

# NASA technology chief: We'll decide what rocket we want to build

October 5 2010, By Robert Block

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NASA engineers -- not Congress -- must determine the design of America's next big spaceship to take humans beyond the moon, according to the agency's top technology official.

Robert Braun, NASA's chief technologist, told The Orlando Sentinel that even though Congress last week passed legislation demanding that NASA use parts of the space shuttle and its now-defunct Constellation moon-rocket program to make a new heavy-lift rocket, sound engineering and not politics should ultimately determine the way to go.

"I think it remains to be seen what heavy lift will be," Braun said. "I would like to believe now that we are making progress in Washington towards the 2011 plan that the engineers ... will weigh in and that we will move towards the technically correct choice."

The bill now awaiting President Barack Obama's signature pushes NASA to incorporate the technology and workforce from existing programs into the design of the rocket that eventually will replace the [space shuttle](#), which is due to retire next year. The bill requires that the new rocket be built by Dec. 31, 2016.

Braun, appointed by [NASA Administrator](#) Charlie Bolden earlier this year to advise the agency on technology issues, is the first NASA official to raise publicly the prospect that Congress may not get the rocket it wants.

To build a new heavy-lift rocket and its companion crew capsule that is supposed to fly humans into space by 2017, Congress recommended that NASA receive about \$11 billion during the next three years -- less money than what the over-budget Constellation program (which already has cost at least \$9 billion) would have received during the same time period.

The bill was meant to be a compromise between the White House's request for a radically restructured NASA focusing on technology development and hardliners in Congress who opposed cancelling Constellation.

To help get support for the bill, the Senate tried to keep as much work with existing contractors to limit the impact of a course change on lawmakers' districts, especially in Utah where aerospace company ATK has been designing solid rocket motors for Constellation's Ares I rocket.

It's not clear how much Congress will allow the agency to change its instructions.

But the legislation leaves a large loophole for NASA engineers. While it encourages NASA to use existing parts, it says only "to the extent practicable." In other words, if NASA decides it is not practical to use solid rocket motors, it doesn't have to.

For example, NASA engineers at Kennedy Space Center and Marshall Space Flight Center are now looking at a so-called "Direct" rocket that would use the shuttle's iconic orange fuel tank, main engines and solid-rocket boosters. But Braun said that there's been no decision on that design.

"I know there's been a lot of discussion about shuttle-derived (rockets) and how derived from the shuttle will it be. There are other options from

a technology perspective," he said, without providing details.

However, he did suggest that a brand-new launcher did not need solid-rocket boosters -- a move that would likely draw the ire of Utah lawmakers and ATK.

The new law requires NASA to build a new [rocket](#) capable of eventually lifting 130 tons of men and equipment into space. But Braun said there were differences of opinions inside the agency over whether even that was necessary.

"A lot of that depends on what we need to go to an asteroid or Mars," he said. "And a lot of that depends on our technology investments." He said advances in in-space technology -- propulsion, communications, orbiting fuel depots -- may enable the use of smaller, less-advanced rockets to launch from Earth.

Braun praised the bill for proposing to invest \$600 million in technology in 2011, saying it would help create more jobs all around the country. He said it would also attract a whole new generation of students back to working in the space program.

"We are going to begin to invest in technology to go beyond low Earth orbit, and we weren't making those investments at any level before," he said.

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