



**May 5, 2025**

**Submitted electronically via Regulations.gov and via email to  
[Transportation.RegulatoryInfo@dot.gov](mailto:Transportation.RegulatoryInfo@dot.gov)**

United States Department of Transportation  
Office of the General Counsel  
1200 New Jersey Avenue, SE  
Washington, DC 20590

**Re: Comments in Response to “Ensuring Lawful Regulation; Reducing Regulation and Controlling Regulatory Costs”**

To Whom It May Concern:

The Commercial Drone Alliance (CDA)<sup>1</sup> appreciates the opportunity to submit comments in response to the Department of Transportation’s (DOT) request for information titled “Ensuring Lawful Regulation; Reducing Regulation and Controlling Regulatory Costs.”<sup>2</sup> The commercial unmanned aircraft systems (UAS or drones) industry has long been plagued by an antiquated aviation regulatory environment ill-equipped to integrate drones into the National Airspace System (NAS). Further, the overly burdensome framework for transport of hazardous materials (hazmat), which does not account for the lower risk profile of commercial drones carrying limited quantities of hazmat, and an arduous environmental review process for large-scale commercial drone operations have limited the ability for drone delivery providers operating under 14 CFR Part 135 to sufficiently scale their operations. The result has been a stifling of innovation and progress, all the while allowing our international peers and competitors to forge ahead in implementing advanced drone operations.

Below, we discuss the existing structure of the Federal Aviation Regulations and provide an overview of current hazmat and environmental regulations applicable to UAS. We also offer suggestions for amending these regulations to better support commercial drone operators. Time is of the essence, and the moment to act is now. By streamlining drone regulations and reducing or eliminating unnecessary regulatory burdens, we

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<sup>1</sup> The CDA is an independent non-profit organization led by key leaders in the commercial drone industry. The CDA has actively participated in rulemakings and policy efforts to facilitate the safe and secure development and expansion of commercial drone operations. The CDA works with all levels of government to collaborate on policies for industry growth and seeks to educate the public on the safe and responsible use of commercial drones to achieve economic benefits and humanitarian gains. We bring together commercial drone end-users, manufacturers, service providers, advanced air mobility companies, drone security companies, and vertical markets including oil and gas, precision agriculture, construction, security, communications technology, infrastructure, newsgathering, filmmaking, and more. Learn more at <https://www.commercialdronealliance.org/>.

<sup>2</sup> Ensuring Lawful Regulation; Reducing Regulation and Controlling Regulatory Costs, 90 Fed. Reg. 14593 (proposed Apr. 3, 2025).

can restore America's global leadership in drone technology and unlock the full potential of the commercial drone industry for all Americans.

## **Federal Aviation Regulations**

Currently, drone operators wishing to conduct advanced drone operations—ranging from aerial agriculture spraying and public safety missions to commercial package delivery and infrastructure inspections—must apply for and receive case-by-case approvals from the Federal Aviation Administration (FAA) via exemptions, waivers, or other approvals. This is because many of the Federal Aviation Regulations applicable to commercial drone operations were developed decades ago and never contemplated today's UAS technology and the innovative ways in which UAS operate. The Government Accountability Office (GAO) has characterized this process as overly burdensome and opaque, particularly concerning the risk mitigation criteria used to evaluate the requests and the coordination between internal FAA offices during the evaluation process.<sup>3</sup> Operators often wait months for applications to be evaluated, and many requests are denied simply for lack of information the applicant had no indication was needed.

The CDA has engaged its membership and surveyed recently granted waivers and exemptions to identify the most common regulations from which operators request relief. This overview can be found as Attachment A to this letter. Attachment A provides the nomenclature for each regulation, the purpose behind each regulation, and why these regulations frequently make little to no safety sense for UAS or their operation. Many of the regulations that require relief, such as seatbelt requirements for Part 137 agricultural operations, are designed for manned aircraft and have no applicability to drone operations. Other commonly requested exemptions, such as those pertaining to minimum safe altitudes for aircraft operations, are requested in nearly every exemption because they are essential to conducting drone operations safely and in a way that deconflicts drones from manned aircraft. The CDA considers the FAA's ongoing beyond visual line-of-sight (BVLOS) rulemaking activity under RIN 2120-AL82, mandated by Section 930 of the FAA Reauthorization Act of 2024, to be a deregulatory action that potentially addresses all elements in Attachment A.

