space Law Commons](#), [Internet Law Commons](#), [Science and Technology Law Commons](#), [State and Local Government Law Commons](#), and the [Transportation Law Commons](#)

Recommended Citation

Henry H. Perritt Jr., *One centimeter over my back yard: where does federal preemption of state drone regulation start?*, (2015).

Available at: https://scholarship.kentlaw.iit.edu/fac_schol/845

This Article is brought to you for free and open access by the Faculty Scholarship at Scholarly Commons @ IIT Chicago-Kent College of Law. It has been accepted for inclusion in All Faculty Scholarship by an authorized administrator of Scholarly Commons @ IIT Chicago-Kent College of Law. For more information, please contact jwenger@kentlaw.iit.edu, ebarney@kentlaw.iit.edu.

One centimeter over my back yard: where does federal preemption of state drone regulation start?

Henry H. Perritt, Jr.¹

Albert J. Plawinski

I. Introduction

You look out your back window and see a small drone hovering a few inches over your lawn, driving your dog crazy, and watching you watching it. Do you have to figure out how to report it to the Federal Aviation Administration and wait for the FAA to send an inspector, or should you call the cops?

Since the United States Constitution was ratified, creating a paradigmatic federal structure for governing the United States, new technologies have consistently raised new issues about the allocation of governing responsibility between the central government and the sovereign states that ceded some of their sovereignty to create the United States of America. Steamboats, factories, railroads, telegraphs and telephones, motor cars, wireless communications, aircraft, the Internet, and biotechnology each have raised questions anew about whether a more or less uniform body of national law, or a mosaic of different state and local laws would advance social welfare the most.

Now, the proliferation of commercial drones (unmanned aircraft systems) reignites old controversies over state and federal power. Being sold by the thousands by Amazon and other online vendors, flown for fun by hobbyists and to make money in a variety of industries, drones alarm privacy advocates, enrage anti-government zealots, make pilots fearful of midair collisions, and invite intervention by politically ambitious office

¹ Professor of Law and former Dean, Chicago-Kent College of Law, the law school of Illinois Institute of Technology. Private airplane and helicopter pilot. S.B. in Aeronautics and Astronautics, MIT; S.M. in Management, MIT Sloan School; J.D., Georgetown University Law Center. Formerly applications engineer and senior sales planner, Lockheed Aircraft Corporation; consultant to Administrative Conference of the United States on FAA and NTSB civil penalty procedures. Member of the bar:, Virginia (inactive), Pennsylvania (inactive), District of Columbia, Maryland, Illinois, Supreme Court of the United States. Mr. Perritt represents several private clients seeking section 333 exemptions from the FAA. He appreciates the stellar work of his research assistant, Albert J. Plawinski, Chicago-Kent College of Law Class of 2017, in fleshing out major parts of this article.

holders and aspirants. At the same time, drones excite the entrepreneurial energies of private sector technology enthusiasts who have applied by the hundreds for governmental permission to operate them commercially, and who forecast hundreds of thousands of new jobs and billions in economic growth.

Drone regulation is inevitable. Drones, like other flying objects, can be dangerous. Airplanes and helicopters are quite safe statistically, but even they occasionally destroy things and kill people. Helicopters and airplanes operate safely most of the time in a century-old web of customary practices and federal regulation. The FAA sets standards for the aircraft, the pilots that fly them, and the procedures of businesses that operate them. That traditional legal framework is ill-suited to drones. The balances struck between safety and economic productivity for airplanes carrying passengers and helicopters performing med-evac missions cannot merely be extended to much smaller air vehicles with no one on board.

The author and his frequent co-author, Eliot O. Sprague, have been active in exploring the ingredients of sound drone regulation in other articles, published over the last couple of years.² Those articles assume, for the most part, that whatever regulation emerges will be federal, with drone-operator (“DROP”) behavior also being conditioned by restrictions imposed by private liability insurers and the prospect of tort liability for negligent operation.

² Henry H. Perritt, Jr. & Eliot O. Sprague, *Drones*, 17 VANDERBILT J. ENT. & TECH. L. 101 (2015); Henry H. Perritt, Jr. & Eliot O. Sprague, *Law Abiding Drones*, 16 COLUM. SCI. & TECH. L. REV. 385 (2015); Henry H. Perritt, Jr. & Eliot O. Sprague, *Developing DROP Discipline: Training and Testing Operators of Small Unmanned Aircraft Systems*, 7 HASTINGS SCI. & TECH. L. J. 143 (2015); Henry H. Perritt, Jr., *Drones for hire*, DRONESX, May 27, 2015; Henry H. Perritt, Jr. & Eliot O. Sprague, *Bracing for Impact*, VERTICAL, April/May 2015, at p.86; Henry H. Perritt, Jr., *Drones gather news - legally*, NEWSLETTER OF THE RADIO TELEVISION DIGITAL NEWS ASSOCIATION, May 21, 2015; Henry H. Perritt, Jr. & Eliot O. Sprague, *Drones: Free at Last?* NEWSLETTER OF THE RADIO TELEVISION DIGITAL NEWS ASSOCIATION, Mar. 26, 2015; Henry H. Perritt, Jr. & Eliot O. Sprague, *Reigning in the Renegades*, VERTICAL MAGAZINE, Dec./Jan. 2014-2015, at p. 8; Henry H. Perritt, Jr. & Eliot O. Sprague, *Ready for the microdrone races?* NEWSLETTER OF THE RADIO TELEVISION DIGITAL NEWS ASSOCIATION, Oct. 29, 2014; Henry H. Perritt, Jr. & Eliot O. Sprague, *Seeking Law Abiding Drones: What to Tell Clients that Want to Use Drones in Their Business*, BUSINESS LAW TODAY, Oct., 2014; Henry H. Perritt, Jr. & Eliot O. Sprague, *Law abiding drones*, ROTOR & WING MAGAZINE (Sep. 2014); Henry H. Perritt, Jr. & Eliot O. Sprague, *Leashing Drones*, ROTORCRAFT PRO, Aug., 2014; Henry H. Perritt, Jr. & Eliot O. Sprague, *Leashing Drones*, ROTORCRAFT PRO, July, 2014; Henry H. Perritt, Jr. & Eliot O. Sprague, *Law and Order in the Skies*, THE TECH (MIT student newspaper), 13 June 2014; Henry H. Perritt, Jr. & Eliot O. Sprague, *But Who's Going to Fly Them?* PROFESSIONAL PILOT, June, 2014, p.94; Henry H. Perritt, Jr. & Eliot O. Sprague, *Drone Dread*, ROTOR & WING MAGAZINE, June, 2014, p.34; Henry H. Perritt, Jr. & Eliot O. Sprague, *Is there a drone in your future?* HELIWEB, May, 2014 p. 14.

This is the fourth in a series of articles about civilian drones – what the FAA calls “small Unmanned Aircraft Systems (“sUAS”). The first article³ explores the subject generally, introducing the important distinction between microdrones and machodrones and focusing on the engineering choices that are made that produce actual designs of aircraft in these distinct markets. The second article⁴ focuses more closely on vehicle design and explains that most of the rules contemplated by the FAA to ensure safe operation can be built into onboard systems. If drones may be sold only when they internalize aviation safety rules, the burden of enforcing traditional rules on hundreds of thousands of operators is eased considerably. The third article⁵ focuses on human capital. It proposes that bureaucratic burdens can be eased by delegating much of the responsibility for drone operator (“DROP”) training and certification to private organizations, extending the model traditionally used for civilian pilots in the United States.

This article focuses on the allocation of responsibility among different levels of government, recognizing that much civilian drone commercial activity will take place close to the ground and within greatly circumscribed horizontal ranges – matters traditionally regulated by states and municipalities rather than by the federal government.

This article provides a framework within which an intergovernmental tug of war among federal aviation regulators, states, and municipalities can be addressed. Part II explains what drones are, emphasizing the distinctions between microdrones and machodrones. Microdrones, mostly multicopters in configuration, cost from a few hundred to a few thousand dollars, and have limited endurance and range. Mostly powered by electric motors and batteries, they are capable of flying for 15 minutes to an hour, at distances ranging up to a mile or so from the operator, at a few hundred feet above the ground. They can carry high-quality cameras and other sensors, and may eventually be able to deliver small packages. They cannot transport any practical quantity of freight, any significant weaponry, or carry people. They represent scaled up versions of model aircraft—or model aircraft themselves, put to new uses.

³ Henry H. Perritt, Jr. & Eliot O. Sprague, *Drones*, 17 VANDERBILT J. ENT. & TECH. L. 101 (2015).

⁴ Henry H. Perritt, Jr. & Eliot O. Sprague, *Law Abiding Drones*, 16 COLUM. SCI. & TECH. L. REV. 385 (2015).

⁵ Henry H. Perritt, Jr. & Eliot O. Sprague, *Developing DROP Discipline: Training and Testing Operators of Small Unmanned Aircraft Systems*, 7 HASTINGS SCI. & TECH. L. J. 143 (2015).

Machodrones are bigger. More likely to be configured as fixed-wing aircraft or conventional helicopters, they often have gasoline, diesel, or turbine engines and much larger payloads. They can perform essentially the same missions as manned airplanes and helicopters and extend them, because they are not constrained by the endurance of on-board crew members. They represent scaled down versions of airplanes, helicopters, and military drones used in combat and for intelligence collection.

Microdrones present only modest risks to other aircraft and to people and property on the ground; machodrones present greater risk because of their weight and range.

Part II concludes with an overview of emerging drone regulation, haltingly initiated by the Federal Aviation Administration ("FAA") in late 2014.

Part III reviews the constitutional pillars of federalism: the Commerce Clause and the Supremacy Clause; and analyzes the many cases adjudicating the boundary between federal and state regulation of older aviation technologies.

Part IV takes the preemption doctrines developed in Part III and synthesizes a set of legal principles that enable, while circumscribing, state and municipal regulation of drones. It considers a number of specific restrictions that might be contemplated and evaluates their likely prospects for surviving preemption challenges.

Part V recognizes that the eventual allocation of responsibility for regulating drones will be driven as much by politics as by the law. It sketches the likely political dynamics in light of mass public concerns and interest group alignments. It considers the damage that might result from a completely uninhibited and fragmented exercise of governmental power at the most local level, explores state-municipal allocation of responsibility and federal-state cooperative possibilities.

The final part provides a framework within which both the federal government and states and their subdivisions can exercise traditional powers to regulate different aspects of all kinds of drones. The enormous popularity of microdrones has given rise to a new category of operations, increasingly referred to "consumer drones." Consumer drones do not fit comfortably within either traditional model-aircraft operations or the commercial microdrone flights the FAA proposes to regulate in its NPRM and has accommodated with its nearly 700 section 333 exemptions. Consumer drone operations represent a greater threat to aviation safety and the safety of people and things on the

ground than model aircraft or commercial microdrones, but the 2012 Act prohibits the FAA from regulating them. Senator Dianne Feinstein introduced a bill, S.1608, in 2015⁶ that would address the problem, but it may be that the best solution is to leave consumer drones for state and local regulation. Section XXX considers that possibility.

II. Drones

Any regulatory initiatives, whether federal, state, or local, should proceed from a solid understanding of the technology to be regulated. More important, it should focus on actual, rather than imagined, risks posed by the technology, qualified as much as possible. In other words, risk-based regulation should be the norm. Drone regulation also should impose performance standards rather than detailed engineering standards,⁷ which freeze technology at a particular point in time and discourage innovation. Finally, the burdens of any particular regulatory approach should be weighed against the benefit it produces to the public interest. All regulation necessarily excludes some low-probability risks with modest costs, when the burden of eliminating them is too high.⁸ The FAA has embraced all three of these principles in its NPRM,⁹ in its approach to the section 333 process.

A. Two weight groups

Drone technologies are embedded in two distinct groups of vehicles: microdrones, machodrones. The boundary between the two other groups is statutorily defined; anything weighing more than 55 pounds is a machodrone. But the range from 0 to 55

⁶ S.1608, Consumer Drone Safety Act, 114th Cong., 1st Sess. (introduced Jun. 18, 2015). See Statement by Ms Feinstein, 161 Cong. Rec. S4300 (June 18, 2015) [hereinafter “S.1608”].

⁷ FAA, Operation and certification of small unmanned aircraft systems; proposed rule, 80 Fed. Reg. 9544, 9552, 9561 (Feb. 23, 2015) (referring to risk-based and performance-based approach).

⁸ FAA, Operation and certification of small unmanned aircraft systems; proposed rule, 80 Fed. Reg. 9544, 9552, 9561 (Feb. 23, 2015) (referring to risk-based and performance-based approach).

⁹ FAA, Operation and certification of small unmanned aircraft systems; proposed rule, 80 Fed. Reg. 9544, 9552, 9561 (Feb. 23, 2015) (referring to risk-based and performance-based approach).

pounds is too large; a 5-pound 3Drobotics Solo presents vastly different risks from a 50-pound aircraft. An appropriate boundary between small microdrones and big ones—which might be called “mididrones” has not been defined, however. Maybe it should be the 3 kilogram/4.3 pounds that the UAS America Fund proposed for a special regulatory category known as micro sUAS,¹⁰ a proposal on which the FAA explicitly invited comment in the NPRM.¹¹ Maybe it should be 8 pounds or 20 pounds. The most popular small drones include the various DJI Phantom models which fit comfortably below the lowest number, but they also include the DJI Inspire 1, the 3Drobotics IRIS+, the DJI Spreading Wings S800, S900 and S1000, the FreeFly Cinestar 8, and many others.¹²

The vehicles most commonly approved in the section 333 exemptions almost all would be accommodated by 20 pound limit; and most would be accommodated by an 8 pound limit. The 4.3 pound limit would exclude everything except the DJI Phantoms.

Regardless of the regulatory categories and the dividing line between microdrones and mididrones, vehicles falling in the microdrone and mididrone groups share many basic characteristics. They are multicopters, typically quadcopters for the smaller products,

¹⁰ Petition of UAS America Fund, LLC (“UAS Fund”) to Adopt 14 C.F.R. Part 107 to Implement Operational Requirements for Micro Unmanned Aircraft Systems, <http://www.uasamericafund.com/assets/uas-america-fund-petition-rulemaking.pdf> (filed Dec. 18, 2014).

¹¹ NPRM, 80 Fed. Reg. at 9556-9557 (inviting comment on micro-sUAS idea).

¹² The most popular microdrone is the DJI Phantom, which comes in various models with prices clustered around \$1,000. Options include a built-in gimbale camera or a gimbal for a GoPro camera. The DJI Phantom, <http://www.dji.com/product/phantom>, is a quadcopter, with a diagonal size of 14 inches. It has a maximum gross weight of 2.6 pounds. A close competitor is the 3drobotics Solo, <http://3drobotics.com/solo-gopro-drone-specs/>, also a quadcopter, with a diagonal size of 23 inches. It has a maximum gross weight of 3.3 pounds.

Larger vehicles in the microdrone category include the SJI S1000, <http://www.dji.com/product/spreading-wings-s1000/spec>, an octocopter, with a diagonal size of 48 inches and maximum gross weight of 24 pounds, and the similarly sized Cinestar 8. See <http://freeflysystems.com/products/cinestar/8/>. All of them have maximum endurance of about 20 minutes and autonomous flight control and navigation features, including automatic hover, automatic return to home, and the ability to fly among pre-programmed waypoints. The smaller ones carry GoPro-sized cameras on 2- or 3-axis gimbals with the ability to downlink video. The larger ones can carry larger camera packages up to and including the Red camera used by professional cinematographers, and more sophisticated gimbals.

and hexacopters or octocopters for the bigger ones.¹³ They all have electrical propulsion systems in which LiPo batteries drive a motor on each rotor. They all have sophisticated electronic control systems that adjust vehicle attitude and orientation by varying rotor RPM differentially, obviating the need for most of the mechanical complexity on helicopters.

They all have magnetometers (electronic magnetic compasses), altimeters, and GPS navigation. Most of them have autonomous safety features, usually including automatic take off, landing, and hover; automatic return to home at the command of the DROP or if the control link is interrupted; and geo-fencing, which keeps the drone within a certain distance of the DROP, below a certain altitude, and excludes it from airports and other controlled airspace. Most of them can autonomously fly a flight plan defined in advance by entering waypoints, and modifiable in flight.

Few micro- and mididrones have endurance greater than 30 minutes, and most are in the 15-20 minute range. With maximum speeds of about 35 knots, their theoretical range is 10-20 miles, but the spread-spectrum WiFi technologies used for their control links limit them to less than a mile, as a practical matter. They have enough thrust to fly up to several thousand feet above sea level.

