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Chairman
The Honorable Maria Cantwell
Ranking Member
Committee on Commerce, Science, and Transportation
United States Senate

The Honorable Peter A. DeFazio
Chairman
The Honorable Sam Graves
Ranking Member
Committee on Transportation and Infrastructure
House of Representatives

The Honorable Frank Pallone, Jr.
Chairman
The Honorable Greg Walden
Ranking Member
Committee on Energy and Commerce
House of Representatives

**Unmanned Aircraft Systems: Current Jurisdictional, Property, and Privacy Legal Issues
Regarding the Commercial and Recreational Use of Drones**

Introduction and Overview

The commercial and recreational use of unmanned aircraft systems (UAS)—commonly known as drones—has the potential to provide significant social and economic benefits in the United States. Recognizing this potential, in 2012, Congress directed the Department of Transportation (DOT) to develop a plan for the safe integration of civil (non-government) UAS into the national airspace system. By the same legislation—the FAA Modernization and Reform Act of 2012 (FMRA)¹—and subsequent acts,² Congress directed DOT to conduct rulemakings and other activities to carry out this safe integration. The Federal Aviation Administration (FAA), which has declared that “[d]rones . . . are fundamentally changing aviation” and that it is

¹ FAA Modernization and Reform Act of 2012 (FMRA), Pub. L. No. 112-95, § 332, 126 Stat. 11 (2012).

² See, e.g., FAA Extension, Safety, and Security Act of 2016, Pub. L. No. 114-190, 130 Stat. 615 (2016); FAA Reauthorization Act of 2018, Pub. L. No. 115-254, 132 Stat. 3186 (2018 FAA Reauthorization Act). See also National Defense Authorization Act for Fiscal Year 2018, Pub. L. No. 115-91, § 1092(d), 131 Stat. 1283, 1610-1611 (2017).

“committed to working to fully integrate drones . . . into the National Airspace System,”³ has taken steps to meet these statutory mandates, as we have previously reported.⁴

To assist in these UAS integration efforts and inform future legislative action, Congress included provisions in the FAA Reauthorization Act of 2018 (2018 Reauthorization Act)⁵ for us to study and report on a number of key legal issues. Section 373 of the 2018 Reauthorization Act provided for us to study the relative roles and authorities of the federal, state, local, and tribal governments in the regulation and oversight of low-altitude UAS operations (referred to in this report as “UAS jurisdiction” or “UAS federalism” issues).⁶ Section 358 of the 2018 Reauthorization Act provided for us to study UAS-related personal privacy issues and the federal, state, and local laws that currently address them (referred to in this report as “UAS privacy” issues).⁷

This report responds to the section 373 and section 358 mandates and presents substantial information and analysis regarding these UAS legal jurisdiction and privacy issues. The report is in the nature of an informational primer, describing what we understand is the current state of the law, including the uncertainties, differing legal positions, and concerns raised about the current state of the law. Where the law is unclear on a particular issue, we do not express an opinion about what the better view of the law is. Nor do we express an opinion about what the law should be as a matter of policy. Consistent with FMRA’s directive to integrate civil UAS into the national airspace system, our focus is likewise limited to civil UAS operations.

As summarized below and detailed in the accompanying appendices, the integration of commercial and recreational drones into the national airspace system has raised complex legal, technical, and policy questions that have yet to be resolved. The law regarding a number of UAS jurisdiction and privacy matters is in a state of flux, both because the federal government is still developing key aspects of its UAS safety and security requirements and because there have been relatively few court decisions to date addressing whether these requirements are consistent with statutory authorities. Only one federal court has ruled on the merits of the jurisdiction issues, holding that a city’s *de facto* ban of drone flights within city limits was

³ FAA, *UAS Remote Identification*, https://www.faa.gov/uas/research_development/remote_id/ (last visited Sept. 1, 2020).

⁴ GAO, *Unmanned Aircraft Systems: FAA Could Better Leverage Test Site Program to Advance Drone Integration*, [GAO-20-97](#) (Washington, DC: Jan. 9, 2020); *Unmanned Aircraft Systems: FAA’s Compliance and Enforcement Approach for Drones Could Benefit from Improved Communication and Data*, [GAO-20-29](#) (Washington, DC: Oct. 17, 2019); *Small Unmanned Aircraft Systems: FAA Should Improve Its Management of Safety Risks*, [GAO-18-110](#) (Washington, DC: May 24, 2018); *Unmanned Aerial Systems: FAA Continues Progress toward Integration into the National Airspace*, [GAO-15-610](#) (Washington, DC: July 16, 2015); *Unmanned Aerial Systems: Status of Test Sites and International Developments*, [GAO-15-486T](#) (Washington, DC: March 24, 2015); *Unmanned Aerial Systems: Efforts Made toward Integration into the National Airspace Continue, but Many Actions Still Required*, [GAO-15-254T](#) (Washington, D.C.: Dec 10, 2014); *Unmanned Aircraft Systems: Measuring Progress and Addressing Potential Privacy Concerns Would Facilitate Integration into the National Airspace System*, [GAO-12-981](#) (Washington, DC: Sept. 14, 2012).

⁵ 2018 FAA Reauthorization Act, *supra* note 2.

⁶ 2018 Reauthorization Act, *supra* note 2, § 373, 132 Stat. at 3313. Section 373 also provided for us to report on infrastructure requirements necessary to monitor low-altitude UAS operations. *Id.* § 373(b)(6). We plan to issue an audit report addressing these issues later this year, including implementation of a UAS Traffic Management (UTM) system.

⁷ 2018 Reauthorization Act, *supra* note 2, § 358, 132 Stat. at 3305.

federally preempted because it conflicted with FAA regulations that authorized such flights.⁸ A second federal court, while not deciding the jurisdiction issues, has questioned both FAA's and Congress's authority to regulate all low-altitude UAS operations, particularly in airspace over private property.⁹ A third federal court has found it lacked authority to rule on what it said were state law issues of UAS-related privacy and property rights in low-altitude airspace.¹⁰

Beyond the courtroom, consensus on key UAS jurisdiction and privacy issues has been elusive among stakeholders from the federal, state, local, and tribal governments, the UAS industry, property and privacy advocates, academic experts, and others. For example, initiatives carried out between 2017 and 2020, separately convened by FAA¹¹ and the Uniform Law Commission (ULC)¹² in part to address UAS jurisdiction issues (and in the ULC's case, also UAS privacy issues), failed to produce recommendations in key areas. DOT's UAS Integration Pilot Program (IPP), begun in 2017 and scheduled to conclude by October 2020, may help achieve greater consensus. The IPP is bringing together the federal, state, local, and tribal governments with private sector entities to address competing views on UAS jurisdiction and privacy issues, among other things.¹³ Federal legislation addressing some of these issues has been introduced, but not yet enacted, in several recent Congresses.¹⁴

Importantly, a task force of attorneys in the DOT Office of the Secretary and FAA, established by DOT in 2017 and known as the Joint Lawyers Working Group on Federal Preemption and the Regulation of Unmanned Aircraft Systems (DOT Preemption Working Group), is conducting an in-depth review of the Department's legal position regarding federal preemption of state and local laws and other UAS jurisdiction-related issues. The purpose of the Working Group is to develop a DOT "unified legal position" on how preemption and other jurisdiction-related principles apply to the regulation of UAS. DOT officials told us they expect the results of the Working Group to be provided to DOT senior leadership in the coming months, informed in part by the results of the IPP and following review and concurrence by the Department of Justice (DOJ). The officials said they anticipate the agency's legal position to be publicly announced

⁸ *Singer v. Newton*, 284 F.Supp.3d 125 (D. Mass.), *appeal dismissed on other grounds*, 2017 WL 8942575 (1st Cir. 2017). See also *Nat'l Press Photographers Ass'n v. McCraw*, No. 1:19-cv-00946-RP (W.D. Tex., filed Sept. 26, 2019) (ongoing suit challenging UAS restrictions in Texas Privacy Act on federal preemption, privacy, and First Amendment grounds).