To date, applicants have been reliant on case-by-case FAA approvals to conduct advanced drone operations for almost a decade. Between 2020 and the end of 2024, applicants submitted approximately 4,600 petitions for exemption to conduct advanced drone operations;<sup>4</sup> about 3,600 of these are original petitions, while 1,000 are requests for extension or amendment. Each petition requests relief from multiple regulations, as detailed in Attachment A. Additionally, the FAA has granted over 500 waivers for beyond visual line-of-sight operations under 14 CFR Part 107 over the last four years. The sheer number of case-by-case approvals requiring evaluation places an unnecessary administrative burden on both the industry and the FAA. In addition to the administrative exercise, these numbers do not account for the thousands, possibly millions, of hours spent by applicants providing information, explanation, and demonstration to the FAA through supporting documents and requests for information to inform the FAA's safety determinations. It is also impossible to account for the applications *never* filed by potential innovators due to the unknown timelines and costs required to get an approval. These incalculable burdens are primarily due to the lack of clear and standardized regulatory requirements for commercial drones and their operations, which each applicant must essentially negotiate with the FAA individually, creating unsustainable and unscalable bureaucracy.

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<sup>3</sup> See U.S. Gov't Accountability Off., GAO 23-105189, *FAA Should Improve Its Approach to Integrating Drones into the National Airspace System* 20–22 (2023), <https://www.gao.gov/products/gao-23-105189>.

<sup>4</sup> Exemptions are needed for operations involving drones weighing 55 pounds or more, as well as drone package delivery and agricultural spraying operations regardless of drone weight.

The CDA believes that common-sense changes can be made to this process which are beneficial to both drone operators and the FAA. The CDA advocates for modifying the current regulatory structure to eliminate the need for drone operators to apply for exemptions from rules that do not pertain to or are unnecessary for drone operations, specifically through the rulemaking activity underway in RIN 2120-AL82. This rulemaking activity constitutes a deregulatory action and should be expedited. Additionally, while these new regulations are being developed, the CDA strongly urges the FAA to simplify its approval processes to speed up decisions for frequently requested waivers and exemptions. The CDA also urges the FAA to leverage the relief Congress granted in Section 927(e) of the FAA Reauthorization Act of 2024 to reduce the administrative burden of case-by-case approvals by issuing waivers rather than exemptions. These modifications would reduce the complexity of requests, decrease wait times, and ease the administrative burden on the FAA. This would result in significant economic and societal benefits to thousands of Americans without compromising the safety of the NAS.

The UAS industry eagerly awaits the release of the FAA's BVLOS rulemaking, which will allow the industry to safely scale at will using a right-sized, performance-based declarative certification process for airworthiness approvals. With the caveat that this anticipated rule has yet to be published and its content could potentially address some of these concerns, CDA members have identified the following specific portions of the existing regulatory structure not explicitly listed in Attachment A and which inhibit scalability today:

- **Enabling Airspace Access and Effective Counter-UAS:** Counter-UAS can be best understood as a collection of security policies that ensure a secure and consistent approach to keeping our airspace and people on the ground safe. A cornerstone of effective counter-UAS policy is not only to address any nefarious drone activity but also to support and encourage lawful drone operations. In addition to other core objectives, such as training and appropriate information access management for personnel performing counter-UAS responsibilities, a Verified Operator Program (VOP), established and administered by the U.S. DOT and accessed by appropriate security personnel, would provide a means to enable verified operators, meaning the entity operating a fleet, to have access to airspace that is otherwise restricted. This program would be similar to TSA Pre-Check in that it would be offered to drone operators on a voluntary basis and would allow applicants to demonstrate that they conduct legitimate operations and services. In this case, qualified operators that choose to opt into this program are known to meet certain criteria, and therefore have airspace access in areas that might be otherwise restricted, such as in Temporary Flight Restrictions or over other designated fixed sites. This program would create a trust framework between verified operators and government agencies, potentially to include access of information by state law enforcement agencies, which would increase airspace access for beneficial drone activity while elevating compliance and more readily ascertaining intent of UAS operations in the airspace. The VOP thus would support the government's ability to narrow the spectrum of potential threats from proximate UAS while promoting public trust, incentivizing compliance with stated security requirements, and improving efficiency.
- **Safety Management Systems (SMS):** SMS regulation should be outcomes-based and appropriately tailored to the risk profile of drones, particularly as it relates to small UAS operations. We have highlighted a few safety regulations that are unsuitable and irrelevant for drone use cases, but it also is important to evaluate SMS requirements as a whole to effectively address the nature of UAS aircraft and operations.
- **Remote Identification (RID):** The FAA's Remote ID requirement for UAS (14 CFR Part 89) limits the allowable method of sharing Remote ID data to broadcast technologies. This is a limiting requirement that adds manufacturing costs to industry without necessarily providing the societal benefits that justify

the costs, especially for BVLOS operations in densely populated areas. Network Remote ID would facilitate a similar ability to provide location and identification information while providing enhanced privacy protections for transmitted data and enabling appropriate access for relevant stakeholders. The FAA should enable the use of network RID technologies in lieu of broadcast Remote ID, especially in areas where network RID would provide enhanced coverage and better meet the core intent of the Remote ID rule.