Enough similarities exist among the most popular models that the analysis can proceed under the statutory bifurcation between microdrones and machodrones, recognizing that a new middle-category may emerge.¹⁴

Machodrones design will not crystallize until users gain more experience with widely varying configurations. Only a few have entered the market. They are, by definition, heavier, approaching the weight of small airplanes and helicopters. They are more likely to have gasoline, diesel, or turboshaft propulsion systems to allow greater endurance and range than is available from the smaller vehicles. To justify their cost, they will have to fly beyond line of sight and at altitudes that will cause them to intermingle with manned aircraft. It is far from clear whether their capabilities will

¹⁴ The article ignores altogether toy drones, those costing less than \$100, weighing only an ounce or two and intended mainly to be flown inside.

¹⁴ The article ignores altogether toy drones, those costing less than \$100, weighing only an ounce or two and intended mainly to be flown inside.

justify their higher cost, comparable to, or exceeding that of airplanes and helicopters in similar weight classes.

B. Benefits

The explosion of interest in civilian drones, accelerated by CBS 60 Minutes reporter Charlie Rose's November, 2013 interview with Amazon CEO Jeff Bezos, is fueled by an appreciation of their utility. Microdrones and mididrones can make aviation support – especially aerial imagery – available where it has not been available before due to cost or risk of using manned aircraft. Microdrones and mididrones have acquisition costs two- to three orders of magnitude less than helicopters and airplanes. Their operating costs are similarly lower, although crew costs may turn out to be comparable, if DROP compensation resembles that for pilots – the labor market for DROPs is in its infancy.

The limited payload capability of the smaller drones means that they are primarily useful for aerial imaging. But aerial imaging applications abound. Event photography; aerial photographs and videos for marketing of real estate and boats; inspection of utility infrastructure such as pipelines, powerlines, and railroads; aerial inspection of bridges; traffic and breaking news coverage for television; assessing the damage from natural disasters; motion picture and television production; and precision agriculture resulting from crop inspection are applications that have provided incentives for more than 1,000 individuals and business entities to apply for section 333 exemptions, more than 700 of which have been granted, at the rate of 50 or so per week, as of this writing.

Further in the future, drones may be able to deliver packages and disaster relief supplies.

Drone proponents project creation of 100,000 jobs and \$82 billion in contributions to economic growth.¹⁵ While this is likely overblown, the potential contribution to economic growth and employment is undoubtedly substantial.

C. Risks

Microdrones and mididrones are lightweight, compared to helicopters and airplanes. That means that the kinetic energy to be absorbed in a crash is minuscule compared to

¹⁵ <http://www.auvsi.org/econreport>; See also See Marcelo Ballvé, The Drones Report: Market Forecasts For Commercial Applications, Regulatory Process, And Leading Players (Feb. 26, 2015) (BI Intelligence) (forecasting \$13 billion in annual spending by 2024, up from \$6 billion in 2014).

that of a traditional manned aircraft crash. They also do not carry fuel and thus present *de-minimis* fire risk. Finally, they do not carry people, so the risks to aircrews and passengers that drive so much of traditional aviation regulation is absent from the equation.

Drone operation is not without risk, however. Even a Phantom can cut someone badly if it encounters her while its blades are turning. It can create a panic if it lands or appears about to land in the middle of a crowd. A DJI Phantom weighs about as much as a pigeon, and Cinestar 8 weighs about as much as a goose. The damage they could do helicopter bubbles (windshields) and airplane engines is probably similar to that resulting from bird strikes,¹⁶ the resistance to which is tested extensively before any airplane or helicopter receives an airworthiness and type certificate.¹⁷

They also can create risk by distracting people performing potentially dangerous activities, like driving down expressways. Almost any driver would be inclined to swerve and apply the brakes if she suddenly sees even a small drone like a DJI Phantom in front of and a few feet above her in the express lanes.

Microdrone navigation systems and control links are notoriously unreliable, undermining the integrity of their autonomous safety features. Flyaways are not uncommon—a situation in which the drone ignores DROP commands and ascends beyond desired heights or flies beyond programmed or commanded distances from the DROP.¹⁸

Machodrones create far greater risk—similar to or greater than manned aircraft. Their higher weights give them greater kinetic energy, which must be dissipated in a crash. They are more likely to carry inflammable fuel. Their occupancy of higher levels of airspace magnifies the risk of mid-air collisions. The fact that their DROPs are on the ground makes it more difficult for them to honor the see-and-avoid principle that is the mainstay of traditional flight rules.

¹⁶ The large LiPo batteries and metal structural components on microdrones, however, absorb energy differently from bird bodies, and therefore testing beyond birds is necessary.

¹⁷ 14 C.F.R. § 33.76 (bird-strike test requirements).

¹⁹ FAA, Unmanned Aircraft Operations in the National Airspace System, 72 Fed. Reg. 6689 (Feb. 13, 2007).

D. Regulatory approaches

The FAA has been studying civilian drones at least since 2007. In that year it published a Federal Register notice on drones,¹⁹ describing a process for obtaining approval for civilian flight through special airworthiness certificates-experimental. The process was extremely cumbersome and mandated data submissions borrowed irrationally from the requirements for experimental airplanes and helicopters. Until 2012, the agency relied mostly on its slow moving advisory committee process²⁰ to tell it how to proceed.

In 2012 Congress enacted the 2012 FAA Reauthorization and Revitalization Act,²¹ which contained several explicit sections requiring the FAA to move faster and ultimately to integrate civilian drones into the National Airspace System. It required the FAA to come up with “Comprehensive Plan” and a “Roadmap,”²² to issue proposed rules and then to finalize them,²³ and to follow an incremental approach allowing lower risk drones to be flown commercially while more complex issues relating to high-risk, heavier drawings were being worked out.²⁴ It also authorized, in section 333, interim procedures that would allow commercial drone flight in specific cases even before the FAA developed more general regulations.²⁵

The FAA issued the required Comprehensive Plan²⁶ and Roadmap in 2013,²⁷ published a notice of proposed rulemaking (“NPRM”) for microdrones and mididrones in early 2015,²⁸ and began a section 333 exemption process in late 2014,²⁹ which resulted, by mid-

¹⁹ FAA, Unmanned Aircraft Operations in the National Airspace System, 72 Fed. Reg. 6689 (Feb. 13, 2007).

²⁰ See Aviation Rulemaking Advisory Committee (ARAC), http://www.faa.gov/regulations_policies/rulemaking/committees/documents/index.cfm/committee/browse/committeeID/1. The most recent posting of the Unmanned Aerospace Vehicles (UAV) Operations Working Group (WG) is dated 1991.

²¹ Pub. L. 112-95, 112th Cong. (Feb. 14, 2012) [hereinafter “2012 Act”].

²² 2012 Act § 332(a) (1) (comprehensive plan); Id. § 332(a)(5) (roadmap) .

²³ 2012 Act § 332(b).

²⁴ 2012 Act § 332(b).

²⁵ 2012 Act § 333.

²⁶

http://www.faa.gov/about/office_org/headquarters_offices/agi/reports/media/uas_comprehensive_plan.pdf.

²⁷ http://www.faa.gov/uas/media/uas_roadmap_2013.pdf.

²⁸ 80 Fed. Reg. 9544 (Feb. 23, 2015).

2015, in the grant of more than 700 section 333 exemptions.³⁰ Pursuant to another statutory command,³¹ the FAA established six test ranges around the country.³² They were slow to take off because of needlessly cumbersome application and approval requirements initially imposed for every drone flight on the test ranges, and because of initial FAA reluctance to give guidance on the research and demonstration activities that would be most relevant to its regulatory development.³³ Under considerable congressional pressure, the FAA began, in early 2015, to allow the test ranges to become more useful, by steering drone demonstration and experimentation activities to the test centers and by articulating more clearly the data needs for regulatory action.

The agency also has entered into a handful of cooperative ventures with industry to facilitate technology development that would enable broader use of machodrones, especially technologies that would provide collision avoidance through automated sense-and-avoid systems.³⁴ NASA has undertaken a cooperative research effort to accelerate this technology development.³⁵

The content of the NPRM and of the section 333 exemptions defines a regulatory approach that essentially imposes the non-binding guidelines for model aircraft flight:

²⁹ https://www.faa.gov/uas/legislative_programs/section_333/; See FAA, Astraeus Aerial - Exemption Rulemaking, FAA-2014-0352, <http://www.regulations.gov/#!docketDetail;D=FAA-2014-0352> (Sep. 25, 2014).

³⁰ https://www.faa.gov/uas/legislative_programs/section_333/ (summarizing number of exemptions granted).

³¹ 2012 Act § 332(c) (requiring establishment of “pilot projects”).

³² https://www.faa.gov/uas/legislative_programs/test_sites/ (announcing test sites).

³³ GAO, Unmanned Aerial Systems: Efforts Made toward Integration into the National Airspace Continue, but Many Actions Still Required (Dec. 10, 2014), <http://gao.gov/assets/670/667346.pdf>; DOT, Office of Inspector General, FAA Faces Significant Barriers to Safely Integrate Unmanned Aircraft Systems into the National Airspace System, Report Number: AV-2014-061 (June 26, 2014), www.oig.dot.gov/sites/default/files/FAA%20Oversight%20of%20Unmanned%20Aircraft%20Systems%5E6-26-14.pdf.

³⁴ FAA, Press Release – FAA-Industry Initiative Will Expand Small UAS Horizons, https://www.faa.gov/news/press_releases/news_story.cfm?newsId=18756 (May 6, 2015) (announcing Pathfinder project).

³⁵ NASA Armstrong Fact Sheet: Unmanned Aircraft Systems Integration in the National Airspace System (Feb. 28, 2014), <http://www.nasa.gov/centers/armstrong/news/FactSheets/FS-075-DFRC.html>.

weight limits, restricted height (below five hundred feet), operations only within the line of sight of the operator, avoidance of manned aircraft, exclusion of drone flights from airports and other controlled airspace, careful pre flight inspection, conformity to manufacturer instructions, operations only over property as to which an operator has permission, and qualification requirements for DROPs.³⁶

The greatest controversies involve requirements, consistently imposed in the section 333 exceptions, that DROPs have pilot licenses, that DROPs maintain visual contact as opposed to video aided (first person view or “FPV”) control, and the exclusion of night flights and operation from moving vehicles. The proposed rule eliminates the requirement for a traditional pilot’s license, and substitutes a new airman certificate called “sUAS operator,” which can be acquired by passing a knowledge test tailored to drone operation instead of manned aircraft flight.³⁷ In light of comments received on DROP qualification, the final rule is likely to add an experience requirement and a flight test to the drone qualification requirements.

The higher risks associated with machodrone flight justify the FAA’s incremental approach. Beyond line of sight operations at higher altitudes are likely to await the results of research and development on new technologies for collision avoidance.

International competitiveness adds to the pressure to get an appropriate regulatory regime in place to realize the potential. Canada, particularly, has moved much more quickly than the United States to provide flexible regulations allowing low risk commercial drone operations.³⁸ Amazon stresses in Congressional hearings and other public forums that it had to go overseas to conduct research and do demonstrations of package delivery by drones. Without prompt FAA action to get rules in place, drone design and manufacture are likely to move offshore.

General rules proposed in the NPRM are unlikely to be in place before 2016 or 2017. Meanwhile, the hundreds of section 333 exemption holders are beginning to fly commercially.

³⁶ NPRM §§ 107.11-107.11, 80 Fed. Reg. at 9586-9588 (proposed operating rules); FAA Exemption No. 11310, Docket No. FAA 2014-0608 (Colin Hinkle) at 5-9 (imposing operating limitations).

³⁷ 80 Fed. Reg. at 9567-9574 (discussing UAS operator rating).

³⁸ See NPRM at 9557 (table comparing Canadian microdrone rules with those proposed in NPRM).

In addition, hundreds, maybe thousands, of others are flying drones for pleasure or commercially in ignorance or defiance of the FAA's regulatory regime. This is the most serious public safety threat. The FAA has brought no enforcement proceedings for illegal commercial flight,³⁹ and its resources will never permit comprehensive enforcement against drone outlaws. Supplementing FAA resources by state and local law-enforcement resources might help, but if legal restrictions are too far out of line with what is possible and safe, noncompliance will become an even greater problem, exceeding the enforcement resources of all levels of government.

Increasingly state and municipal policymakers ask if they can do the regulatory job themselves. The answer to that question depends on whether state and local regulation of this new type of aviation activity is preempted by federal law.

III. Constitutional framework

A. The Commerce Clause

Article One of the United States Constitution gives the Congress of United States the power "to regulate commerce with foreign nations, and among the several states"⁴⁰ Known as the "Commerce Clause," this is both a grant of federal legislative power and a limitation on the states. The states may not, consistent with the "dormant commerce clause" regulate intrastate commerce so as to interfere with interstate commerce.⁴¹

³⁹ John Goglia, *FAA Says Commercial Drone Operators Need Exemption. But Doesn't Prosecute Those Flying Without One*, *Forbes*, Feb. 13, 2015, <http://www.forbes.com/sites/johngoglia/2015/02/13/faa-says-commercial-drone-operators-need-exemption-but-doesnt-prosecute-those-flying-without-one/> (reporting that FAA policy provides "that legal enforcement action is to be taken only for 'a violation that poses a medium or high actual or potential risk to safety,' such as 'when a UAS operation has a medium or high risk of endangering the operation of another aircraft or endangering persons or property on the ground.'").

⁴⁰ U.S. Const., art. I, § 8.

⁴¹ *Wardair Canada, Inc. v. Florida Dept. of Revenue*, 477 U.S. 1, 7-9 (1986) (explaining dormant commerce clause analysis and holding that state tax on aviation fuel did not interfere with foreign commerce with Canada).

"Interstate commerce" has been given a very broad read so as to encompass commercial activities that have effects on interstate commerce as well as those that directly involve intercourse among the states.⁴² It is likely, for example, that sale and distribution of even the smallest toy drone affects interstate commerce, because they are sold by mostly by online vendors to anyone able to make contact with their websites, regardless of where they are located.

In two recent decisions, the United States Supreme Court emphasized that the United States Congress' power under the Commerce Clause is not unlimited. In *United States v. Morrison*,⁴³ the Supreme Court held unconstitutional a federal statute that provided a civil remedy for victims of gender-motivated violence because it exceeded the Congress's power under the Commerce Clause.

The Court reiterated, from *Lopez*, (see *infra*) three categories of activity that fall within the commerce power:

1. channels of interstate commerce;
2. instrumentalities, persons, or things in interstate commerce, and
3. activities that substantially affect interstate commerce.⁴⁴

The Court focused on the third category, activities that substantially affect interstate commerce.⁴⁵ It noted that federal regulation of intrastate economic or commercial activity has usually been held to be within the commerce power.⁴⁶

Because the violence addressed by the statute was not commercial in character, the Court found it outside the commerce power.

⁴² NLRB v. Jones & Laughlin Steel Corp., 301 U.S. 1 (1937) (holding application of NLRA to local steel production labor relations to be within federal authority under Commerce Clause because of indirect effects on interstate commerce). "Although activities may be intrastate in character when separately considered, if they have such a close and substantial relation to interstate commerce that their control is essential or appropriate to protect that commerce from burdens and obstructions," 301 U.S. at 36.

⁴³ 529 U.S. 598 (2000),

⁴⁴ 529 U.S. at 608-609.

⁴⁵ 529 U.S. at 609.

⁴⁶ Id. at 612.

The *Morrison* Court relied heavily on *United States v. Lopez*,⁴⁷ in which the Court held that a federal statute criminalizing possession of firearms near schools exceeded the commerce power. In reviewing the history of Commerce Clause jurisprudence, the *Lopez* court noted *Wickard v. Filburn*,⁴⁸ which held that the commerce power extended to homegrown wheat because of its economic effect on the national market for wheat. But "neither here nor in *Wickard* has the Court declared that Congress may use a relatively trivial impact on commerce as an excuse for broad general regulation of state or private activities."⁴⁹

"We conclude, consistent with the great weight of our case law, that the proper test requires an analysis of whether the regulated activity "substantially affects" interstate commerce."⁵⁰

The *Lopez* court rejected the argument that gun violence might have an effect on interstate commerce:

"The possession of a gun in a local school zone is in no sense an economic activity that might, through repetition elsewhere, substantially affect any sort of interstate commerce. Respondent was a local student at a local school; there is no indication that he had recently moved in interstate commerce, and there is no requirement that his possession of the firearm have any concrete tie to interstate commerce.