⁹ *Huerta v. Haughwout*, 2016 WL 3919799 (D. Conn. 2016).

¹⁰ *Boggs v. Merideth*, 2017 WL 1088093 (W.D. Ky. 2017).

¹¹ In early 2017, FAA established Drone Advisory Committee Task Group 1 ("Roles and Responsibilities"), a group of industry, academic, and state and local stakeholders, to provide recommendations on issues related to federal, state, and local jurisdiction over low-altitude airspace including property rights in airspace. In a number of key areas, the group was unable to reach consensus on common ground principles or to make recommendations by the group's mid-2018 endpoint. Appendix I provides additional detail.

¹² We discuss these ULC efforts below and in Appendices II and III.

¹³ Appendix I provides additional detail about the IPP.

¹⁴ Regarding UAS federalism-related issues, see, e.g., Advanced Unmanned Delivery Services Act, H.R. 6943, 116th Cong. (2020); Drone Integration and Zoning Act of 2019, S. 2607, 116th Cong. (2019); Drone Federalism Act of 2017, S. 1272, 115th Cong. (2017); Drone Innovation Act, H.R. 2930, 115th Cong. (2017). Regarding UAS personal privacy issues, see, e.g., Drone Aircraft Privacy and Transparency Act of 2017, S. 631 and H.R. 1526, 115th Cong. (2017); Drone Aircraft Privacy and Transparency Act of 2015, H.R. 1229, 114th Cong. (2015); Drone Aircraft Privacy and Transparency Act of 2013, H.R. 1262, 113th Cong. (2013).

sometime thereafter and noted that the agency's position on its authority over UAS could apply to its authority over manned aircraft as well.

Based on our review of the law, as well as the legal positions expressed by a range of stakeholders we spoke with and analyses by a number of legal commentators, key unresolved UAS legal jurisdiction and privacy issues include:

- Whether Congress may use its power under the U.S. Constitution's Commerce Clause to regulate all UAS operations, including non-commercial, non-interstate, low-altitude operations over private property, and if so, whether Congress has authorized FAA to regulate all such operations in FMRA or other legislation;¹⁵
- What impact possible Fifth Amendment-protected property rights held by landowners in the airspace within the "immediate reaches" above their property, as recognized by the U.S. Supreme Court in *United States v. Causby* and other legal precedents, may have on federal, state, local, and tribal authority over low-altitude UAS operations;¹⁶
- Whether and to what extent Congress intended, in FMRA or other legislation, to preempt states, localities, and tribes from regulating UAS operations at low altitudes;¹⁷
- What liability UAS operators and the federal, state, local, and tribal governments may have to landowners under state aerial trespass and constitutional takings law precedents for conducting, regulating, or preempting state regulation of UAS operations in low-altitude airspace, and whether landowners may exclude drones from their overlying airspace;¹⁸ and
- Whether existing federal and state privacy laws adequately protect against invasions of physical privacy and personal data privacy involving UAS operations and what authority the federal, state, local, and tribal governments have to enact additional measures that may be needed.¹⁹

The legal uncertainty surrounding these and other issues is presenting challenges to integration of UAS into the national airspace system. Successful integration may involve balancing the social and economic benefits anticipated from UAS operations with constitutionally protected property and privacy rights. It may also involve balancing the federal government's constitutional rights and responsibilities to regulate interstate commerce with the states' constitutionally reserved police powers and principles of federalism. A number of stakeholders we spoke to, and legal commentators who have addressed these matters, said additional clarity on these matters from Congress, FAA, or the courts would facilitate the successful integration of UAS into the national airspace.

This report is presented in multiple parts. This correspondence summarizes key aspects of our

¹⁵ See Appendix I.

¹⁶ See Appendix I. Appendices II and V provide additional detail about the evolution of property rights in airspace.

¹⁷ See Appendix I. Appendix IV provides additional detail about state regulation of UAS operations.

¹⁸ See Appendix II.

¹⁹ See Appendix III.

analysis and six appendices accompanying this correspondence provide more detailed analysis. Appendices I and II address UAS jurisdiction and airspace property rights issues in response to the section 373 mandate. Appendix III addresses UAS privacy issues in response to the section 358 mandate. Appendix IV is a table of state UAS-specific laws, resolutions, and executive orders enacted or issued as of 2019. Appendix V provides further detail about the evolution of property rights in airspace, because the modern-day status of these rights is one of the significant unresolved issues identified as potentially affecting federal and state authority over UAS operations. Appendix VI lists the stakeholders we interviewed in preparing this report and describes how we selected them. Unless otherwise noted, this report reflects significant legal developments as of September 1, 2020.

Current Commercial and Recreational Drone Use in the United States

Commercial and recreational use of drones in the U.S. has grown substantially in recent years and is expected to increase as technology improves and legal and policy issues are resolved. According to FAA, in 2019, about 77 percent of the approximately 1.7 million “small” UAS (less than 55 pounds including cargo)²⁰ used in non-government operations were used for recreational purposes, while about 23 percent were used for commercial purposes. By 2024, FAA predicts the total non-government use fleet will likely increase to approximately 2.3 million small UAS, with the proportions shifting to about 64 percent in recreational use and 36 percent in commercial use.²¹

As of 2018, the predominant commercial small UAS uses in the U.S. were industrial inspection, event photography, real estate, and research and development/training.²² Routine, for-hire UAS package delivery may be on the horizon, however, and FAA predicts that growth in the UAS small-package delivery sector could be “phenomenal.”²³ Under FAA’s current operating rules for commercial UAS operations, deliveries made beyond a UAS operator’s visual line of sight—likely a critical feature of large-scale commercial drone delivery—are allowed only by obtaining an FAA air carrier certification, appropriate exemptions, and an associated airspace waiver or authorization. Over the last year, however, initially as part of the IPP and more recently under FAA’s traditional air carrier regulations, the agency has approved drone deliveries on a broader basis by several commercial ventures.²⁴

²⁰ 49 U.S.C. § 44801(9).

²¹ FAA, *FAA Aerospace Forecast, Fiscal Years 2020-2040* (March 26, 2020), at 48, 52, available at https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2020-40_faa_aerospace_forecast.pdf (last visited Sept. 1, 2020).

²² FAA, *FAA Aerospace Forecast, Fiscal Years 2019-2039* (April 30, 2019), at 48, available at https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/fy2019-39_faa_aerospace_forecast.pdf (last visited Sept. 1, 2020).

²³ *FAA Aerospace Forecast, Fiscal Years 2020-2040*, *supra* note 21, at 53.

²⁴ Appendix I provides additional detail.

Federal, State, Local, and Tribal Jurisdiction and Regulation of Low-Altitude UAS Operations, Including the Impact of Property Rights in Airspace²⁵

A threshold issue in deciding how to integrate small UAS operations into the national airspace system is determining who—the federal government, or the state, local, and tribal governments, or all of them—has the legal authority to make these decisions.

