



Key Issues and Insights for Transportation and Energy Companies Regarding Commercial Drone Operations

On June 21, 2016, the Federal Aviation Administration (“FAA”) released Part 107 of the Federal Aviation Regulations that, for the first time, provide standards for general operation and certification of drones or small unmanned aircraft systems (“sUAS”). The new Part 107 was published in the *Federal Register* on June 28, 2016¹ and is effective on August 29, 2016. It is significantly more accommodating of the commercial considerations associated with sUAS operations than previously indicated in the FAA’s notice of proposed rulemaking (“NPRM”) or previously allowed under the FAA’s Section 333 Exemption regime.

One of the most significant improvements is that operations under Part 107 can cover a broader geographic area in one flight. Although operations must remain within the controlling pilot’s visual line of sight (“VLOS”), control of the aircraft can be transferred between pilots mid-flight, and a controlling pilot can operate from a moving vehicle or vessel in sparsely populated areas. Additionally, operations can be conducted up to 400 feet above ground level (“AGL”), and higher if operating within 400 feet of a structure.

Although some remaining limitations inhibit maximum commercial operations, the FAA contemplates a system

to allow waivers from those limitations. Two of the key limitations are: (i) limiting operations to “fair weather flying” by requiring three miles of visibility and significant clearance from clouds, both laterally and horizontally; and (ii) no night operations. However, an operator can seek a waiver of these rules by demonstrating that the contemplated operations can be conducted safely under the terms of the waiver. Also, the FAA has indicated that it intends to relax the new rules further with additional safety improvements and demonstrations.

This *Commentary* analyzes these key issues and provides insights into how they will affect commercial operations, particularly in the transportation and energy industries. Additionally, it explores the impact of Part 107 on existing operations under Section 333 Exemptions. Finally, it lists several additional noteworthy Part 107 requirements.

The Basics

General Requirements for Operation. Part 107 contemplates three potential types of personnel, or crewmembers, involved in sUAS operations: a Remote Pilot in Command (“Remote Pilot”), a person manipulating the flight controls, and a visual observer (“Observer”).²

All sUAS flights must have a designated Remote Pilot.³ The Remote Pilot is responsible for a number of aspects of the sUAS flight and operation. However, the Remote Pilot does not have to be the person manipulating the flight controls (although often he or she will be) and can instead supervise that individual. Each Remote Pilot may conduct or supervise only one sUAS operation at a time. The Observer is a separate individual who can assist the Remote Pilot in surveying the unmanned aircraft and the surrounding environment.⁴ The use of an Observer is optional, and Observer responsibilities may be handed off between multiple people. The Observer and Remote Pilot are allowed to communicate by means of a cell phone or radio transmitter.⁵ This allows the Observer to be geographically distant from the Remote Pilot and flight controller.

The Remote Pilot, the person manipulating the flight controls, and the Observer must be able to see the unmanned aircraft with unaided vision throughout the duration of the flight (maintain VLOS). Although all crewmembers must have the capability to see the sUAS at all times,⁶ only the Observer or the Remote Pilot and the flight controller are actually required to: (i) determine the unmanned aircraft's location, attitude, altitude, and direction of flight; (ii) observe the airspace for other air traffic; and (iii) determine that the unmanned aircraft does not endanger the life or property of another.⁷ In other words, if an Observer can see the sUAS as required, then the Remote Pilot and person manipulating the flight controls are required merely to keep the unmanned aircraft within their general field of view. Since the Observer may exercise the VLOS capability instead of the Remote Pilot and flight controller, the pilot can use First Person Viewer technology during flight to better conduct a particular surveillance activity. Such a device allows the sUAS operator to observe the flight virtually from the perspective of the unmanned aircraft.

Licensing Requirements. Under the Final Rule, Remote Pilots must possess a Remote Pilot certificate. A valid pilot license will no longer be sufficient. Observers and the person at the controls, if not the Remote Pilot, are not required to possess a pilot certificate of any kind.

In order to receive a Remote Pilot certificate, an applicant with no prior pilot certificate must take an initial aeronautical knowledge test designed for sUAS operations. This test must be

taken at an FAA-approved testing center, and the applicant's identity will be verified at that time. Upon receiving a passing score, the applicant will apply for the certificate online and will be assessed by the Transportation Security Administration ("TSA") as a possible security risk. The applicant will also certify that he does not have a physical or medical condition that would interfere with the safe operation of the sUAS. The FAA anticipates that the TSA vetting will be completed within 10 days, although there could be delays depending on the number of applicants. Once TSA approval has been received, the FAA will issue a temporary pilot certificate that is valid for 120 days. This will allow sufficient time for processing the official certificate. The certificate does not expire but requires recurrent training every 24 months to remain active.