## **Hazardous Materials and the Environmental Review Process**

In addition to amending the Federal Aviation Regulations to remove unnecessary burdens on UAS operators, the DOT should also prioritize modernizing the current regulatory regime surrounding the transportation of hazmat as applied to UAS as well as the processes governing environmental reviews for commercial drone operations. These changes will remove unnecessary regulatory burdens on operators that inhibit their ability to expand and scale safe and secure commercial drone operations.

### *Hazmat Regulations Under 14 CFR Part 135 and 49 CFR Part 175*

The current hazmat regulations applicable to drone package delivery are overly burdensome and do not account for the lower risk profile of commercial drones carrying limited quantities of hazmat - as compared to traditional occupied and larger aircraft operations. The current one-size-fits-all approach fails to differentiate the vastly different risk profiles of drones versus large crewed aircraft carrying hazmat. The FAA Reauthorization Act of 2024 identified this issue and mandated that the DOT Secretary, in conjunction with the Administrators of the FAA and the Pipeline and Hazardous Materials Safety Administration (PHMSA), use a tailored, risk-based approach to establish the operational requirements, standards, or special permits necessary to approve or authorize transport of hazardous materials by commercial package delivery UAS.<sup>5</sup>

Commercial package delivery UAS are generally delivering consumer goods and medications. Some of these consumer goods are technically hazmat, but in small quantities have low risk profiles—e.g., nail polish, hand sanitizer, and small consumer electronics containing or packaged with lithium-ion batteries. While categorized as “dangerous goods” they represent extraordinarily low risk when transported in small quantities, by unoccupied aircraft, and in their normal commercial packaging. Their associated risk profiles are much less dangerous than the normal goods permitted to be carried by passengers aboard aircraft every day. See 49 CFR 175.10 (exceptions for passengers, crewmembers, and air operators). The current framework was designed for higher-risk operations involving large crewed aircraft actually or potentially transporting significantly greater quantities of hazmat. A tailored, risk-based approach must account for the vast differences between the types and quantities of hazmat being transported by package delivery drones carrying small quantities and larger uncrewed aircraft as well as the traditional, crewed aircraft for which the current framework was developed. For example, an illogical outcome that has resulted from lack of regulatory progress is that a drone may carry a battery powered camera if used in flight without additional regulatory burden, but cannot transport one in its original packaging. Rather than the current case-by-case approval process, FAA and PHMSA should establish a streamlined hazmat approval process specifically for drone operations, with reduced requirements where appropriate given the lower risks involved.

In particular, the CDA supports the expedited implementation of Section 933 requirements. This includes the use of a risk-based approach that accounts for the weight, amount, packaging, and type of hazmat being transported and the characteristics of the operations, including as it applies to the handling and training

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<sup>5</sup> See FAA Reauthorization Act of 2024, Pub. L. No. 118-63, § 933, 138 Stat. 1025, 1368–69 (2024).

procedures as well as the development of a local response plan, as necessary. This will ensure that regulators recognize the unique, typically lower risk profile associated with UAS delivery operations relative to large crewed and uncrewed aircraft. Commercial package delivery UAS provide inherent risk reductions in hazmat transport because there are no humans (pilots or passengers) onboard with a risk of exposure to the hazmat during an incident or accident.

In addition, PHMSA should consider developing a tailored exception for delivery of hazmat items via commercial drone operations to ensure an equivalent level of safety without inhibiting innovation. PHMSA has precedent for examining a specific set of operations or activities (e.g., reverse logistics operations at 49 C.F.R. § 173.157) and developing a streamlined set of hazmat requirements that account for the particular risk profile of the transport operations. In the context of commercial drone delivery, specific provisions to consider as the candidates for exceptions include, but are not limited to, requirements related to shipping papers, hazmat training and inspection of damaged shipments after unloading. Similarly, PHMSA and the FAA should evaluate the relevance and applicability of traditional hazmat rules to commercial drone delivery operators including types of drones used, CONOPs, and delivery mechanisms. A tailored exception for commercial UAS package delivery operations would offer opportunities for reduced compliance costs, without any decrease in safety. For example, the exception in 49 CFR 173.134(b)(10) provided to private and contract carriers using motor vehicles could be expanded to UAS.

#### *Environmental Review Process Under the National Environmental Policy Act (NEPA)*

In the commercial drone package delivery context, to meet its obligations under NEPA, the FAA conducts environmental reviews for, among other things, advanced drone operations that are proposed to the FAA for authorization under Part 135. This includes issuing operations specifications or “OpSpecs” (and changes to OpSpecs). In practice, this means that each time a carrier wants to initiate operations at a new site or expand operations at an existing site, the FAA must undertake NEPA review. The FAA typically prepares an environmental analysis (EA) to evaluate package delivery operations using a drone. This process, which can take over a year to complete, has not been an efficient use of time and governmental resources and has prolonged the more widespread deployment of these commercial UAS operations. Moreover, every review to date has resulted in Findings of No Significant Impact (FONSI). As a result, NEPA review functions as a blocker to timely approval and initiation of UAS package delivery operations (or expanded operations).