FAA's Position on Its Authority over Low-Altitude UAS Operations

FAA states that it has authority to create a comprehensive regulatory system governing the safe and efficient management of UAS operations—including non-commercial operations at ground-level altitudes, above private property, and solely within state boundaries—pursuant to laws Congress has enacted under its constitutional Commerce Clause power. FAA also states that under the Constitution's Supremacy Clause, state and local laws affecting the field of aviation safety and the efficient use of airspace are federally preempted,²⁶ although non-federal government entities may still issue laws pertaining to UAS that do not touch this preempted field.

In particular, according to FAA, it is responsible for air safety “from the ground up,” including with respect to UAS operations.²⁷ Similarly, DOT officials told us it is the agency's “long-held position that . . . [FAA] has the responsibility to regulate aviation safety and the efficiency of the airspace within the navigable airspace, which may extend down to the ground.” This authority and responsibility to regulate all aircraft operations down to the ground is based in part on 49 U.S.C. § 40103(b)(1), FAA officials told us, which is derived from Congress's original 1926 legislation enacted in the context of manned aircraft.²⁸ As currently codified, that provision authorizes FAA to regulate “the use of the *navigable airspace* . . . to ensure the safety of aircraft and the efficient use of [that] airspace,”²⁹ with “navigable airspace” defined as the airspace above minimum safe flight altitudes *prescribed by FAA regulations*.³⁰ Although FAA has issued no regulation prescribing minimum safe flight altitudes for UAS, DOT officials told us “it is the Department's stance that, for purposes of the definition of the term *navigable airspace*, zero feet (‘the blades of grass’) is the minimum altitude of flight for UAS.”

FAA's authority to regulate UAS operations at ground level also is supported by 49 U.S.C. § 44701(a)(5), FAA officials told us, which directs the agency to issue “*air commerce*” safety

²⁵ Our detailed analysis of these issues is contained in Appendix I.

²⁶ See, e.g., FAA Office of the Chief Counsel, State and Local Regulation of Unmanned Aircraft Systems (UAS) Fact Sheet (Dec. 17, 2015), available at https://www.faa.gov/uas/resources/policy_library/media/UAS_Fact_Sheet_Final.pdf (last visited Sept. 1, 2020).

²⁷ See, e.g., FAA, *Busting Myths about the FAA and Unmanned Aircraft—Update*, available at <https://www.faa.gov/news/updates/?newsId=76381> (last visited Sept. 1, 2020).

²⁸ See Air Commerce Act of 1926, Pub. L. No. 69-254, 44 Stat. 568 (1926). Congress has expanded and amended the 1926 Act over time through numerous authorization acts, including substantial legislation in 1938 and the landmark Federal Aviation Act of 1958, which among other things created the Federal Aviation Agency, renamed in 1966 as the Federal Aviation Administration.

²⁹ 49 U.S.C. §§ 40103(b)(1) (emphasis added).

³⁰ 49 U.S.C. § 40102(a)(32) (emphasis added). The definition also includes airspace needed to ensure safe takeoffs and landings.

regulations. The officials noted that because “air commerce,” in contrast to “navigable airspace,” is not defined by a minimum altitude, FAA may regulate UAS and other “aircraft” in the stream of interstate commerce even when they are on the ground. Support comes as well from 49 U.S.C. § 40103(b)(2), the officials told us, which among other things directs FAA to issue air traffic regulations for “protecting individuals and property on the ground.”

In addition to these general aviation authorities, FAA officials told us Congress specifically intended to authorize regulation of low-altitude UAS operations even if they occur below “navigable airspace” pursuant to 49 U.S.C. §§ 44802 and 44807. Those provisions codify FMRA’s directive to establish requirements for UAS operations in the “*national airspace system*,” provided that FAA determines such operations may be carried out safely.³¹ Although Congress has not defined “national airspace system,” FAA has defined this term in its Pilot/Controller Glossary as a “network” of “U.S. airspace” (an undefined term) together with aviation-related facilities, rules, technical information, manpower, and material.³² As so defined, DOT officials told us, “national airspace system” is “a broader concept than the ‘navigable airspace.’”

Beyond these “navigable airspace,” “air commerce,” and “national airspace system” statutory authorities cited by FAA as supporting its regulation of UAS operations from the ground up, the agency refers throughout the preamble to one of its most recent UAS rulemakings to regulation of UAS operations in the “*airspace of the United States*.”³³ Congress has used the same undefined term in declaring in 49 U.S.C. § 40103(a)(1) that the United States Government has exclusive sovereignty of “*airspace of the United States*.” DOT officials told us, however, that it is not the Department’s position that this “sovereignty” statute provides additional authority to regulate UAS operations down to ground level. Nor does it reflect “national ownership” of the airspace or expressly exclude the sovereign powers of the states, the officials said, but rather simply excludes the exercise of sovereignty by foreign nations.

Based on FAA’s reading of these statutory authorities, the agency initially addressed UAS operations by issuing UAS-related guidance and enforcing relevant parts of its existing aviation regulations. Starting in 2015 after enactment of FMRA, FAA has promulgated regulations tailored to the unique flight characteristics of UAS, such as their small size and low-altitude flight capabilities. For example, because FAA generally requires manned aircraft to fly at least 500 feet above the ground to segregate them from people and structures, FAA’s Part 107 regulations, issued in 2016, generally require small UAS to fly no more than 400 feet above the ground (with no explicit minimum altitude), in order to segregate them from manned aircraft.³⁴ Absent a waiver, the Part 107 rules also currently prohibit small UAS operations beyond an operator’s visual line of sight, during nighttime hours, and over persons not participating in the UAS operation (known as “flights over people”).

³¹ 49 U.S.C. §§ 44802, 44807 (emphasis added).

³² See FAA Order JO 7110.65Y, Air Traffic Control, Appendix - Pilot/Controller Glossary at p. PCG N-1.

³³ See 84 Fed. Reg. 72438 (Dec. 31, 2019) (proposed Remote Identification rule) (emphasis added).

³⁴ FAA’s general operating rules for small UAS, which are mandatory for commercial UAS operations, are set forth in 14 C.F.R. Part 107. Recreational fliers—that is, operators of small UAS that are flown strictly for “recreational purposes” and meet other criteria (previously known as hobbyist or model aircraft UAS operators)—can but are not required to follow the Part 107 rules. Instead, recreational fliers may operate UAS without specific FAA certification or authorization if the operation adheres to all UAS “recreational operations” requirements in 49 U.S.C. § 44809.

The agency has proposed to amend its Part 107 rules to allow routine small UAS flights beyond the operator’s visual line of sight and during daytime hours.³⁵ It has also proposed a set of UAS “remote identification” requirements; these so-called Remote ID rules would assign what many have described as a “digital license plate” to each UAS device to make identification and location information available in real time to other airspace users and persons on the ground.³⁶ Until the Remote ID rules are finalized and go into effect, FAA is considering ways to incentivize UAS manufacturers and users to install and use this technology voluntarily.

State, Local, and Tribal Governments’ Positions on Their Authority over Low-Altitude UAS Operations

While FAA states that it has authority to create a comprehensive regulatory system addressing UAS operations at ground level as part of ensuring aviation safety and the efficient use of airspace, some state and local governments and legal commentators, in addition to the federal district court noted above,³⁷ have questioned FAA’s authority to regulate UAS operations at low altitudes, at least those conducted purely intrastate and over private property.

