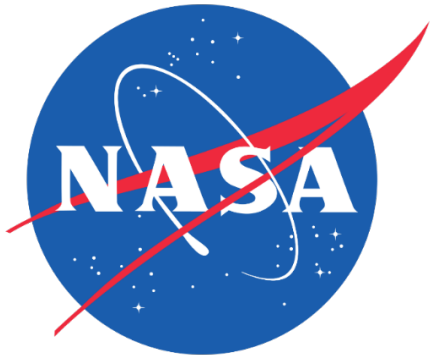


Agency Priority Goal Action Plan

Commercial Low Earth Orbit Economy

Goal Leader: Phil McAlister, Human Exploration and Operations Mission Directorate (HEOMD)

Deputy Goal Leader: Angela Hart, LEO Commercialization Manager, Johnson Space Center (JSC)

Overview

Goal Statement

- Enable a robust commercial low Earth orbit economy in which transportation, habitation, and on-orbit services are available for purchase by NASA and other customers. By September 30, 2021, NASA will support the development of commercial services, including through releasing new business opportunities, supporting demonstration flights, beginning certification activities, and demonstrating commercial capabilities.

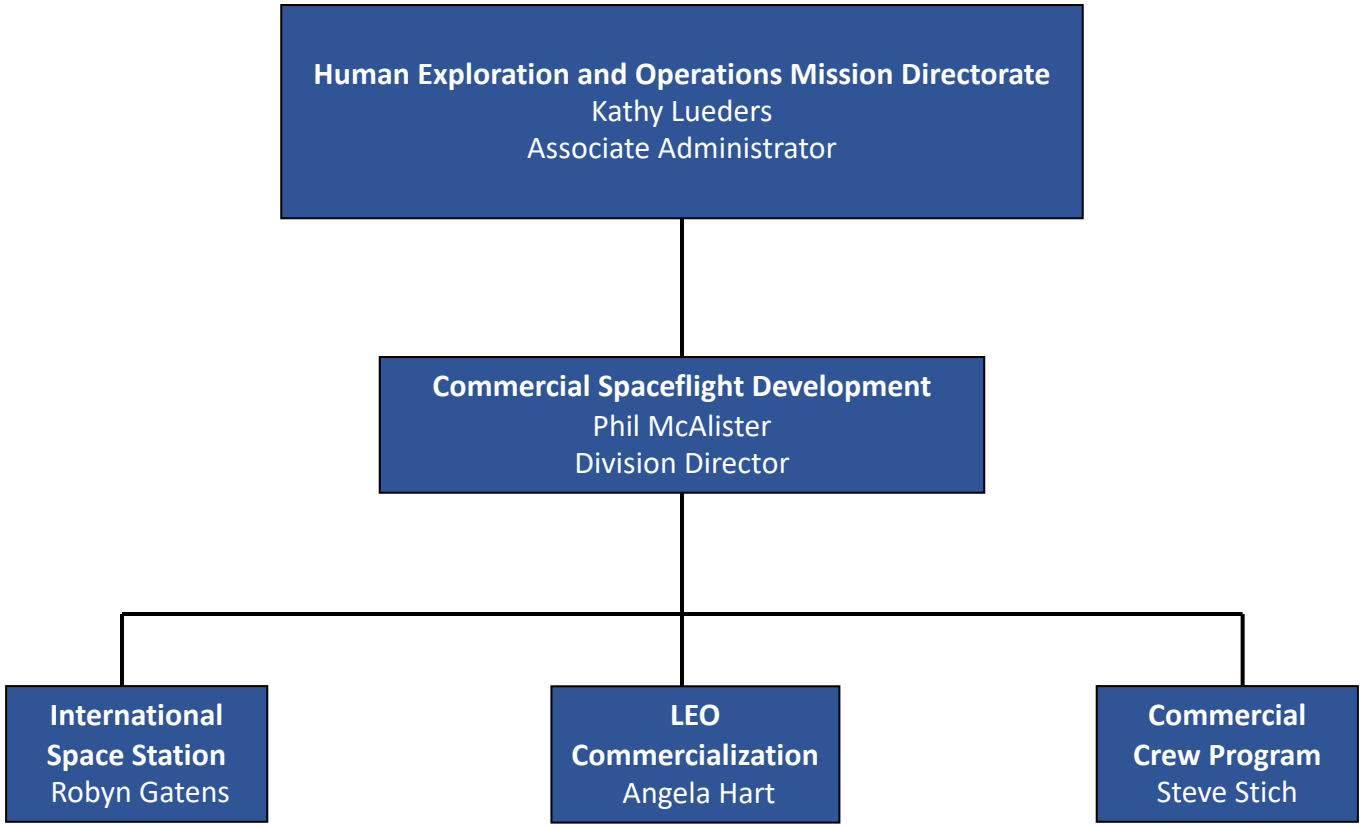
Challenge

- Achieving safe, reliable, and cost-effective access to and from low Earth orbit and the ISS through the development of U.S. commercial crew space transportation capabilities. Partnering with industry to develop commercial destinations that will enable transition from the ISS, while stimulating growth of sustainable demand so NASA can be one of many customers.

