

## **FACT SHEET**

# **Programmatic Environmental Impact Statement for Horizontal Launch Vehicles and Reentry Vehicles**

### **INTRODUCTION**

The Federal Aviation Administration (FAA) is preparing a Programmatic Environmental Impact Statement (PEIS) to address the environmental impacts associated with licensing the launch of horizontally launched vehicles and the reentry of reentry vehicles (RVs). The FAA is the lead Federal agency in preparing the PEIS because of its licensing authority for commercial launch activities in accordance with 49 U.S.C. Subtitle IX – Commercial Space Transportation, ch. 701, Commercial Space Launch Activities, 49 U.S.C. §§ 70101-70121, and supporting regulations. 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.

### **WHY FAA IS PREPARING THE PEIS**

The FAA is responsible for preparation of the PEIS in accordance with the National Environmental Policy Act (NEPA) and the President's Council on Environmental Quality (CEQ), as well as with other Federal, state and local requirements. NEPA establishes a broad national framework for protecting the environment. NEPA requires Federal agencies to consider 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)

A PEIS is useful for analyzing actions that are broad in scope, that occur in phases over several years and may be widely dispersed geographically. The programmatic or system-wide approach to considering environmental impacts creates an overarching framework that can then support the subsequent analysis of specific actions at specific locations within the overall system, i.e., tiering, with fewer resources.

In May 1992, the U.S. Department of Transportation issued the *Final Programmatic Environmental Impact Statement for Commercial Reentry Vehicles* (PEIS CRV) that assessed the environmental impacts of the licensing the unpowered reentry of reentry vehicles from space to Earth. This 1992 PEIS relied in part on the analysis in the *Programmatic Environmental Assessment of Commercial Expendable Launch Vehicle Programs*, February 1986.

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

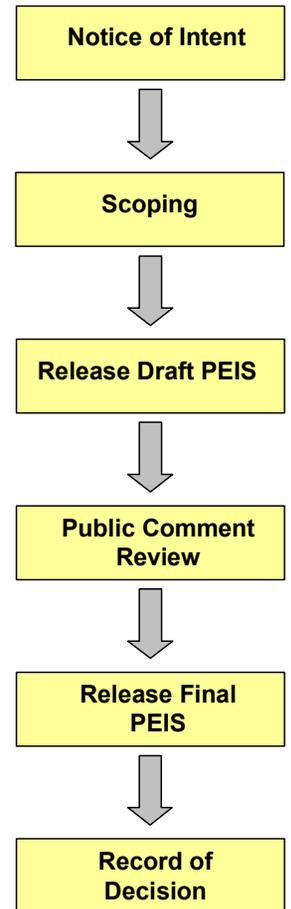
The PEIS for Licensing Launches of Horizontally Launched Vehicles and Reentries of Reentry Vehicles will update and replace the 1992 PEIS and address the launch and landing of horizontally launched vehicles and the reentry of all reentry vehicles. Exhibit 1 outlines the analyses from the PEIS CRV and PEIS LL and the analysis that is anticipated to be conducted for this PEIS.

### **ABOUT THE PEIS**

The proposed action for this PEIS is to license the launch and landing of horizontally launched vehicles and the reentry of all 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.” 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. Alternatives to the proposed action may include activities such as not licensing horizontal launches, not licensing vertical reentries, not licensing horizontal reentries, not licensing powered reentries, and not licensing unpowered reentries.

## MILESTONES

- **Notice of Intent (NOI).** The FAA publishes the NOI in the *Federal Register (FR)* to announce the decision to prepare a PEIS. The NOI initiates scoping.
- **Scoping.** The FAA invites all interested parties to participate. The FAA incorporates relevant comments into the draft PEIS.
- **Release Draft PEIS.** The FAA provides copies of the draft PEIS to all interested parties. Publication of a Notice of Availability (NOA) in the *FR* announces release of the draft.
- **Public Comment Review.** A public review and comment period follows the publication of the draft PEIS.
- **Release Final PEIS.** The FAA revises the draft as needed and prepares a final PEIS. Publication of an NOA in the *FR* announces the release of the final PEIS.
- **Record of Decision (ROD).** Thirty days after the NOA of the final PEIS, the FAA will issue a ROD. The ROD documents the FAA's decision, the reasoning behind the decision, and any required mitigation measures.



## WHAT WILL BE ANALYZED IN THE PEIS?

Public participation is critical in identifying issues and alternatives to be considered in a PEIS. The analysis of impacts in the PEIS may include consideration of

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



## **CONTACT INFORMATION**

Written comments, statements and/or questions regarding scoping issues or the PEIS process should be addressed to

Ms. Michon Washington  
FAA Environmental Specialist  
FAA PEIS  
c/o ICF Consulting,  
9300 Lee Highway  
Fairfax, VA 22031

Telephone (703) 934-3950  
Fax (703) 934-3951  
Electronic mail at [FAA.PEIS@icfconsulting.com](mailto:FAA.PEIS@icfconsulting.com)

Additional information regarding the development of the PEIS is available on the public participation web site at (<http://ast.faa.gov>).