For example, they note that since 1926, Congress has distinguished between “navigable airspace”—which FAA may regulate for aircraft safety and efficient management and which as noted is defined as the airspace *above* safe altitudes of flight—and “airspace of the United States”—an undefined and seemingly broader term over which the U.S. Government has sovereignty. They also dispute FAA’s position that 49 U.S.C. § 40103(b)(2)(B)—authorizing the agency to regulate “navigable airspace” by issuing “air traffic regulations” for “protecting individuals and property on the ground”—provides authority to regulate activities *below* navigable airspace and to allow *flight* activity down to the ground.

Even if FAA has such authority, many states, localities, and Indian tribes believe they are not preempted from regulating at least some aspects of UAS operations in the same low-altitude airspace in which FAA has asserted preemptive authority over aviation safety and airspace management. States and localities, citing their inherent police powers over public health, safety, and welfare reserved under the Constitution’s Tenth Amendment, and tribes, citing their inherent sovereign powers, have sought to address UAS operations in a manner that protects property and privacy rights and provides for appropriate land use regulation, zoning, and law enforcement. As discussed below, property rights are significant in the UAS context because they have been recognized in low-altitude airspace, both in the context of unconstitutional takings of property and state-law aerial trespass claims. Privacy rights also are significant in the UAS context because of drones’ virtually universal use of cameras and other sensors and their ability to fly at low altitudes and be remotely piloted. Both property rights and privacy rights have historically been governed by state law rather than federal law.

For example, a number of states and localities have sought to address UAS concerns using their general trespass, reckless endangerment, privacy, and other police power laws,³⁸ and/or have enacted UAS-specific laws to create so-called “reasonable time, place, and manner”

³⁵ 84 Fed. Reg. 3856 (Feb. 13, 2019).

³⁶ See *supra* note 33. Appendix I provides additional detail about the proposed Remote ID rule.

³⁷ See *Huerta v. Haughwout*, *supra* note 9.

³⁸ See Appendices I, II, and III.

restrictions.³⁹ According to our analysis of information compiled by the National Conference of State Legislatures, 46 states had enacted or issued some type of UAS-specific legislation, resolutions, or executive orders as of 2019. These have included restrictions to ensure UAS do not intrude on personal privacy (one of the most common types of UAS-specific state laws); prohibitions on the use of UAS for certain types of activities; and restrictions or bans on UAS operations in certain locations or below certain altitudes.

Some states and localities also assert that they have, or want to obtain, authority to use so-called “counter”-UAS measures to respond to “rogue” drones that are flying either in an unsafe manner or where drones are not permitted to fly. Finally, although many states have enacted measures to address concerns raised by UAS operations, other states are seeking to encourage UAS operations within their borders, particularly for commercial purposes. Among other things, these states have passed resolutions highlighting the benefits of UAS to their citizens and economies and enacted laws preempting localities from restricting such operations.

Although DOT officials told us they recognize that state, local, and tribal governments have legitimate interests and constitutionally reserved rights to protect the property, privacy, and security of their citizens, the officials expressed concern with bans or other substantial restrictions affecting the safety or efficiency of UAS operations. Such restrictions, the officials said, are presenting UAS operators with what DOT characterized as a “daunting regulatory patchwork” of differing restrictions, many of which the Department believes could conflict either with current law or with regulatory policies it may wish to develop in the future. Further, the DOT officials told us, the Department believes the regulatory uncertainty created by what they referred to as a “hodge-podge of differing federal and state regimes” threatens to dampen innovation and investment in commercial drone use and impede progress toward the federal goal of UAS integration.

The Impact of Possible Property Rights in Airspace on Federal and State Authority over UAS Operations

A key unresolved issue in determining the scope of federal and state jurisdiction over UAS operations is the modern-day status and impact of property rights in airspace. The continued recognition of these historic rights could affect the extent to which Congress is deemed to have intended to preempt states’ police power protections of those rights, for example, or might influence how Congress may decide to clarify its preemption intentions in the future. The possibility that federal UAS regulatory action might diminish airspace property rights to such an extent that it is an unconstitutional taking requiring just compensation to landowners also might affect the scope of regulatory authority Congress is deemed to have assigned to FAA or how FAA exercises that authority.

These issues arise in the UAS context because UAS are generally restricted to low-altitude airspace—the fact that FAA has set no explicit UAS minimum flight altitude, while setting a general maximum flight altitude of 400 feet, necessarily places UAS relatively close to people and structures on the ground. Low-altitude UAS operations, in turn, have revived questions about whether landowners have property rights in the low-altitude airspace above their land—a question many believe was resolved in the context of manned flight decades ago. The different legal positions in the UAS context largely reflect different interpretations of the U.S. Supreme

³⁹ See Appendices I and IV.

Court's landmark decision in *United States v. Causby*⁴⁰ and subsequent cases, and *Causby*'s statements that a landowner "owns" and has "exclusive control" of his "immediate reaches" airspace. As one law firm stakeholder we spoke to has said, *Causby* is a "touchstone" that "you can't get around" in the debate over federal versus state authority over low-altitude airspace; "you can't pretend *Causby* doesn't exist."

In *Causby*, the Supreme Court addressed the Anglo-American common law doctrine of *cujus est solum, ejus est usque ad coelum et ad inferos*—he who owns the soil owns upwards to the heavens and down to the depths.⁴¹ For centuries, the *ad coelum* doctrine was used to resolve disputes over activities occurring in the airspace; in the U.S., states adopted the doctrine as part of their common law police powers. The advent of manned flight in the 1800s and 1900s prompted landowners to seek what they believed was the doctrine's protection of their exclusive right to use the airspace above their land. At the same time, aviation proponents who sought to use that airspace for public purposes and private commerce argued the doctrine should be changed or abandoned.

As with today's debate over how UAS should be regulated, this debate over manned aircraft regulation a century ago also raised the question of who—the federal government or the states—had authority to decide those matters. Congress answered that question to some extent by using its Commerce Clause power to enact the 1926 Air Commerce Act, the first federal legislation governing air commerce.⁴² As noted, that legislation authorized the federal government to regulate the use of the "navigable airspace" and declared a public right of transit through that airspace.

Notwithstanding Congress' assignment of control over navigable airspace activity to the federal government, the Supreme Court in *Causby* said private landowners retained their constitutionally protected property interests in the airspace immediately above their land. The Court said the *ad coelum* doctrine "has no place in the modern world," noting that airspace ownership up to the heavens would subject every pilot to aerial trespass suits and "seriously interfere with" the public interest in manned flight.⁴³ The Court nonetheless found that private landowners still have "*exclusive control* of the *immediate reaches* of the enveloping atmosphere" above their land and "*own[]* at least as much of the space above the ground as [they] can occupy or use in connection with the land."⁴⁴ The Court explained that "[t]he superadjacent airspace at this low altitude is so close to the land that continuous invasions of it affect the use of the surface of the land itself. We think that the landowner, as an incident to his ownership, has a claim to it and that invasions of it are in the same category as invasions of the surface."⁴⁵

Recognizing the continued vitality of low-altitude airspace property rights, the Court ruled that the flights at issue in *Causby*—U.S. military aircraft continuously taking off and landing directly

⁴⁰ *United States v. Causby*, 328 U.S. 256 (1946). We discuss *Causby* in Appendices I, II, and V.