The FAA has conducted several EAs for Part 135 UAS small package delivery operations—each of these EAs resulted in a finding of no significant impacts (“FONSI”). The FAA does not currently have a categorical exclusion (“CATEX”) that applies to Part 135 UAS package delivery operations; however, it may adopt and apply a CATEX listed in another agency’s NEPA procedures to a proposed action or a category of proposed actions. While other federal agencies have not adopted UAS-specific CATEXs, the FAA has identified multiple existing CATEXs from other agencies that may apply to UAS.<sup>6</sup>

The current environmental review process for UAS operations lacks clarity and moves too slowly, hindering industry’s ability to scale and, paradoxically, impeding the realization of the environmental benefits that UAS offer in comparison to other modes of transportation. Efforts to streamline the environmental review process for UAS are aligned with the President’s interest in ensuring that NEPA review does not hinder American innovation.<sup>7</sup> To overcome these obstacles and unlock the full potential of UAS, it is essential to

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<sup>6</sup> Federal Aviation Administration, *Desk Reference for Unmanned Aircraft Systems Environmental Review* 24–25 (Oct. 2024), [https://www.faa.gov/uas/advanced\\_operations/nepa\\_and\\_drones/Desk-Reference-for-UAS-Environmental-Review.pdf](https://www.faa.gov/uas/advanced_operations/nepa_and_drones/Desk-Reference-for-UAS-Environmental-Review.pdf).

<sup>7</sup> See Exec. Order No. 14154, 90 Fed. Reg. 8353 (Jan. 20, 2025).

amend the current regulatory structure and related FAA policies in a way that simplifies and expedites the NEPA review process which will have benefits for both industry and those conducting the agency review.

The CDA urges the DOT to require the FAA to take a nationwide programmatic approach to environmental review of UAS operational approvals. Such an approach is consistent with Congress' recent mandate in the FAA Reauthorization Act of 2024, wherein Congress directed the FAA to "examine and integrate programmatic-level approaches to the requirements of the National Environmental Policy Act" and "leverage an environmental review for unmanned aircraft operations within a defined geographic region" as well as "leverage an environmental assessment or environmental impact statement for nationwide programmatic approaches for large scale distributed unmanned aircraft operations."<sup>8</sup> A so-called "nationwide EA" would significantly streamline NEPA review and allow for a tiered approach to evaluating the incremental effect of subsequent UAS operations. An operator that has completed a single EA and will operate in similar areas (i.e., over urban and suburban areas, from commercial areas) should not need to repeat the process across individual similar areas. Additionally, in framing and evaluating the environmental impacts of drones, it also is important to note that the use cases of drones are not replacing those of traditional aircraft carrying large cargo and passengers over long distances, but rather shorter trips with lighter loads transported via ground transportation. As a result, it is more appropriate to compare the environmental offsets and tradeoffs of drones to modes of surface transportation such as cars or trucks. Adopting a nationwide EA approach will enable the successful deployment of UAS technology without sacrificing the thoroughness and due diligence required of the environmental review process.

In addition, the DOT should require the FAA to identify and adopt CATEXs specifically applicable to UAS operations, including package delivery operations, and leverage the CATEXs from other agencies that may apply to UAS. Finally, the CDA also emphasizes the importance of expeditiously rolling out a scalable process that could support the pace of industry's deployment of commercial drone operations across all states. Each of these efforts will enable the successful deployment of UAS technology and the realization of the countless public benefits of large-scale UAS operations for American businesses and communities.

## **Foreign Ownership**

Our membership is aware that the DOT and other jurisdictions are considering policies related to foreign ownership and control requirements on drones. Existing foreign ownership and control requirements were not developed with drones in mind and instead were crafted with the aim of protecting national security and/or labor interests to ensure that the United States has a sufficient supply of domestic crewed aircraft in the event of war. Labor requirements for personnel working aboard crewed aircraft are irrelevant to autonomous drone operations that are not transporting passengers. The purposes of these commercial drone operations, such as delivering goods, are not comparable to the use cases of aircraft carrying personnel and cargo in the service of national defense, and the nature of these operations is to serve local communities rather than internationally traveling passengers. These requirements not only would be disproportionate given the stark discrepancies in operational purposes and risk profiles for UAS versus crewed aircraft, but also would be misdirected in protecting and bolstering America's domestic drone industry. Regulations for the UAS industry, both for this issue specifically and in general, should be tailored to their unique needs and use cases and framed in a way that seeks to foster beneficial activity and American innovation.

