



Space options

President Barack Obama has a choice to make about the future of NASA. A blue-ribbon committee is finishing a report that will outline five options, two variations of the current moon-Mars program and three new plans. The chart below outlines each plan, including how much each one would cost above the current long-term budget plan for NASA through 2020.

CURRENT TRANSPORT FOR CREW/CARGO

FUTURE TRANSPORT FOR CREW/CARGO

FUTURE DESTINATIONS

SPACE COAST ECONOMIC IMPACT

SCENARIO 1

Continue existing Project Constellation

Send astronauts to the moon by about 2020 and prepare for future human missions to Mars.

- **Cost over budget:** \$50 billion through 2020
- **Shuttles retire:** 2011
- **Space station retires:** 2016

Crew

- Russian Soyuz starting in 2011
- Orion spacecraft by 2016, but no ISS to visit
- Private U.S. crew transport starting as soon as available

Cargo

- Russian Progress, European ATV, Japanese HTV until 2016
- Private U.S. cargo transport starting as soon as available

Crew

- Ares I rockets and Orion spacecraft by 2016

Cargo

- Ares V heavy-lift rocket and Altair lunar lander by about 2021



By 2020

- Missions to Earth orbit

Next target

- Presidential panel projects human moon mission 2021 or later

- KSC would lose 3,500 to 7,000 jobs after 2011 shuttle retirement.
- Undetermined number of jobs saved by workers transitioning to Ares I development and test flights.
- Estimated 400 jobs created by mid-decade if Orion spacecraft final assembly based at KSC.
- Jobs created late in decade if Ares and Orion engineering work and lunar lander assembly based at KSC.

Ares I and Ares V rockets

- Ares I, a sleek crew launch rocket based on shuttle solid rocket boosters may be cancelled.
- Ares V, or smaller variations, could haul cargo and maybe crew on the first leg of missions beyond Earth's orbit.

SCENARIO 2

Slow down, stretch out existing Project Constellation

Send astronauts back to the moon by about 2028 and eventually build a lunar outpost.

- **Cost over budget:** \$0
- **Shuttles retire:** 2011
- **Space station retires:** 2016

Crew

- Russian Soyuz starting in 2011
- Orion spacecraft by 2018, but no ISS to visit
- Private crew transport starting as soon as available

Cargo

- Russian Progress, European ATV, Japanese HTV until 2016
- Private U.S. cargo transport starting as soon as available

Crew

- Ares I rockets and Orion spacecraft by 2018

Cargo

- Ares V rocket and Altair lunar lander by 2028



By 2020

- Missions to Earth orbit

Next target

- Moon, Ares V rocket and other hardware not available until 2028

- KSC would lose 3,500 to 7,000 jobs after 2011 shuttle retirement.
- Delays in Ares rockets, Orion spacecraft and lunar lander would slow space job recovery at KSC over next decade.
- NASA's investment in private ISS crew and cargo services could yield jobs if launched here.

Orion spacecraft

- Orion, a modernized version of a spacecraft similar to America's Apollo and Russia's Soyuz could be next U.S. crew vehicle to space station or beyond.

SCENARIO 3

Focus on the ISS

Focus on Space Station operations through 2020 and develop smaller version of NASA's Ares V for moon missions.

- **Cost over budget:** \$2 billion through 2020
- **Shuttles retire:** 2011
- **Space station retires:** 2020

Crew

- Russian Soyuz starting in 2011
- Private U.S. crew transport starting as soon as available

Cargo

- Russian Progress, European ATV, Japanese HTV until 2016
- Private U.S. cargo transport starting as soon as available

Crew

- Orion spacecraft launched on undetermined rocket

Cargo

- Smaller version of Ares V



By 2020

- Missions to ISS

Next target

- Undetermined, but maybe moon long-term

- KSC would lose 3,500 to 7,000 jobs after 2011 shuttle retirement.
- Cancellation of Ares I rocket eliminates transition jobs for development and test flights.
- Long delays in Ares V rocket, Orion spacecraft and lunar lander development would further slow down space job recovery at KSC.
- NASA investment in private ISS crew and cargo services could yield jobs if launched here.
- A small number of jobs related to space station payload processing might be retained.

SCENARIO 4

Extend space shuttle, ISS programs

Extend shuttle fleet and ISS operations; indefinitely delay missions beyond Earth orbit.

- **Cost over budget:** To be determined
- **Shuttles retire:** 2015
- **Space station retires:** 2020

Crew

- Space shuttle through 2015
- Private crew transport starting as soon as available

Cargo

- Russian Progress, European ATV, Japanese HTV until 2016
- Private U.S. cargo transport starting as soon as available

Crew

- None planned by 2020

Cargo

- None planned by 2020



By 2020

- Missions to ISS

Next target

- To be determined. No funds available for exploration development projects

- Smaller number of shuttle jobs lost. When flight rate drops in 2011, NASA could retire one orbiter, and contractors could downsize.
- A small number of jobs related to space station payload processing may be retained.
- Cancellation of Ares I eliminates transition jobs for development and test flights.
- Indefinite delay in Ares V rocket, Orion and lander would mean new space jobs would not materialize in next decade.
- NASA investment in private ISS crew and cargo services could yield jobs if launched here.

Space shuttle

- Space shuttle, flying astronauts and large cargo to orbit since 1981 could be extended to 2015.

SCENARIO 5

Send astronauts on deep-space flybys

Send astronauts on missions to orbit, but not land on, the moon, asteroids and Mars among possible destinations.

- **Cost over budget:** \$24 billion to \$27 billion through 2020
- **Shuttles retire:** 2011
- **Space station retires:** 2020

Crew

- Russian Soyuz starting in 2011
- Private U.S. crew transport starting as soon as available

Cargo

- Russian Progress, European ATV, Japanese HTV until 2016
- Private U.S. cargo transport starting as soon as available

Crew

- Orion spacecraft and rocket to be determined from list below

Cargo

- Smaller Ares V; upgraded Atlas V or Delta IV; or new rocket based on shuttle



By 2020

- Missions to ISS

Next target

- To be determined, but flyby destinations include moon by 2023-2025; an asteroid by 2026-2030; or Mars by 2028-2034

- KSC would lose 3,500 to 7,000 jobs after 2011 shuttle retirement.
- Cancellation of Ares I rocket eliminates transition jobs for development and test flights.
- A small number of jobs related to space station payload processing might be retained.
- NASA investment in private ISS crew and cargo services could yield jobs if launched here.
- Longer delays of Orion and heavy-lift rocket — plus cancellation of landers — would mean few new space jobs until 2020s.

Delta IV Heavy

- Delta IV Heavy, variation of the satellite-launching rocket, could be used to launch NASA's next crewed spaceship.