National Aeronautics and Space Administration

Commercial Spaceflight Update

NAC Exploration Committee Meeting

April 18, 2013
Philip McAlister
NASA HQ

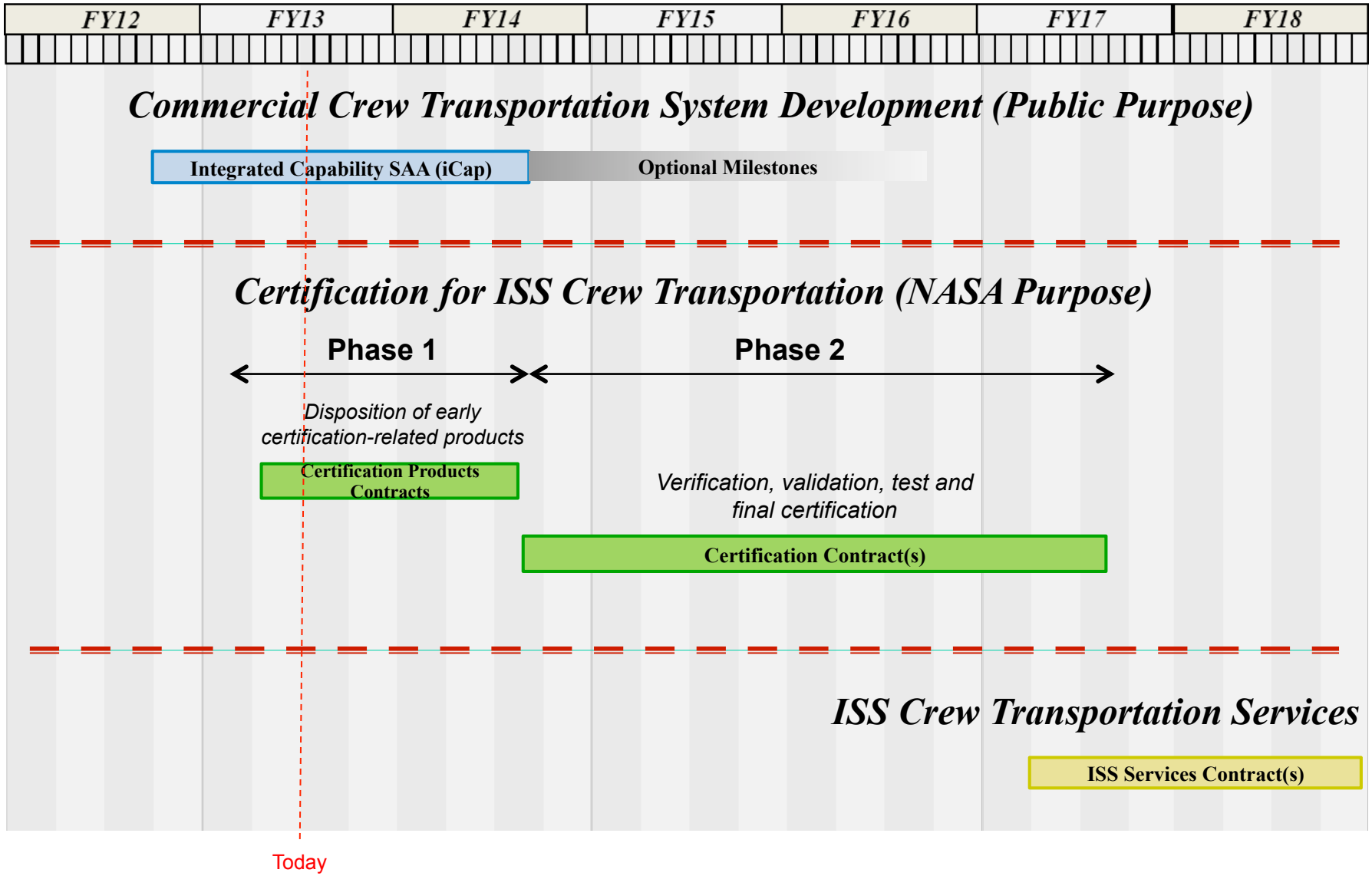
Commercial Crew Program Objectives

- Facilitate development of U.S. commercial crew space transportation capability with goal of achieving safe, reliable and cost effective access to and from LEO and ISS.

- Once capability is matured and available to the government and other customers, NASA will purchase services to meet ISS needs and end dependence on foreign providers for crew transportation.

