

FREQUENTLY ASKED QUESTIONS

Programmatic Environmental Impact Statement for Licensing Horizontal Launch Vehicles and Reentry Vehicles

ABOUT THE AGENCY

➤ **What is the Federal Aviation Administration (FAA)?**

The FAA has primary responsibility for the safety of civil aviation. The FAA has seven lines of business, one of which is commercial space transportation. Through this line of business, the agency regulates and promotes the U.S. space transportation industry. The FAA licenses commercial launches and reentries and launch and reentry site operations.

➤ **What is the Office of the Associate Administrator for Commercial Space Transportation (AST)?**

The AST oversees space-related activities within the FAA. The AST's mission is to ensure protection of the public, property, and the national security and foreign policy interests of the United States during a commercial launch or reentry activity and to encourage, facilitate, and promote U.S. commercial space transportation.

UNDERSTANDING THE LICENSING PROCESS

➤ **What is the goal of the FAA's licensing program?**

The primary objective of the FAA's licensing program, carried out by the AST, is to ensure public health and safety through the licensing of commercial space launches and reentries, and the operation of launch and reentry sites. Protection of public health and safety and the safety of property is the objective of the FAA's licensing and compliance monitoring/safety inspection processes.

➤ **What are the key components of the licensing process?**

The key components of the licensing process include a pre-application consultation period and an application evaluation period that includes a policy review, a payload review, a safety evaluation, a financial responsibility determination, and an environmental review. Brief descriptions of these key components are available on AST's web site at <http://ast.faa.gov/lrra>. The FAA licenses launches and reentries and launch and reentry sites, but not the launch and reentry vehicles themselves.

➤ **What launches are exempt from the licensing process?**

Applicants proposing to launch unguided suborbital launch vehicles, such as amateur rockets, require a license unless the launch is exempt. To be exempt from the licensing process, a launch must take place from a private site and involve a rocket (1) that has a motor or combination of motors with a total impulse of 200,000 pound-seconds or less; (2) whose motor or combination of motors have a total burn time or operating time of less than 15 seconds; and (3) has a ballistic coefficient (gross weight in pounds divided by frontal area of rocket vehicle) less than 12 pounds per square inch (14 CFR 401.5).

ABOUT LAUNCH AND REENTRY

➤ **What is a launch?**

Launch, as defined in 14 CFR § 401.5, means "to place or try to place a launch vehicle or reentry vehicle and any payload from Earth in a suborbital trajectory, in Earth orbit in outer space, or otherwise in outer space, and includes activities involved in the preparation of a launch vehicle for flight, when those activities take place at a launch site in the United States. The term launch includes the flight of a launch vehicle and pre-flight ground operations beginning with the arrival of a launch vehicle or payload at a U.S. launch site. For purposes of an expendable launch vehicle launch, flight ends after the licensee's last exercise of control over its launch vehicle. For purposes of an orbital RLV launch, flight ends after deployment of a payload for an RLV having payload deployment as a mission objective. For other orbital RLVs, flight ends upon completion of the first sustained, steady-state orbit of an RLV at its intended location."

➤ **What is a trajectory?**

A trajectory is the path followed by an object moving through space under the action of given forces such as thrust, wind, and gravity.

➤ **What is reentry?**

Reentry, as defined in 14 CFR § 401.5, means "to return or attempt to return, purposefully, a reentry vehicle and its payload, if any, from Earth orbit or from outer space to Earth. The term 'reenter; reentry' includes activities conducted in Earth orbit or outer space to determine reentry readiness and that are critical to ensuring public health and safety and the safety of property during reentry flight. The term 'reenter; reentry' also includes activities conducted on the ground after vehicle landing on Earth to ensure the reentry vehicle does not pose a threat to public health and safety or the safety of property."

➤ **What are reentry vehicles?**

Reentry vehicle, as defined in 14 CFR § 401.5, means "a vehicle designed to return from Earth orbit or outer space to Earth substantially intact. A reusable launch vehicle that is designed to return from Earth orbit or outer space to Earth substantially intact is a reentry vehicle."

➤ **What are reusable launch vehicles?**

An RLV, as defined in 14 CFR § 401.5, means "a launch vehicle that is designed to return to Earth substantially intact and therefore may be launched more than one time or that contains vehicle stages that may be recovered by a launch operator for future use in the operation of a substantially similar launch vehicle."