"To uphold the Government's contentions here, we would have to pile inference upon inference in a manner that would bid fair to convert congressional authority under the Commerce Clause to a general police power of the sort retained by the States."⁵¹

The *Morrison* and *Lopez* cases involved constitutional challenges to statutes, not to administrative-agency regulations or orders. The limitations imposed by the Court in those cases, however, apply to agency actions. Administrative agencies have no power

⁴⁷ 514 U.S. 549 (1995),

⁴⁸ 317 U.S. 111, 121 (1942),

⁴⁹ *Lopez* at 558 (quoting *Maryland v. Wirtz*, 392 U.S. 183 (1968)).

⁵⁰ *Id.* at 559.

⁵¹ *Id.* at 567.

not validly delegated to them by statute. A statute purporting to delegate a power the Congress does not have is a legal nullity. So if a federal agency attempts to regulate an activity outside the Congress's commerce power, the agency action is unconstitutional, just as a statute directly regulating the same activity would be.

Morrison and *Lopez* support an argument that federal power over drones is limited. For commercial activity that does not fall within the commerce power, *per se*; the federal regulator must demonstrate a substantial relationship to interstate commerce. Merely because an activity is commercial does not mean that it is within the commerce power. To be within the commerce power, local commerce must affect interstate commerce. The same touchstones for evaluating effects are expressed in the *Lopez* and *Morrison* cases; only the level of scrutiny is different.

Federal restrictions on the kinds of drones that may be sold would involve interstate commerce; regulation of localized drone flight at low levels above the ground does not. Localized flight does not involve commerce that crosses state lines; it usually involves activity within the scope of no more than a mile. Any safety hazards are local—to persons or property nearby. Safety hazards to airliners carrying interstate passengers or freight are minimal, given the autonomous limitations installed on the vehicle's control systems that keep them away from where most commercial manned aircraft fly.

B. The Supremacy Clause

The Supremacy Clause of the United States Constitution,⁵² nullifies state law that conflicts with federal law. Such conflict may arise when the United States Congress expressly forecloses state law in a statute (express preemption), when a state law or regulation directly conflicts with federal law (conflict preemption), or when the pervasiveness of federal regulation leaves no room for state regulation (field preemption).

Usually a presumption against preemption operates, but not with respect to aviation safety regulation.

"[T]he presumption against preemption only arises if Congress legislates in a field traditionally occupied by the states. In matters of air transportation, the

⁵² U.S. Const, Art. VI,

federal presence is both longstanding and pervasive; that field is simply not one traditionally reserved to the states. The Supreme Court has not suggested that the presumption against preemption should be interposed in that field.⁵³

1. Express preemption

In *Montalvo v. Spirit Airlines*,⁵⁴ the court of appeals found no general express preemption in the Federal Aviation Act,⁵⁵ distinguishing express preemption under the Airline Deregulation Act:

“A State ... 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 any air carrier that may provide air transportation under this subpart.”⁵⁶

49 U.S.C. § 40103 declares that “[t]he United States Government has exclusive sovereignty of airspace of the United States.” This provision has been interpreted, however, as addressing sovereignty vis-a-vis other countries rather than the federal-state relationship.⁵⁷

2. Implied preemption

Montalvo explains two types of implied preemption: field preemption and conflict preemption.

a) Conflict preemption

“Courts may find conflict preemption when a state law actually conflicts with federal law or when a state law stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress in enacting the federal law.”⁵⁸

In some hypothetical instances, conflict preemption would be obvious. If the FAA mandates practice autorotations as a part of helicopter training, and a state prohibits

⁵³ *Brown v. United Airlines, Inc.*, 720 F.3d 60, 68 (1st Cir. 2013) (holding that state common-law claims by skycaps for a share of an airline fee for curbside checking of baggage was preempted by the explicit preemption language in the Airline Deregulation Act).

⁵⁴ 508 F.3d 464 (9th Cir. 2007).

⁵⁵ 508 F.3d at 470.

⁵⁶ 508 F.3d at 474-475, quoting 49 U.S.C. § 41713(b)(1).

⁵⁷ CITE

⁵⁸ 508 F.3d at 470.

practice autorotations because of the high incidence of accidents associated with such flight training, the conflict is manifest, and the state provision must yield.

Conflict preemption can be difficult to distinguish from field preemption. Suppose, for example, that an FAA regulation prescribes certain content for passenger briefings on commercial flights, and a state decides to impose an additional requirement that the briefing include advice that sitting for long periods of time can produce deep vein thrombosis. The state measure is preempted, *either* because the FAA has occupied the field of passenger briefing, *or* because adding to the FAA mandated briefing subjects conflicts with the scheme for passenger briefing the FAA envisions. In other words, the FAA prescription of certain content implies that briefer should talk about nothing else in the briefing.

b) Field preemption

Field preemption exists when federal law so thoroughly occupies a legislative field “as to make reasonable the inference that Congress left no room for the States to supplement it.”⁵⁹

As § III.A explains, preemption cannot extend beyond the Commerce power.

C. Aviation preemption

Some three dozen reported state and federal cases address federal preemption in the field of aviation safety.⁶⁰ Some of them contain sweeping language concluding that the entire field of aviation safety is off-limits to state and local law. In *Abdullah v. American Airlines, Inc.*,⁶¹ the United States Court of Appeals for the Third Circuit held that state regulation of aviation safety is federally preempted.⁶² “[W]e find implied federal preemption of the entire field of aviation safety.”⁶³ The case involved a state law claim for damages occasioned by operation of an airline transport in turbulence.

State regulation can, of course, take either one of two forms. It can be statutory, criminalizing certain drone-related conduct and imposing fines or giving authority to

⁵⁹ 508 F.3d at 470.

⁶⁰ A Westlaw search on 13 June 2015 with the search terms sy,di("aviation safety" & preemp!) yielded 36 cases.

⁶¹ 181 F.3d 363 (3d Cir. 1999).

⁶² 181 F.3d at 365.

⁶³ 181 F.3d at 365.

state or local administrative agencies to promulgate rules and impose civil penalties for their violation. Alternatively, the state common-law can give individuals a private right of action for certain drone-related conduct, such as that causing injury or damage or invading personal privacy property rights. Preemption caselaw discussed in this part involves both types of approach.

In *In re Air Crash Near Clarence Center, New York*,⁶⁴ the district court assigned multiple cases involving a Colgan Airways crash held that occupation of the field of aviation safety by the Federal Aviation Act leaves no room for state safety standards. "Applying state law standards of care would interfere with these regulations and potentially subject airlines and related entities to 50 different standards."⁶⁵

Other cases, however, adopt a more nuanced approach, examining whether the FAA has regulated particular subject matter, the degree of conflict between federal and state rules on the subject, and whether the matter regulated by the state involves a subject within traditional state police powers.

In early 2014, the FAA said: "[A] state law or regulation that prohibits or limits the operation of an aircraft, sets standards for airworthiness, or establishes pilot requirements generally would be preempted."⁶⁶

a) Aircrew qualification

State prescription of qualifications for flight personnel is preempted, because of the FAA's extensive regulation of the subject. In *French v. Pan Am Express, Inc.*,⁶⁷ the First Circuit held that state regulation of drug tests for pilots was preempted, because it intruded on the field of pilot qualifications, a matter regulated in detail by the FAA.⁶⁸

In *Ventress v. Japan Airlines*,⁶⁹ the court of appeals affirmed the district court's conclusion that state employment claims by a flight engineer were preempted. The plaintiff's whistleblower claims would have drawn the state court into deciding "backdoor

⁶⁴ 798 F. Supp.2d 481 (W.D. N.Y. 2011).

⁶⁵ 798 F. Supp.2d at 486.

⁶⁶ FAA, Fact Sheet – Unmanned Aircraft Systems (UAS), http://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=14153 (Jan. 6, 2014).

⁶⁷ 869 F.3d 1 (1st Cir. 1989).

⁶⁸ 869 F.2d at 4.

⁶⁹ 747 F.3d 716 (9th Cir. 2014).

challenges to JAL's safety-related decisions regarding his and Captain Bicknell's physical and mental fitness to operate civil aircraft."⁷⁰ "Permitting indirect challenges to aviation safety decisions under the guise of state law whistleblower claims interferes with the agency's authority to serve as the principal arbiter of aviation safety," it said.⁷¹ The court was careful to point out, however, that not all state employment law in the airline employment context is preempted, only those state claims that "encroach upon, supplement, or alter the federally occupied field of aviation safety" and jeopardize national uniformity.⁷²

The court distinguished *Martin v. Midwest Express Holdings, Inc.*⁷³ which found that state standards of care for airplane stairs were not preempted because the FARs established no requirements for airplane stairs.⁷⁴

b) Aircraft design

Many cases finding no preemption involve products liability actions premised on claims of negligent design. *Public Health Trust of Dade County, Fla. v. Lake Aircraft, Inc.*⁷⁵ is an example. The plaintiff was injured in a seaplane accident and claimed that his seat was negligently designed. The court of appeals reversed summary judgment for the defendant, finding that, despite FAA standards for seat design, allowing a damages action to proceed did not interfere with federal regulation.⁷⁶

Damages for personal injuries can co-exist with federal aviation safety regulations.⁷⁷ State regulation prescribing flight rules or aircraft design cannot. In *Lewis v. Lycoming*,⁷⁸ the district court interpreted *Abdullah* and *Elassaad* to hold that state products liability claims are not preempted on field preemption grounds; instead, a successful

⁷⁰ 747 F.3d at 722.

⁷¹ 747 F.3d at 722.

⁷² 747 F.3d at 722-723.

⁷³ 555 F.3d 806, 809 (9th Cir.2009). See § III.C.b)

⁷⁴ 747 F.3d at 721.

⁷⁵ 992 F.2d 291 (11th Cir. 1993).

⁷⁶ 992 F.2d at 294.

⁷⁸ 957 F. Supp.2d 552 (E.D. Pa. 2013).

⁷⁸ 957 F. Supp.2d 552 (E.D. Pa. 2013).

preemption defense requires establishing conflict between federal and state standards, or at least federal regulation of a particular aspect of safety.⁷⁹

FAA regulation of aircraft design and manufacture is even more detailed than regulation of aircrew qualification. Preemption in this field of aviation safety would thus appear complete. *Cleveland By and Through Cleveland v. Piper Aircraft Corp.*,⁸⁰ however, is an influential case holding that the field of aircraft safety is not completely preempted.⁸¹ The case involved a claim by the pilot of a Piper Super Cub PA-18-150 that his severe injuries in a crash were due to the negligent design of the aircraft. The jury found that Piper had negligently designed the aircraft by providing for inadequate visibility from the rear seat (from which the pilot was flying) and failing to provide a rear shoulder harness.⁸² The court of appeals found that aircraft manufacturers could comply with FAA "minimum" safety standards and also comply with standards of care embodied in state tort law.⁸³ Furthermore FAA approval of an aircraft's design "is not intended to be the last word on safety. The FAA has given manufacturers broad responsibilities for assuring their own compliance by appointing aircraft company employees to "act as surrogates of the FAA in examining, inspecting, and testing aircraft for purposes of certification."⁸⁴ There was, thus, no conflict preemption.

As noted in the discussion of *O'Donnell, infra*, subsequent Tenth Circuit caselaw questions the viability of the *Cleveland* analysis.

When FAA regulations are silent, however, on the design of a particular subsystem, there may be room for state law. The *Martin* court interpreted *Montalvo* to mean that when the agency issues "pervasive regulations" in an area, like passenger warnings, the FAA preempts all state law claims in that area. In areas without pervasive regulations or other grounds for preemption, the state standard of care remains applicable."⁸⁵ It rejected the proposition that the aircraft certification process preempts every state inquiry into aircraft design; it only preempts those design or performance matters that

⁷⁹ Id. at 558-559.

⁸⁰ 985 F.2d 1438 (10th Cir. 1993).

⁸¹ 985 F.2d at 1444.

⁸² 985 F.2d at 1441.

⁸³ 985 F.2d at 1445.

⁸⁴ 985 F.2d at 1445.

⁸⁵ 555 F.3d at 811.

are explicitly that are explicitly addressed by specific certification regulations.⁸⁶ Aircraft stairs were not among them:

"Airstairs are not pervasively regulated; the only regulation on airstairs is that they can't be designed in a way that might block the emergency exits. 14 C.F.R. § 25.810. The regulations have nothing to say about handrails, or even stairs at all, except in emergency landings. No federal regulation prohibits airstairs that are prone to ice over, or that tend to collapse under passengers' weight. The regulations say nothing about maintaining the stairs free of slippery substances, or fixing loose steps before passengers catch their heels and trip. It's hard to imagine that any and all state tort claims involving airplane stairs are preempted by federal law. Because the agency has not comprehensively regulated airstairs, the FAA has not preempted state law claims that the stairs are defective."⁸⁷

Unlike airplane stairs, pilot qualifications and medical standards are subject to detailed FAA regulation.⁸⁸ Thus the different result in *Ventress*.

The *Martin* court found support for its approach in *Cleveland, Lake County*.⁸⁹

It acknowledged that the Third Circuit takes a different approach:

"The Third Circuit, considering a failure to warn claim, took a different approach. Rather than limiting its analysis to regulations on warnings, the court decided that "federal law establishes the applicable standards of care in the field of air safety, generally, thus preempting the entire field from state and territorial regulation." *Abdullah v. American Airlines, Inc.*, 181 F.3d 363, 367 (3d Cir.1999). The savings and insurance clauses, the court reasoned, only preserve state remedies, while excluding all state standards of care. *Id.* at 367-68."⁹⁰

⁸⁶ 555 F.3d at 811-812.

⁸⁷ 555 F.3d at 812.

⁸⁸ 747 F.3d at 721-722.

⁸⁹ 555 F.3d at 811. It also cited *Greene v. B.F. Goodrich Avionics Sys., Inc.*, 409 F.3d 784, 788-89, 794-95 (6th Cir.2005) (citing *Abdullah* to find FAA preemption of a failure to warn claim, but applying a state law analysis to a claim that a navigational instrument was defectively manufactured).

⁹⁰ 555 F.3d at 809.

Later, in *Gilstrap v. United Airlines, Inc.*,⁹¹ the Ninth Circuit embraced both *Martin* and *Abdullah*:

"We find persuasive, and here adopt, Abdullah 's division of the FAA's field preemptive effect into two components: state standards of care, which *may* be field-preempted by pervasive regulations, and state remedies, which may survive *even if* the standard of care is so preempted."⁹² The court's use of the words *may* and *even if*, however, still allows for Martin's conclusion that preemption results only when the FAA has explicitly regulated the particular aspect of safety involved in the state lawsuit.

c) Passenger warnings and liquor service

In *Montalvo v. Spirit Airlines*,⁹³ the court of appeals affirmed the district court's conclusion that federal law preempted state negligence claims for an airline's failure to warn about the danger of developing deep vein thrombosis. It reasoned that a state-imposed duty to warn would conflict with federal safety standards for pre-flight passenger briefings, backed up by the FAA's occupation of the entire field of aviation safety.⁹⁴ It reviewed the legislative history of the Federal Aviation Act and Supreme Court and court of appeals cases finding Congressional intent to "make the Federal Aviation Administration the sole arbiter of air safety."⁹⁵ It quoted Justice Jackson: "Planes do not wander about in the sky like vagrant clouds. They move only by federal permission, subject to federal inspection, in the hands of federally certified personnel and under an intricate system of federal commands."⁹⁶

Although it expressed reluctance to infer preemption from the mere comprehensiveness of statutory authority unless a federal agency has exercised the authority to occupy a subfield,⁹⁷ it found sufficient exercise of FAA authority to "infer a preemptive intent to displace all state law on the subject of air safety."⁹⁸

⁹¹ 709 F.3d 995 (9th Cir. 2013).

⁹² 709 F.3d at 1006 (emphasis added).

⁹³ 508 F.3d 464 (9th Cir. 2007).

⁹⁴ 508 F.3d at 468.

⁹⁵ 508 F.3d at 472.

⁹⁶ 508 F.3d at 471-472 (quoting *Northwest Airlines, Inc. v. Minnesota*, 322 U.S. 292, 303 (1944) (J. Jackson, concurring)).

⁹⁷ 508 F.3d at 470-471.

⁹⁸ 508 F.3d at 472 (emphasis added).

Significantly, for extension of its reasoning to drone regulation, it cited the "uniqueness of the aviation industry."⁹⁹ "Aviation transportation requires more national coordination than any other public transportation and also poses the largest risks. Regulation on a national basis is required because air transportation is a national operation," it said.¹⁰⁰ As § III.A explains, this is not true of microdrone operations.

