

# **Streamlined Launch and Reentry Licensing Requirements Final Rule FAQ**

## **PART 450 General Questions**

### **Q: Why did the Federal Aviation Administration issue a Streamlined Launch and Reentry Licensing Requirements Final Rule?**

The new rule supports greater innovation, flexibility and efficiency, and lays the foundation for the Federal Aviation Administration to keep pace with the dramatic increase in the cadence and complexity of commercial space transportation operations.

### **Q: What are the four rules that were combined into one?**

The four separate regulations are Parts 415, 417, 431, and 435. They were combined into a single performance-based part to better accommodate the evolving commercial space transportation industry.

The final rule converts many of the legacy prescriptive requirements to more performance-based requirements that would allow for different means of compliance. The removal of unnecessary prescriptiveness provides additional flexibility while still preserving safety and providing regulatory clarity. The final regulation combines elements from parts 415, 417, 431, and 435. Part 450 is shorter than parts 415 and 417 and more performance-based. Although it is longer than parts 431 and 435, part 450 is more flexible and encompasses more types of launch and reentry operations. The final rule allows operators to use a means of compliance that will accommodate customized operations, changing technologies, and innovation.

### **Q: How does a performance-based regulation provide industry flexibility?**

The final rule replaces many prescriptive regulations with performance-based rules that enable the use of flexible means of compliance. An applicant can use a means of compliance identified by the FAA, or can propose a unique means of compliance that meet the safety standards of the regulation. A means of compliance is one means, but not the only means, by which a requirement can be met and may be used to demonstrate compliance with any of the performance-based requirements. For government standards or means of compliance developed by a consensus standards body, the FAA will provide public notice of those accepted means of compliance that it determines satisfy the corresponding regulatory requirement.

### **Q: How long are part 450 licenses valid?**

Part 450 vehicle operator licenses are valid for up to five years and are renewable.

### **Q: What has changed in the application process?**

The new rule consolidates four separate regulations and applies a single set of performance based licensing and safety regulations for all types of vehicle operations.

- A single operator's license that can be used to support multiple launches from potentially multiple launch site locations.
- Applicants may submit portions of an application for incremental review and approval by the FAA.
- Applicants may negotiate reduced document submittal and review period timelines.
- Applicants can apply for a safety element approval with a license application, instead of needing to submit a separate application.

**Q: What steps will the FAA take to ensure stakeholders understand all the features of the new rule?**

FAA will be hosting a Part 450 Workshop on November 4<sup>th</sup>-6<sup>th</sup> to walk through the rule. We will kick-off the workshop with an overview of the rule and an introduction to some new pre-application consultation tools. The remainder of the first two days will cover each topic under part 450, and will be taught by FAA's subject matter experts. The final day will include sessions on crosswalk tools that compare part 450 to legacy regulations.

Due to the large number of expected participants, participants will submit questions electronically and the FAA will answer as many as possible with the remaining time at the end of each topic. The FAA will consider including any unanswered questions in a future FAQ or training material. After the workshop, legacy operators will be invited to individual sessions to answer questions pertaining to their unique programs.

**Q: Are there guidance documents associated with this rule?**

There are three Advisory Circulars that are being issued concurrently with the final rule:

- AC 450.101-1 High Consequence Protection
- AC 450.115-1 High Fidelity Flight Safety Analysis
- AC 450.141-1 Computing Systems and Software

A Means of Compliance Table is available on the FAA website and will be updated as additional means of compliance are accepted by the FAA. The MOC table has a full listing of all ACs, including the ones that are currently under development with an expected time frame for issuance.

Due to the large number of planned ACs supporting part 450 and our schedule to have them all published in FY21, FAA encourages the public to comment on each AC within 30 days of issuance using the form at the end of each document.

## **Current Operators FAQs**

**Q: How long can I continue to operate under my existing license?**

The compliance period for legacy licenses is up to five years after effective date of Part 450.