➤ **Into which orbits can launch vehicles place payloads or conduct a mission?**

Launch vehicles can place payloads or perform missions in a variety of orbits around Earth, including but not limited to, Low Earth Orbit (LEO), Geosynchronous Transfer Orbit (GTO), and Geosynchronous Earth Orbit (GEO). Launch vehicles can also be launched along suborbital trajectories under which the vehicle does not reach Earth orbit and falls back to the surface of the Earth. The launch vehicles addressed in this PEIS may be launched into various orbits or along suborbital trajectories.

➤ **What is the difference between launches on orbital and suborbital trajectories?**

Vehicles that are launched on orbital trajectories have instantaneous impact points (IIPs) that leave the surface of the Earth when the launch vehicle reaches orbital velocity. Vehicles that are launched on suborbital trajectories have IIPs that do not leave the surface of Earth. IIP is a term used by trajectory specialists to identify the place where a vehicle would hit the ground if its engines were to stop at that particular moment. If the IIP never leaves the surface of the Earth, the vehicle never moves fast enough to reach orbit (a suborbital trajectory) and the vehicle will fall back to the surface of the Earth.

UNDERSTANDING THE NEPA PROCESS

➤ **What is the National Environmental Policy Act (NEPA)?**

NEPA establishes a broad national framework for protecting the environment. NEPA requires Federal agencies to integrate environmental values into their decision-making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions. The NEPA process is intended to help public officials make decisions that are based on understanding environmental consequences and take actions that protect, restore, and enhance the environment (40 CFR 1500.1).

➤ **What is the FAA's role in this NEPA process?**

The FAA is the lead Federal agency in preparing the PEIS because of its licensing authority for commercial launch activities. FAA exercises licensing authority in accordance with the Commercial Space Launch Act and Commercial Space Transportation Licensing Regulations, 14 CFR Ch.III. The FAA is responsible for preparation of the PEIS in accordance with NEPA and the President's Council on Environmental Quality (CEQ), as well as with other Federal, state and local requirements. FAA Order 1050.1D, *Policies and Procedures for Considering Environmental Impacts*, describes the FAA's procedures for implementing NEPA. Specifically, FAA Order 1050.1D requires that the FAA decision making process facilitate public involvement by including consideration of the effects of the proposed action and alternatives; avoidance or minimization of adverse effects attributable to the proposed action; and restoration and enhancement of resources, and environmental quality of the nation. These requirements will be considered in the FAA's licensing decision.

If any other Federal agencies are identified that have specific regulatory oversight or technical expertise in a critical area, the FAA has the discretion to invite them to be cooperating agencies. The FAA will consult with all appropriate agencies at the Federal, state and local levels in preparing the PEIS.

➤ **What kind of analyses and documentation are required under NEPA?**

According to CEQ regulations, there are three basic levels of environmental review and documentation: (1) Categorical Exclusion (CATEX); (2) Environmental Assessment (EA); and (3) Environmental Impact Statement (EIS). FAA Order 1050.1 D, NEPA implementing regulations also identify an analysis called a Written Reevaluation (WR). The proposed action and its potential for significant environmental effects determine the appropriate level of environmental review.

- **CATEX.** A CATEX is a category of actions that do not have, under normal circumstances, individually or cumulatively, a significant effect on the human environment or that have been previously studied and found to have no significant environmental effect (40 CFR 1508.4). The CATEX does not cancel the need to perform environmental planning and other types of environmental, safety, and health analyses. In some cases, actions that normally would qualify for a CATEX may not qualify because unique or extraordinary circumstances cause the action to have significant environmental effects. If the proposed action qualifies as a CATEX, no other analytical environmental document is necessary.
- **EA.** An EA is a concise public document that provides sufficient evidence and analysis for determining whether to prepare a Finding of No Significant Impact (FONSI) or an EIS (40 CFR 1508.9). A FONSI is a document that presents the reasons why an action, not otherwise categorically excluded, will not have a significant effect on the human environment, and for which an EIS will not be prepared. (40 CFR 1508.13)
- **EIS.** An EIS is a public document prepared for actions that may have a significant impact on the quality of the human environment (40 CFR 1508.11). EISs are first prepared in draft, distributed to government agencies, organizations, and individuals for review and comment, and the Environmental Protection Agency (EPA) publishes a Notice of Availability (NOA) in the *Federal Register*. A final EIS includes pertinent comments and information from the review process. The final EIS is distributed to recipients of the draft EIS and the EPA publishes an NOA in the *Federal Register*. Thirty days after the EPA publishes the NOA of the final EIS, the agency issues a Record of Decision (ROD). The ROD is a concise statement of the decision made and any mitigation and monitoring actions that the agency will apply.
- **Written Reevaluation.** An analysis that either concludes that the contents of previously prepared environmental documents remain valid or that significant changes require the preparation of a supplement to existing environmental documents or the preparation of new documents. The FAA will exercise judgment on when a written reevaluation is appropriate to evaluate the continued validity of environmental documents. The preparation of a new EIS, FONSI or supplement is not necessary when it can be documented that
 - ❖ The proposed action conforms to plans or projects for which a prior EIS or FONSI has been filed,
 - ❖ The data and analyses in the previous EIS or FONSI are still substantially valid, and