### Exhibit 1. Comparison of Analysis in the PEIS LL, PEIS CRV, and PEIS RV

Document	PEIS LL	PEIS CRV	PEIS RV
Date Finalized	May 2001	May 1992	N/A
<b>Purpose and Need</b>	New technologies have created the need for increased launch transportation. The U.S. military and NASA cannot meet the demand for access to space.	Not explicitly stated.	Reusable and reentry vehicle technologies are starting to become reality. The first X-Prize entrant tested its engines in 2001 and NASA continued to award funding under the Space Launch Initiative with the hope of supporting a full scale commercial RLV by 2005.
<b>Proposed Action</b>	Included launches of expendable launch vehicles, launches of RLVs, and sounding rockets and addressed all activities from lift-off to payload separation. Vehicle assembly and payload preparation prior to liftoff, payload functioning during useful life, controlled or uncontrolled payload reentry, and construction activities were outside the scope of the PEIS LL.	Generic analysis of the impacts from the reentry from space of commercial reentry vehicles. Any mission and vehicle specific aspects of an RV operation (including its payload) that significantly differ from the variations described in the PEIS were outside the scope of this document.	Would analyze the potential impacts of licensing the launch of horizontally launched vehicles and the reentry of reentry vehicles.
<b>Propellants</b>	Solid (polybutadiene matrix, acrylonitrile oxidizer, and powdered aluminum); liquid (liquid hydrocarbons, hypergolic, and cryogenic); and hybrid propellants	Solid propellants, monomethyl hydrazine, hydrazine, and nitrogen tetroxide	Liquid oxygen, kerosene, air, liquid hydrogen, hydrogen peroxide, methane, hybrid propellants, jet engines, ramjet <sup>1</sup>
<b>Launch/Takeoff operations</b>	<b>Orientation:</b> vertical <b>Platform:</b> sea, land, and air	Assumed that RVs would be launched on expendable launch vehicles into space, but analyzed only impacts from space reentry of commercial RVs.	<b>Orientation:</b> horizontal launch and all reentries <b>Platform:</b> sea, land, and air (including hot air balloon) <b>Other:</b> tow launch and air refueling

<sup>1</sup> 2002 U.S. Commercial Space Transportation Developments and Concepts

<b>Reentry/Landing Operations</b>	Did not consider reentry/landing operations.	<b>Orientation:</b> unspecified <b>Power type:</b> unpowered <b>Other:</b> parachute, air snatch, retro thrust, inflatable air cushions, sand filled landing area, and water	<b>Orientation:</b> horizontal and vertical <b>Power type:</b> powered and unpowered <b>Other:</b> turbofan, parachute, air bag, water, parafoil, and jet engine
<b>Basis for Analysis</b>	Taurus, Athena, Titan III, Delta II, Delta III, Delta IV, Zenit-3SL, Titan IV, and Atlas V (representative vehicles)	Space Shuttle, Lifesat, COMET, and Space Station Freedom	X-Prize Entrants, K-1, Astroliner, Pathfinder, SA-1, and Space Shuttle (representative vehicles)
<b>Proposed Function of Vehicles</b>	Transport of government, scientific, and commercial payloads (communication satellites, other vehicles, scientific experiments)	Microgravity research (crystal growth; solidification of metals, alloys, and composites; and fluid transport), medical research, and biological research on organisms	Manned reusable launch vehicles, deployment of satellites, and other payloads for commercial and government customers, travel to other parts of the world, and space tourism
<b>Major Impact Areas Evaluated</b>	Atmospheric, Noise, and Other Environmental Effects (water, land, biota, socioeconomics, historical, cultural, and archaeological resources)	Atmospheric, Noise Sources, Landing (water, hazardous materials/waste), and Site-Specific Effects (land, hazardous waste, biota, historical and cultural resources, noise, transportation, socioeconomics)	Atmospheric, Noise, and Other Environmental Effects (water, land, biota, socioeconomics, historical, cultural, and archaeological resources)
<b>Environment Types Evaluated</b>	Southeastern Atlantic Coastal Environment, Southwestern Desert-Arid Environment, South Central California Coastal Environment, Subarctic Pacific Environment, Ocean or Open-Ocean Environment, and Mid-Atlantic Coastal Environment	Atmosphere, Space, and Site-Specific Environments on Earth's surface (did not include specific sites on Earth)	South Central Inland Environment, Southeastern Atlantic Coastal Environment, Southwestern Desert-Arid Environment, South Central California Coastal Environment, Subarctic Pacific Environment, Ocean or Open-Ocean Environment, and Mid-Atlantic Coastal Environment
<b>Feasible Alternatives</b>	More Environmentally-Friendly Propellant Combinations Alternative and No Action	No Action Alternative	TBD
<b>Launch Manifest Estimates</b>	Assumed 72 small, 22 medium, 75 intermediate, and 92 high capacity launches between 2000 and 2010.	Assumed up to 7 reentries per year from 1993-1999 and 20-30 reentries per year from 2000-2005.	TBD