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<sup>8</sup> FAA Reauthorization Act of 2024 at § 909(c).

Thank you again for the opportunity to provide input on this matter. We look forward to working with the current Administration to reduce red tape and unnecessary regulatory burdens on the commercial drone industry so that we can unlock the enormous benefits of large-scale drone operations across the United States.

Sincerely,

A handwritten signature in blue ink that reads "Lisa Ellman". The signature is fluid and cursive, with a long horizontal stroke at the end.

Lisa Ellman  
Chief Executive Officer  
Commercial Drone Alliance

Attachment A: Overview of Regularly Requested Exemptions for Advanced Drone Operations

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14 CFR Regulation	Title	Summary of Requirement	Non-Applicability to UAS
PART 61—CERTIFICATION: PILOTS, FLIGHT INSTRUCTORS, AND GROUND INSTRUCTORS*			
* These Part 61 pilot certification regulations apply to anyone operating a drone weighing 55 lbs. or more and to all drone package delivery operations regardless of drone weight.			
61.3	Requirement for certificates, ratings, and authorizations	Requires a manned pilot certificate for operating any drone weighing 55 lbs. or more	Most drone pilots do not hold Part 61 manned pilot certificates, as the skills and knowledge required to safely operate a manned aircraft are not the same as those needed to safely operate a drone. Relief from this regulation is necessary when the drone pilot holds a Part 107 remote pilot certificate in lieu of a Part 61 manned pilot certificate.
61.23	Medical Certificates: Requirement and Duration	Defines when first, second-, or third-class medical certificates are required or not required, as well as when a Driver's License can be used in lieu of a medical certificate.	Relief from this regulation is generally necessary if a drone pilot does not hold a medical certificate or only holds a Class 3 medical certificate. The medical certificate requirements were developed to ensure pilots operating manned aircraft with people onboard the aircraft do not have a medical condition that would cause a safety risk. These same risks do not apply to drone operations because there are no individuals on the aircraft. Stringent Part 67 medical certificate requirements impose unnecessary and burdensome requirements in the context of commercial drone operations.
61.101(e)(4) and (5)	Recreational pilot privileges and limitations	Prohibits a recreational pilot from acting as a pilot in command of an aircraft for compensation or hire or in furtherance of a business.	An exemption from these requirements is necessary to use a drone pilot that holds any certificate other than a manned commercial pilot certificate issued under Part 61. Most Part 91 drone operators do not hold manned aircraft pilot certificates issued under Part 61, let alone Part 61 commercial pilot certificates (other certificates include private, sport and recreational). Obtaining a manned commercial pilot certificate is a very time consuming and expensive process (~\$100,000). The training and testing associated with a commercial pilot certificate have little or no bearing on the qualifications of an individual to safely operate a particular make/model of drone.
61.133	Commercial Pilot Privileges and Limitations	Defines the privileges and limitations of a commercial pilot acting as a pilot in command to include the ability to carry property or conduct flight operations for compensation.	
61.315(c)(2) and (3)	What are the privileges and limits of my sport pilot certificate?	Defines the privileges and limitations for a holder of a sport pilot license to include prohibitions from carry property or conducting operations for compensation or hire.	
PART 91—GENERAL OPERATING AND FLIGHT RULES*			
* The FAA's Part 107 regulations only apply to drones weighing less than 55 lbs., and package delivery operations beyond visual line-of-sight are prohibited under Part 107. For this reason, the operation of drones weighing 55 lbs. or more and any drones used in package delivery			



<i>operations (regardless of weight) must comply with the general operating rules in Part 91. The Part 91 operating rules were developed for manned aircraft, and it is often impossible or impractical for a drone operator to comply with many of these rules.</i>			
<b>91.7</b>	Civil Aircraft Airworthiness	Prohibits operation of a civil aircraft unless it is in airworthy condition.	An FAA airworthiness certificate certifies that an aircraft conforms to its approved FAA design. FAA has a very detailed and comprehensive process for certifying the design of traditional manned aircraft, however there are currently no FAA approved design standards for drones, and therefore no drones currently have airworthiness certificates that allow for commercial operations. For this reason, every commercial drone operation occurring under Part 91 requires relief from this airworthiness certificate requirement, as well as various other requirements in Part 91 that require having an airworthiness certificate.
<b>91.113(b)</b>	Right-of-way rules: Except water operations	Requires aircraft to “see” and avoid other aircraft.	The FAA interprets the term “see” in the “see and avoid” requirement to mean a pilot onboard an aircraft or on the ground within visual line-of-sight of the aircraft visually scanning the airspace with their eyes. Since drones do not have an onboard pilot, operations beyond visual line-of-sight cannot meet this requirement. There are various sensor technologies that allow a drone or a ground-based pilot to “detect” other aircraft, generally with more efficacy than an onboard pilot, however use of this technology requires relief from the see-and-avoid requirement because “detecting” is distinct from “seeing” from the FAA’s perspective.
<b>91.119(b) and (c)</b>	Minimum Safe Altitudes	Prohibits operation of an aircraft below 1,000’ AGL above congested areas and 500’ AGL over all other areas.	These minimum safe altitudes were designed to mitigate hazards associated with large traditional aircraft operating very low to the ground. These standards are nonsensical when applied to much smaller drones that are intended and required to operate at much lower altitudes. Generally speaking, it is almost always safer for a drone to operate lower than 500 feet because manned aircraft typically do not operate that low to the ground. In fact, FAA often requires drones to operate at lower altitudes as a risk mitigation to avoid potential conflict with manned air traffic. Therefore, an exemption or waiver from the minimum safe altitude regulation is almost always required.

