



Summary of Report on Key Industry Metrics and Voluntary Safety Standards to Satisfy Section 111 of U.S. CSLCA

May 30, 2019



Background

- In 2004* Congress granted the Department of Transportation (DOT) authority to issue regulations governing the design or operation of a launch vehicle to protect the health and safety of crew and space flight participants.
- However, Congress created a “learning period” that prohibited FAA from promulgating regulations absent death, serious injury, or close call.
- The learning period is set to expire on October 1, 2023.

* **Commercial Space Launch Amendments Act of 2004, Pub. L. 108-492.**

Congressional Tasking

Section 111 of the CSLCA* required DOT to submit:

- A report specifying key industry metrics that might indicate readiness of the commercial space sector and DOT to transition to a safety framework that may include regulations that considers space flight participant, government astronaut, and crew safety.
- A report on the progress of the commercial space transportation industry in developing voluntary industry consensus standards that promote best practices to improve industry safety.

*** U.S. Commercial Space Launch Competitiveness Act, Pub. L. 114-90.**

Report

- “FAA Evaluation of Commercial Human Space Flight Safety Frameworks and Key Industry Indicators”
- Submitted to Congress on October 20, 2017.



FEDERAL AVIATION
ADMINISTRATION

Report to Congress:

FAA Evaluation of Commercial Human Space Flight
Safety Frameworks and Key Industry Indicators

U.S. Commercial Space Launch Competitiveness Act (CSLCA),
Public Law 114-90, Section 111(5); 51 USC § 50905(e)(5), (6)

Key Industry Metrics

Core premises underlying the report:

- Human space flight industry must continually improve its safety performance.
- As industry grows and matures, the depth and breadth of a safety framework should evolve.
- The public's expectation of safety will increase as the purpose of flying to space evolves from adventure, to occupation, to transportation.
- Until space travel becomes transportation, industry may lead the development and implementation of a safety framework, with limited government involvement.
- Once space travel becomes transportation, the Federal Government will likely need to have a regulatory role.

Key Industry Metrics (cont.)

Readiness to transition to a safety framework that may include regulations is captured by three sets of indicators:

1. Industry readiness,
2. Industry's progress in developing a safety framework, and
3. FAA readiness.

Key Industry Metrics (cont.)

Industry Readiness

- Purpose of people flying in space
 - Adventure → Occupation → Transportation
- Size and complexity of industry
 - # of suppliers of suborbital & orbital flight, multiple suppliers of same vehicle type, extent of supplier network, international launches
- Safety of the industry
 - Unsafe ops, difficulty attracting customers, availability of insurance

Key Industry Metrics (cont.)

Industry's progress in developing safety framework

- Voluntary safety reporting
 - Internal reporting and data sharing
- Voluntary consensus standards
- Compliance

FAA readiness

- Authority to transition to safety framework
 - Authority needed depends on leadership (industry v. FAA)
- Expertise in human space flight safety

Metrics Summary

- A safety framework can evolve from company-driven to industry-driven, with various levels of potential government involvement, as industry grows and matures.
- Industry's proactive participation in a safety framework can influence the timing and extent of government regulatory involvement, and successful implementation of an industry-led framework could minimize the need for government involvement.

Consensus Standards

- Efforts to develop industry-wide standards have been concentrated in three entities:
 1. The Commercial Space Transportation Advisory Committee (COMSTAC).
 - Formed Standards Working Group in 2014 to develop and prioritize list of standards.
 2. The Commercial Spaceflight Federation (CSF).
 - Formed Technical Standards Committee in November 2012, which has approved standards on propellant handling (2013) and hazardous test notification (2015).
 3. ASTM International.
 - Formed Commercial Spaceflight technical committee in 2016.

Consensus Standards (cont.)

- Conclusion of the report:

The current state of standard development is appropriate for the evolving state of the industry.