NASA's smaller programs could be at risk

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The cost of NASA's two flagship programs - a new space telescope and its next rocket - is poised to devour much of the agency's shrinking budget in coming years, putting at risk everything from efforts to develop futuristic spacecraft to returning rocks from Mars, scientists and congressional insiders warn.

At a time when budgets are being slashed government-wide, price estimates for the James Webb Space Telescope and the National Aeronautics and Space Administration's new rocket and crew capsule either have increased by billions of dollars or are at risk to do so, according to internal NASA documents and external evaluations.

The Webb telescope, a high-tech successor to the Hubble Space Telescope, once was expected to cost $3.5 billion and launch this year. Now, the estimate is $8.7 billion, with a 2018 launch date. And NASA's proposed Space Launch System and Orion capsule - capable of taking humans to the moon and beyond - could run the agency at least $32 billion over the next decade, a figure that auditors caution is likely optimistic.

The trend has alarmed astronomers and others, who are concerned that less-visible projects - such as robotic Mars missions and various space probes - will be sacrificed.

"So, we have one giant money sponge (JWST) already sucking up dollars with yet another money sponge (SLS) on the drawing board. Since the money simply is not there to do either project to begin with, trying to do

both of them together will devour funds from smaller NASA programs," wrote Keith Cowing in a recent post on his influential blog NASA Watch.

Heightening concern is the new focus in Congress on spending cuts, leading many to think that NASA's 2010 budget of $18.7 billion won't be repeated. The White House already has asked agencies to submit 2013 budget requests that are 10 percent below their 2011 levels - essentially a $1.85 billion cut to NASA.

"That would be huge," said Richard Anthes, co-chair of a National Academies panel that sought to prioritize Earth space science missions. He said he worried that the number of Earth science missions would decrease from roughly 20 ongoing now to about five in 2020, because dying satellites - that measure everything from winds, clouds and atmospheric pollution to ocean temperatures, currents and salinity - won't be replaced, or their successors will carry fewer instruments.

"We've gone from guarded optimism ... to a lot of pessimism," Anthes said.

NASA spends about one-fifth of its current budget - about $4 billion - on manned spaceflight; another $2 billion to $3 billion on the International Space Station; about $5 billion on science, such as lunar and Martian probes; and the remainder on aeronautics, technology research, education and overhead.

Earlier this year, Webb was expected to cost about $375 million annually - but then the price was bumped from $6.5 billion to $8.7 billion. Investigators last year found that NASA had managed the project poorly and had significantly low-balled the cost of launching a telescope with a 21-foot mirror to a position about 1 million miles from Earth.

The overruns have drained NASA's science budget and contributed to the cancellation of two joint missions with the European Space Agency: one that would have studied supermassive black holes, and another that would have looked at a mysterious cosmic force known as gravitational waves.

"James Webb is the next-generation space telescope and will be marvelous if it ever gets built - but that's the question," said Dan Britt, a professor at the University of Central Florida and incoming chair of planetary sciences at the American Astronomical Society.

Britt, like many scientists, does not doubt the potential of a telescope designed to find the first galaxies in the universe. But he and others are concerned that Webb's cannibalization of NASA's science budget will kill any chance of bold new projects, such as a mission to return soil samples from Mars.

Also at risk, Britt said, are smaller grants of $200,000 or less that help university scientists and students conduct research into topics such as meteorites. "That's a drop in the bucket for Webb that really hammers those who train the next generation of scientists and the ability of U.S. scientists to compete in the world," he said.

For its part, NASA officials said no decision has been made on how Webb's latest overruns would affect other programs. Spokesman Dwayne Brown said those changes would be reflected in NASA's 2013 budget request, due for release in early 2012.

Less clear is the budgetary impact of NASA's next manned spacecraft program.

Last year, Congress and the White House agreed to cancel the troubled 5-year-old Constellation moon program (which cost about $13 billion)

and instead build a new rocket and crew capsule that would reuse pieces of both the space shuttle and Constellation programs.

Congress, led by U.S. Sens. Bill Nelson, D-Fla., and Kay Bailey Hutchison, R-Texas, has pressed President Barack Obama to devote a significant share of NASA's budget toward the effort - a move so far resisted by the administration, which has yet to release an official design for the rocket.

The administration wants to spend more money on programs like technology research, including innovations such as orbiting fuel depots and a solar sail that could be used for deep-space exploration.

Internal NASA documents show the program will be expensive no matter which side wins.

Under the White House plan, NASA would spend $32.5 billion on a rocket that would launch just two missions over the next decade - an unmanned flight in 2017 and a manned mission to loop around the moon in 2021.

The Senate plan would cost more - about $45.6 billion over the next 10 years - but fly more often: an unmanned mission in 2017, a manned mission in 2018 and one a year thereafter. It also includes plans for a far larger "heavy-lift" rocket that would be one of the most powerful ever built.

Both plans, however, assume increased NASA budgets and that the project will stay on time and on budget - something that independent auditors at Booz Allen Hamilton asked to review the spacecraft program said was problematic.

Without divulging cost figures, the analysts found the program assumes

"large, unsubstantiated, future cost efficiencies leading to the impression that they are optimistic" and that reserves to cover any future problems were "insufficient."

In response, administration officials said they would take more time to review the program and its potential costs.

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