Pilots (other than student pilots) with a current flight review have the option of either taking the initial knowledge test or taking an online training program. If taking the knowledge test, the pilot follows the same steps as outlined above, but the 10-day TSA waiting period will not apply since the individual has already been vetted by TSA. If choosing to take only the training, the pilot must submit the application for a Remote Pilot certificate to one of several individuals authorized by the FAA. The point of this requirement is to confirm that the individual is who he says and to verify that the applicant meets the applicable flight review requirements. Again, TSA vetting will not be required since the pilot has already been evaluated. As is the case with individuals with no previous pilot's license, there is a recurrent training requirement every 24 months for the Remote Pilot certificate to remain valid.

At present, there appears to be a glitch in the regulation that, unless corrected, will affect the practical effective date of the Final Rule. Unless the FAA determines otherwise, an applicant will not be able to take the required knowledge test or submit an application until the Final Rule takes effect. Thus, absent a correction, there will necessarily be some lag time between the Final Rule's August 29 effective date and the commencement of operations under Part 107, since the FAA will not be able to issue certificates on the first day the rule becomes effective. The FAA is aware of this issue and is expected to resolve it before August 29. Should it fail to do so, operators will need to rely on their existing Section 333 Exemptions or delay operations until they have a properly certificated Remote Pilot.

Expanded Areas of Permissible Operations Within Remaining Limits

While superficially it appears that the FAA has not expanded the areas of permissible operations horizontally (meaning the ground-area or radius) and has reduced the area of operations vertically (meaning altitude) from what was originally proposed to what has been permitted under its Section 333 Exemptions, various carve-outs allow for expanded operations in some circumstances. Recent Section 333 Exemptions categorically barred operations from moving vehicles.⁸ That prohibition has severely limited the range that could be covered during operations, particularly when combined with the requirement to operate within one pilot's visual line of sight. Both of these provisions have been relaxed through allowances to the general prohibitions. When taken together, these carve-outs substantially increase the ability of commercial operators, particularly in the transportation and energy sectors, to expand the scope of their drone operations.

Horizontal Expansion: Visual Line of Sight Operations. Part 107 retains the FAA's emphasis on maintaining VLOS, but with some notable changes from the NPRM.

First, the Final Rule allows the Remote Pilot to hand off control of the unmanned aircraft to another Remote Pilot while the aircraft is in flight. This "daisy-chaining" of operations allows for extension of operations well beyond the initial Remote Pilot's visual line of sight, effectively limiting operations to practical battery considerations. Hand-offs from Observer to Observer are allowed to expand the Observer's situational awareness while the unmanned aircraft remains within a Remote Pilot's visual sight. However, the Rule does not allow the same hand-off for Observers, such that the aircraft would remain within sight of an Observer but not the Remote Pilot. The FAA's rationale is that the delay in communicating a possible problem to a single Remote Pilot through multiple Observers is eliminated when the aircraft always remains within sight of one or more Remote Pilots.

Second, in a shift from its previous position, the FAA will now permit an unmanned aircraft to be operated from a moving vehicle or vessel, as long as the operation takes place in a sparsely populated area. The FAA has not defined "sparsely

populated area," but it has provided some guideposts. It cited one FAA legal interpretation that a 10-acre site with 20 people "would be considered sparsely populated."⁹ It also cited FAA legal opinions adopting "a case-by-case analysis" to the term. The FAA acknowledges in the Final Rule that technical innovation can permit operations in areas with higher population densities to be conducted safely. As a result, it is willing to consider case-by-case waiver applications when the applicant can establish that the operation "can safely be conducted under the terms of a certificate of waiver."¹⁰

The FAA recognized that the provision for operation from moving vehicles or vessels will expand operations generally, including in the transportation and energy sectors. Some of the key operations cited by the FAA are "inspection of objects that extend for miles, such as power lines, pipelines, railway lines, highways, and solar and wind farms."¹¹ Similarly, operations from a moving vehicle would benefit "surveying catastrophic scenes," as well as "safety scouts leading and surveying railroad tracks in front of trains, and surveying for road hazards in front of trucks and emergency vehicles."¹²

Operations from aircraft are explicitly prohibited, although the FAA will consider waiver requests. The Final Rule is silent on operations from trains, and the wording of the regulatory text indicates that the FAA will likely require a waiver for such operations. As long as the operation is conducted only in sparsely populated areas, there is no reason to believe the FAA would deny such a request and could, at its option, decide to address it through a legal interpretation.