- Availability of commercial crew services in 2017.

CCP Roadmap


FY12
FY13
FY14
FY15
FY16
FY17
FY18
Commercial Crew Transportation System Development (Public Purpose)
Integrated Capability SAA (iCap)
Optional Milestones
Certification for ISS Crew Transportation (NASA Purpose)
Phase 1
Phase 2
Disposition of early certification-related products
Certification Products Contracts
Verification, validation, test and final certification
Certification Contract(s)
ISS Crew Transportation Services
ISS Services Contract(s)
Today

Current Status

- The certification of commercial crew transportation systems has begun with the initiation of the Phase 1 Certification Products Contracts (CPC) to Boeing, Sierra Nevada, and SpaceX.

- With CPC, NASA now has the opportunity to minimize technical risks and cost or schedule impacts that would result by waiting to begin Certification activities after industry's designs have been completed.

- NASA and industry are actively engaged in determining how well the companies' designs meet NASA safety/performance requirements.

- NASA is planning to use FAR-based contract(s) for Phase 2 Certification activities which will enable NASA to fully assess the systems for performing ISS missions in compliance with NASA requirements.

Distinct Approaches for Distinct Missions

Program Characteristics	Unique, Low TRL Hardware Approach	Commercial-Oriented Approach
Owner	NASA	Industry
Contract Type-Fee	Cost-Plus	Fixed Price
Contract Management	Prime Contractor	Public-Private Partnership
Customer(s)	NASA	Government and Non-Government
Funding for Capability Development	NASA procures capability	NASA provides investment via milestone payments
NASA's Role in Capability Development	NASA defines "what" and "how"	Industry defines "how" and NASA approves
Requirements Definition	NASA defines detailed requirements	NASA defines top-level capabilities/requirements
Cost Structure	NASA incurs total cost	NASA and industry share costs

- While NASA has transitioned to FAR-based contracts for certification, the goals, objectives, and approach of the Program remain the same.

Independent Cost Analysis Overview

- Booz Allen recently completed an Independent Cost Analysis (ICA).
  - Final Report is available online.
  - Purpose: Conduct an independent assessment of the government cost estimates of the respective CCiCap partner designs to ensure that program planning is based on realistic and achievable cost and schedule estimates.
  - Conclusion: "Overall, the CCP government cost estimates are of high quality and follow standard cost estimating best practices but should be considered optimistic (e.g., likely to experience cost growth)."
  - The ICA findings and recommendations underscore that NASA's CCP cost estimates are very well done, conforming to GAO and NASA estimating standards and embodying best practices. NASA generally embraces the results of the ICA.
  - NASA has assigned an Office of Primary Responsibility for each finding to develop responses and applicable implementations.

FY 2013 Budget Status

FY 2013 Continuing Resolution ($M) Commercial Crew Program	$525.0
Rescission	$(10.9)
Sequestration	$(25.7)
FY 2013 CCP Budget	**$488.4**

- NASA and CCP now have a final budget for FY 2013.
- While $489.4M is significantly below the FY 2013 President's Budget Request (41%), this is a 20% increase over FY 2012.
- A budget closer to the FY 2013 request would have enabled our partners to significantly accelerate their development activities. However, NASA will be able to fund the FY 2013 CCiCAP milestones and complete the planned CPC activities.

FY14 President's Budget Request

Outyears are notional

($M)	2014	2015	2016	2017	2018
Commercial Spaceflight	$821	$821	$821	$590	$371

- Facilitates development of affordable U.S. commercial crew space transportation capability with a goal of achieving safe, reliable, and cost effective access to and from low Earth orbit and the International Space Station.
- Reduces our dependence on Russian spaceflight capabilities for crew exchange.
- Builds on successful progress in the development of commercial cargo capabilities and the Commercial Crew Development (CCDev) activities.
- Ensures contracted services meet the Agency's crew transportation system certification requirements.

Risks

- Prematurely eliminating competition is one of the primary risks to NASA satisfying the goals and objectives of the Program.

- Competition among more than one industry partner during the development phase is important to safety and cost effectiveness.
  - A competitive environment provides strong incentive for companies to meet and exceed NASA's safety certification requirements
  - Competition prevents NASA from becoming dependent on a sole provider regardless of safety or cost implications
  - Competition supports cost-sharing by industry which augments government funds and encourages industry partners to "stay in the game" when encountering difficulties