"If the FAA did not impliedly preempt state requirements for passenger warnings, each state would be free to require any announcement it wished on all planes arriving in, or departing from, its soil, or to impose liability for the violation of any jury's determination that a standard the jury deems reasonable has been violated. Such a patchwork of state laws in this airspace ... would create a crazyquilt effect. Congress could not reasonably have intended an airline on a Providence-to-Baltimore-to-Miami run to be subject to certain requirements in, for example Maryland, but not in Rhode Island or in Florida. See *id.* It is equally as doubtful that Congress would have intended the sufficiency of the Airlines' warnings to hinge on where each passenger on each flight was likely to file suit. As the district court noted, such a result would be an anathema to the FAA."¹⁰¹

It distinguished *Skysign* on the grounds that the FAA had not exercised its authority to regulate aerial advertising.

In *U.S. Airways, Inc. v. O'Donnell*,¹⁰² the court of appeals reversed the district court and held that state liquor regulation was preempted as applied to airline flights. It cited *Martin*, but took a broader approach, using language that suggests that all aspects of aviation safety are preempted--appearing to agree with *Abdullah* that the statutory savings clause only preserves state remedies for violation of federal standard. Nevertheless, the subject of alcohol service on air carrier aircraft is the subject of specific FARs, and " By requiring airlines to comply with NMLCA, New Mexico is seeking to impose additional training requirements on flight attendants and crew members serving alcoholic beverages on airplanes."¹⁰³ It also noted the FAA's detailed balancing

⁹⁹ 508 F.3d at 473.

¹⁰⁰ 508 F.3d at 473.

¹⁰¹ 508 F.3d at 472 (internal quotations and citations omitted).

¹⁰² 627 F.3d 1318 (10th Cir. 2010).

¹⁰³ 627 F.3d at 1328.

of various considerations arising from alcohol service on flights.¹⁰⁴ So whether the Tenth Circuit would follow *Martin* or *Abdullah* is unclear.

The Tenth Circuit backed away from *Cleveland*, noting that its reasoning has been called into question by subsequent Supreme Court cases.¹⁰⁵ It did not overrule it, however.

It remanded, however, a claim for unsafe seating configurations, which required closer analysis of airline-fare preemption.¹⁰⁶

d) Flight rules: Aerial advertising

Regulation of what aircraft may do in flight would seem to be at the heart of detailed FAA regulation. Parts 71, 91, 97, 119, 135, and 136 of the FARs contain hundreds of pages of specific operating rules. The regulations do not, however, cover everything. In *Skysign International, Inc. v. City and County of Honolulu*,¹⁰⁷ the court of appeals, affirming the district court, held that local regulation of signage could be applied to banner-towing aircraft, notwithstanding broad federal preemption of aviation safety. The plaintiff's helicopters operated under certificates of waiver ("COWAs") issued by the FAA.¹⁰⁸ Because advertising is an activity traditionally regulated by the states rather than by the federal government, the court presumed, "that federal law does not displace Honolulu's regulatory authority over advertising absent a clear statement of the federal intent to do so, either by Congress or by the FAA as Congress's delegate."¹⁰⁹ It found that Honolulu's general signage ordinance was entitled to this presumption, but not a companion ordinance that singled out aviation by prohibiting any advertising on an aircraft.¹¹⁰ It found that Congress expressly has preempted state regulation of aircraft noise and airline pricing, but not state regulation of aerial advertising.¹¹¹ Although the court did not make this point, by the nature of the advertisement, the aircraft would not leave the state. If the aircraft traveled between states carried an advertisement, the outcome might be different.

¹⁰⁴ 627 F.3d at 1328.

¹⁰⁵ 627 F.3d at 1326.

¹⁰⁶ 508 F.3d at 475.

¹⁰⁷ 276 F.3d 1109 (9th Cir. 2002).

¹⁰⁸ 276 F.3d at 1113.

¹⁰⁹ 276 F.3d at 1115.

¹¹⁰ 276 F.3d at 1116.

¹¹¹ 276 F.3d at 1116.

It was unwilling to infer field preemption from the "mere volume and complexity" of federal aviation regulation,¹¹² in the absence of any explicit federal regulation on the subject a state seeks to regulate. It rejected the plaintiff's argument that preemption should be inferred from FAA silence on a subject.¹¹³

Significantly, it was equally unwilling to infer preemption from overlapping safety concerns:

"Skysign notes that Honolulu justifies its ordinance based in part on the danger that distracting aerial advertising poses to motorists below, and it attempts to argue that Congress has confided to the FAA exclusive authority over such safety concerns. However, the provision it cites directs the FAA Administrator to "prescribe air traffic regulations in the flight of aircraft (including regulations on safe altitudes) for ... protecting individuals and property on the ground." 49 U.S.C. § 40103(b)(2)(B) (1994). We do not read this provision to preclude local regulation with an identical purpose that does not actually reach into the forbidden, exclusively federal areas, such as flight paths, hours, or altitudes."¹¹⁴

By negative implication, a local ordinance that did address flight paths, hours, or altitudes would be preempted.

Finally, the FAA COWAs¹¹⁵ did not give rise to preemption, because they expressly required that the operator "understand" local laws relating to aerial signs.¹¹⁶

e) Airport siting

The boundary between state and federal authority gets murkier when states determine where airports can be located and what operations can occur to and from them. In this regulatory arena, aviation safety and traditional state control of real property and its uses overlap. *City of Burbank v. Lockheed Air Terminal Inc.*,¹¹⁷ is the leading Supreme Court case on preemption of airport regulation. It held that a municipal noise ordinance

¹¹² 276 F.3d at 1116.

¹¹³ 276 F.3d at 1116-1117.

¹¹⁴ 276 F.3d at 1117.

¹¹⁵ Banner towing airplanes or helicopter requires a certificate of waiver ("COWA") issued by the FAA. 14 C.F.R. § 91.311.

¹¹⁶ 276 F.3d at 1117-1118.

¹¹⁷ 411 U.S. 624 (1973).

was preempted. The municipal ordinance prohibited jet aircraft from taking off from the Hollywood-Burbank Airport between 11 PM of one day and 7 AM the next. The only scheduled flight affected by the ordinance was an intrastate one.¹¹⁸

In its 5-4 decision, the Court focused its attention almost entirely on federal regulation of aircraft noise rather than on general aviation safety regulation.¹¹⁹ It emphasized, however, the interplay between operational restrictions to reduce noise and other aspects of aircraft operation. "The Federal Aviation Act requires a delicate balance between safety and efficiency and the protection of persons on the ground. Any regulations adopted by the Administrator to control noise pollution must be consistent with the 'highest degree of safety.'"¹²⁰ It also noted that local restrictions on hours of operation would have a ripple effect through the national aviation system, and would limit the FAA's flexibility in controlling traffic flow.¹²¹

In *Gustafson v. City of Lake Angelus*,¹²² the court of appeals reversed the district court and held that a local ordinance prohibiting operation of seaplanes on a city-owned lake was not preempted. The challenged ordinance provided:

"4.10. Nuisances prohibited. Land may not be used for any of the following purposes, all of which are declared to be public nuisances:

"E. The mooring, docking, launching, storage, or use of any ... aircraft powered by internal combustion engines....

"J. The landing upon the lands, waters, or ice surface within the Village of Lake Angelus of any aircraft, airplane, sailplane, seaplane, helicopter, ground effect vehicle, or lighter than air craft."¹²³

The city council declared that the ordinances were intended to "protect the public health, safety, and general welfare" of the residents, by preventing "noise, danger, apprehension of danger, pollution, apprehension of pollution, contamination and

¹¹⁸ 411 U.S. at 625-626 (summarizing facts).

¹¹⁹ 411 U.S. at 633-639.

¹²⁰ 411 U.S. at 638-639.

¹²¹ 411 U.S. at 639-640.

¹²² 76 F.3d 778 (6th Cir. 1996).

¹²³ 76 F.3d at 781.

infestation from other bodies of water, destruction of property values, and interference with other lawful uses of the lake enjoyed by the great majority of citizens, including boating, sailing, fishing, swimming, and other recreational uses."¹²⁴

The court of appeals distinguished regulation of aircraft in flight from regulation of aircraft landing sites, "which involves local control of land (or, in the present case, water) use."¹²⁵ It distinguished *City of Burbank* which held that a local noise ordinance was preempted because it interfered with airport operations. Aircraft noise, the *Gustafson* court said, is the subject of several explicit pronouncements by the FAA, the EPA and in the legislation history of the Federal Aviation Act and the Noise Control that embraced federal preemption.

"In contrast, in the present case, an examination of the Federal Aviation Act and regulations concerning seaplanes and aircraft landing sites indicates that the designation of plane landing sites is not pervasively regulated by federal law, but instead is a matter left primarily to local control. In contrast to the pervasive scheme of federal regulation of aircraft noise found in Burbank, we fail to identify any language in the Act, the regulations promulgated pursuant to the Act, or the legislative history of the Act, which by implication preempts enforcement of the City's ordinances prohibiting the operation of seaplanes on Lake Angelus."¹²⁶

It also found, in 14 C.F.R. § 157.7(a), the federal airport siting regulation an express savings clause for local zoning and other land use regulation.¹²⁷

It cited a number of earlier cases, finding that local airport siting regulation was not preempted.¹²⁸

It distinguished *Command Helicopters, Inc. v. City of Chicago*,¹²⁹ finding local regulation of helicopter heavy lift operations preempted because it conflicted with FAA regulations on heavy lift operations.¹³⁰

¹²⁴ 76 F.3d at 781.

¹²⁵ 76 F.3d at 783.

¹²⁶ 76 F.3d at 784.

¹²⁷ 76 F.3d at 784-785.

¹²⁸ 76 F.3d at 786.

In *Condor Corp. v. City of St. Paul*,¹³¹ the court of appeals summarily rejected the plaintiff's argument that denial of a permit for a heliport intruded upon exclusive federal power: "We see no conflict between a city's regulatory power over land use, and the federal regulation of airspace, and have found no case recognizing a conflict."¹³²

In *Golden State Farms, Inc. v. Bay*,¹³³ the New Jersey supreme court held that an ordinance prohibiting the creation of private heliports was not preempted.

It distinguished heliport siting from matters that require national uniformity:

"The case at hand does not present a situation where preemption may be predicated upon a felt need for a monolithic system of regulation. While in some important aspects uniform regulation may be required, that obvious need does not reach down to the level of the location of small, relatively isolated, privately owned helistops or heliports." ¹³⁴ It cited cases supporting its conclusion that "state and local authority over the "operation and navigation of aircraft" is supplanted by this federal regulation, . . . significant local power over ground operations of aircraft remains viable."¹³⁵

In *Harrison v. Schwartz*,¹³⁶ Maryland's highest court held that certain zoning restrictions imposed on airport operations were preempted and others were not.

It held that the following conditions in the conditional use permit were preempted:

"2. Aircraft take-offs shall be separated by intervals of at least 15 minutes in order to minimize the adverse effects of aircraft engine noise upon the residents of the surrounding area and to reduce the intensification of the use of the property in what is otherwise a primarily rural residential area.

¹²⁹ 691 F.Supp. 1148 (N.D.Ill.1988)

¹³⁰ 76 F.3d at 787-788.

¹³¹ 912 F.2d 215 (8th Cir. 1990).

¹³² 912 F.2d at 221.

¹³³ 390 A.2d 1177 (N.J. 1978).

¹³⁴ 390 A.2d at 1180-1181 (internal citations omitted).

¹³⁵ 390 A.2d at 1181.

¹³⁶ 572 A.2d 528 (Md. 1990).

"3. Aircraft take-offs shall not be made before 9:00 a.m. or later than 7:00 p.m. on any day."¹³⁷

"To say that local authority may use its zoning power to ban a certain use is not the same as to say that it may permit a use subject to conditions that affect air navigation."¹³⁸

In *Riggs v. Burson*,¹³⁹ the Tennessee supreme court reversed the intermediate court and held that a state statute prohibiting heliports within nine miles of the boundary of national park was not preempted. The plaintiffs argued that the statute was aimed at flight of aircraft and aircraft noise; the defendants argued that it was aimed at the use of land and not the flight of aircraft.¹⁴⁰ In agreeing with the defendants, the court cited *Gustafson* and distinguished *Burbank*. It also found *Condor Corp.* persuasive. The legislature articulated legitimate state interests: regulation of "noise, disruption and safety risks caused by locating heliports near main roads and heavily populated areas."¹⁴¹ "[W]e agree with the persuasive federal and state authority that has upheld laws which restrict the use of land for the operation of helicopters or other aircraft."¹⁴²

In *Vorhees v. Naper Aero Club, Inc.*,¹⁴³ the district court distinguished *Gustafson* and held that a private suit to enjoin operations on one runway of an existing airport was preempted. The litigation did not involve regulation of land use by a public body. Indeed, the airport was approved under state law.

"In *Gustafson*, the issue surrounded a city ordinance which prohibited the landing or taking-off of airplanes on a city lake—not an airport or runway. In the present case, plaintiff is seeking to enjoin an airport from using its already zoned runway—a runway which is protected by a state statute. See 620 ILL.COMP.STAT. 5/49.1 (prohibiting plaintiff from erecting any structure which would interfere with airport operations). Significantly, the plaintiff does not contend that the airport's operation violates any ordinance or regulation.

¹³⁷ 572 A.2d at 529 (quoting conditions).

¹³⁸ 572 A.2d at 533.

¹³⁹ 941 S.W.2d 44 (Tenn. 1997).

¹⁴⁰ 941 S.W.2d at 48 (summarizing arguments).

¹⁴¹ 941 S.W.2d at 50.

¹⁴² 941 S.W.2d at 51.

¹⁴³ 96 F. Supp.2d 820 (C.D. Ill. 2000).

“In sum, although plaintiff claims that he is seeking to regulate land use, what he is actually seeking to regulate is the use of the airspace above his property. Thus, plaintiff's claim is preempted by the FAA.”¹⁴⁴

Conversely, In *Aviation Cadet Museum, Inc. v. Hammer*,¹⁴⁵ the supreme court of Arkansas approved an injunction, on private nuisance grounds, against continued use of a private airport. It found that the testimony at the trial established the elements of a common-law nuisance. A footnote asserts that land-use regulation is a matter of state law,¹⁴⁶ but there is no real analysis of federal preemption; apparently it was not asserted as a defense.

f) Environmental regulation of airport activities

A number of preemption cases involved environmental regulation by states and municipalities. Environmental regulation, especially when it is of a general nature rather than targeting specific airports or aviation operations, is likely to fall within state police power.

In *Tweed-New Haven Airport Authority v. Town of East Haven*,¹⁴⁷ the district court enjoined local environmental authorities from interfering with construction of federally approved and funded runway improvements. It held that the local governmental regulation was preempted by the Federal Aviation Act under the doctrine of field preemption.¹⁴⁸ It distinguished *Dallas/Fort Worth Int'l Airport Bd. v. City of Irving*,¹⁴⁹ as involving land outside airport boundaries.¹⁵⁰ It cited *Burbank-Glendale-Pasadena v. City of Los Angeles*, in which the City of Los Angeles enacted an ordinance requiring a local airport to submit for approval any plans that involved development-specifically runway and taxiway construction-on airport-owned land.¹⁵¹

¹⁴⁴ 96 F. Supp.2d at 823-824.

¹⁴⁵ 283 S.W.3d 198 (Ark. 2008).

¹⁴⁶ 283 S.W.3d at 201 n.2,

¹⁴⁷ 582 F. Supp.2d 261 (D. Conn. 2008).

¹⁴⁸ 582 F. Supp.2d at 272.

¹⁴⁹ 854 S.W.2d 161, 167 (Tex.Ct.App.1993),

¹⁵⁰ 582 F. Supp.2d at 269.

¹⁵¹ 979 F.2d 1338, 1339 (9th Cir. 1992),

In *United States v. City of Berkeley*,¹⁵² a case relied on by the Authority, the court addressed the City's attempt to regulate construction of an airport surveillance radar. According to the FAA, the construction was necessary to ensure air safety. The *Berkeley* court held that the City's attempted regulation was impliedly preempted by the Federal Aviation Act because federal regulation of the area is so pervasive.

