

## ▶▶▶ COMMERCIAL SPACE TRANSPORTATION

The Federal Aviation Administration's (FAA) Office of Commercial Space Transportation (AST) licenses and regulates U.S. commercial space launch activity including launch vehicles and non-federal launch sites authorized by Executive Order 12465 and 49 US Code, Subtitle IX, Chapter 701 (formerly the Commercial Space Launch Act). Title 49 and the Executive Order also direct the Department of Transportation (carried out by the FAA) to encourage, facilitate, and promote commercial launches. AST's mission is to license and regulate commercial launch and reentry operations and non-federal launch sites to protect public health and safety, the safety of property, and the national security and foreign policy interests of the United States.

### OVERVIEW

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Commercial space transportation generally consists of the launch of satellites into orbit for either commercial or government customers by private, non-government entities, called launch services providers. Commercial space transportation also covers suborbital launches, where a payload or vehicle is launched on a trajectory that briefly goes into space but returns to Earth rather than going into orbit, as well as the reentry of objects from space to Earth.

The FAA licenses several expendable vehicles used for commercial orbital launches. The most active include the Pegasus and Taurus, two small vehicles built and operated by Orbital Sciences Corporation (OSC); the Delta IV, a heavy-class vehicle and the Delta II, a medium-class vehicle, both built by United Launch Alliance (ULA), a joint venture between Boeing and Lockheed Martin, and marketed by Boeing Launch Services (BLS); the Zenit-3SL, a heavy-class vehicle built by the Ukrainian company KB Yuzhnoye for the multinational Sea Launch venture; the Atlas 5, a heavy-class vehicle built by ULA and marketed by Lockheed Martin Commercial Launch Services (LMCLS), and the Falcon 1, a small launch vehicle built and operated by SpaceX. Commercial vehicles under development include the heavy-class Falcon 9 vehicle by SpaceX and the medium-class Taurus II by OSC. From 1989 through the end of 2008, DOT/FAA has licensed 195 orbital and suborbital commercial launches.

Experimental Permits, for suborbital reusable vehicle development and test flights, were first granted by FAA in 2006 to Blue Origin and Armadillo Aerospace. Some permits have been granted for vehicles participating in the Lunar Lander Challenge, a competition to demonstrate technologies potentially applicable to both future lunar spacecraft and commercial suborbital vehicles, with \$2 million in prizes offered by NASA's Centennial Challenges program.

Six commercial spaceports, located in Alaska, California (Vandenberg Air Force Base and Mojave Air and Space Port), New Mexico, Oklahoma, and Virginia, currently have FAA launch site operator licenses. Several other commercial spaceports around the United States are under development.

### REVIEW OF 2008

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There were 11 FAA-licensed launches, all orbital, in 2008, up from 4 in 2007. BLS performed two Delta II launches, carrying one commercial and one Italian government remote sensing satellites. Sea Launch conducted five Zenit-3SL launches of commercial communications satellites. There were two Falcon

1 launches, including a successful demonstration launch. LMCLS performed one Atlas V launch of a commercial communications satellite. OSC performed one Pegasus XL launch of a military satellite under an FAA license. There were also five suborbital permit flights during 2008. .

FAA Licensed and Permitted Launches, 2007-2009			
	2007	2008	2009 Forecast
Licensed Launches	4	11	8-10
Permitted Launches	9	5	5-10

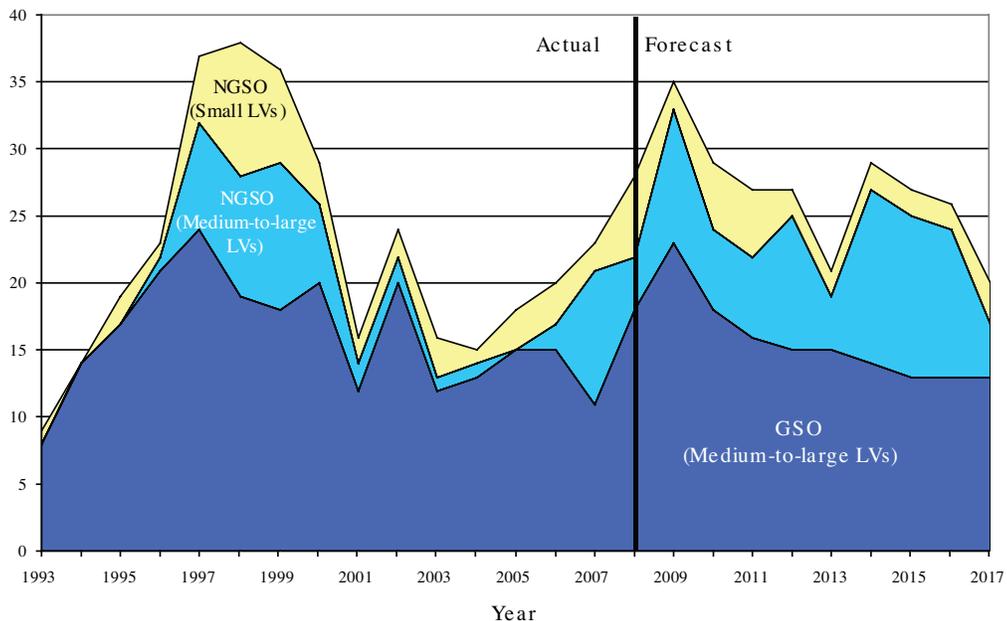
Worldwide there were 28 orbital commercial launches in 2008, compared to 23 in 2007. In addition to the 11 FAA-licensed launches, Europe performed five commercial launches of its Ariane 5, Russia conducted 11 launches of various vehicles, and Land Launch, a joint venture of Sea Launch and Space International Services, performed the inaugural launch of the Zenit-3SLB. There were 69 total worldwide commercial, civil, and military launches in 2008, with commercial launches representing about 41 percent of the total. For more details, see the Year in Review report available online at:

[http://www.faa.gov/about/office\\_org/headquarters\\_offices/ast/reports\\_studies/year\\_review/](http://www.faa.gov/about/office_org/headquarters_offices/ast/reports_studies/year_review/).

## GLOBAL FORECAST

In May 2008, the FAA and the Commercial Space Transportation Advisory Committee (COMSTAC) published their annual global forecast for commercial launch demand, the 2008 Commercial Space Transportation Forecasts. The report forecasts an average of 27.4 commercial orbital launches per year of geosynchronous orbit (GSO) and non-geosynchronous orbit (NGSO) payloads through 2017. That annual average includes 16.2 launches of medium-to-heavy vehicles to deploy GSO satellites, 8.1 launches of medium-to-heavy vehicles to NGSO, and 3.1 launches to NGSO by small vehicles.

Commercial Orbital Launch Forecast (1993-2017)



Commercial GSO launches are used for communications satellites with masses ranging from 2,000 to over 6,000 kilograms; satellite masses have tended to grow over time although there is still interest in smaller satellites. Demand for commercial NGSO launches spans a number of markets, including commercial remote sensing, science and technology demonstration missions (often for nations without an indigenous launch capability), and the replenishment and replacement of low Earth orbit communications satellite systems first launched in the late 1990s.

The GSO and NGSO forecasts are not a prediction of what will actually be launched but instead represent the expected demand for launch services, based on a variety of inputs. The complete forecast report is available at: [http://www.faa.gov/about/office\\_org/headquarters\\_offices/ast/reports\\_studies/forecasts/](http://www.faa.gov/about/office_org/headquarters_offices/ast/reports_studies/forecasts/).