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<b>91.121(a)(1)</b>	Altimeter Settings	Requires aircraft to maintain cruise altitude or flight level by reference to a barometric altimeter.	Most drones determine altitude using GPS technology rather than a traditional barometric altimeter. An exemption is required to use GPS technology in lieu of a barometric altimeter. Even drones equipped with altimeters often need relief from this regulation because their height above ground is set by GPS data and the constant pressure cruise does not necessarily include a barometric correction setting because height above ground is the operating constraint.
<b>91.151(a) and (b)</b>	Fuel Requirements for Flight in VFR Conditions	Establishes fuel reserve requirements for airplanes (30 minutes during the day, 45 minutes at night) and rotorcraft (20 minutes day and night).	These fuel reserve standards were developed to ensure that manned aircraft have enough spare fuel to safely land at alternate airports and to address emergency scenarios that may require a longer flight time than anticipated. Most drones are battery powered and can usually fly for around 30 minutes or less, making compliance with this regulation impossible. Even in scenarios where compliance with this regulation is theoretically possible, usable flight time may only be a few minutes when accounting for a 20- or 30-minute fuel reserve. For this reason, an exemption from the minimum fuel reserve requirements is almost always necessary.
<b>91.403(b)</b>	General	Prohibits maintenance, preventative maintenance, or alterations to aircraft unless done in compliance with Part 91 and Part 43.	These regulations require a drone to be maintained and inspected in accordance with the general maintenance requirements applicable to manned aircraft in Part 43. It is impossible to comply with the maintenance standard in Part 43 if the aircraft does not have an airworthiness certificate. Since drones do not have airworthiness certificates, compliance with these regulations is not possible and exemption relief is almost always necessary in the context of a commercial drone operation. Additionally, requirements around maintenance personnel certificates impose an unnecessary burden on UAS operators, as the skills and experience necessary to qualify for maintenance positions and certificates do not typically apply to many of the tasks for small drones. In addition, FAA oversight placed on maintenance programs and maintainer certificates under Part 43 diverts already scarce resources from manned aircraft maintenance.
<b>91.405(a)</b>	Maintenance required	Requires that an aircraft be inspected per the criteria established in Part 91 and Part 43.	
<b>91.407(a)(1)</b>	Operation after maintenance, preventive maintenance, rebuilding, or alteration	Prohibits an aircraft from returning to service after undergoing maintenance, preventative maintenance, rebuilding, or alteration unless it has been approved by a person meeting the requirements in Section 43.7.	
<b>91.409(a)(1) and (2)</b>	Inspections	Establishes annual inspection and airworthiness certificate inspection requirements.	
<b>91.417(a) and (b)</b>	Maintenance records	Establishes standards for maintaining aircraft maintenance records to include required information and retention time.	