⁴¹ *Causby*, *supra* note 40, 328 U.S. at 260-61, 264 (citations omitted).

⁴² Air Commerce Act, *supra* note 28.

⁴³ *Causby*, *supra* note 40, 328 U.S. at 261.

⁴⁴ *Causby*, *supra* note 40, 328 U.S. at 264 (emphasis added).

⁴⁵ *Causby*, *supra* note 40, 328 U.S. at 265.

above a landowner's home and business—had taken the landowner's property: a so-called flight easement in that airspace. The federal government therefore was ordered to pay the landowner just compensation under the Constitution's Fifth Amendment.⁴⁶ The Court did not specify the "precise limits" of "immediate reaches" airspace but rather said a taking occurs when flights over private land are "so low and so frequent as to be a direct and immediate interference with the enjoyment and use of the land."⁴⁷

With *Causby* and subsequent Supreme Court rulings protecting "immediate reaches" airspace property rights,⁴⁸ the courts recognized a balance of authority between the federal government and the states. In the aviation context, the courts held that the federal government has dominant authority to regulate flight operations in navigable airspace to ensure aviation safety and efficient airspace management, and most but not all state and local aviation laws are preempted.⁴⁹ But the federal government's authority remains subject to landowners' constitutionally-protected airspace property rights and states' police power to protect such rights.⁵⁰

The advent of UAS has brought renewed attention to *Causby* and property rights in airspace. On the one hand, state and local government stakeholders, property law and real estate experts, and others have said *Causby* affirms landowners' continued property rights in the low-altitude airspace above their land. These property rights include the fundamental right to exclude others which, in the UAS context, means the right to exclude drones. States and localities also have said they are not completely preempted from protecting these property rights and from regulating what, in their view, are inherently "local" (low-altitude) UAS operations using their traditional police powers. At the least, states and localities told us, they should "have a seat at the table" with the federal government in addressing when and where drones may operate.

On the other hand, UAS industry stakeholders have questioned whether *Causby's* statements regarding low-altitude airspace property rights are part of binding Supreme Court precedent at all, or instead whether *Causby's* holding was limited to property rights in *land*. Some law firm stakeholders have said *Causby's* "vague framework" of airspace property rights is ripe to be challenged and suggested these rights are an anachronism that should be reconsidered to allow society to achieve the social and economic benefits of UAS. UAS industry stakeholders also have taken the position that states are preempted from regulating or at least prohibiting UAS operations in low-altitude airspace, asserting that Congress intended such preemption to ensure

⁴⁶ The Takings Clause of the Fifth Amendment authorizes the federal government to take private property for a public use under its eminent domain power, provided the government pays just compensation to the property owner. U.S. Const. Amend. V. These requirements apply to state governments through the Fourteenth Amendment.

⁴⁷ *Causby*, *supra* note 40, 328 U.S. at 266.

⁴⁸ See, e.g., *Griggs v. Allegheny County*, 369 U.S. 84 (1962); *Penn Central Transp. Co. v. City of New York*, 438 U.S. 104 (1978); *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419 (1982). We discuss *Griggs* below and in Appendices I, II, and V.

⁴⁹ See, e.g., *City of Burbank v. Lockheed Air Terminal Inc.*, 411 U.S. 624 (1973) (finding preemption); *Montalvo v. Spirit Airlines*, 508 F.3d 364 (9th Cir. 2007) (same); *Braniff Airways v. Nebr. State Bd. of Equalization and Assessment*, 347 U.S. 590 (1954) (finding no preemption); *Skysign International, Inc. v. City and County of Honolulu*, 276 F.3d 1109 (9th Cir. 2002) (same).

⁵⁰ See, e.g., *Andrews v. United States*, 108 Fed. Cl. 150 (2012); *Brown v. United States*, 73 F.3d 1100, 1102 (Fed. Cir. 1996); *Adaman Mutual Water Co. v. United States*, 181 F. Supp. 658 (Ct. Cl. 1958).

the safety and efficiency of the national airspace system. UAS industry stakeholders also have said preemption is critical to avoid a “patchwork” of differing state UAS laws that they believe would stifle technological innovation.

FAA did not take a position on the existence or impact of property rights in airspace in issuing its Part 107 UAS regulations in 2016. DOT and FAA officials also declined to provide their position on such rights or on the agency’s interpretation of *Causby* for this report. They explained these are among the issues being considered by the agency’s Preemption Working Group, whose analysis will be informed in part by the results of the IPP and coordinated with DOJ.

Nonetheless, it appears FAA has recognized constitutionally protected property rights in low-altitude airspace at least in the context of manned aviation. FAA’s directives governing its Airport Improvement Program (AIP) have long required airport sponsor-grantees to acquire “title” to all “real property interests” needed for construction and operation of the grant-assisted airport. FAA explicitly states that these property interests include flight easements in airspace, now known as “avigation easements,” which it defines as “a conveyance of airspace over another property for use by the airport.” FAA also requires airport sponsors to pay “just compensation” for this “interest in . . . real property” and notes that sponsors may need to use their “power of eminent domain,” and to “institute formal condemnation proceedings” for “the taking of the real property,” to acquire such property interests.⁵¹ DOT officials declined to identify the basis for FAA’s inclusion of airspace easements in its AIP property directives or to state whether those directives reflect a recognition of property rights in airspace, again explaining that the DOT Preemption Working Group is currently considering such issues.

Additional Considerations Involving UAS-Related Property Rights in Airspace: Potential Claims under State and Federal Law⁵²

While the federal, state, and local governments have regulated low-altitude UAS operations in order to protect the public interest, as discussed above, private individuals also may have legal rights to seek redress for what they believe are UAS-related harms particularized to them. One category of these potential private causes of action, to the extent they have been recognized under state or federal law, are claims involving UAS-related interference with property rights in airspace.⁵³

Current law recognizes two basic types of private “airspace rights” claims: state tort claims for traditional and “aerial” trespass, and federal constitutional claims for a government taking of

⁵¹ We describe FAA’s AIP directives specifying these airspace easement acquisition and compensation requirements in Appendix I. According to FAA, these AIP property acquisition requirements implement 49 U.S.C. § 47016(b)(1), mandating airport sponsors to hold “good title” to takeoff and landing areas. That statute does not specify that the property to which title must be acquired includes airspace, however. That interpretation, of an earlier codification of the statute, is found in the Supreme Court’s decision in *Griggs v. Allegheny County*, *supra* note 48. Relying on *Causby* and seemingly consistent with FAA’s present-day AIP requirements, *Griggs* found that what it called “air easements” and “navigation easements” were constitutionally protected “private property.” *Griggs*, 369 U.S. at 90. FAA’s AIP property acquisition directives also state that they carry out the Uniform Relocation Assistance and Real Property Acquisition Policies Act, 42 U.S.C. §§ 4601 *et seq.*, and implementing regulations. Like the “good title” requirements of 49 U.S.C. § 47016(b)(1), however, those requirements do not specify that the “real property” to which they apply includes airspace or easements in airspace.

⁵² Our detailed analysis of these issues is contained in Appendix II.