It noted the following factors:

- Non-proprietary versus proprietary; when the local government is the proprietor of the airport, it has broader authority¹⁵³
- The court found preemption despite evidence of local concerns about traffic disruption and adverse affects on the quality of life of local residents because of noise.¹⁵⁴

In *Goodspeed Airport LLC v. East Haddam Inland Wetlands & Watercourses Commission*,¹⁵⁵ the court of appeals affirmed judgment after a bench trial that local regulation of tree removal was not preempted. The plaintiff was privately owned and state licensed. The airport argued that the trees were "obstructions to air navigation" under 14 CFR Pt 77, and therefore that local limitations on removing them were preempted.¹⁵⁶

It distinguished *Tweed*:

"The local regulatory action at issue in *Tweed* constitutes a much more direct intrusion of local authority on the preempted field of air safety than do the regulatory actions challenged here. Unlike *Tweed*–New Haven Airport, *Goodspeed Airport* is not licensed by the FAA; it is not federally funded, and no federal agency has approved or mandated the removal of the trees from its property. Indeed, in its response to a formal inquiry from the district court in this case, the federal government disclaimed any authority to order the trees' removal. Therefore, while in *Tweed* the construction project was approved,

¹⁵² 735 F.Supp. 937, 940 (E.D.Mo. 1990).

¹⁵³ The proprietary airport doctrine logically extends to any territory that a state or municipality like a park district owns and already regulates extensively.

¹⁵⁴ 582 F. Supp.2d at 271 n.13

¹⁵⁵ 634 F.3d 206 (2d Cir. 2011).

¹⁵⁶ 634 F.3d at 208.

indeed required, by the federal regulatory authority, in this case there is no federal interest in the Airport's proposed actions."¹⁵⁷

It noted that the challenged local regulations did not single out aviation; they were limitations of general applicability.¹⁵⁸

It also observed that the FAA exercises only limited direct oversight of small airports.¹⁵⁹

Matters within the boundary of an airport are more likely to be preempted than those outside the boundaries, because activities outside the boundaries are less directly linked to aviation.¹⁶⁰

g) Private actions for trespass to land

Not only state and local regulation through statutes, ordinances, and administrative-agency rules challenge federal authority. So do private actions for trespass to land. The common law of trespass to land recognizes the overflight close to the ground may be a trespass:

"(2) Flight by aircraft in the air space above the land of another is a trespass if, but only if,

(a) it enters into the immediate reaches of the air space next to the land, and

(b) it interferes substantially with the other's use and enjoyment of his land."¹⁶¹

Early in the history of aviation, caselaw recognized that extensive liability for trespass would interfere with aviation:

"The air, like the sea, is by its nature incapable of private ownership, except in so far as one may actually use it. This principle was announced long ago by Justinian. It is in fact the basis upon which practically all of our so-called water codes are based.

¹⁵⁷ 634 F.3d at 211.

¹⁵⁸ 634 F.3d at 211.

¹⁵⁹ 634 F.3d at 211.

¹⁶⁰ 582 F. Supp.2d at 271-272.

¹⁶¹ Restatement (Second) of Torts sec. 159 (2015) (discussing Causby). The Restatement suggests that "immediate reaches" of the land extend to 50 feet, not to 500 feet and that heights inbetween, such as 150 feet would present questions of fact. Id. cmt. 1.

"We own so much of the space above the ground as we can occupy or make use of, in connection with the enjoyment of our land. This right is not fixed. It varies with our varying needs and is coextensive with them. The owner of land owns as much of the space above him as he uses, but only so long as he uses it. All that lies beyond belongs to the world.

"When it is said that man owns, or may own, to the heavens, that merely means that no one can acquire a right to the space above him that will limit him in whatever use he can make of it as a part of his enjoyment of the land. To this extent his title to the air is paramount. No other person can acquire any title or exclusive right to any space above him.

"Any use of such air or space by others which is injurious to his land, or which constitutes an actual interference with his possession or his beneficial use thereof, would be a trespass for which he would have remedy. But any claim of the landowner beyond this cannot find a precedent in law, nor support in reason."¹⁶²

The Supreme Court agreed:

"The airspace, apart from the immediate reaches above the land, is part of the public domain. We need not determine at this time what those precise limits are. 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. We need not speculate on that phase of the present case."¹⁶³

These principles suggest that drone flight over private property at the heights approved for microdrones under the section 333 exemptions and proposed in the NPRM could give rise to liability for trespass to land. While the advent of drones has extended the concept of air navigation and of the National Airspace System to levels lower than the traditional 500 feet, and thus extended the federal interest in regulating it to lower

¹⁶² *Hinman v. Pacific Air Lines Transport Corp.*, 84 Fed. 755, 758 (9th Cir. 1936) (affirming dismissal of trespass complaint seeking injunction; allegations of flight from 5- to 100 feet over portion of plaintiff's land). See *United States v. Causby*, 328 U.S. 256, 264 (1946) (citing *Hinman* approvingly).

¹⁶³ *United States v. Causby*, 328 U.S. 256, 267 (1946) (holding that low-level flights by military aircraft constituted a compensable taking); see also *Bryski v. City of Chicago*, 499 N.E.2d 162, 164-167 (Ill. App. Ct. 1986) (reviewing caselaw after *Causby* and concluding that sole remedy for aircraft noise from municipal airport is action for reverse condemnation).

levels,¹⁶⁴ the fact remains that operations that close to the ground intrude upon traditional property rights. The resulting tension between private interests in exclusive domain over property and the public interest in air commerce places greater emphasis on delineating the height to which property extends--a question on which the Restatement, *Hinman*, and *Causby* punt. A reasonable rule of thumb is that a drone flying lower than treetop level or the level of utility lines commits a trespass, but not if it stays above that level.

D. Interaction of Commerce Clause and federal preemption doctrine

The Commerce Clause and federal preemption doctrine interact in determining the legality of state regulation of drones. Under its commerce power, the Congress retains the authority explicitly to preempt state and local regulation, as it has done with respect to economic regulation of airlines.¹⁶⁵ It has explicitly forbore to do so with respect to state law remedies.¹⁶⁶ As to the more general realm of aviation safety regulation, it has not spoken explicitly about state power, but it has granted broad authority to the FAA and specified some details as to how the FAA should exercise that authority, supporting the many judicial findings of implied preemption.¹⁶⁷

¹⁶⁴ But see § XXX (evaluating argument that Commerce Clause and thus the permissible reach of FAA preemption does not extend below 500 feet).

¹⁶⁵ 49 U.S.C. § 41713(b): "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." *Compare* *Morales v. Trans World Airlines, Inc.*, 504 U.S. 374, 391 (1992) (state deceptive advertising guidelines preempted as applied to airline fares) *with* *American Airlines v. Wolens*, 513 U.S. 219, 233 (1995) (state breach of contract action for violating terms of frequent flying program not preempted). "[T]erms and conditions airlines offer and passengers accept are privately ordered obligations and thus do not amount to a State's 'enactment or enforcement of any law, rule, regulation, standard, or other provision having the force and effect of law within the meaning of § 1305(a)(1)." 513 U.S. at 228. See also 49 U.S.C. § 40116(b) (prohibiting state taxation air commerce).

¹⁶⁶ 49 U.S.C. § 40120(c): "A remedy under this part is in addition to any other remedies provided by law." See also 49 U.S.C. § 40116(c) (allowing landing fees for commercial aircraft landing or taking off within a state)..

¹⁶⁷ See § XXX.

Under the Commerce Clause, it could decide in the future to adopt explicit statutory preemption of state regulation of drones, partially or completely. It could not do so, however, beyond the limits of interstate commerce.

The federal preemption question then turns on a parallel inquiry, with the FAA the focus instead of the Congress, itself. Although some of the aviation preemption cases make sweeping pronouncements of field preemption, in fact, closer examination of the cases shows, not field preemption, at least not in general, but preemption turning on whether the FAA has exercised its statutory authority with respect to a particular aspect of safety. The analogy under the Commerce Clause is whether the Congress has exercised its authority on a particular subject.

As long as it acts within its statutory authority, the FAA could adopt a new rule that not only regulates some aspect of drone operations that theretofore had been unregulated, but it also could explicitly preempt state regulation, either as to the subject of the new FAA rule, or expressing its conclusion that that an aspect of safety should go unregulated. As long as it is as it has done neither, states have a plausible argument that they are free to regulate the subject matter. *Martin* and *Montalvo*, discussed in § III.C, are examples of this kind of analysis.

Having this power to define the boundary between federal and state regulation, the FAA – or the Congress itself – could define a system for cooperative and concurrent state and federal regulation of drones.

IV. Space for states?

As part III concludes, states are free to regulate drone operations when a statute explicitly saves room for state regulation as in tort remedies, or when the FAA has not exercised its authority on a particular subject.

The FAA's approach to drone regulation makes room for some arguments not generally available with respect to traditional aviation safety regulation. While the FAA's statutory mandate is to *integrate* drones into the National Airspace System, its approach to microdrone regulation actually *segregates* microdrones and keeps them out of the vast expanse of the national airspace where most manned aircraft operations occur. It relegates microdrones to flights below 500 feet, where airplanes and helicopters cannot operate safely, and also keeps them out of airport traffic areas where manned aircraft

operate below 500 feet in order to take off and land. The content of its proposed rule and its section 333 exemptions prescribe few operating rules beyond the height limit and a line of sight requirement — which is tantamount to a horizontal distance restriction.

In effect, the FAA has said, “You can fly microdrones commercially but only outside the national airspace system.” It does not admit this, of course; its position, obvious from the content of FAR Part 91, is that airspace all the way to the ground is regulated by FAA rules. Indeed it says as much: “The FAA is responsible for the safety of U.S. airspace from the ground up.”¹⁶⁸ There is no explicit floor of the national airspace system expressed either in statute or rule.

What a defender of state regulatory authority would argue, however, is that the combination of low altitudes and short distances puts microdrone flight, at least as the FAA would allow it for commercial purposes —outside the National Airspace System, outside the realm of Air Commerce, outside Congressional power under the Commerce Clause, and beyond FAA jurisdiction. The FAA has defined microdrone airspace that is inherently local, and well within traditional state police power.

This argument may prove too much, however, because it would negate FAA authority, and leave it only to the states and their subdivisions to regulate low-level and close-in drone flights—not only drone flights, but *any* flight by any kind of vehicle.

A. Subjects of state regulation

If the argument prevails that the FAA has essentially defined the floor of the national airspace system as 500 feet, states and localities have plenary authority to regulate low-level drone flight. If that argument fails or if plaintiffs with standing are unwilling to make the argument, the scope of federal and state regulation depends upon application of the caselaw. That yields the following conclusions.

States may not regulate subjects explicitly addressed by the FAA in its NPRM and section 333 exemptions—at least they may not do so as to the holders of section 333 exemptions and more generally, once the regulation becomes final. That means that states may not impose different weight limits, height limits, preflight inspection

¹⁶⁸ FAA, Busting Myths about the FAA and Unmanned Aircraft, <http://www.faa.gov/news/updates/?newsId=76240> (Feb. 26, 2015).

requirements, accident reporting requirements, or periodic reporting requirements on operations. It means they may not impose different DROP qualification, training, certification, or experience requirements. They may not impose vehicle design requirements.

Before the FAA issued its notice of proposed rulemaking and began granting section 333 exemptions, the FAA had not preempted the field of drone regulation because it had not spoken and, under *Martin*, silence is not enough to preempt.

Now, however, the FAA has spoken. The *Martin* argument would be available only if the FAA unexpectedly does not act reasonably promptly to turn its NPRM and the comments it received into final rules. Otherwise, the defender of a state or local measure would be left only the relatively weak read of the 10th circuit *Cleveland* decision

In any event, the holder of a section 333 exemption would have a strong argument that the detailed involvement of the FAA in crafting the exemption preempts state and local regulation of matters covered by the exemption.

On the other hand, they retain their authority to enforce generally applicable state and local law against disorderly conduct,¹⁶⁹ public endangerment,¹⁷⁰ refusal to obey the lawful command of a police officer,¹⁷¹ or refusal to disperse.¹⁷² The FAA has published guidance for local law enforcement personnel confronted with what they believe to be impermissible microdrone operations.¹⁷³ The language of the section 333 exemptions itself does not address state and local regulation. The blanket COAs accompanying the section 333 exemptions however do. A note on the first page says:

¹⁶⁹ See 720 ILL. COMP STAT. 5/26-1 (2013) (disorderly conduct).

¹⁷⁰ See MONT. CODE. ANN. § 45-5-207 (1987) (criminal endangerment).

¹⁷¹ See 720 ILL. COMP STAT. 5/31-1 (2014) (interference with public officers).

¹⁷² See *City of Chicago v. Morales*, 527 U.S. 41, 57-58 (1999) (affirming conclusion that gang-dispersal ordinance was unconstitutionally vague; explaining that laws criminalizing disobedience of police order are similarly questionable because of the possibility of arbitrary police orders); CA Penal Code §§ 409, 416 (refusal to disperse).

¹⁷³ See FAA, *Law Enforcement Guidance for Suspected Unauthorized UAS Operations*, http://www.faa.gov/uas/regulations_policies/media/FAA_UAS-PO_LEA_Guidance.pdf.

“Note-This certificate constitutes a waiver of those Federal rules or regulations specifically referred to above. It does not constitute a waiver of any State law or local ordinance.”¹⁷⁴

Further language on the last page says:

““This Certificate of Waiver or Authorization does not, in itself, waive any Title 14 Code of Federal Regulations, nor any state law or local ordinance. Should the proposed operation conflict with any state law or local ordinance, or require permission of local authorities or property owners, it is the responsibility of the operator to resolve the matter. This COA does not authorize flight within Special Use airspace without approval from the scheduling agency. The operator is hereby authorized to operate the small Unmanned Aircraft System in the National Airspace System.”¹⁷⁵

To say that the exemption and COA do not “waive” state law or local ordinance does not say that any particular state law or local ordinance is valid under the Commerce Clause or federal preemption analysis. If the FAA approves specific drone operations through the section 333 process, preemption analysis says that a state cannot block the operations unless pursuant to a traditional police power not singling out aviation.

It is unlikely that states have the power to enforce FARs directly. States have no inherent power to enforce federal law.¹⁷⁶ As a general matter, judicial enforcement of FARs is reserved to the Secretary of Transportation and the Attorney General.¹⁷⁷

¹⁷⁴ FAA FORM 7711-1 UAS COA Attachment accompanying section 333 exemption No. Exemption No. 11310 (Colin Hinkle), docket no. FAA-2014-0608 at page 1 (Apr. 9, 2015)

¹⁷⁵ FAA FORM 7711-1 UAS COA Attachment accompanying section 333 exemption No. Exemption No. 11310 (Colin Hinkle), docket no. FAA-2014-0608 at page 6 (Apr. 9, 2015)

¹⁷⁶ Margaret H. Lemos, *State Enforcement of Federal Law*, 86 N.Y. UNIV. L. REV. 698, 708 (2011) (asserting that states have no inherent power to enforce federal law); *Hawaii v. Standard Oil Co.*, 405 U.S. 251, 263-64 (1972) (affirming dismissal of state *parens patriae* suit for damages under Clayton antitrust act); *Connecticut v. Health Net, Inc.*, 383 F.3d 1258, 1262 (11th Cir. 2004) (affirming dismissal of action by state to enforce ERISA; no evidence of Congressional intent to give states enforcement standing).

¹⁷⁷ See *Bonano v. East Caribbean Airline Corp.*, 365 F.3d 81, 84-85 (1st Cir. 2004) (holding that Congress meant to reserve enforcement of aviation regulations to the FAA); *Schmelling v. NORDAM*, 97 F.3d 1336 (10th Cir. 1996) (interpreting 49 U.S.C. section 46108 and holding that Federal Aviation Act does not grant private right of action to enforce FAA rules; affirming dismissal of action by former maintenance employer challenging dismissal for failing drug test).

State courts remain open to adjudicate claims of invasion of privacy, trespass to land, or negligence so long as the elements of each tort applied in a particular drone case do not conflict with FAA rules.

For example, a jury instruction in a privacy case that tells the jury it may find the defendant liable only if it finds intent to intrude into private activities in a manner that a reasonable person would find offensive¹⁷⁸ would protect the privacy litigation from preemption. Intent to intrude is an element that the FAA does not address; just like it did not address the design of airstairs in *Martin*.¹⁷⁹ Conversely, a jury instruction in a negligence case that defines the standard of care as flying no lower than 1000 feet above private property, or testimony allowing a jury to find the same thing, would result in preemption.