<b>PART 107—SMALL UNMANNED AIRCRAFT SYSTEMS</b>			
<b>107.36</b>	Carriage of hazardous material	Prohibits a small UAS from carrying any hazardous material as defined in 49 CFR 171.8.	<p>Relief from this regulation is necessary to carry hazmat on a small UAS, most commonly in the context of drone light shows using pyrotechnics, carrying incendiaries to assist with controlled burn wildfire prevention efforts, and insecticides and pesticides required for agricultural operations.</p> <p>Overall hazardous material regulations would benefit from exceptions for small packages carried by unoccupied aircraft (similar to exceptions permitted for passenger aircraft operations under 49 CFR 175.10).</p>
<b>PART 135—OPERATING REQUIREMENTS: COMMUTER AND ON DEMAND OPERATIONS AND RULES GOVERNING PERSONS ONBOARD SUCH AIRCRAFT*</b>			
<i>* Any operator conducting drone package delivery operations for compensation must comply with the same stringent Part 135 regulatory requirements applicable to manned aircraft conducting certain types of air carrier operations.</i>			
<b>135.25(a)(1) and (a)(2)</b>	Aircraft Requirements	Requires Part 135 aircraft to meet airworthiness requirements and carry an appropriate and current airworthiness certificate	The FAA has not issued any airworthiness certificates for commercial drone operations and therefore compliance with this regulation is impossible. See above under 91.7 for further explanation.
<b>135.63(c) and (d)</b>	Recordkeeping Requirements: Manifests	Establishes standards for load manifests and requires that load manifests be carried in the aircraft.	Load manifest recordkeeping requirements are designed to mitigate risks that do not exist in the context of a drone operation that does not have an onboard pilot or passengers. The regulation also normally requires records to be kept “in the aircraft,” something that is impracticable and unnecessary in drone operations without a bespoke legal interpretation. It should be noted that this is not required of single engine multi-thousand-pound aircraft but would be required of small multi-rotor drones.
<b>135.65(a) and (d)</b>	Reporting mechanical irregularities	Requires a maintenance log to be carried onboard the aircraft.	It is impracticable and unnecessary for a maintenance log to be carried onboard a drone.
<b>135.93</b>	Minimum Altitudes for Autopilot	Establishes minimum altitudes for autopilot use during all modes of flight. For example, use of autopilot is generally prohibited while enroute below 500’ AGL.	Commercial drones are designed to be operated below 400 feet AGL, and the FAA often requires operators to fly below 400 feet as a safety mitigation to avoid manned aircraft that typically operate below 400 feet for only very brief periods at takeoff and landing. Thus, an exemption from this regulatory requirement is almost always needed.

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<b>135.95</b>	Airmen: Limitations on use of services	Requires pilots to hold a Part 61 manned commercial pilot certificate.	Relief is necessary if the pilot does not hold a commercial pilot certificate issued under Part 61. The extensive training and experience requirements associated with obtaining a Part 61 manned commercial pilot certificate have little to no bearing on the knowledge and skills necessary to safely operate the types of highly automated drones that are used in drone package delivery operations. A commercial pilot certificate requires pilots to accumulate hundreds of hours of flight time and the total costs for obtaining this certificate can exceed \$100,000. For this reason, very few drone operators hold a Part 61 commercial pilot certificate and an exemption from this requirement is almost always necessary.
<b>135.143(c)</b>	General requirements	When an ATC transponder is installed on an aircraft, requires that aircraft be equipped with ATC transponder equipment that meets certain TSO requirements.	Due to their small size and weight limitations, it is often impossible or impractical to install this equipment on a drone. An alternate solution that meets the intent of the regulation is to install the equipment at the drone's ground control station; however, this alternate approach to meeting the intent of the regulation still requires an exemption from the regulation.
<b>135.149(a)</b>	Equipment Requirements: Altimeter	Requires aircraft to be equipped with a barometric altimeter.	Most drones are equipped with GPS technology that is more accurate and reliable than barometric altimeters required by this regulation. See above under 91.121 for further explanation.
<b>135.161(a)(1) through (3)</b>	Communication and Navigation Equipment	Prohibits operation of an aircraft under VFR without two-way radio communication with stations along the route and ATC and the ability to receive meteorological information.	This regulation could be viewed to require radio communication equipment to be installed in the aircraft. This makes sense when two-way communication is required. Most low altitude drone operations do not require two-way communication with ATC unless operating from an airport. The intent of this rule can be satisfied by the drone including the necessary communication equipment; however, this still requires an exemption because two-way communication with ATC is rarely required for small drone operations.
<b>135.203(a)(1) and (b)</b>	VFR: Minimum Altitudes	Prohibits operation of an airplane below 500' AGL or horizontally from any obstacle or a helicopter at an altitude less than 300' AGL over a congested area.	These regulations were developed to mitigate risks associated with large manned aircraft operating close to the ground. These same risks do not apply to drones that are markedly smaller, lighter, and specifically designed, intended, and generally required to be operated at lower altitudes.
<b>135.205</b>	VFR: Visibility requirements	Prohibits both: (1) operation of an airplane under VFR in uncontrolled	