- ❖ All pertinent conditions and requirements of the prior approval have been or will be met in the current action.

Also, if a final EIS is not submitted to the approving official within three years from the date the draft EIS was circulated, a written reevaluation of the draft shall be prepared by or for FAA to determine whether the consideration of alternatives, impacts, existing environment, and mitigation measures in the draft statement remain applicable, accurate and valid. The written reevaluation has no standard format and no circulation or publication requirements. It becomes part of FAA's file and may be made available on request.

➤ **What is the difference between an EA and EIS?**

An EA is a concise public document that has three defined functions: (1) briefly provides sufficient evidence and analysis for determining whether to prepare an EIS; (2) aids an agency's compliance with NEPA when no EIS is necessary, i.e., it helps to identify better alternatives and mitigation measures; and (3) facilitates preparation of an EIS when one is necessary (40 CFR 1508.9).

An EIS provides detailed discussion of significant environmental impacts and informs decision-makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment. An EIS is used by Federal officials with other relevant material to plan actions and make decisions (40 CFR 1502.1). An EIS is more detailed and comprehensive than an EA, requires public scoping, and involves formal coordination with agencies and interested parties.

➤ **What is a Programmatic EIS (PEIS)?**

The preparation of a PEIS may be particularly useful when similar actions, viewed with other reasonably foreseeable or proposed agency actions, share common timing or geography. The programmatic or system-wide approach creates a comprehensive, global analysis for a broad plan or action that is evolving and includes a number of phases, activities, or individual actions. Programmatic analysis can save resources by providing NEPA coverage for the entire program, allowing subsequent NEPA analyses to be more narrowly focused on specific activities at specific locations.

➤ **What is tiering?**

Tiering refers to the coverage of general matters in broader environmental impact statements with subsequent more focused statements or environmental analyses, incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared (40 CFR 1508.28). The CEQ has stated that tiering can be a useful method of reducing paperwork and unnecessary duplication. Applicants for launch and reentry licenses and launch and reentry site operator licenses will be able to use the PEIS to tier their site-specific environmental analysis. This will help to reduce the burden on applicants and facilitate the environmental compliance portion of the licensing process.

➤ **What is the time required for a PEIS?**

The CEQ's NEPA regulations encourage streamlined review, adoption of deadlines, elimination of duplicative work, eliciting suggested alternatives and other comments early through scoping, cooperation among agencies, and consultation with applicants during project planning (NEPA's Forty Most Asked Questions). The average time for the entire PEIS process is approximately 12 to 18 months. A PEIS may entail difficult long-term planning or acquisition of certain data, and could require more time for preparation.

ABOUT THE PEIS

➤ **Why is AST preparing a PEIS for licensing launches of horizontally launched vehicles and reentries of reentry vehicles?**

In May 1992, the FAA prepared the *Final Programmatic Environmental Impact Statement for Commercial Reentry Vehicles* to assess the environmental impacts of the licensing of the launch of reentry vehicles from space to Earth¹. This PEIS relied in part on the analysis from the *Programmatic Environmental Assessment of Commercial Expendable Launch Vehicle Programs* (PEIS CRV), February 1986.

In May 2001, the FAA prepared the *Programmatic Environmental Impact Statement for Licensing Launches* (PEIS LL), which assessed the environmental impacts of licensing commercial launches. This PEIS updated and replaced the 1986 Programmatic EA.

¹ In this instance launch did not include the firing of engines to orient and de-orbit the RV from its orbital track into its reentry trajectory. RV reentry operations were defined as beginning when the vehicle is in its reentry trajectory, i.e., it is completely removed from its orbital track and ending at vehicle touchdown.