As aviation matured through the twentieth century, landowners periodically sued aircraft operators for trespass and nuisance.¹⁸⁰ Most of the trespass cases confronted questions about how high above the ground the property owner's rights extend.¹⁸¹ Above that height, trespass liability is preempted by FAA regulation. As for the manned aircraft, machodrone flight is unlikely to engender difficulty with height questions. This question of the vertical extent of property is less prominent for microdrone operations. A landowner's exclusive rights surely extend to 500 or 1,000 feet above the ground, as a handful of older aviation cases hold.

¹⁷⁸ The tort of invasion of privacy-intrusion upon seclusion is defined as "One who intentionally intrudes, physically or otherwise, upon the solitude or seclusion of another or his private affairs or concerns, is subject to liability to the other for invasion of his privacy, if the intrusion would be highly offensive to a reasonable person." Restatement (Second) of Torts sec. 652B (1977).

¹⁷⁹ See notes XXX-XXX and accompanying text, *supra*.

¹⁸⁰ See, e.g., *Hinman v. Pac. Air Lines Transp. Corp.*, 94 F.2d 755 (9th Cir. 1936) (rejecting trespass liability for aircraft overflying private property).

¹⁸¹ Compare *United States v. Causby*, 328 U.S. 256, 264 (1946) (holding that military flights at eighty-three feet over plaintiff's property constituted a compensable "taking" because it encroached on plaintiff's property rights), with *Laird v. Nelms*, 406 U.S. 797 (1972) (holding that high-altitude flight creating sonic booms did not constitute a trespass); See also *Pueblo of Sandia ex rel. Chaves v. Smith*, 497 F.2d 1043, 1045 (10th Cir. 1974) (rejecting trespass action against aircraft operator because no proof of actual injury to concrete uses of land). "The landowner owns at least as much of the space above the ground as he can occupy or use in connection with the land." *Causby*, 328 U.S. at 264.

When states and municipalities adopt legislation or rules that target drones, it is more likely to be preempted than a state statute or regulation of general effect, as relating to noise, taxation, or environmental protection.

When state legislation and regulation specifies limits on flight profiles, crew qualifications, or aircraft design, it is more likely to be preempted than initiatives that address matters not directly related to flight, such as business financial reserves, employee vacation or sick leave, minimum wages, or employment discrimination. *French*, *Montalvo* and *O'Donnell* are examples of state regulation that intrudes too far into matters regulated by the FAA—definition of flight crew duties. *Skysign* is an example of general state regulation of advertising, found not to be preempted, and *Goodspeed Airport* is an example of non-preempted environmental regulation.

If an existing or proposed FAA rule exists on a particular subject addressed by state legislation and regulation, it is more likely to be preempted. *Montalvo* and *O'Donnell* are examples. But if the if the FAA has left a gap in its regulations on the particular subject, state action to fill the gap is less likely to be preempted, even if the FAA regulates the general area. Regulation of airstairs in *Martin* is an example.

Moreover, if a state narrowly targets a particular highly localized area of drone operations, and relates it to matters of traditional state concern, such as personal privacy, security of property occupancy, preemption is less likely. Deference usually given to matters of traditional state concern, and the argument is stronger that the activity is outside the Commerce Clause.

If a state incorporates federal regulatory standards into its tort law¹⁸² and provides its own remedies when a plaintiff can prove violation of the standards, proximate causation, and injury, preemption is unlikely. *Cleveland* is an example, although it goes further in allowing state regulation. *Abdullah* is square-on support for the proposition, and the other products liability cases discussed in § III.C embrace the distinction.

The caselaw validating state regulation of airport siting supports the proposition that states and municipalities have the power to specify where drones may take off and land, effectively limiting where microdrones may fly, given their short range.

¹⁸² The common-law doctrine of negligence per se is an example of such incorporation.

Recognizing traditional state power to preserve public order, states should have the power to establish tort liability or to criminalize reckless conduct,¹⁸³

¹⁸³ See generally <http://blogs.findlaw.com/blotter/2014/07/2-drone-pilots-arrested-for-allegedly-endangering-nypd-helicopter.html>;
<http://collegespun.com/sec/alabama-sec/someone-got-struck-by-a-drone-outside-bryant-denny-stadium-saturday-afternoon>;
<http://7online.com/archive/9292217/http://rt.com/usa/185480-new-york-tennis-drone/>
(news reports of drone flights resulting in charges of reckless endangerment).

In Alabama, “A person commits the crime of reckless endangerment if he recklessly engages in conduct which creates a substantial risk of serious physical injury to another person.” AL Code § 13A-6-24.

New York has both a first degree and second degree reckless endangerment statute. Reckless Endangerment in the Second Degree occurs, “when the person recklessly engages in conduct which creates a substantial risk of serious physical injury to another person.” NY Code 120.20. Reckless Endangerment in the First Degree occurs, “when, under circumstances evincing a depraved indifference to human life, he recklessly engages in conduct which creates a grave risk of death to another person.” NY Code 120.25. In Illinois, 720 ILCS 5/12-5 provides:

Sec. 12-5. Reckless conduct.

(a) A person commits reckless conduct when he or she, by any means lawful or unlawful, recklessly performs an act or acts that:

(1) cause bodily harm to or endanger the safety of another person; or

(2) cause great bodily harm or permanent disability or disfigurement to another person.

(b) Sentence.

Reckless conduct under subdivision (a)(1) is a Class A misdemeanor. Reckless conduct under subdivision (a)(2) is a Class 4 felony.”

although this also is the subject of an FAA rule prohibiting reckless flight operations.¹⁸⁴

State or municipal regulations increasing the height at which drones can be flown would be preempted, because of the FAA prescription of a maximum height above ground level, justified by reducing interference between drones and higher flying manned aircraft. On the other hand, a state or local rule establishing a minimum height is less likely to be preempted because there is no FAA-established minimum height, and because of traditional police power to regulate land use. The cases involving claims of trespass to land by aircraft might suggest otherwise, however.¹⁸⁵

Limiting the purposes for which drones may be flown, for example, prohibiting flights for surveillance or to capture imagery of a particular individual might be permissible, because the FARs, while imposing different airman and aircraft certification and different flight rules for different purposes such as banner towing, med-evac, and tourism in certain areas do this because of differing types of safety threats. A state or local law limiting purposes would be aimed instead at exercising traditional police power over privacy or land use. To the contrary is a recent student note¹⁸⁶ concludes that state and municipal laws focused on drone safety, such as measures limiting flight altitudes or flights over populated areas, are likely to be preempted.¹⁸⁷ Conversely, the author concludes that state and local regulation of surveillance, justified by protection of personal privacy, may survive preemption challenges, at least if they apply the same limitations to manned aircraft as to drones.¹⁸⁸

States should be able to regulate data collection, to limit liability for accidents, and to require liability insurance, because there is no federal aviation law on these subjects, and because of traditional—and statutory¹⁸⁹—state prerogatives over insurance.

The airport regulation preemption decisions suggest that states and municipalities have more non-preempted power over facilities they own and manage than over facilities in

¹⁸⁴ 14 C.F.R. § 91.13 (prohibiting careless or reckless operation).

¹⁸⁵ See § XXX.

¹⁸⁶ Ray Carver, *State Drone Laws: A Legitimate Answer to State Concerns or a Violation of Federal Sovereignty*, 31 Ga. St. U. L. Rev. 377 (2015).

¹⁸⁷ 31 Ga. St. U. L. Rev. at 404.

¹⁸⁸ 31 Ga. St. U. L. Rev. at 404-405.

¹⁸⁹ 15 [U.S.C.](#) §§ 1011-1015 (saving state insurance regulation from federal preemption).

private hands. In the drone context, that means that states and municipalities likely have more authority to regulate conduct in public spaces than they do over private property, especially over public parks. They already regulate access to public parks, charge fees, and determine what activities are permissible. It is a relatively simple matter, as the Chicago Park District Commission proposes to do, simply to add microdrone flight to the list of activities that are prohibited unless one obtains a permit.

The distinction between sovereign and government between proprietary and governmental functions was enshrined in Supreme Court case law for a while with respect to the reach your federal labor law into local government employment.¹⁹⁰ The distinction is largely been abandoned as a touchstone of labor law preemption, but conceptually, it remains viable as a federalism principal.

B. Model aircraft and “consumer drones”

Section 336 of the 2012 Act¹⁹¹ prohibits the FAA from promulgating any rule or regulation applicable to model aircraft weighing less than 55 pounds, as long as they are flown consistent with "community-based" guidelines, as a part of “community based programming,” and not near airports. The reference to community-based guidelines is generally understood to guidelines issued by the Academy of Model Aeronautics.¹⁹² The reference to “programming” probably means as a part of a local model aircraft club sponsored outing, but the reference is ambiguous.

Section 336 says nothing about state or local regulations, and its withholding of authority for the FAA leaves a relatively clear field for states to regulate model aircraft operations.

The safe harbor for model aircraft is written around traditional practices of well-organized and long-established model aircraft hobbyist organizations such as the XXX. In a traditional model aircraft club, RC hobbyists get together at designated fields as a group and cooperatively fly their aircraft, usually with one person serving as the pilot, and the second serving as an observer. Adherence to safe practices depends on the culture of a particular group and the dynamics of interaction on a particular day, but

¹⁹⁰ CITE and Discuss *Usery v Maryland*.

¹⁹¹ 2012 Act § 336.

¹⁹² <http://www.modelaircraft.org/>

the clubs have rules, both general and specific for operations for any particular field, and the club members generally follow them, exerting social pressure on anyone who deviates. A visit to an RC hobbyist field, encounters hobbyists with their RC airplanes flying them in pairs, talking and joking about their plans and past exploits. They all know each other. It is unlikely that one of them would stray too far from the norm and risk getting kicked out of the club.

If a club member gets interested in drones and buys a DJI Phantom or 3D Robotics Solo, he is likely to fly it in this fashion—unless he decides to try to make money with it. Then the pathway of the section 333 exemption process and the eventual final rule for sUAS are open to him. His habit of compliance with RC club rules and his general awareness of the FAA probably will cause him to comply rather than just to ignore the restrictions on commercial microdrone flight.

None of this poses any significant new threat to other aircraft or to the citizenry in general. Hobbyists have a good safety record, and commercial microdrone operators are unlikely to put their exemptions and certificates at risk by flouting the FAA's detail rules for commercial operations – whatever their eventual content.

The threat comes from a new quarter: from the thousands of people who got a microdrones as Christmas or birthday presents, but have no prior connection with an RC model club or any prior interest in tinkering with model aircraft. Some of them have entrepreneurial instincts; many already are entrepreneurs, especially photographers, freelance journalist, civil engineers, surveyors that mostly account for the nearly 700 section 323 exemptions that have been granted, and the much larger number of pending petitions. But the vast majority of these casual purchasers do not plan on starting a business or making arrangements to fly there drone as a part of an RC club activity. They are going to take it out into their backyards, local parks, and nearby schoolgrounds and fly for fun. When they go to a sporting event, a music festival, or some other recreational gathering, they will think about taking their drone for the same reason they take their cameras. They'll take their drones on their vacations for the same reasons they take their cameras on vacation: it will be a good way to get some good imagery for their Facebook pages and to record videos to put on YouTube.

This is the source of the greatest threat, not RC hobbyists or commercial microdrone operators. The drone that landed on the White House lawn¹⁹³ was not being flown for commercial purposes; it was flown for fun in connection with an alcohol-fueled party. Likewise the incident in King County Washington¹⁹⁴ involved recreational, rather than commercial, drone flight. Arguably, these consumer operations fall outside the statutory safe harbor for RC hobbyists because they are not:

"operated in accordance with a community based set of safety guidelines and within the programming of a nationwide community-based organization."¹⁹⁵

The Conference Report on the 2012 Act explains:

"In this section the term 'nationwide community-based organization' is intended to mean a membership based association that represents the aeromodeling community within the United States; provides its members a comprehensive set of safety guidelines that underscores safe aeromodeling operations within the National Airspace System and the protection and safety of the general public on the ground; develops and maintains mutually supportive programming with educational institutions, government entities and other aviation associations; and acts as a liaison with government agencies as an advocate for its members."¹⁹⁶

There is enough ambiguity in the language, however, to support broad claims that the Congress has placed all forms of consumer drone activity beyond the FAA's reach. The statute may be amended, of course, as S.1608 proposes to do. But any proposed

¹⁹³ Michael D. Shear and Michael S. Schmidt, White House Drone Crash Described as a U.S. Worker's Drunken Lark, N.Y. Times, Jan. 27, 2015, http://www.nytimes.com/2015/01/28/us/white-house-drone.html?_r=0.

¹⁹⁴ FAA investigating drone flying near news helicopters (March 17, 2015), <http://www.kirotv.com/news/news/faa-investigating-drone-flying-near-news-helicopte/nkYk7/> (reporting on near miss between drone and news helicopters).

¹⁹⁵ 2012 Act § 336(a)(2).

¹⁹⁶ FAA Modernization and Reform Act of 2012, Conference Report to Accompany H.R. 658, Rep. No. 112-381, 112th Cong., 2d Sess. 199 (Feb. 1, 2012), <http://www.gpo.gov/fdsys/pkg/CRPT-112hrpt381/pdf/CRPT-112hrpt381.pdf>.XXX and XXX

amendment is like to the face ferocious opposition from the RC hobbyist community and therefore is uncertain of passage.

Even if S.1608 becomes law, or if the FAA decides to impose automation performance requirements on microdrones as a prerequisite for sale,¹⁹⁷ anarchy will be the norm for consumer drones unless states and municipalities supplement FAA enforcement resources. If states and municipalities decide to step in, the preemption barriers are modest. States have a long history of regulating recreational activity that may pose safety problems: hunting, archery, recreational boating, all-terrain vehicles.¹⁹⁸ Requiring consumer drones to fly down low, stay within line of sight of the operator, not to fly over people, and to fly in public parks only if they have a permit is not likely to interfere with commercial microdrone operations or to interfere with the operation of the National Airspace System.¹⁹⁹

State and local regulation of consumer drones will have little adverse effect on the economics of commercial drone operation, because they are not being flown commercially--if the consumer drone regulations exclude commercial microdrone operations conducted under FAA rules and approvals.²⁰⁰

Limiting state and local regulation to risk-based and performance-oriented rules is a good idea anyway, but even if they are not so limited, the adverse effect on commercial designs may be limited because of a growing differentiation between Consumer designs and even low-end commercial designs.²⁰¹

The matters outlined in section IV.A that are off-limits to state and local regulations of commercial drone activity are permissible subjects for state and local regulation of recreational drone activity. If states exercise that authority, they can be significant contributors to public safety and other legitimate state interests.

¹⁹⁷ Its current authority to do so is uncertain. *Compare* statutory language for motor vehicle regulation and electronic device regulation *with* FAA's authority.

¹⁹⁸ This puts states in a strong position under the first criterion set forth in § XXX.

¹⁹⁹ This puts states in a strong position under the second criterion set forth in § XXX.

²⁰⁰ This puts states in a strong position under the third criterion set forth in § XXX.

²⁰¹ This puts states in a strong position under the fourth criterion set forth in § XXX.

C. State and local initiatives

Only a handful of states have enacted statutes limiting the operation of drones (Unmanned Aerial Vehicles or “UAVs”). Most of these laws prevent law enforcement use of drones for evidence gathering without appropriate search warrants. Some of these limitations prohibit law enforcement and citizens from weaponizing drones. Some heighten privacy protection by prohibiting aerial surveillance without consent. A few statutes limit drone involvement in hunting. The following table lists the statutes. It is followed by a discussion of specific statutory provisions and an evaluation of the likelihood of federal preemption.

State Legislation Enacted	Bill	Date Approved	Date Effective	Paraphrase
Florida	C.S.C.S.S.S.B 766 Freedom from Unwarranted Surveillance Act	May 14, 2015		Prohibits law enforcement use to gather evidence. Prohibits recording an image of a privately owned property or of the owner (tenant, occupant, invitee etc.) violating a reasonable expectation of privacy. Exceptions: police get warrant, “perform reasonable tasks” within the scope of one’s license, property appraisals, utility inspection, mapping, <i>delivering cargo</i> (as long as with FAA compliance),

State Legislation Enacted	Bill	Date Approved	Date Effective	Paraphrase
Idaho	IC 21-213			No law enforcement searches without a warrant. No aerial photography without prior consent.
Illinois	720 Ill. Comp. Stat 5/48-3 Freedom from Drone Surveillance Act			Prohibits law enforcement use of drones without a warrant. No drone interference with hunters
Indiana	IC 35-33-5-9	July 1, 2014		No law enforcement use without a warrant
Iowa	HF 2289	May 23, 2014		No drones for traffic law enforcement. Evidence obtained with a drone without search warrant is inadmissible.

