National Aeronautics and Space Administration

NASA Commercial Space Update

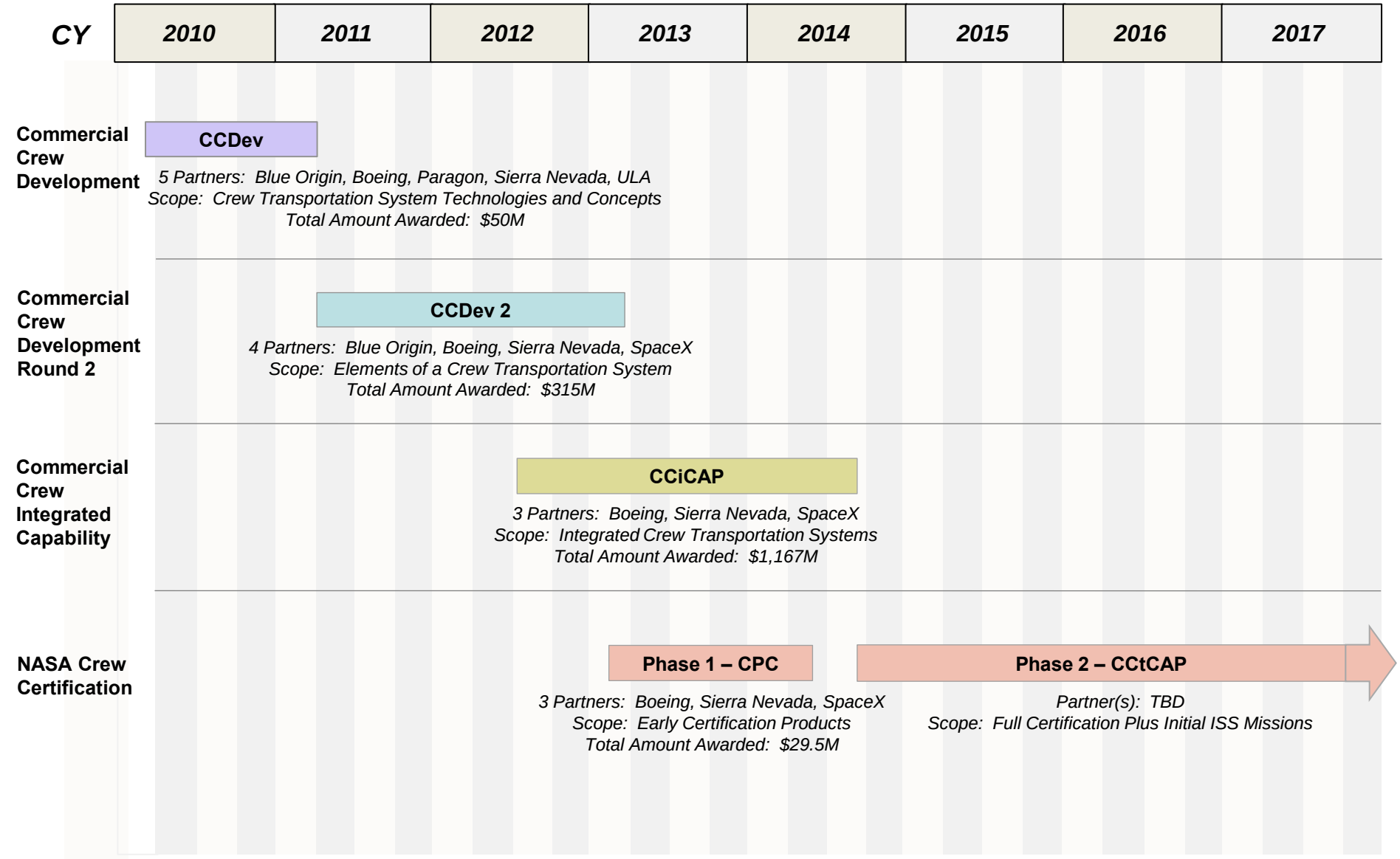
December 9, 2013
NAC HEO Meeting
Phil McAlister

Commercial Cargo Status

What Did Commercial Cargo Accomplish?