Finally, one limitation on operations from a moving vehicle or vessel may not be waived. Part 107 categorically bars all operations from a moving vehicle to transport someone else's property for compensation or hire. The FAA has put particularly tight restrictions on such operations to avoid characterizing the operations as "air carrier" operations that would be subject to stricter requirements, including the statutory requirement to be a U.S. citizen and hold economic authority from the Department of Transportation ("DOT").¹³ Based on historical interpretations of "air carrier," the prohibition on carrying property for compensation or hire prohibits the point-to-point transportation of cargo rather than a prohibition on carrying property that will be used during the course of the flight.

Vertical Expansion: Operating Altitude. Part 107 provides two important deviations from the NPRM regarding maximum operating altitude.

First, sUAS must operate below 400 feet AGL, rather than the operating ceiling of 500 feet AGL proposed in the NPRM. The FAA determined that because most manned aircraft operations transit the airspace at or above 500 feet AGL, it made sense to impose a 100-foot buffer between manned and unmanned operations.

Second, the FAA established a new provision in the Final Rule allowing sUAS to fly higher than 400 feet AGL when operating within 400 feet of a structure up to an altitude of 400 feet above the structure's immediate uppermost limit.¹⁴ Since manned aircraft are prohibited from flying close to structures, the FAA determined that this new maximum altitude provision will not compromise aviation safety. This provision is particularly helpful for operators conducting facility and infrastructure inspections. The FAA specifically noted that “[a]llowing higher altitude small UAS operations within a 400-foot lateral limit of a structure will enable additional operations (such as tower inspection and repair) while maintaining separation between small unmanned aircraft and most manned aircraft operations.”¹⁵ Wind turbine inspection may benefit particularly since the tips of their blades often approach or exceed 500 feet AGL. Inspection of coal fire power plant chimneys may also be considerably eased by this provision.

Horizontal and Vertical Expansion: National Airspace and Flight Around Airports. Part 107 permits sUAS operations in uncontrolled (“Class G”) airspace without permission from air traffic control (“ATC”). Acknowledging concerns about the risks of such operations near manned aircraft and airports, the Final Rule prohibits operating an sUAS in any airspace “in a manner that interferes with operations and traffic patterns at any airport, heliport, or seaplane base.”¹⁶ For instance, a drone hovering in Class G airspace near a plane’s takeoff trajectory could interfere with an airport’s traffic and could violate Part 107, even though not operating in prohibited airspace. Unlike operations near airports under Section 333 Exemptions, such operations would not require notifying the airport or a separate certificate of authorization. However,

given the prohibition on interfering with manned operations, the FAA predicts that sUAS pilots will avoid operating near airports altogether due to the risks involved.

In line with the NPRM, sUAS operations will be permitted, with either ATC permission or a waiver, in Class B, C, and D airspace and the lateral boundaries of the surface area of Class E airspace (designated for an airport).¹⁷ The FAA emphasized that ATC is best situated to approve sUAS operations in controlled airspace but noted that individual ATC requirements and approval time may vary. For example, an ATC approval may require two-way radio communications or additional altitude restrictions to operate in controlled airspace. Commercial sUAS operators should be prepared for longer approval wait times and more stringent requirements in busier controlled airspace. Instead of ATC permission, sUAS operators may request a waiver on the grounds that their operations in Class B, C, D, or E airspace will be safe due to additional equipment, such as geo-fencing.¹⁸ As such technologies evolve, these waivers may be easier to obtain because the FAA will not need to evaluate each equipage case-by-case and thus will be able to streamline the approval process.

The FAA also adopted its NPRM proposal requiring controlling agency permission for operations in prohibited and restricted areas (e.g., airspace under military command).¹⁹ Notably, the FAA rejected calls to create sUAS-restricted airspace around energy facilities but emphasized its Notice to Airmen (“NOTAM”) advising that pilots avoid such sites.²⁰ Thus, while energy facilities will not be prohibited from conducting their own sUAS monitoring operations, sUAS operations near such facilities will remain a risk that the FAA does not prohibit by regulation.