State Legislation Enacted	Bill	Date Approved	Date Effective	Paraphrase
Maryland	SB 370	May 12, 2015	July 1, 2015	Only the state can make drone laws (preempts counties and local ordinances).
Mississippi	SB 2022	April 23, 2015		Define felonious trespass to include peeping through a window, hole, or opening with a drone. Prohibits photographs and video of people without consent
Montana	HB 330	April 23, 2015	October 1, 2015	No weaponized or armored drones for law enforcement

State Legislation Enacted	Bill	Date Approved	Date Effective	Paraphrase
Nevada	AB 236 The largest and most comprehensive bill.			No person shall weaponize a drone or operate a weaponized drone. No operation within 500 ft or 250ft vertically from a "critical facility" and 5 miles from airport without consent. Right of action (trespass) if drone less than 250ft over property and property owner notifies DROP that the flight is unauthorized. No use for law enforcement to collect evidence. Creates a public registry of all state operated drones.
New Hampshire	SB 222 Fish and Game—Animal—Harassment	May 7, 2015	January 1, 2016	No activity that disturbs animals with intent to prevent their lawful taking. No drone use with intent to conduct video surveillance of citizen lawfully hunting, finishing, or trapping, without prior consent.

State Legislation Enacted	Bill	Date Approved	Date Effective	Paraphrase
North Dakota	HB 1328	April 15, 2015		Evidence obtained by a drone not admissible as evidence without a search warrant nor can law enforcement use drone footage as a basis for probable cause. No lethal weapons on a drone. Does not prohibit drone usage for research and development by edu. inst.
Oregon	HB 2534 Fish and Game—Fish and Wildlife Commission—Drone Regulation HB 2354: only definition of drone changed to “unmanned aircraft system”	May 12, 2015		Prohibit the use of drones related to pursuit of wildlife (angling, hunting, trapping) or aiding through use of drones to harass, track, locate, or scout wildlife; and interfere with angling, hunting, and trapping. The definition of drone includes unmanned water-based vehicles
Tennessee	HB 153 Crimes and Offenses—Drones—Photography and Pictures	April 20, 2015	July 1, 2015	No operation over events with 100+ attendees for a ticked event; no flight around fireworks without event organizer’s consent;

State Legislation Enacted	Bill	Date Approved	Date Effective	Paraphrase
Texas	423.008			Law enforcement must submit a report of drone use to the governor.
Utah	HB 296	March 27, 2015		Evidence obtained by a drone not admissible as evidence without a search warrant.
West Virginia	HB 2515 Wildlife— Animals— Weapons	April 2, 2015		Prohibits hunting, with drone..
Wisconsin	WSA 941.292 WSA 175.55	April 10, 2014		No weaponized drones. No law enforcement use without a warrant.

Law Enforcement . The drone statutes reinforce the Constitutional limitation on unreasonable searches and seizures. This prevents law enforcement from taking advantage of a new technology to conduct warrantless searches.

Some states prohibit law enforcement from gathering evidence without a search warrant. In Illinois, law enforcement “may not use a drone to gather information”²⁰² unless it obtains a search warrant prior to the search.²⁰³ Law enforcement agents may use drones in certain circumstances like crime scene and traffic investigation.²⁰⁴ Wisconsin and Indiana, like Illinois, prohibit the use of

²⁰²725 ILCS 167/10

²⁰³ 725 ILCS 167/15 (2)

²⁰⁴ 725 ILCS 167/15 (5) The Illinois statute confines law enforcement drone operation to the geographic location and imposes a time limit on investigation.

drones to gather evidence without a search warrant.²⁰⁵ Violation results in inadmissibility of the evidence. In addition, North Dakota prohibits use of drone imagery to establish probable cause to obtain a search warrant that would lead to drone captured evidence.²⁰⁶

Some states prohibit law enforcement from weaponizing a drone.²⁰⁷ In addition to weaponizing a drone, Wisconsin prohibits law enforcement from equipping a drone with armor.²⁰⁸ Other states extend this prohibition to civilian drone operations.²⁰⁹

Texas addresses concerns about law enforcement abuse but not limiting drone use. The Texas statute does not explicitly require a search warrant when law enforcement conducts an aerial search to gather evidence using a drone.²¹⁰ It merely requires that the law enforcement agency must, every two years, submit a written report to the governor, the governor lieutenant, and each member of the state legislature with a list of drone missions, costs of operating and maintaining a drone, and a list of non-criminal drone investigations.²¹¹

Privacy. States with drone privacy statutes address the fear of citizens using drones as “prying eyes” to collect information about their neighbors from an aerial vantage point. They prohibit on aerial imagery capture without consent.²¹² Florida, for example, prohibits any surveillance of a privately owned property, its owner and anyone legally occupying the premise (landlord, tenant, or licensee).²¹³ The Idaho statute prohibits capturing imagery of land and occupants without prior consent of the owner or the occupant.²¹⁴ Additionally, some states legitimate drone use over property for property appraisals, utility inspections, and mapping if the DROP performs the “reasonable task” under a state occupational license.²¹⁵

Flying a drone over private property without consent can lead to a trespass claim against the DROP or a penalty. Some states allow a trespass claim after the land owner notifies the DROP about an unauthorized flight over the land owner’s land lower than 250 feet.²¹⁶ Texas, for example, creates a civil right of action against a violating DROP and allows a land owner to recover a penalty for every captured

²⁰⁵ WSA 175.55; IC 35-33-5-9. See Florida, Idaho, Utah, Nevada, Iowa, N Dakota (prohibiting drone use to gather evidence without a search warrant).

²⁰⁶ N Dakota HB 1328

²⁰⁷ Montana HB 330

²⁰⁸ WSA 175.55

²⁰⁹ Nevada AB 236, N Dakota,

²¹⁰ Texas Drone Statute 423.008

²¹¹ *Id.*

²¹² *See*

²¹³ Florida Freedom From Unwarranted Surveillance Act

²¹⁴ Idaho 21-213

²¹⁵ Florida Freedom From Unwarranted Surveillance Act

²¹⁶ Nevada AB 236

image, or for distributing images.²¹⁷ In Mississippi, a drone trespass is a “felonious trespass” when a DROP uses a drone to peep through a “window, hole, or opening.”²¹⁸ For drone operation during live events, Tennessee prohibits unauthorized use with more than 100 guests attending a ticketed event.²¹⁹

Hunting. Aside from privacy concerns, some states worry about the role of drones in the outdoors by enacting bills concerning hunting, fishing, and trapping. New Hampshire prohibits drone use with the intent to prevent lawful taking by hunters.²²⁰ Oregon, for example, prohibits drone use to interfere with hunting, trapping, and finishing.²²¹ State statutes also prohibit drone use to aid in hunting. It is illegal to track, locate, and scout for wild animals²²² and to herd animals with a drone to hunt.²²³ Drone wildlife statutes prevent DROPs from interfering with other’s enjoyment of wildlife sports and from taking advantage of drone to gain an upper-hand in outdoor sport.

The measures restricting what state or local law-enforcement may do with drones are not preempted, because of the traditionally strong state interest in regulating its own law-enforcement bodies and the limited effect on air commerce. Likewise, the measures related to hunting are not preempted, because of the traditional state interest in that subject.

The Tennessee, Florida, Idaho, and Mississippi statutes present more interesting preemption questions because they restrict the operations of civilian drones outside the hunting context. Tennessee’s prohibition of flying over major events can be justified by the state’s interest in public safety. Limitations on what people can do in connection with large public events are a traditional mainstay of state and local regulation. The Tennessee crowd overflight prohibition is congruent with the section 333 exemption and (probable) eventual final-rule prohibition on flying over crowds. Tennessee could further justify its involvement as simply providing additional enforcement mechanisms for a federally established standard – similar to what happens when state law provides toward remedies for conduct that violates federal standard. On the other hand, a state crowd overflight restriction that goes well beyond the federal standard is more vulnerable to a preemption challenge.

²¹⁷ Texas 423.006

²¹⁸ Mississippi SB 2022

²¹⁹ HB 153

²²⁰ New Hampshire SB 222

²²¹ Oregon HB 2534

²²² *Id.*

²²³ West Virginia HB 2515

The prohibition against aerial imagery over property without the owner's consent and of subjects without their consent can be justified as an extension of traditional state measures to protect private property and personal privacy interests, matters generally left to the states and covered by extensive state regulation already. Many states already prohibit capturing – or at least publishing – images of persons without their consent.²²⁴ State overflight rules on this subject, however, are more vulnerable to preemption challenges when they extend the height below which permission is required. 250 feet places half of the FAA's allowable height under off-limits, especially if it is accompanied by restrictions or overflight of public spaces. Such inconsistent height limits interfere with the federal regulatory regime and burden air commerce.

The state privacy measures would fare better under preemption analysis if they simply extend existing state limitations on photographing individuals; such measures do not single out drones or other aircraft for special restrictions. The caselaw is more hospitable to state regulation of general application.

D. Space for municipalities?

The sovereignties in the United States constitutional structure are the federal government and the states; not municipalities.²²⁵ It was the states that met at the Constitutional convention and ceded some of their sovereign power to the United States; counties, towns, and cities were not at the table.²²⁶

States started out with sovereignty and gave some of it up—part of it upward, to the national sovereign, and part of it downward to counties, cities, and towns. Counties and other municipalities enjoy only such powers as are granted by the sovereign state. The American Civil War established that states, having ratified the United States Constitution, are not entitled to take back any of the sovereignty they ceded to the federal government, but the sovereignty they ceded downward, to local units of

²²⁴ CITE examples—CA, IL.

²²⁵ Indian tribes also are sovereign, but their role in drone regulation is beyond the scope of this article.

²²⁶ CITE for constitutional convention

government, they can take back at any time. A 2015 Maryland statute preempts municipal drone regulation.²²⁷

Of course, to the extent that state local government prerogatives are codified in state constitutions, the process for taking it back may be more arduous than simply passing a bill in one session of the Legislature. In some states, local government enjoys only those governmental authorities explicitly granted to them by state statute or constitutional provision. That was the case in Alabama for many years.²²⁸ The trend, however, is for states to adopt home rule legislation that grants general governmental power – roughly equivalent to that exercised by the state – to municipalities unless a specific power is withheld in the home rule statute or by subsequent legislation.²²⁹

E. Mechanisms for Federal-state cooperation

Cooperative federal-state regulation is not uncommon. Mechanisms for sharing federal and state authority over the same subject matter are pillars of air pollution regulation, occupational safety and health regulation, and remedying employment discrimination.

²²⁷ (B) “Only the State may enact a law or take any other action to prohibit, restrict, or regulate the testing or operation of unmanned aircraft systems in the State.

(1)

(C) Subsection (B) of this Section:

(2) Preempts the authority of a county or municipality to prohibit, restrict, or regulate the testing or operation of unmanned aircraft systems; and supersedes any existing law or ordinance of a county or municipality that prohibits, restricts, or regulates the testing or operation of unmanned aircraft systems.” SB 0370 (B)-(C).

²²⁸ Paul Diller, *Intrastate Preemption*, 87 B.U. L.Rev. 1113, 1127 n.64 (2007) (characterizing Alabama’s lack of meaningful home rule).

²²⁹ See David J. Barron, *Reclaiming Home Rule*, 116 Harv. L. Rev. 2255, 2277-2322 (2003) (analyzing history and competing philosophies of home rule); *City of Commerce City v. State*, 40 P.3d 1273, 1279 (Colo. 2002) (describing home rule authority).

The Clean Air Act distributes responsibility for setting and enforcing air-pollution standards among the federal EPA and state and local governments.²³⁰

Title VII of the Civil Rights Act of 1964 requires the complaints of employment discrimination be filed first with state anti-discrimination agencies, if they exist, before the federal EEOC has jurisdiction.²³¹

The Congress, in crafting the federal Occupational and Safety Act, was reluctant to federalize workplace safety. Accordingly, it provided for a system of state implementation plans under federal OSHA oversight.²³²

V. Economic and political realities

Regulation arises, not only from politics and law, but also from economics and ideas.

A. Economics

Two distinct markets exist for commercial microdrone activities. The first is the market for the vehicles themselves; the second is the market for services provided by operators of those vehicles. The market for the vehicles is undeniably national and international in character. The dominant vendor for small drones in the United States is DJI, a Chinese company. U.S. vendors such as 3Drobotics, like their foreign counterparts, seek footholds in international markets. Allowing states to set different standards for vehicles would significantly interfere with the efficient functioning of these markets, and it would be even worse if regulations are made at the local level. It would be bad enough to need 50 different business plans and vehicle requirements; let alone 36,000 for municipalities.²³³ Of course, drone manufacturers and operators could use a

²³⁰ Arnold W. Reitze, Jr., Air Quality Protection Using State Implementation Plans -- Thirty-Seven Years of Increasing Complexity, 15 Vill. Envtl. L.J. 209, 211-212 (2004) (explaining allocation of federal, state, and local authority in state implementation plans under the Clean Air Act).

²³¹ See Procedure Under Title VII, 84 Harv. L. Rev. 1195, 1213-1216 (1971) (criticizing deferral-state procedure).

²³² See *AFL-CIO v. Marshall*, 570 F.2d 1030, 1035 (D.C. Cir. 1978) (remanding OSHA regulations on staffing and funding of state implementation plans); Courtney M. Malveaux, OSHA Enforcement of the "as effective as" Standard for State Plans: Serving Process or People?, 46 U. Rich. L. Rev. 323, 324-325 (2011) (explaining that Occupational Safety and Health Act allows states to adopt their own implementation plans so long as they are at least as effective as federal standards).

²³³ https://www.census.gov/govs/go/municipal_township_govs.html (noting number of sub-county municipalities in the United States).

“common denominator” model and adapt to the most stringent regulatory requirements in all their models. This would obviously increase costs.

The market for drone services, in contrast, is inherently local. The limited range of the available vehicles means that any particular mission is going to take place in a relatively small area. For example, an Amazon delivery drone can only deliver packages within the range of the battery flight time limitations. Thus, Amazon can only serve the market immediately adjacent to its warehouse and distribution offices.

Even so, there are broader impacts. Depending on the altitudes at which they are flown, these local missions could pose collision risks to interstate and international airline and commercial operations.

Also, economies of scale for marketing, finance, and operations management may lead commercial drone operators over time to expand, so they offer the same or similar services in more than one geographic area. One crew dispatcher for DROPs can handle more than one customer’s callouts. Promotional materials prepared for one local market can be made suitable for others. Investment promotion, cash management, accounting, purchasing, and liability insurance all represent fixed costs that can be shared among different local markets

The enterprise structure of the commercial helicopter industry is an analogy to how commercial drone operations will be structured; the markets and missions are, in many respects, similar. National or regional operations instead of purely local ones predominate for oil and gas exploration crew transportation, for medevac, for electronic newsgathering, and for much utility infrastructure inspection. To be sure, there are many purely local operators in each of these industry sectors, but they provide services mostly at the margins of their customers’ operations and of their own, flying an occasional utility patrol or event shot opportunistically in to fill out a portfolio of that offers flights for almost any purpose, frequently coupled with flight training as the mainstay business.

Drone operator organizational structure also will depend, to some extent, on the organization structure of the customers for drone services. An enterprise with a national or international footprint is likely to want to standardize drone services contracts across its geographically dispersed operations. It can do this, of course, while still allowing local decision-makers to contract with local operators, but the economies of scale from

both buyers and sellers of drone services will push things toward arrangements of wider scope.

Different operating rules in different parts of the country would be impediments to realizing these efficiencies. Even if compliance is not a problem – for example not flying over 200 feet in New York State, but up to 500 feet in Colorado; or being allowed to fly the drone from a moving vehicle in Nebraska but not in Michigan—finding out what the rules are if they vary from place to place would impose significant additional transaction costs for legal research and advice.

B. Politics

Politics will share the stage with law and economics in determining how regulatory power over drones will be allocated among the federal government, states, and municipalities. Microdrones will produce a clash over federalism when constituent or interest group pressures to draft drone legislation prove irresistible. Two different political issues exist. The first is the politics of the content of state or local drone regulation. The second is the politics of federalism and federal preemption. Section XXX discusses the politics of content.

The politics of federalism intersects with judicial appreciation of the need to give greater room for state regulation of federal interests in areas where states traditionally have exercised power.²³⁴ Most state and local lawmakers do not think much about preemption. Even if they are lawyers and recall the concept from law school and the bar exam, they are unlikely to have an appreciation of the analysis conducted in part XXX and its conclusion. They likely, however, have a general understanding that some matters are mostly federal and some are mostly local.