- Produced two new low-cost U.S. launch vehicles, two new autonomous cargo spacecraft capable of carrying cargo to and from the ISS, and two new privately developed launch facilities at Cape Canaveral, FL and Wallops, VA.
- Providing future robustness needed for ISS cargo transportation.
- Providing NASA Science missions with two medium class launch vehicle options.
- Helping to recapture U.S. market share for commercial launches.
- Developed for about $800M from NASA.

Commercial Crew Program Roadmap



Commercial Crew – Boeing Status

- Boeing has successfully completed 10 of 20 milestones under CCiCAP to date.

- Recently completed milestones:
  - Dual Engine Centaur Liquid Oxygen Duct Development Test (April)
  - Mission Control Center Interface Demo Test (August)
  - Orbital Maneuvering & Altitude Control Engine Development Test (September)

- Final milestone, Spacecraft Phase 2 Safety Review Board, is scheduled for July 2014.

Contingency Water Landing Scenario Testing

Parachute Drop Test Landing

CST-100 Interior

Commercial Crew – Sierra Nevada Status

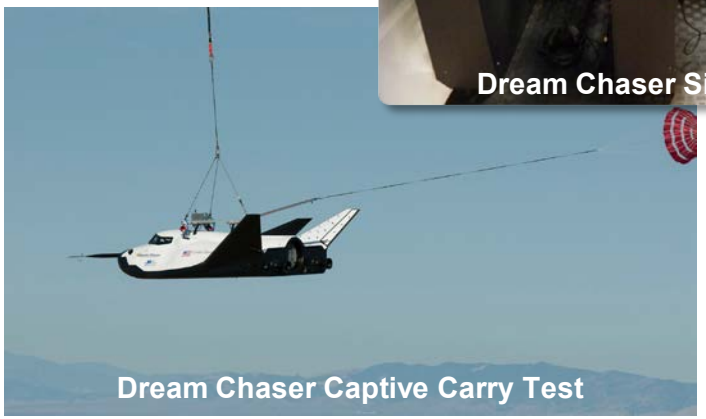
- Sierra Nevada has successfully completed 6 of 12 milestones under CCiCAP to date.

- Recently completed milestones:
  - Investment Financing #1 (June)
  - Free Flight Drop Test (November, final CCDev 2 milestone)
  - Integrated System Safety Analysis Review (November)

- Final CCiCAP milestone, Reaction Control System Incremental Test, is scheduled for July 2014.

Dream Chaser Rocket Motor Test

Dream Chaser Simulator


Dream Chaser Captive Carry Test

Commercial Crew – SpaceX Status

- SpaceX has successfully completed 9 of 16 milestones under CCiCAP to date.

- Recently completed milestones:
  - On-Orbit and Entry Preliminary Design Review (July)
  - In-Flight Abort Test Review (September)
  - Safety Review (November)

- Final milestone, In-Flight Abort Test, is scheduled for July 2014.