In contrast to the NPRM, the Final Rule allows sUAS operation in airspace restricted by NOTAMs as long as operations comply with current Part 91 provisions.²¹ This acknowledges that in most instances, compliance with NOTAMs is voluntary, but that certain types of NOTAMs have mandatory elements. For example, an sUAS seeking to operate in a NOTAM-designated area in the vicinity of a natural disaster will need to meet the requirements of 14 C.F.R. § 91.137(c), such as operating under the direction of an official in charge of the disaster relief.²²

The Final Rule does not differentiate between manned aircraft and sUAS for purposes of receiving a waiver from NOTAM restrictions. Therefore, commercial operators should be prepared to comply with existing Part 91 requirements, which may require more than ATC permission or a waiver.

Horizontal Expansion: Operations Over and Near People and Property. Part 107 also expands operations near people and over property, eliminating setbacks and other requirements from the NPRM and/or Section 333 Exemptions.

First, Part 107 allows for broader operations over and near people than proposed in the NPRM and allowed under Section 333 Exemptions. The NPRM proposed allowing operations directly over people involved in the UAS operations and others under a protective structure.²³ It did not mention operations over people in vehicles. Section 333 Exemptions allowed only flight directly over people directly involved in the UAS operations and provided several additional rules for operations near anyone else. Operations had to be at least 500 feet from all persons, unless the operator ensured “barriers or structures are present that sufficiently protect that person from the UAS and/or debris or hazardous materials such as fuel or chemicals in the event of an accident.” Even people directly participating in the intended purpose of the UAS operation had to be briefed on the risks and had to give express consent to operations within 500 feet.²⁴

Part 107 allows broader operations. It allows operations directly over²⁵ people “directly participating” in the UAS operation, under the cover of a protective structure and (in the newly added category of) people covered in a stationary vehicle.²⁶ Operations can be conducted near all other persons, without a briefing or consent, at a distance determined by the Remote Pilot necessary for safe operations of the particular sUAS, taking into account the conditions (e.g., aircraft weight and wind speed) at the time. The FAA has declined to require a specific minimum standoff distance because such a requirement “would be more burdensome than necessary for some operations while not being stringent enough for other operations.”²⁷ Even though notice is not required, the FAA noted that giving notice to people can be part of fulfilling the obligation to ensure that the operation does not endanger the safety of bystanders.

The group of people “directly participating” in the operation is far from limitless, and it does not include individuals participating in a broader endeavor, such as bridge or power line inspections. “Directly participating” refers to specific personnel that the Remote Pilot has deemed to be involved with the flight operation, including the person manipulating the controls of the sUAS and the visual observer. It extends to any person who is necessary for the safety of the sUAS flight operation but excludes all others, even if they consent to overhead flight.

Significantly, the prohibition against operating an sUAS over a person may be waived. As with all other waiver requests, the petitioner will need to demonstrate on a case-by-case basis that it has mitigated the risks to ensure that flight over people is safe. For example, the FAA indicated that airworthiness certification of the sUAS is a possible mitigation.²⁸

Second, Part 107 allows sUAS to be flown over property, even without the property owner’s permission. This is a substantial change from operations under Section 333 Exemptions. Those operations generally had to be conducted at least 500 feet from all structures. Before operations closer to any structure, the operator needed to “obtain permission from a person with legal authority” over the structure, and the pilot had to “make a safety assessment.” Additionally, operations were limited to airspace “over private or controlled-access property with permission from a person with the legal authority to grant access” for each flight.²⁹

Part 107 allows much broader flight over property without the need for consent. The FAA recognized that the public’s statutory right of free transit through the airspace includes the users of unmanned aircraft. Part 107 does not bar operations near or over critical infrastructure, but the FAA emphasized that for both manned and unmanned aircraft, “to the extent practicable, pilots are strongly advised to avoid the airspace above, or in proximity to such sites as power plants (nuclear, hydro-electric, or coal), dams, refineries, industrial complexes, military facilities and other similar facilities.”³⁰ Several state legislatures have attempted to prohibit sUAS operations over or in the vicinity of critical infrastructure. While the FAA has not definitively stated such provisions are preempted by federal regulation, it has previously indicated that they likely

are unless part of a broader restriction on trespass that is not limited to unmanned operations.³¹

Significant Additional Limits

Weather and Visibility Requirements. The FAA continues to impose weather and visibility requirements that will limit commercial operations. Part 107 requires three miles of visibility and that operations remain 500 feet below and 2,000 feet horizontal from clouds.³² The FAA is concerned about the Remote Pilot being able “to see and avoid other aircraft.” Although many commenters suggested removing or reducing this requirement, the FAA insisted that it is necessary to enable the Remote Pilot to see rapidly approaching manned aircraft and to move the slower unmanned aircraft out of the way, including when the manned aircraft exits clouds.