When they think of the subject as aviation regulation, they are likely to assume that it is a matter for the federal government. When the subject is zoning, other land-use regulations, nuisance, protection of personal privacy, and localized disorderly conduct, they assume it's a matter for state or local regulation. Here is what is likely to happen:

A state legislature or a city council has proposed legislation on its agenda, sponsored by one of its members in response to constituent pressure. The content of the measure may

²³⁴ See § XXX.

restrict drones, or it may encourage their expanded use, depending on local politics. The Maryland statute²³⁵ clearly is an example of the latter, but most of the others on the list in § XXX are examples of the former. The legislative body schedules hearings, and at some point, a hearing witness, another legislator, or staff counsel suggests that the measure might be preempted by federal law. That will surely come as a surprise. "You mean the federal government excludes us from aviation regulations all the way down to one centimeter over my backyard?" someone may ask.

Then the battle is on. The FAA is extremely unlikely to accede to the proposition that it has anything less than exclusive authority all the way to the ground.

1. Not in my back yard

Ultimately, as section VV explains, the boundary between federal and state regulation will be defined not by abstract legal principles, but by policy decisions made by federal, state, and local legislators. Their policy decisions will, of course, be informed by politics operating at their particular level of government. An axiom of political science is that concentrated interests trump diffuse interests. Socially desirable projects such as cell phone towers, wind turbine farms, waste disposal sites, and electricity infrastructure "often succumb to a political process that yields to concentrated costs over diffuse benefits."²³⁶ Organization matters, and it is not easy to organize.²³⁷

²³⁵ Cross ref § XXX.

²³⁶ Barak D. Richman & Christopher Boerner, A Transaction Cost Economizing Approach to Regulation: Understanding the NIMBY Problem and Improving Regulatory Responses, 23 Yale J. on Reg. 29, 37-38 (2006) (explaining political economy of NIMBY); Michael A. Fitts, Can Ignorance Be Bliss? Imperfect information as a Positive Influence in Political Institutions, 88 Mich. L. Rev. 917, 930-931 (1990) (summarizing literature on the greater political power of concentrated interests opposing diffuse interests); Michael A. Fitts, The Vices of Virtue: A Political Party Perspective on Civic Virtue Reforms of the Legislative Process, 136 U. Pa. L. Rev. 1567, 1580-1581 (1988) (summarizing theory of how concentrated interests bias legislative decisionmaking);

²³⁷ See Lucas R. White, Untangling the Circuit Splits Regarding Cell Tower Siting Policy and 47 U.S.C. § 332(c)(7): When is a Denial of One Effectively a Prohibition on All?, 70 Wash. & Lee L. Rev. 1981, 1987-1988 (2013) (analyzing collective action problems in cell phone tower siting decisions).

Regulation at the federal level favors well-organized national interests, most of whom are likely to be pro-drone: farmers,²³⁸ the press and media,²³⁹ realtors,²⁴⁰ electricity and gas utilities,²⁴¹ insurers,²⁴² airlines,²⁴³ pilots,²⁴⁴ and railroads²⁴⁵. It will be easier for drone manufacturers to exert political power at the national level rather than having to develop a presence at the state and municipal level.

So does a role for states and municipalities mean more restrictions on desirable drone use because of the NIMBY phenomenon? ²⁴⁶Answering that question requires analysis of the political dynamics of local political decision-making, and that involves assessment of whether pro-drone or anti-drone interests are likely to be concentrated or diffuse.

Yale political science professor Robert Dahl, in his classic 1961 book, *WHO GOVERNS?: DEMOCRACY AND POWER IN AN AMERICAN CITY*, highlighted the role of local governmental institutions as mediators among conflicting interests groups, some of which had more power to influence the process than others.

“A political issue can hardly be said to exist unless and until it commands the attention of a significant segment of the political stratum [the small segment of the population

²³⁸ CITE – power of farmer lobby.

²³⁹ CITE – political power of press and media

²⁴⁰ CITE – power of realtors and developers

²⁴¹ CITE – utility lobby

²⁴² CITE insurance lobby

²⁴³ CITE – airline lobby

²⁴⁴ CITE ALPA and AOPA

²⁴⁵ CITE - RR lobby

²⁴⁶ "NIMBY, describes the situation where local citizens, organized community groups, and officials who want to benefit from an “essential infrastructure,” such as wireless telecommunication facilities, but do not want the infrastructure located in their particular neighborhoods and communities." Camille Rorer, *Can You See Me Now? The Struggle between Cellular Towers and NIMBY*, 19 J. Nat. Resources & Env'tl. L. 213, 216-217 (2004-2005). See Hannah Wiseman, *Expanding Regional Renewal Governance*, 35 Harv. Env'tl. L. Rev. 477, 483-484 (2011) (arguing that fragmentation of governmental authority prevents efficient land use for renewable energy; proposing regional structures).

that is involved regularly in politics].”²⁴⁷ An issue may take root because members of the political stratum get interested in it and influence other members to pay attention. It also may take root when the apolitical stratum experiences a vaguely felt need and members of the political stratum formulate ways for the need to be addressed by political institutions.²⁴⁸ The vicissitudes of press and media attention drive awareness in both strata. A highly publicized drone accident, or a rescue of a lost child enabled by drone imagery has impact.

One cannot predict political behavior in a particular unit of government without sophisticated public opinion polling of the population of that particular unit. Even then, predictions based on poll results are notoriously unreliable when political opinion is rapidly changing or when a particular issue is not very firmly in the public consciousness. Still, national polling suggests that the public attitude toward drones is unfavorable,²⁴⁹ likely fueled by an perception that civilian drones resemble military drones used in combat by the armed services and intelligence agencies– Predators and Reapers with thousands of pounds flying out of sight, at thousands of feet above the ground, and loitering for many hours to spy on or launch missiles at those below.

Over time, the wider use of civilian microdrones will alter the public perception, but for now, the likelihood is great that negative public attitude, reinforced by the NIMBY phenomenon, will make state and local legislative bodies instinctively hostile to widespread use of microdrones. In May, 2015, for example the Commissioners of the Chicago Park District had on their agenda a measure to prohibit drones from flying in Chicago's extensive public park system unless the operator had a permit.²⁵⁰ No mechanism was in place for obtaining a permit. The poorly drafted, one-page measure contained numerous errors about the FAA's position on local regulation of drones. It was withdrawn from the agenda pending reconsideration at another meeting after model aircraft enthusiasts protested.

²⁴⁷ Dahl at 92 (explaining crystallization of political issues).

²⁴⁸ Id.

²⁴⁹ Alwyn Scott, Americans OK with police drones - private ownership, not so much: Poll, Reuters, Feb. 5, 2015 (reporting that 42% of 2,000 respondents opposed private ownership and operation of drones. but 62% support police use for crimefighting).

²⁵⁰ <https://chicagoparkdistrict.legistar.com/LegislationDetail.aspx?ID=2283879&GUID=C26DC8E7-CAA4-44B1-A9ED-E275409C6D92>

There will be exceptions of course. In some communities, drone proponents will be well organized and influential. Realtors,²⁵¹ construction firms, and utilities, are alert and have drones high enough on their agendas that they are willing to make the effort. In some rural communities, agricultural interests that want to use drones will be influential. In most cases, however, it is more likely that concentrated opposition will trump diffuse supporters who don't know about the initiative or who don't want to go to the trouble of opposing it.

2. Intellectual capital

Eighty years ago, Justice Brandeis famously observed that the genius of the federal structure of the United States is that states can serve as laboratories within which different regulatory approaches can be tried out.²⁵² Moreover, having different local regulations has its merits. For example, each region has its own environmental characteristics (weather and terrain) that rational drone rules should take into account. Drone operations in rural, compared with urban, environments differ, along with the risks they pose.

The agenda of the laboratories, however, is not determined by an intellectual exploration of facts and the public interest. It is determined by politics. But politics translates into policy only when intellectual capital has linked amorphous public desire to concrete legislative or regulatory language.²⁵³

²⁵¹ Realtors are well represented on zoning bodies. Accordingly their interest in using drones to market listed properties is concentrated relative to that of neighbors who may oppose drone operations for this purpose. But see Jerry L. Anderson & Erin Sass, *Is the Wheel Unbalanced? A Study of Bias on Zoning Boards*, 36 *Urb. Law.* 447 (2004) (reporting on survey of members of Iowa zoning boards, data from which mostly refuted hypothesis of pro-development bias).

²⁵² "Denial of the right to experiment may be fraught with serious consequences to the nation. 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. This Court has the power to prevent an experiment." *New State Ice Co. v. Liebmann*, 285 U.S. 262, 280, 311 (1932) (Brandeis, J., dissenting) (invalidating, as violative of substantive due process, state law restricting entry into ice business).

²⁵³ CITE role of intellectual capital in translating political desire into legislation.

Drone regulation is not like occupational safety and health, or employment discrimination, however, where many states had mature, effective programs before the national program was crafted. Instead, virtually all of the intellectual capital with respect to drone regulation has been developed focused on the premise that drones would be regulated nationally.

It is completely different with respect to drone regulation. Few states or municipalities have given any serious thought to how drones should be regulated. Few interest groups have focused on drafting desirable state and local regulations. Most of the bills proposed have been impulsive, superficial, and motivated by ill-conceived public perceptions of the realities of drone flight.

On a relatively new issue like drones, local decision-makers are buffeted by public outcries animated by urban myth and overblown anecdotes about what might happen. They lack firm intellectual or political anchors to resist or to shape public opinion, so they just go with the flow.

State and local legislators are not irresponsible; they just lack resources to find out what the facts are. Interest groups provide essential technical support and intellectual capital to higher-level legislative bodies and forge long-standing relationships involving trust with the ample committee and personal staffs that support the United States Congress. Interest groups frequently are impotent at lower levels of government, however, because they lack the resources to interact effectively with legislators, who often are part time, and have a little if any staff support.

VI. Plan for the future

Drone regulation at the state—and, especially, at the local level—will result in dramatically different regulatory regimes across the country. Would that be a bad thing, either because of lack of uniformity, or because local regulation would bias decision-making? In addition to encouraging safety of air commerce, the FAA Administrator has a statutory duty to "encourage the development of civil aeronautics."²⁵⁴ It is thus

²⁵⁴ 49 U.S.C. § 40104. See also 49 U.S.C. § 40101(d)(3) ("[FAA Administrator shall consider] encouraging and developing civil aeronautics, including new aviation technology"); 49 U.S.C. § 40101 (c)(2) "[FAA Administrator shall consider] the public right of freedom of transit through the navigable airspace").

appropriate for the FAA, not only to assure that state and local regulation does not interfere with its safety mandate, but also to assure that state and local regulations does not stifle innovation and the development of commercial drone markets.

In considerable measure, the motivation for the proposal is to give the FAA and the Congress a way to respond to state and local political pressure to allow states and municipalities to regulate drones. Adoption of the proposal is far better for air commerce, the national airspace system, and local democracy than a shoving match among different levels of government, inevitable resulting in an outbreak of uncoordinated litigation in state and federal court.

1. Default: federal regulation and preemption

Default regulation for drones would comprise FAA regulations for DROP qualification, vehicle capabilities, and operating rules. State and local desire to play a role would be accommodated by a petition process. A state or municipality (authorized by state law) could petition the FAA to regulate drones in certain airspace. The FAA would be required to grant the petition so long as it shows that the proposed state regulation involves matters traditionally of concern to the states, does not interfere with effective operation of the national airspace system including, now, drone integration into it, does not interfere with the economies of scale necessary to allow drone commerce to develop in an unfettered market, and performance rather than technical engineering standards. The four criteria are factors to be considered collectively; not elements. They also are interrelated.

In effect, the regulatory regime would be an inversion of the state of affairs in mid 2015, when the default is a prohibition, and commercial operators must petition to fly. Under the proposal, the default would be permission to fly with units of state and local government empowered to petition to limit it.

This arrangement could be authorized by statute, or it could be implemented under existing statutory authority. The FAA already has authority to decide when to regulate and when to stay its hand, and it also has authority to delegate its regulatory

responsibility to others.²⁵⁵ For the most part delegation now involves shifting authority to private persons, but there is no reason that the authority to delegate explodes delegation to state and local governmental authorities. Moreover, the FAA has, and frequently exercises, the authority to leave certain areas within the scope of its statutory authority unregulated. Model aircraft operations are an obvious example, at least before the 2012 statute withdrew FAA authority over the subject. Commercial aircraft airstairs are another example, to borrow from the caselaw.

In effect, under the proposal, the FAA would say two things: first, we delegate our authority to you in the space and to the extent that you propose, and second, we withhold our authority to impose our own rules in the space and to the extent that you propose.

The concept could be implemented in the final rule for microdrones, but it is not a concept that was disclosed in the proposed rule, and therefore it has not received the public comment the Administrative Procedure Act envisions.²⁵⁶ If it is deferred, the federal government will have a considerable head start in regulating microdrones – exactly the opposite of the experience with occupational safety and health and employment discrimination regulation. That is not necessarily a bad thing, however. The initial increment of federal regulation could produce data about and what does and does not work, where state supplementation of the regulatory framework is most desirable.

The default position, of federal regulation, while leaving the initiative to states and municipalities to pose exactly what they want to regulate is that the Congress of the FAA need not make guesses as to what is well-suited for state and local regulation and what will satisfy state and local desires.

If the state wants to exclude drones from certain areas of geography, it can propose to do so.

²⁵⁵ See 49 U.S.C. § 44702(d) (authorizing FAA Administrator to delegate "examination, testing, and inspection necessary to issue a certificate under this chapter"); 14 C.F.R. § 183.1 (summarizing delegation of authority for issuing airman, operating, and aircraft certificates).

²⁵⁶ 5 U.S.C. § 553.

2. FAA authority to approve a state plan, meeting certain criteria

a) Unusual local interest

The first criterion would build on doctrine Commerce-Clause and federal-preemption analysis that allows states a wider ambit of regulatory authority alongside or instead of the federal government in areas traditionally with the state police power: land-use regulations, personal privacy, and other areas of common law torts. A state petition that imposes insurance requirements or tort rules for imposing liability arising from drone accidents would be viewed favorably under this criterion.

A petition that addresses traffic separation or drop qualification or vehicle standard would not.

b) Non-interference with NAS

The second criterion involves assessing the state proposal in terms of its effect on the efficient and safe operation of the national airspace system. A state proposal to exclude drones from the airspace below to treetop and powerline level over private property without permission would be viewed favorably under this criterion because it would have little effect on national airspace system operations and on most legitimate drone flight; indeed it's not clear that anyone is permitted to fly a manned aircraft or a drone below treetop and powerline level about private property under existing if FARs, under the NPRM, or under the section 333 exemptions.

On the other hand, a blanket ban on drones over the entire territory of a municipality would interfere with the efficient and safe operation of the national airspace system, given that the Congress has declared that commercial drone operations are a part of the national airspace system, subject only to compliance with the FAA rules to ensure safe integration.

c) No adverse effect on national and international economies of scale

The third criterion would require a showing by the state that its rules can be accommodated without commercial drone operators having to have separate business plans and operating programs for each local area in the United States. It also could be heightened by showing that a state or local government proposes to adopt uniform or model rules proposed by an entity like the uniform commissioners on national state laws, the National Association of attorneys general, or some private group. Satisfaction

of this criterion also would exist if a petitioner shows that compliance with the rules impinges only slightly on likely commercial drone operations. Restricting low-level flight over backyards it is an example of where impingement is low. Exposing certain purposes such as harassment to after-the-fact liability would be another example.

On the other hand, a state or municipal regulatory regime that limits the kinds of vehicles that can be flown would be suspect under this criterion. It would have the effect of requiring drone operators with more than a local footprint to select their fleets so as to accommodate a patchwork quilt of potentially inconsistent vehicle requirements. Local imposition of DROP and other crew member qualification requirements would be suspect for the same reason. Any system that requires advance approval of drone flight would be inconsistent with this criterion because it would ratchet up the transaction costs to know what the advance approval requirements are and to alter operations to comply with them. Advance approval for specific flights would be considerably worse in this regard than blanket approval for flights during a defined period of time, such as a year.

d) Plausible risk basis and performance orientation

The fourth criterion is closely related to the first. The risks that are petitioner identifies should be explicitly, and logically linked to the interests it cites under the first criterion. The analysis would resemble that used in 14th Amendment due process analysis to demonstrate a nexus between limitations on human activity and legitimate state interests.