The FAA has considered the launch (i.e., reentry) of reentry vehicles unpowered from space back to Earth and other vertically launched expendable and reusable launch vehicles in these prior analyses. This PEIS will update and replace the 1992 PEIS and will address the launch of horizontally launched vehicles and the reentry of all reentry vehicles.

➤ **How does NEPA affect the FAA’s licensing process?**

The FAA is required to consider the environmental impacts of commercial space launches authorized under a license because the issuance of a license is considered to be a major Federal action under NEPA. An applicant must provide information sufficient to enable the FAA to comply with the requirements of NEPA, CEQ implementing regulations, and the FAA's Procedures for Considering Environmental Impacts, FAA Order 1050.1D.

➤ **What alternatives will be considered in the PEIS?**

This PEIS will assess environmental impacts associated with the proposed action, reasonable alternatives including those identified during scoping, the no action alternative, and cumulative impacts. The proposed action is to license the launch of horizontally launched vehicles and reentry of reentry vehicles. The no action alternative is to not license the launch of horizontally launched vehicles or the reentry of reentry vehicles. The FAA will consider other alternatives identified during scoping as appropriate.

➤ **What resource areas will be evaluated in the PEIS?**

The analysis of impacts in the PEIS may include consideration of

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| <input type="checkbox"/> Air quality | <input type="checkbox"/> Health and safety |
| <input type="checkbox"/> Airspace | <input type="checkbox"/> Land use |
| <input type="checkbox"/> Biological resources | <input type="checkbox"/> Noise |
| <input type="checkbox"/> Cultural and historic resources | <input type="checkbox"/> Socioeconomic resources |
| <input type="checkbox"/> Environmental justice | <input type="checkbox"/> Transportation |
| <input type="checkbox"/> Geology and soils | <input type="checkbox"/> Utilities |
| <input type="checkbox"/> Hazardous materials and waste | <input type="checkbox"/> Visual resources |
| | <input type="checkbox"/> Water resources |

➤ **Will the PEIS evaluate local impacts that result directly from the proposed action and alternatives?**

The PEIS will not analyze local impacts. Rather, the PEIS will consider existing locations and elements that are representative of different ecosystems. The intent of the PEIS is to establish a broad envelope of potential environmental impacts for a variety of resource areas. As specific launch and reentry activities are proposed for specific locations, they will likely require additional, site-specific environmental analysis, as required under NEPA. These will be tiered from the PEIS within the intent of NEPA.

PUBLIC INVOLVEMENT

➤ **What is scoping and why do we need it?**

During scoping, the lead agency invites the participation of Federal, state, and local agencies, Native American tribes, environmental groups, organizations, citizens, and other interested parties to assist in determining the scope and significant issues to be evaluated in the PEIS. The scope consists of the range of actions, alternatives, and impacts to be considered in the PEIS (40 CFR 1508.25). Scoping is required for the preparation of a PEIS, and is a useful tool for discovering alternatives to a proposal, identifying significant impacts, eliminating insignificant issues, communicating information, consulting with agencies and organizations, and soliciting public comments.

Scoping begins with publication of the Notice of Intent (NOI) in the *Federal Register*. The NOI describes the FAA's intent to prepare a PEIS, the FAA's scoping activities, and contact information for submitting comments to the FAA on the scope of the PEIS. The FAA will invite the general public, other Federal agencies, Native American tribes, state and local governments, and other interested parties to comment on the scope of the PEIS.

➤ **How can one submit comments during scoping?**

The options for submitting comments to the FAA are as follows

- ❑ Comments may be submitted via e-mail to Michon Washington at the FAA at FAA.PEIS@icfconsulting.com
- ❑ Comments may be submitted by phone at (703) 934-3950 or by fax at (703) 934-3951
- ❑ Comments may be submitted through this web site at <http://ast.faa.gov>
- ❑ Comments may be submitted by mail to

Michon Washington
c/o ICF Consulting
9300 Lee Highway
Fairfax, VA 22031

➤ **How will the FAA use public comments submitted during scoping?**

The FAA extended public scoping for the Draft PEIS until October 31, 2003, to ensure that all interested government and private organizations, and the general public had an opportunity to express their concerns and identify topics that should be addressed in the Draft PEIS. The FAA will categorize the scoping comments received according to content and analyze the comments to determine issues of priority to the interested parties; level of detail to be included in the PEIS; sources of information to be used; and issues to be addressed and evaluated in the PEIS.