The FAA acknowledged that these requirements are more stringent than those for manned aircraft operating in Class G airspace, which need only one mile of visibility and must simply “keep clear of clouds.”³³ The FAA imposed a more stringent visibility requirement because sUAS are more difficult for other aircraft to see than manned aircraft, and sUAS are not required to have collision avoidance technology that is on manned aircraft. These Part 107 restrictions are unchanged from the NPRM, except the NPRM proposed they may not be waived.³⁴ The FAA has backed off this position, recognizing that some operations could be safe with reduced or no cloud clearance requirements, e.g., where there is a lower chance of “interaction with manned aircraft” and where “other means,” such as collision avoidance technology, mitigate the risk of collision. The FAA seemed to acknowledge that this rule would limit disaster recovery operations for public sUAS flights and specifically noted that the rule does not apply to such public operations. The FAA acknowledged that similar “salutary” or beneficial purposes could justify a waiver when the Remote Pilot can establish that the operation can safely be conducted under the terms of a certificate of waiver.

The visibility requirements will substantially inhibit many operations in the transportation and energy sectors where sUAS operations could be most beneficial. Some of the main uses in those sectors will involve less than ideal weather conditions. For example, railroads may want to fly ahead of trains to ensure the tracks are clear during periods of heavy rain and

flooding, particularly since visibility may be reduced for train operators. Similarly, inspection of energy infrastructure, particularly after a storm, may need to occur before the weather has completely cleared. Moreover, low visibility and clouds will be particularly common in areas that regularly experience heavy cloud cover. Companies planning such operations in such areas should consider whether their operations can qualify for a complete or partial waiver of this requirement.

No Nighttime Operations. Following the NPRM, Part 107 continues to prohibit nighttime operations.³⁵ The FAA explained that reduced visibility increases the risks from midair collision, particularly because it becomes more difficult to judge the distance from and movement of manned aircraft, sUAS, and other lighted objects. Night operations also increase the risk of collision with people, structures, and obstacles on the ground, particularly when unlighted, because sUAS operate at such low altitudes. Part 107 allows operations during twilight (one half hour before official sunrise and one half hour after official sunset, except in Alaska) with anti-collision lights that are visible for at least three miles. The FAA explained that twilight provides sufficient light to avoid collisions with objects on the ground, but anti-collision lights are still necessary to provide adequate visibility.

Significantly, the nighttime prohibition may be waived. The FAA recognized that there could be benefits to allowing certain sUAS operations at night, such as search and rescue or firefighting operations. Waivers will be granted when the applicant can demonstrate sufficient mitigation such that operating at night would not reduce the level of safety of the operation.

Section 333 Exemptions Going Forward

The implementation of Part 107 raises a question of how the FAA will address pending Section 333 Exemption petitions. The FAA has notified petitioners that it plans to review and group all pending petitions and process them under a three-tiered approach.

Tier 1 petitions are requests to conduct operations that fall entirely within the scope of Part 107 without the need for regulatory relief via a waiver or exemption. The FAA will close the docket on these petitions and advise the operators that they may begin operations in compliance with Part 107 on

its effective date. Tier 2 petitions are requests to conduct operations that fall entirely within the scope of Part 107 but will require a waiver under Part 107. The FAA will close the docket on these petitions and consider the exemption petition as a waiver application and process them accordingly. Finally, Tier 3 requests are requests to conduct operations that require additional regulatory relief because they may not be conducted under Part 107 and are not eligible for a waiver. The FAA will continue to process these petitions as traditional Section 333 Exemption requests.