**Q: What will it take for me to transition to Part 450?**

Legacy license operators may choose to operate under Part 450 on the effective date of this rule. FAA is committed to working with legacy operators to ensure a smooth transition to part 450. As the final rule is more performance-based than the rule as proposed in the NPRM, many of the current requirements would serve as a means of compliance to meet the new regulations. The FAA anticipates that there would be few, if any, additional requirements that will not be fulfilled by previously submitted information. After the Part 450 Workshop, legacy operators will be invited to individual sessions to answer questions pertaining to transitioning their license to part 450.

**Q: Can my legacy license may be renewed and modified?**

Applicants with an accepted license application at the time Part 450 becomes effective may continue to seek a license under Parts 415, 417, 431, and 435.

**Q: Are any new requirements for legacy operators?**

Upon the effective date of the final rule, parts 415, 417, 431, and 435 will be revised to include the Critical Asset protection and Collision Avoidance requirements

**Q: When is the last day that I can submit an application for a legacy license?**

An acceptable application must be submitted within 180 days of the publication of the final rule in the federal register. The actual date will be noted in § 413.1 once published.

## **PART 450 Detailed FAQs**

**Q: How does the new rule address High Consequence Event Protection and Conditional Expected Casualty (CEC)?**

The use of high consequence event protection represents a significant change from our legacy regulations. It introduces a new safety criteria for low probability, high consequence events and provides a means by which an operator can demonstrate that expensive, highly reliable flight safety system (FSS) design and testing may be unnecessary to protect public safety.

Conditional expected casualties (CEC) is the quantitative criteria used to determine the need for flight abort as a hazard control strategy, setting reliability standards for an FSS, and determining when to initiate a flight abort. An applicant may use an equivalent level of safety to propose an alternative way to measure high consequence events other than by CEC. The final rule also allows multiple ways an applicant may protect against a low probability, high consequence event in uncontrolled areas for each phase of flight using either flight abort, demonstrating that CEC is below a certain threshold without flight abort, or establishing the launch or reentry vehicle has sufficient demonstrated vehicle reliability in consideration of CEC. The final rule allows an operator in certain circumstances to use a method other than flight abort to protect against high consequence events.

**Q: How does the new rule address Flight Safety System tiers?**

The final rule requires all FSS not required to meet the highly reliable FSS requirements in § 450.145 to meet the safety-critical systems requirements in § 450.143. This tiered regulatory

approach should support ongoing innovation in the development of FSS. The commercial space transportation industry has continued to mature and operators have proposed FSS alternatives. These alternative approaches include fail-safe single string systems that trade off mission assurance and redundancy, other fail-safe consequence mitigation systems, and dual-purpose systems such as FSS that reuse the output of safety-critical GPS components for primary navigation avionics. For operations in which the consequence of a flight failure is lower, the FSS, while still being reliable, may not need to be as highly reliable as an FSS for a vehicle operating in an area where the consequence of a flight failure is higher.

**Q: How does the new rule eliminate duplicative requirements when launching from a Federal Range?**

The FAA has addressed concerns regarding duplicative government requirements in part by modifying its approach to ground safety at certain Federal sites. In the final rule, an operator need not comply with the ground safety requirements contained in § 450.181 (Coordination with a Site Operator) through § 450.189 (Ground Safety Prescribed Hazard Controls) if the conditions in § 450.179(b) are met. In making this change, the FAA preserves its statutory jurisdiction over those ground safety activities that are part of launch and reentry, but recognizes certain Federal processes and procedures as sufficient to meet the FAA’s mandate. Under § 450.179(b), an operator is not required to comply with the ground safety requirements of part 450 if:

- The launch or reentry is being conducted from a Federal launch or reentry site;
- The operator has a written agreement with the Federal launch or reentry site for ground safety services or oversight; and
- The Administrator has determined that the Federal launch or reentry site’s ground safety processes, requirements and oversight are not inconsistent with the Secretary’s statutory authority over commercial space activities.

In making the determination to accept the Federal site’s processes without specific compliance with ground safety regulations, under § 450.179(c), the Administrator will consider the nature and frequency of launch and reentry activities conducted from the Federal launch or reentry site, coordination between the FAA and the Federal launch or reentry site safety personnel, and the Administrator’s knowledge of the Federal site’s requirements.