⁵³ As discussed below, the second category are claims involving UAS-related interference with personal privacy rights.

private property (the claim recognized by the Supreme Court in *Causby* as discussed above). Whether and how the elements of these claims, developed in the context of manned aviation apply in the context of low-altitude UAS operations remains to be seen, as UAS operations continue to be integrated into the national airspace system. We summarize below how stakeholders and legal commentators have described these potential UAS-related state and federal claims.

Potential State Tort Law Claims for Trespass

The law is unsettled about whether and under what circumstances a landowner may bring suit for trespass when a drone flies into the low-altitude airspace above his land and if so, whether the landowner can exclude drone flights over his property. A threshold issue is whether drone flights should be governed by the traditional common law trespass rule for airborne objects; the more recently developed common law aerial trespass rule for “aircraft;” or an alternative legal framework to be developed specifically for drones.

Existing Trespass Rules for Airborne Objects and Aircraft

Traditional common law provides that there is a trespass when a person or “thing”—such as a tree branch, a telephone wire, or a gunshot—enters onto another person’s land or into the airspace above it.⁵⁴ The mere intrusion is generally considered a trespass *per se*; no harm must be shown. With the advent of manned aviation and its accompanying benefits to society, however, state courts and legislatures created more stringent trespass rules for aircraft starting in the early 1920s. By 1965, common law trespass involving “aircraft” generally required both flight into the “immediate reaches” of a landowner’s airspace and “substantial interference” with the “use and enjoyment of his land.”⁵⁵ This aircraft trespass rule, still in use today, is said to be based on *Causby*.⁵⁶

As between the common law trespass rules for airborne objects and for aircraft, UAS industry stakeholders have generally taken the position that flights by drones should be governed by the trespass rule for aircraft, noting Congress has defined UAS as “aircraft” for purposes of federal aviation safety regulation.⁵⁷ They also believe the aircraft trespass rule’s “substantial interference” requirement appropriately balances the rights of landowners and UAS operators.

Other stakeholders and legal commentators, however, believe drone flights should be governed by the traditional trespass *per se* rule for airborne “things.” They state that small UAS flying through and hovering near the ground are more akin to small airborne objects covered by the traditional rule than large manned aircraft covered by the “aircraft” rule. They also state that requiring substantial interference for trespass by drones effectively replaces aerial trespass with a new tort of “aerial nuisance” and that landowners should be able to maintain their right to the exclusive use of their low-altitude airspace without having to prove the same high level of interference required by *Causby* for an unconstitutional taking.

⁵⁴ Restatement (Second) of Torts §§ 158, 159(1); see also *id.* § 158, cmt. i.

⁵⁵ Restatement (Second) of Torts § 159(2).

⁵⁶ Restatement (Second) of Torts § 159, cmts. i-k; Reporter’s Notes.

⁵⁷ See 49 U.S.C. § 44801(11) (defining “unmanned aircraft” as “aircraft”).

Potential Trespass Rule for Drones: Draft Uniform Law Commission Model Act for Drone Aerial Trespass

As the number of UAS in recreational and commercial use continues to increase, some have seen a need to replace the common law trespass rules developed for airborne objects and aircraft with a new legal framework developed specifically for drones. A drone-specific trespass rule could be created by courts (as a matter of common law) or by state legislatures. A major effort to facilitate the state legislation approach was initiated in late 2017 by the Uniform Law Commission, a leading state-law drafting advisory organization. The ULC convened the Uniform Tort Law Relating to Drones Act Drafting Committee from its group of state-appointed expert ULC Commissioners, to develop a model drone aerial trespass law that could be enacted by states nationwide, thus avoiding multiple differing approaches to issues of common concern.⁵⁸

The ULC Drafting Committee developed nine versions of a model drone trespass law over the past several years, reflecting two basic approaches. The first approach, an altitude-based “bright line” test, had similarities to the above-mentioned traditional trespass *per se* test for airborne objects.⁵⁹ The second approach, a multi-factor “substantial interference” test, had similarities to the above-mentioned test for trespass by aircraft.⁶⁰

Both approaches encountered strong opposition by Drafting Committee members and members of the public who participated as observers and commenters. Although a final model law reflecting the multi-factor substantial interference test was scheduled for a vote by the full Commission in July 2019, it was withdrawn, reportedly due to disagreements over the status of property rights in airspace and other matters. The ULC has now suspended its drafting efforts as of January 2020. The legal approaches considered and lessons learned from this process may nonetheless be valuable in informing the states and others how to approach these same issues.

Potential Federal Constitutional Law Claims for Government Taking of Private Property

The law is unsettled about whether and under what circumstances a landowner may bring suit for an unconstitutional taking of his airspace property rights based on UAS-related actions by

⁵⁸ As discussed below, the ULC Drafting Committee also was tasked with developing a model drone privacy law.

⁵⁹ The altitude-based bright line test defined UAS flights in a landowner’s overlying airspace below a specified altitude (100 or 200 feet, representing the boundary of “immediate reaches” airspace) as trespass *per se*, without requiring interference or other harm. UAS industry stakeholders opposed this approach, stating it failed to account for what they said is the federal government’s exclusive role in safeguarding aviation safety and air navigation; was federally preempted as conflicting with FAA’s exclusive authority to approve no-fly zones; failed to strike the proper balance between innovation and personal privacy; and reflected a misreading of *Causby*, which they said recognizes property rights in land, not airspace.

⁶⁰ The multi-factor substantial interference test defined UAS flights in a landowner’s overlying airspace as a trespass if they caused substantial interference with the use and enjoyment of the property, “substantial interference” being determined based on the totality of the circumstances using a list of 12 factors and “any other factor relevant to the determination of substantial interference with the use and enjoyment of land.” This approach was opposed by, among others, three national bar organizations specializing in property law and real estate, as well as the Reporter for the pending Restatement (Fourth) of Property. Among other things, these entities said the approach is a “radical departure from existing law” that invites courts to “balance away” landowners’ rights and extends “navigable airspace down to the grass tops”; relegates airspace property rights largely to nuisance remedies; and fails to protect personal privacy.

the federal, state, local, or tribal governments. Several stakeholders we spoke to, the Chair of the ULC Uniform Tort Law Relating to Drones Act Drafting Committee, and legal commentators have suggested such claims might be viable based on Supreme Court constitutional takings precedents including *Causby*. It appears that no court has yet ruled on how these precedents would apply in the context of UAS operations, however, and thus the viability of these potential causes of action is uncertain.

One type of potential UAS-related takings claim, according to these stakeholders and legal commentators, could be based on actions taken directly by a government entity, where the government either conducts UAS operations itself or authorizes specific UAS operations. For example, these claims might resemble the landowner claims upheld by the Supreme Court in *Causby* if the government itself operates the drones—if the U.S. Postal Service starts to deliver mail and packages by drone, for instance, and this substantially interferes with the use and enjoyment of a landowner’s property. UAS-related claims also might resemble the landowner claims upheld by the Supreme Court in *Griggs*,⁶¹ for example, if a local government “drone airport” owner/operator specifies low-altitude takeoff and landing flight paths, fails to acquire the necessary neighboring airspace easements, and the drones substantially interfere with the landowner’s use and enjoyment of his land.