Opportunity

- Enabling a U.S. industry-based capability can facilitate growth of a commercial market, providing new high-technology jobs, securing U.S. leadership, and reducing the cost of human access to and operations in space.
- Further opening the frontier for space exploration will support a robust economy in low-Earth orbit.

Leadership & Implementation Team



Goal Structure & Strategies

- Enable crew and cargo transportation capabilities that support establishment of a Commercial LEO economy.
- Support establishment of commercial LEO transportation systems and destinations for use by future customers, including industry, other US government agencies, other National and the general public.
- Partner with industry to support growth of sustainable demand for products and services in the LEO economy.
- Contributing Programs include NASA's Commercial Crew Program, Commercial LEO Development, and the International Space Station Program.

Summary of Progress – FY 2020 Q3

- On April 6, Boeing announced that it will refly the uncrewed test flight of its CST-100 Starliner commercial crew spacecraft. The CST-100's Orbital Flight Test (OFT) in FY 2020 Q1 (December 2019) encountered several anomalies that prevented it from demonstrating the ability to dock with the International Space Station (ISS). The CST-100 reflight is expected this fall.
- An experiment was launched to the ISS in Q2, with the goal of enhancing the sole of a running shoe. Throughout Q3, the project observed the flow of foam particles of different sizes. Through this experiment, the manufacturer hopes to gain a better understanding of shoe midsole performance and improve the manufacturing process of running shoe soles back on Earth.
- In Q3, the first crewed orbital launch from the United States in nearly nine years took place, with two NASA astronauts on board a SpaceX Crew Dragon spacecraft. Following the launch on May 30, the Crew Dragon successfully docked with the ISS. Undocking and return are anticipated in Q4.

Key Milestones

Progress update for the Commercial LEO Economy APG.

	FY 2020 Q1	FY 2020 Q2	Current Status FY2020 Q3	Forecast FY2020 Q4
Quarterly Rating	Yellow	Yellow	Yellow	
Milestones Achieved	0 out of 1	1 out of 2	2 out of 3	

Milestone Summary		
Milestones	**Milestone Due Date**	**Comments**
Make awards for the port solicitation – NextStep 2 Broad Agency Announcement (Appendix I).	FY 2020 Q1	Completed in January 2020.
Make awards for the free-flyer solicitation – NextStep 2 Broad Agency Announcement (Appendix K)	FY 2020 Q2	RFP Release delayed until Q4.
Initiate astronaut training for initial private astronaut mission under a reimbursable space act agreement	FY 2020 Q3	Completed, with two SAA's signed and in place.
Both commercial crew industry partners complete demonstration missions	FY 2020 Q4	
Execute an outreach and communication campaign to expand pipeline of new entrants into the LEO economy	FY 2021 Q1	
Complete Preliminary Design Review for at least one port solicitation awardee	FY 2021 Q2	
Complete Preliminary Design Review for at least one free-flyer solicitation awardee	FY 2021 Q3	
Commence regular commercial crew operations	FY 2021 Q4	

Data Accuracy and Reliability

Verification and Validation:

- NASA monitors and tracks its progress towards this goal using various Agency documents and reports, including Directorate Program Management Council (DPMC) materials, reports from the industry partners, and other program-internal documents.

Data Source(s):

- Email(s), press releases, and program-internal documents indicating that NASA's industry partners continue to make progress maturing their transportation system technical and certification/verification efforts, including Baseline Performance Reviews.

Level of Accuracy Required for Intended Use:

- Using the documents and reports referenced above, the Agency is able to accurately report at the end of each quarter on whether or not it has met its planned milestones.

Data Limitations:

- Materials provided by NASA's industry partners may include company-proprietary information. Data are sufficiently accurate for their intended use.

How the Agency Compensates for Data Limitations:

- NASA has not identified any data limitations that would preclude it from reporting accurate, reliable, and timely performance information.

Additional Information

Contributing Programs

NASA Program Activities:

- Commercial Crew Program: Facilitates the development of safe, reliable, and cost-effective human space transportation by the U.S. commercial industry to and from low Earth orbit and the International Space Station (ISS).
- ISS Program: Develops and maintains the transportation service, interface, and safety requirements associated with crewed flights to and from the ISS.
- Launch Services Program (LSP): Manages NASA's launch vehicle services, dedicated to launching all types of science and operational spacecraft.
- Commercial LEO Development: Partners with industry to support development of commercial LEO destinations and growth of sustainable demand leading to a robust economy in low-Earth orbit.

Other Federal Activities:

- Federal Aviation Administration (FAA), Office of Commercial Space Transportation: Ensures that commercially-developed, human-rated transportation systems meet FAA licensing requirements for launch and entry, and works with NASA on cross-agency licensing issues.
- United States Air Force, 45th Space Wing: Addresses launch range safety and crew rescue.
- Department of Commerce: Champion growth of space commerce.

Stakeholder/Congressional Consultations

NASA provides quarterly updates to Congress on the status of required milestones under the Commercial Crew Transportation Capability contracts, as well as through other contracts and partnerships. NASA also consults regularly with experts from industry and academia, such as the NASA Advisory Council.