Dragon Crew Accommodations Test

Super Draco Hot Fire Test

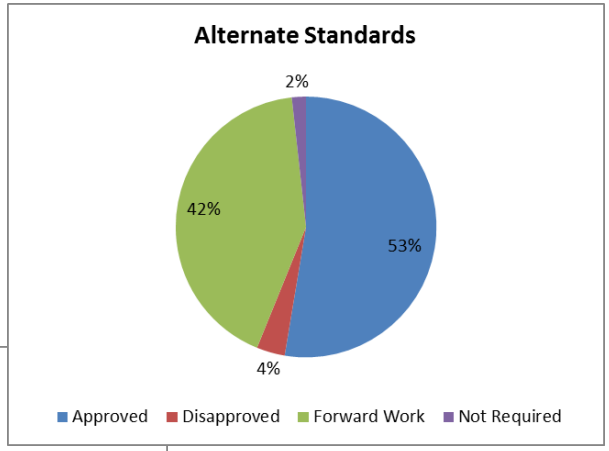
Dragon Capsule

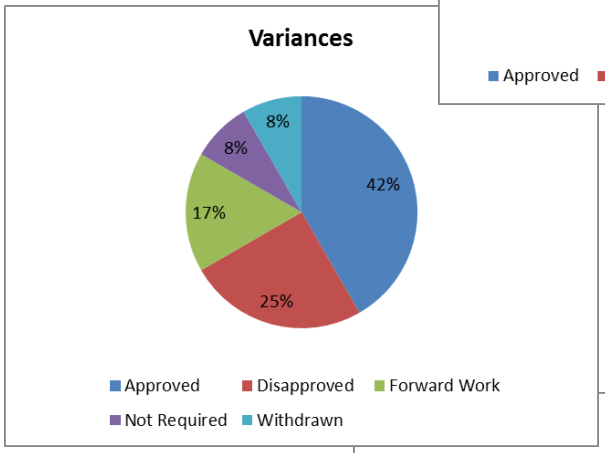
Certification Products Contracts (CPC)

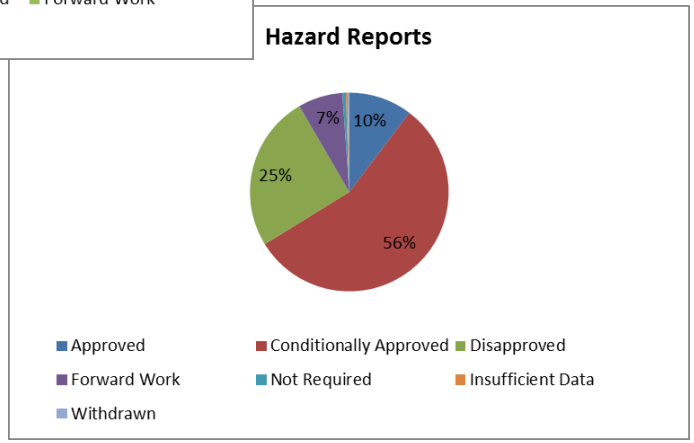
- Primary objective of CPC is the delivery, technical interchange, and NASA disposition of early lifecycle certification products.

- During Round 1, NASA received:
  - 57 Alternate Standards
  - 12 Variance Requests
  - 289 Hazard Reports

- Feedback and dispositions have led to changes by the partners to better align with the Program's posture.







CCtCAP Overview

- Phased acquisition using competitive down-selection procedures; allows for a Full and Open Competition.
- Firm Fixed Price, Performance-Based, with fixed-price Indefinite Delivery/Indefinite Quantity (IDIQ) element. Completes development and provides for 2-6 Post Certification Missions.
- Base Period: August 2014 thru September 31, 2017 (DDTE Portion).
- RFP is centered around how well the contractor shows compliance to core CCP and ISS requirements.
- Crew safety is the foundation of the program; the mission assurance function is embedded in CCP's assessment and eventual certification of the contractor's capability to safely transport crew and cargo.

CCtCAP Schedule

- Draft RFP release — July 19, 2013
- Pre-Solicitation Conference — August 1-2, 2013
- Draft RFP Interim Drops — Multiple
- Release RFP — November 19, 2013
- Pre-Proposal Conference — December 4, 2013
- Proposals Due — January 22, 2014
- Planned Contract Award — August/September 2014

- Industry feedback and communication have been key to RFP development.

Budget Situation

President's Budget Request

Outyears are notional

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

- FY14 is a key year for CCP.
- The program needs as close to the President's Budget Request as possible in order to stay on track.

Summary

- Commercial cargo is demonstrating ISS cargo resupply capability.
- Commercial crew is continuing to advance commercial crew transportation system designs. Significant maturation expected over the next year.
- Technical, schedule, and budgetary challenges remain for NASA's commercial spaceflight initiatives. However, progress is being made.
- Together with NASA's deep space activities (i.e., Space Launch System and Orion capsule), NASA's human spaceflight program is moving forward.