A second type of potential UAS-related takings claim, according to these stakeholders and legal commentators, might be brought for what is known as a “regulatory taking.” The Supreme Court has long recognized that when the government exercises its regulatory authority in a way that diminishes or eliminates private property rights, this can constitute a taking. In the UAS context, the federal government might be liable if, for example, it affirmatively authorizes UAS operations within landowners’ immediate reaches airspace or it preempts landowners’ state altitude-based drone trespass claims (if states defined drone trespass using an altitude-based bright line test such as the ULC test discussed above, for example). State governments likewise might be liable if, for example, they define altitude-based drone trespass with an altitude that is “too low,” within landowners’ immediate reaches airspace.⁶²

Considerations Involving UAS-Related Personal Privacy Rights Under Federal and State Law⁶³

In addition to federal-state jurisdiction and property rights issues, low-altitude UAS operations have raised the question of how to protect the privacy of individuals from surveillance by UAS. Such “UAS personal privacy” concerns—which include both physical privacy (the privacy of an individual in their person) and personal data privacy (the privacy of UAS-collected information about a person)—stem from a combination of drones’ small size, their virtually universal use of cameras and other sensors, their ability to fly at ground level and hover in place “down to the blades of grass,” and their ability to be remotely piloted.

While a legal “right to privacy” was declared more than a century ago and has been recognized by most states either by common law or statute, the applicability and adequacy of these existing

⁶¹ *Griggs*, *supra* note 48.

⁶² In addition to *Causby* and *Griggs*, the stakeholders and legal commentators cited *Penn Central* and *Loretto*, *supra* note 48; *Dolan v. City of Tigard*, 512 U.S. 74 (1994); *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003 (1992); and *Kaiser Aetna v. United States*, 444 U.S. 164 (1979) as supporting these potential regulatory takings claims.

⁶³ Our detailed analysis of these issues is contained in Appendix III.

laws to address UAS-related privacy issues is subject to considerable debate. Some stakeholders have said UAS operations present novel privacy concerns, while others believe they are simply a new technology raising essentially the same concerns as earlier technologies. Fourth Amendment concepts of when and where there is a “reasonable expectation of privacy” from government intrusion, although not directly applicable to “intrusions” by commercial or recreational UAS operations, also may affect the scope of UAS privacy rights.

What, if any, additional legal protections can and should be enacted to address these privacy rights, and whether those protections should come from the federal government or the states, is also subject to debate. Such protections may be constrained by First Amendment rights of UAS operators to gather or at least to report information, for example. Questions also have been raised about which types of UAS privacy interests the federal versus state governments have authority to address, as well as about which level of government is better positioned to address concerns about these interests. We summarize the current federal and state privacy protections that may apply to UAS operations below.

Federal UAS Privacy Protections

As we have reported, there is currently no comprehensive federal law protecting the privacy of personal data collected by private actors (versus by the government), including data collected by drones.⁶⁴ Nor is there a single federal agency with statutory responsibility to regulate UAS privacy matters for the entire federal government.⁶⁵

FAA officials told us the agency lacks authority to regulate UAS operations to address privacy concerns. In issuing the Part 107 rules in 2016, FAA explained that privacy concerns are beyond the scope, and an “overreach,” of its mission to ensure aviation safety and the efficient use of the airspace, and that Congress did not require the agency to consider privacy issues in its 2012 FMRA mandate to integrate UAS into the national airspace system.⁶⁶ Nor did Congress require regulation of UAS privacy in its 2016 or 2018 FAA reauthorization acts,⁶⁷ FAA officials noted to us, and FAA’s rulemaking authority neither mandates nor permits it to issue or enforce regulations specifically aimed at protecting privacy interests between private parties, according to the officials.

FAA has nonetheless “recognize[d] that unique characteristics and capabilities of UAS may pose risks to individual privacy” and acknowledged the public’s “concerns regarding the use of small UAS to collect information about individuals.”⁶⁸ The agency has acted to address these concerns by engaging and collaborating with the public, stakeholders, and other agencies that have authority and expertise in privacy law and policy. FAA also has included privacy-related terms and conditions in its agreements with Lead Participants in the UAS Integration Pilot Program, discussed above, and in agreements with Lead Participants in FAA’s UAS Test Site

⁶⁴ GAO, *Internet Privacy: Additional Federal Authority Could Enhance Consumer Protection and Provide Flexibility*, [GAO-19-52](#) (Washington, DC: Jan. 15, 2019)

⁶⁵ See [GAO-12-981](#), *supra* note 4 at 35.

⁶⁶ 81 Fed. Reg. 42064, 42190-92 (June 28, 2016) (Part 107 rules).

⁶⁷ See *supra* note 2.

⁶⁸ 81 Fed. Reg. at 42190; see also 84 Fed. Reg. 3856, 3893 (Feb. 13, 2019).

Program established under FMRA.⁶⁹ Finally, as FAA noted in issuing Part 107, state and local governments may address UAS privacy concerns involving private parties using their police power authorities.

The Federal Trade Commission (FTC) has certain authority to protect personal privacy related to UAS operations. Section 5(a)(1) of the Federal Trade Commission Act authorizes FTC to protect consumers from “unfair or deceptive acts or practices in or affecting commerce,”⁷⁰ and section 375 of the 2018 FAA Reauthorization Act confirms that these prohibited acts or practices include failing to comply with privacy commitments made in connection with commercial UAS operations.⁷¹ For example, FTC officials told us, the agency might be able to take enforcement action against a UAS operator under section 5 if the operator informs the public how it will protect the privacy of personal data it collects about them but then fails to honor that commitment. The fact that the UAS operator’s promised privacy protections would otherwise be voluntary would not shield the UAS operator from liability, the FTC officials said, because the operator has committed to meet them.

One such set of voluntary UAS privacy protections that a number of entities have supported in concept was developed in 2016: *Voluntary Best Practices for UAS Privacy, Transparency, and Accountability* (UAS Voluntary Best Practices).⁷² The UAS Voluntary Best Practices, which apply to both commercial UAS operators and recreational fliers, address the collection and protection of UAS-collected personal data and were developed through a presidentially directed, multi-stakeholder engagement process convened over two years by the National Telecommunications and Information Administration (NTIA).⁷³

With many exceptions, the UAS Voluntary Best Practices create measures to enhance privacy—for example, restricting the intentional collection of personal data where the UAS operator knows the potentially affected person “has a reasonable expectation of privacy”—as well as transparency and accountability—for example, providing advance notice to potentially affected individuals when and where UAS operations may intentionally collect their personally identifiable data. Twenty-one UAS industry, news media, and other organizations announced their general support of the UAS Voluntary Best Practices at the conclusion of the multi-stakeholder process.

⁶⁹ FMRA, *supra* note 1, § 332(c).

⁷⁰ 15 U.S.C. § 45(a)(1).

⁷¹ Section 375 provides that “violation of a privacy policy by a person that uses a UAS for compensation or hire, or in furtherance of a business enterprise, in the national airspace system shall be an unfair and deceptive practice in violation of section 5(a) of the Federal Trade Commission Act”

⁷² See *Voluntary Best Practices for UAS Privacy, Transparency, and Accountability: Consensus, Stakeholder-Drafted Best Practices Created in the NTIA-Convened Multistakeholder Process* (2016), available at https://www.ntia.gov/files/ntia/publications/uas_privacy_best_practices_6-21-16.pdf (last visited Sept. 1, 2020).

⁷³ See Presidential Memorandum from President Barack Obama to Heads of Executive Departments and Agencies, *Promoting Economic Competitiveness While Safeguarding Privacy, Civil Rights, and Civil Liberties in Domestic Use of Unmanned Aircraft Systems*, 80 Fed. Reg. 9355, 9355 (Feb. 20, 2015). See generally NTIA, *Multistakeholder Process: Unmanned Aircraft Systems*, available at <https://www.ntia.doc.gov/other-publication/2016/multistakeholder-process-unmanned-aircraft-systems> (last visited Sept. 1, 2020).