The Final Rule allows sUAS operators who have received and are currently operating under approved Section 333 Exemptions to conduct operations under their Section 333 Exemptions or under Part 107, whichever provides the broadest regulatory permission. For example, operators with a current Section 333 Exemption allowing nighttime operations can continue to conduct nighttime operations under their Section 333 Exemption until the exemption expires, avoiding the immediate need to obtain a waiver for such operations under Part 107 but subject to the conditions and limitations set forth in the Section 333 Exemption. Once the Section 333 Exemption expires, the FAA will evaluate the operations covered by the Exemption. If the operations fall within the scope

of Part 107 and may be eligible for a waiver, the FAA will likely find no need to renew the Section 333 Exemption. Instead, the FAA would require the operator to seek a waiver under Part 107.

In the vast majority of cases, Part 107 is more lenient than Section 333 Exemptions. Accordingly, other than motion picture operators, who are already subject to a different set of conditions than traditional aircraft operators, there is little incentive to continue operating under a Section 333 Exemption after the Final Rule is effective in late August. However, operations before the effective date will need to be conducted in accordance with the Exemption's conditions and limitations, and companies without an Exemption will have to wait until August 29 to commence operations. In addition, should the FAA decide against issuing Remote Pilot certificates before the August 29 effective date, holders of existing exemptions will need to rely on those exemptions until their pilots can be issued a temporary Remote Pilot certificate.

Other Noteworthy Requirements

There are many additional requirements that affect commercial operations and warrant additional consideration, including:

Regulatory Provision	Brief Jones Day Insight
Flight pre-check requirement (14 C.F.R. §§ 107.15, 107.19, 107.49).	Consider drafting a policy and checklist, including whether all steps, such as checking radio frequency, must be repeated for every takeoff when operating in a set area. If the manufacturer of the sUAS has prepared a checklist, it may simply be incorporated into company policy.
No mandatory insurance requirement	But insurance is still worth strong consideration.
Privacy is regulated at the state and local level.	This imposes a burden to learn those rules, which vary. It warrants further consideration, particularly for operations that include data or image recording.
Towing operations permitted.	Requires a pre-flight examination of equipment securing payload to ensure payload does not detach or shift the aircraft's weight so that it loses stability.
Planned dropping of payload is allowed only when not a "hazard" (14 C.F.R. § 107.23(b)).	Need to ensure the area is secured and minimize risks of harming people or property on the ground.
Owner must be a U.S. citizen or seek Part 375 authority from DOT.	This requirement is separate from the requirement that air carriers be citizens of the United States. Commercial owner/operators of sUAS who are not U.S. citizens cannot register their sUAS in the U.S. (aircraft must still be registered), and the sUAS will be considered a foreign civil aircraft. Part 375 authority is required for all operations of foreign civil aircraft in U.S. airspace. Since none of the categories for an exemption under Part 375 apply to sUAS operations, special authorization will be needed under 14 C.F.R. § 375.70.
Part 107 applies to micro UAS until separate rules are finalized.	The FAA intends to issue a performance-based NPRM by the end of 2016 that will allow operations directly over people. It is anticipated that NPRM will propose allowing flight over people largely without restriction when the unmanned aircraft is approximately 0.5 lb. or less. Other restrictions may apply as well. Given the current authority to operate near people as long as the unmanned aircraft is not directly overhead, it is unclear whether this expansion will provide any meaningful or needed relief to the transportation and energy sectors.
Autonomous operation allowed, as long as the pilot retains the ability to direct the sUAS.	This is a recognition of fully autonomous operations, but for now the Remote Pilot must remain involved and within line of sight of one sUAS at a time.
The sUAS must have sufficient battery power but does not need five extra minutes.	Because battery life is relatively short, this may introduce cost savings over time. It is important to adhere to the manufacturer's suggested power reserve limits to avoid a loss-of-control event.
Accident Reporting: Report within 10 calendar days any operation involving at least a loss of consciousness or a serious injury requiring hospitalization or damage to any property other than the sUAS in excess of \$500.	Accident reporting requirements are much stricter than those of the NTSB. Injury criteria is equivalent to abbreviated injury scale 3 or above and loss of consciousness, regardless of whether hospitalization is needed.
Drug and alcohol requirements: No operating under the influence of narcotics, with a blood alcohol content of 0.04 or more, or within eight hours of drinking alcohol. Must submit to local law enforcement requests for a sample and agree to have results transmitted to the FAA.	Requirements may require changes to employee manuals and restrictions in contract agreements.