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		airspace when the ceiling is less than 1,000' and less than two statute miles of visibility; and (2) operation of a helicopter in Class G airspace at an altitude of less than 1,200' AGL or within the lateral boundaries of Class B, C, D, and E airspace when visibility is less than one-half statute mile under the day and one mile at night.	
<b>135.209(a) and (b)</b>	VFR: Fuel Supply	Establishes VFR fuel requirement minimums beyond the first point of landing for airplanes (30 minutes during the day, 45 minutes at night) and helicopters (20 minutes day and night).	These fuel reserve standards were developed to ensure that manned aircraft have enough spare fuel to safely land at alternate airports and to address emergency scenarios that may require a longer flight time than anticipated. Most drones are battery powered and can usually fly for around 30 minutes or less, making compliance with this regulation impossible or impracticable.
<b>135.243(b)(1) through (3)</b>	Pilot in Command Qualifications	Requires that pilots operating as pilots in command under Part 135 hold at least a commercial pilot certificate, have at least 500 hours of flight time (including 100 cross country hours and 25 night hours), and for airplanes hold an instrument rating or ATP.	Very few drone pilots have a Part 61 manned commercial pilot certificate. The training and testing associated with obtaining a commercial pilot certificate also has little to no bearing on the qualifications of an individual to safely operate the types of highly automated drones used in package delivery operations.
<b>135.267</b>	Flight time limitations and rest requirements: Unscheduled one- and two-pilot crews	Establishes commercial flight time restrictions per day, quarter, and calendar year as well as crew rest requirements per duty day.	Flight time limitations and rest requirements are overly burdensome and unnecessary for the appreciably lower risk posed by unoccupied aircraft, particularly in the context of highly automated drone package delivery operations.
<b>135.337(b)(1)</b>	Qualifications: Check pilots	Requires check pilots under Part 135 to hold at minimum a commercial pilot certificate.	These qualification and training requirements for flight instructors and check pilots are overly burdensome and unnecessary in the context of training a drone pilot. It is also impossible to comply with regulatory requirements that require a left and right pilot seat because drones do not have pilot seats.
<b>135.338(b)(1)</b>	Qualifications: Flight instructors	Requires flight instructors under Part 135 to hold at minimum a commercial pilot certificate.	
<b>135.339(e)(3) and (4)</b>	Initial and transition	Requires that the initial and transition	

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	training and checking: Check pilots	flight training for check airmen includes training in conducting flight checks from the left and right pilot seats.	
<b>135.340(e)(3) and (4)</b>	Initial and transition training and checking: Flight instructors	Requires that the initial and transition flight training for flight instructors includes training in conducting flight checks from the left and right pilot seats.	
<b>135.415(b)</b>	Service Difficulty Reports	Requires that certificate holders report failures, malfunctions, or defects in an aircraft “during flight,” with “during flight” defined as “the period from the moment the aircraft leaves the surface of the earth on takeoff until it touches down on landing.”	Most drones perform automated pre-flight system checks, some of which occur at a short height above the ground for a more complete check, to ensure the drone is in a safe working condition prior to flight. Compliance with this regulation would require a commercial drone operator to file a Service Difficulty Report with the FAA for minor malfunctions identified during the automated checks. This reporting requirement is overly burdensome and unnecessary in the context of a drone operation with no pilot or passengers onboard the aircraft.
<b>PART 137—AGRICULTURAL AIRCRAFT OPERATIONS*</b>			
<i>* The Part 137 regulatory framework applies to drones used in agricultural spraying operations.</i>			
<b>137.19(c)</b>	Certification Requirements: Commercial Operator-Pilots	Mandates that a commercial agricultural aircraft operator hold a current commercial license or ATP.	Most drone pilots do not hold Part 61 commercial or ATP pilot certificate. See above for further explanation.
<b>137.41(c)</b>	Personnel: Pilot in Command	Requires a pilot in command to hold either a commercial pilot certificate or ATP for commercial operations.	
<b>137.19(d)</b>	Certification Requirements: Aircraft	Requires an applicant for an agricultural aircraft operator certificate to have an airworthy aircraft.	The FAA has not issued any airworthiness certificates for unmanned aircraft used in commercial operations and therefore compliance with this regulation is impossible. See above for further explanation.
<b>137.19(e)(2)(ii), (iii), and (v)</b>	Certification Requirements: Knowledge and Skill Tests: (ii) Approaches to the working area, (iii) flare-	Requires an applicant for an agricultural aircraft operator certificate to demonstrate approaches to a working area, flare-outs, and pullups and turnarounds.	These certification requirements require pilots to demonstrate flight maneuvers commonly used by manned aircraft during agricultural spraying operations. Most drones do not need to perform these maneuvers during spraying operations and the vast majority of drone spraying operations are automated with the pilot providing oversight rather than manual flying.

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	outs, and (v) pullups and turnarounds		Therefore, relief is almost always needed from these requirements.
<b>137.31</b>	Aircraft Requirements	Requires aircraft to be equipped with a shoulder harness for each pilot.	Drones used in spraying operations do not have seats with shoulder harnesses or safety belts and therefore compliance with this regulation is impossible and entirely unnecessary given that there is no pilot onboard the aircraft.
<b>137.42</b>	Fastening of Safety Belts and Shoulder Harnesses	Requires pilots to wear shoulder harnesses while performing agricultural operations.	
<b>137.33</b>	Carrying of Certificate	Requires aircraft to carry a facsimile of the agricultural aircraft operator certificate.	It is highly impractical and unnecessary to carry an operator certificate or any other documents inside a drone.