State UAS Privacy Protections

Privacy rights, like property rights, have historically been governed by state law rather than federal law, pursuant to states' general police powers. As summarized below, some states and localities have sought to use their general privacy laws or common law causes of action to protect against UAS-related privacy harms, while others have enacted UAS-specific privacy laws.

State General Privacy Laws: Criminal "Peeping Tom" Laws

One type of general privacy law that some states and localities have employed to try to address UAS privacy concerns is a criminal "Peeping Tom" or "video voyeurism" statute. As of 2010 (the most recent year for which such information was available), almost all states had enacted some version of this type of law, but some reportedly have encountered challenges in using them to address UAS concerns because the laws' requirements do not always correspond to UAS technical capabilities.

State General Privacy Laws: Common Law Privacy Torts

Another type of general privacy law that might provide protection against surveillance by UAS, and that individuals might be able to use to obtain recourse for harms particularized to them, are common law privacy torts. Legal commentators most commonly cite two of these torts— intrusion upon seclusion⁷⁴ and public disclosure of private facts⁷⁵—as potentially relevant to UAS operations. Because some elements of these torts may be difficult to prove in the UAS context, however, some legal commentators have suggested they may provide little practical relief, while others are more optimistic.

In intrusion upon seclusion cases, for example, legal commentators have noted that because the surveilled person must, as a practical matter, be in a setting where they have a "reasonable expectation of privacy," this tort would likely afford little protection to those surveilled by a UAS in public. In addition, in both intrusion upon seclusion and public disclosure of private facts cases, if the UAS operator is a member of the news media or is otherwise a legitimate information gatherer, this might limit an individual's UAS privacy protections in some cases.⁷⁶ How courts will apply the elements of these common law causes of action to UAS operations remains to be seen and will be highly fact-dependent.

State UAS-Specific Privacy Laws

Based on our analysis of data compiled by the National Conference of State Legislatures, of the 46 states that had enacted or issued some type of UAS-specific law, resolution, or executive order as of 2019, at least 26 states had addressed UAS privacy matters in some way.

⁷⁴ Restatement (Second) of Torts § 652B.

⁷⁵ Restatement (Second) of Torts § 652D.

⁷⁶ The Supreme Court has ruled that there is no First Amendment right to *gather* news and information in a way that "invad[es] the rights of other citizens." *Branzburg v. Hayes*, 408 U.S. 665, 692 (1972); *see also Cohen v. Cowles Media Co.*, 501 U.S. 663, 669-70 (1991); *Dietemann v. Time, Inc.*, 449 F.2d 245, 249 (9th Cir. 1971). However, the Supreme Court also has ruled that the First Amendment's right to *publish* "newsworthy" information outweighs an individual's right to privacy, including privacy protections provided by the public disclosure of private facts tort. *Cox Broadcasting v. Cohn*, 420 U.S. 469 (1975).

Florida, for example, has created a private cause of action to enforce a statutory prohibition against the use of a drone to record an image of private property, or persons legally on the property, in violation of the surveilled person's "reasonable expectation of privacy."⁷⁷ The Florida statute broadly defines that term as where a person cannot be observed by others located at ground level, regardless of whether the person could be seen from the air—thus providing greater protection than the Fourth Amendment.⁷⁸ As another example, California has amended its so-called anti-paparazzi statute to create a private cause of action against someone using a drone to record a person engaging in "private, personal, or familial activity."⁷⁹

Potential Privacy Rules for Drones: Draft Uniform Law Commission Model Act for Drone Privacy

In addition to the Uniform Law Commission's efforts over the past several years to draft a model drone aerial trespass law as discussed above, the ULC's Uniform Tort Law Relating to Drones Act Drafting Committee has worked to draft a model drone privacy law. Ultimately, because of wide differences in the privacy interests that states protect and how they protect them, the Committee decided to draft a model law that simply affirmed that a state's existing privacy laws—if any and whatever their content—apply to actions taken by drones. The model law thus would be technology-neutral and avoid conflict with existing state laws.

Although a final model law along these lines was scheduled for a vote by the full Commission in July 2019, those privacy provisions, along with the drone aerial trespass provisions, were withdrawn and the ULC has suspended these drafting efforts as of January 2020.

Methodology

To prepare this report, we reviewed federal, state, and local statutes and regulations; court decisions and briefs; law review articles and treatises (whose authors we refer to as "legal commentators"); and other materials related to aviation, property, and privacy law, the United States Constitution, and other matters. We also spoke with officials and individuals (who we refer to as "stakeholders") involved in and knowledgeable about these matters who represent or are affiliated with 66 government and non-government entities. In all instances, we requested to speak with attorneys at or representing these entities and in the vast majority of cases, one or more attorneys participated in our interviews.⁸⁰

⁷⁷ Fla. Stat. §§ 934.50(3)(b), (5)(b).

⁷⁸ The Supreme Court has ruled that the Fourth Amendment provides no reasonable expectation of privacy from the government either in a person's backyard or on other private property if someone flying in a plane or helicopter could see the activity on the ground. *Florida v. Riley*, 488 U.S. 445 (1989); *California v. Ciraolo*, 476 U.S. 207 (1986).

⁷⁹ Cal. Civ. Code § 1708.8. Although the statute itself does not explicitly reference drones, the legislative history, citing the U.S. Supreme Court's decision in *Causby*, explains the law was amended to ensure it applies to invasion of privacy by drones.

⁸⁰ A complete list of the stakeholders we interviewed and the criteria we used in selecting them is set forth in Appendix VI. In brief, we selected these stakeholders based on criteria including that they were federal agencies identified in the section 373 or 358 mandates or authorized to enforce UAS-related operational or privacy requirements relevant to the subjects of the mandates; they represented constituencies identified in the mandates or were recommended by individuals in those constituencies; or they were academic legal experts, attorneys or consultants, state model-law drafting commission members or affiliated individuals, or others knowledgeable about aviation or UAS matters, property law matters, and/or constitutional law matters, who we identified through our prior work as well as literature searches and recommendations.

Pursuant to standard legal principles and practices, our description of the law is based on the authoritativeness of the source (for example, the text of a statute or a U.S. Supreme Court decision interpreting a statute or the Constitution). Where we found the law was unclear or potentially conflicting on a particular issue, as it was in many instances, we have described the differing statutory or regulatory provisions, legislative history, and court decisions, as well as the legal positions and viewpoints identified by stakeholders and legal commentators. We have sought to represent the full range of positions and viewpoints without regard to the number of stakeholders or commentators who expressed them.

* * * * *

If you or your staff have questions regarding this report, please contact me at SawtelleS@gao.gov or (202) 512-6417. Assistant General Counsel Hannah R. Laufe and Senior Attorney Camilo A. Flores made key contributions to this report. Senior Attorneys Amy Apostol, Christine Pecora, and Jeanette Soares and Legal Assistant Jeffery Haywood also made contributions to this report.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Susan D. Sawtelle". The signature is fluid and cursive, with the first name "Susan" being larger and more prominent than the last name "Sawtelle".

Susan D. Sawtelle
Managing Associate General Counsel

Enclosures: Appendices I - VI