Conclusion

The FAA's Final Rule on sUAS continues to pose challenges for commercial operators. Until the Agency routinely authorizes operations beyond VLOS or in conditions with poor visibility, including nighttime operations, energy and transportation companies will be limited in their ability to maximize the potential for sUAS to increase safety and efficiency and to reduce costs. However, by allowing workarounds to the general prohibition on operations beyond VLOS, such as in-flight Remote Pilot handoffs and operation from moving vehicles, as well as providing a waiver process for those provisions that are amenable to technological solutions, the FAA has developed an initial rule that allows for significant growth and that will largely accommodate the needs of the transportation and energy industries.

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Endnotes

- 1 81 Fed. Reg. 42,064 (June 28, 2016).
- 2 FAA Advisory Circular 107-2 uses the acronyms “VO” for Visual Observer and “PIC” for Pilot in Command. This *Commentary* uses “Observer” and “Remote Pilot,” respectively.
- 3 14 C.F.R. § 107.19.
- 4 14 C.F.R. § 107.33.
- 5 14 C.F.R. § 107.33(a).
- 6 14 C.F.R. § 107.31(b).
- 7 14 C.F.R. § 107.31(a).
- 8 See, e.g., Alamo Drone LLC, Exemption No. 16775, at 6 ¶ 27 (June 7, 2016) (“The UAS may not be operated by the PIC from any moving device or vehicle.”).
- 9 The legal interpretations addressed 14 C.F.R. § 91.119(c), which allows some manned aircraft operations below 500 feet in “sparsely populated areas.”
- 10 14 C.F.R. §§ 107.200 and 107.205.
- 11 81 Fed. Reg. at 42,115.
- 12 *Id.*
- 13 By limiting operations to within a fixed Remote Pilot’s VLOS (as well as to within intrastate operations), DOT has characterized the operations as not part of a broader network of interstate commerce warranting economic authority requirements.
- 14 14 C.F.R. § 107.51(b).
- 15 81 Fed. Reg. at 42,118.
- 16 C.F.R. § 107.43.
- 17 14 C.F.R. § 107.41.
- 18 A geo-fence is a virtual barrier that may prevent the small unmanned aircraft from either entering or exiting a geographically defined area. The area may be defined by a property owner or aircraft operator utilizing a combination of mapping programs and technology such as global positioning system (“GPS”) or radio frequency identification (“RFID”).
- 19 14 C.F.R. § 107.45. These areas are designated in 14 C.F.R. § 73.
- 20 See FDC NOTAM 4/0811.
- 21 14 C.F.R. § 107.47.
- 22 14 C.F.R. § 91.137.
- 23 80 Fed. Reg. 9544, 9563-64 (Feb. 23, 2015).
- 24 The Alamo Drone, LLC, Section 333 Exemption, at 7, ¶ 28 (June 7, 2016).
- 25 “Over” refers to “the flight of the small unmanned aircraft directly over any part of a person.”
- 26 Operations over moving vehicles are prohibited because the unmanned aircraft could be distracting and because, depending on the angle of impact, the unmanned aircraft could strike the vehicle with increased force (i.e., a greater delta V).
- 27 81 Fed. Reg. at 42,130. See *also id.* at 42,133 (emphasizing that the FAA does not intend to be prescriptive as to how to conduct safe and compliant UAS operations).
- 28 The FAA plans to revisit the question of standards when it publishes consensus standards for the safe operation of small UAS over people, which are in development.
- 29 The Alamo Drone, LLC, Section 333 Exemption, at 7, ¶¶ 28, 29 (June 7, 2016).
- 30 81 Fed. Reg. at 42,147 (citing FDC NOTAM 4/0811).
- 31 For general guidance on preemption, see [FAA Fact Sheet on State and Local Regulation of Unmanned Aircraft Systems \(UAS\)](#).
- 32 14 C.F.R. § 107.51(c) and (d).
- 33 14 C.F.R. § 91.155(a).
- 34 The FAA also clarified that the requirement applies from the control center where the Remote Pilot is located and is for three miles of visibility diagonally. 81 Fed. Reg. at 42,107 (“The 3-mile flight visibility requirement is based on a slant angle from the control station. In other words, a person standing at the control station of the small UAS must be able to see at a diagonal distance of 3 miles into the sky in order to detect other aircraft that may be approaching the area of operation.”); see *also* § 107.51(c) (explaining flight visibility).
- 35 14 C.F.R. § 107.29.