**Q: How does the new rule address Neighboring Operations?**

The final rule carves out separate individual and collective risk criteria for neighboring operations personnel to reduce the need to clear or evacuate other launch operator personnel during a commercial launch or reentry operation. Under the legacy regulations, an operator might be required to clear anywhere from a handful of employees to over a thousand employees from a neighboring site for a significant portion of a day. Neighboring operations personnel would still be members of the public, but would be subject to different individual and collective risk criteria. The rule enables neighboring operations personnel to remain within safety clear zones and hazardous launch areas during flight as long as their risk does not exceed the newly designated thresholds.

In the final rule, the FAA notes that the Federal or licensed site operator will determine those personnel who are eligible for neighboring operations personnel status in coordination with the launch operators, because the site operator is in the best position to identify which personnel are

required to perform safety, security, or critical tasks at the launch site. Further, both the launch or reentry operator and the neighboring site operator benefit from this treatment of neighboring operations personnel. The designation of neighboring operations personnel is optional for FAA-licensed or exclusive use site operators.

**Q: How does the new rule address software?**

In the final rule, the FAA replaces prescriptive requirements with performance-based standards and provides increased flexibility for operators to demonstrate compliance with computing systems requirements. The final rule levies requirements for computing system safety items in proportion to their criticality rather than their autonomy; requires independent verification and validation for safety-critical computing system safety items; and retains focus on development and testing processes instead of direct inspection of software by the FAA. The FAA removed prescriptive requirements to increase flexibility in application to current and future computing system designs. The rule requires the identification and assessment of public safety-related computing system requirements, functions, and data items, in order to streamline the evaluation of computing system safety. The explicit identification of public safety related aspects of computing systems enables a reduction in the scope of FAA's evaluation compared to the legacy regulations.

**Q: What is the difference between application process alternatives as agreed to by the FAA, the use of equivalent level of safety, and waivers?**

Part 450 accommodates all vehicle operators with flexibility that is primarily provided by performance-based requirements. However part 450 also incorporates a number of regulatory tools by allowing application process alternatives as agreed to by the FAA, the use of equivalent level of safety (ELOS), and waivers.

An applicant may clearly and convincingly demonstrate that an alternative approach provides an equivalent level of safety (ELOS) to the requirement. In theory, a performance-based regulation like part 450 could function without an ELOS provision, because, in concept, a performance-based rule allows many different means of compliance with the required safety standard. The FAA considered eliminating the ELOS provision from the final rule, but decided that eliminating the ELOS provision would remove a useful regulatory tool that provides flexibility. Unlike means of compliance, which demonstrate compliance with the regulation, ELOS allows an applicant to propose and demonstrate a method that ensures an ELOS to the requirement, but not necessarily compliance with the requirement itself. The FAA has chosen to retain the option of ELOS to allow operators to propose unique processes and procedures. An applicant could use a safety case or other justification for ELOS.

For most of the requirements in part 450, an applicant may demonstrate an equivalent level of safety if the applicant is unable to meet a requirement. In addition, an operator may request a waiver to any requirement. An ELOS may be submitted in a license application and must clearly and convincingly demonstrate that an alternative approach provides an equivalent level of safety to the requirement. A petition for waiver must be submitted 60 days in advance and address why granting the request for relief is in the public interest and will not jeopardize the public health and safety, safety of property, and national security and foreign policy interests of the United States.

For some requirements, the FAA anticipated the need for additional regulatory flexibility without the burden of providing an equivalent level of safety or applying for a separate waiver. For those requirements, the FAA has incorporated the clause “as agreed to by the Administrator” to mean that an operator may submit an alternative to the proposed requirement to the FAA for review. Unlike an ELOS determination, an applicant need not demonstrate that this alternative satisfies an ELOS to the requirement. For each requirement where the FAA has provided additional flexibility by including the “as agreed to by the Administrator” clause, the FAA has also provided criteria that the Administrator will consider in determining whether to approve the alternative approach, including safety considerations when appropriate. For example, an alternative time frame will generally be accepted if it provides sufficient time for the FAA to review the submittal. These alternatives will typically be agreed to in pre-application consultation.