

# Mars samples project looms large in final spending talks

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A complex project aimed at retrieving rock and dirt samples from Mars has long been a top priority for NASA, with proponents arguing the mission could answer the age-old question of whether life once existed on the red planet.

The Perseverance rover, manufactured by the Jet Propulsion Laboratory in Pasadena, Calif., is collecting the samples. But lawmakers are fighting over whether getting them back to Earth for study is viable in a tight budget environment.

The battle lines are regional, not partisan: California lawmakers backing work being done on the Mars Sample Return program at the Pasadena complex pitted against Maryland and Virginia supporters of the agency's sprawling Goddard Space Flight Center, among others.

The Mars mission is also facing serious questions about its viability following an internal NASA review that determined the program would take longer, and cost far more, than originally forecast.

The GOP-controlled House has taken the Biden administration's side, proposing full funding for the Mars program, while the Democratic-controlled Senate has sought to divert money to other projects.

"The mission is way over budget," Senate Commerce-Justice-Science Appropriations Chair Jeanne Shaheen, D-N.H., said. "It's not at all clear what kind of science that will produce for us, so I think given the constraints within the budget, we have to look at putting the money where it's going to have the most impact."

Not taking any chances, NASA is preparing for the worst. The Jet Propulsion Laboratory announced large-scale layoffs last week—8 percent of its workforce. The move follows NASA Administrator Bill Nelson's direction that the agency should prepare for a \$300 million fiscal 2024 Mars project appropriation, as proposed in the Senate's Commerce-Justice-Science spending bill.

The Mars program's future is among the big decisions facing appropriators as they negotiate the final Commerce-Justice-Science bill. That measure has a March 8 deadline in the current stopgap law, part of roughly four-fifths of total fiscal 2024 discretionary funding due on that date.

The Senate wants to slash the account by 63 percent, buttressed by NASA's review, which found the program would cost at least \$3 billion more than expected. Moreover, the report accompanying the Senate bill directs NASA—if the agency reports that it can't find a way to live within an earlier \$5.3 billion projection—to "either provide options to de-scope or rework MSR or face mission cancellation."

By contrast, House appropriators included the full \$949.3 million Mars program amount President Joe Biden requested in their Commerce-Justice-Science bill.

"It'll be the most exciting series of samples that we will have in our possession when it does come back," said Rep. Judy Chu, D-Calif, whose district includes the Jet Propulsion Laboratory and the California Institute of Technology, which operates the facility. "But all of this is being undermined by cuts that will stop all of the tremendous progress we have made."

## **The mission**



Congress to-date has appropriated \$1.74 billion for the Mars program, which the most recent once-every-decade survey of planetary scientists called NASA's highest robotic exploration priority.

But the effort to retrieve the samples is challenging, to put it mildly. It involves the Perseverance rover delivering the materials to a garage-sized, bug-shaped "sample retrieval lander" equipped with a rocket to blast the materials back into orbit. The samples would be collected by an orbiting spacecraft and brought back to Earth, with a target re-entry date in 2033—if everything goes right.

The program is "one of the most complex missions ever attempted by NASA, requiring the first ever launch from another planet and rendezvous with a spacecraft in orbit around another planet," NASA spokesman Dewayne Washington said in a statement.

NASA's independent review board released its report in September, finding that the program will ultimately cost between \$8 billion and \$11 billion with a "near zero probability" of meeting interim launch deadlines.

"As a result, there is currently no credible ... schedule, cost and technical baseline that can be accomplished with the likely available funding," the board said.

The agency is now "evaluating future options for the program" due to the current budget environment, Washington said. An internal assessment is underway, with recommendations due at the end of March.

## **Regional fights**

The Mars program and NASA in general already faced budget pressures.

Due to spending caps in last year's debt limit suspension law, the fiscal 2024 Commerce-Justice-Science bill overall is nearly certain to face cuts from the previous year's version. Both chambers' bills came in under the fiscal 2023 enacted level of \$84.2 billion, with the Senate bill totaling \$83.5 billion and the House including \$81.5 billion.

The White House sought a big boost for NASA, to \$27.2 billion. But the agency would receive just \$25.4 billion in the House bill, essentially flat from fiscal 2023. The Senate, seeking to protect other funding priorities, would trim NASA further, to \$25 billion.

With less money to go around, lawmakers are pushing to steer available dollars to their states. Even before NASA released its review board's findings, Senate appropriators charged in the report accompanying their fiscal 2024 bill that the agency is delaying work on other important projects due to the financial and staffing demands of the Mars mission.

Maryland and Virginia lawmakers are backing the Senate's lower figure because they want more money freed up for projects benefiting Greenbelt, Md.-based Goddard, which manages the Wallops Flight Facility on Virginia's Eastern Shore.

Sen. Chris Van Hollen, D-Md., a Commerce-Justice-Science subcommittee member, signed a Jan. 8 letter from Maryland and Virginia lawmakers to committee leaders urging them to stick with the Senate's proposed cut.

Shaheen isn't an impartial observer. The University of New Hampshire's Space Science Center, a major NASA research institution, is involved in the agency's Artemis program to return astronauts to the moon as well as its study of heliophysics, or how the sun affects its surroundings.

After the death of Democratic Sen. Dianne Feinstein in September,

California no longer has a senator on the Appropriations panel. But the powerful California delegation is trying to flex its muscles. The state's senators and most of its House delegation sent a Feb. 1 letter to Office of Management and Budget Director Shalanda Young expressing concern over the administration's decision to "prematurely move forward with budget cuts" to the Mars program.

Letter signers run the gamut from GOP lawmakers in tough races like Mike Garcia and Ken Calvert, the Defense Appropriations Subcommittee chairman, to three Democratic candidates vying to take Feinstein's former seat: Barbara Lee, Katie Porter and Adam B. Schiff.

Garcia, a Commerce-Justice-Science Appropriations Subcommittee member, said NASA's pre-emptive cuts are circumventing lawmakers' wishes.

"NASA has sort of unilaterally decided to assume the worst-case scenario with the Senate number, and has also ... decided to effectively reprogram budgets and effectively cut MSR to the point where it's not executable in the near term," Garcia said.

### Senate preferences

Initially, Senate appropriators in their Commerce-Justice-Science bill directed NASA to scrap the program if it finds it won't be able to hit the \$5.3 billion target. At the panel's July markup, a little more than two months before she died, Feinstein amended the initial draft committee report to give NASA the option to downsize or rework the program instead of simply canceling it outright.

If NASA does choose to kill the Mars mission, Senate appropriators would direct most of the funding to the agency's top overall priority, the Artemis mission.

The measure would divert \$235 million of the canceled Mars appropriation—if it comes to that—to Artemis, enough to meet the White House's budget request. Shaheen said Artemis, which could put the first woman on the moon, is "at the top" of Senate appropriators' list of NASA priorities.

Of the remaining Mars funds, \$30 million each would go to the Dragonfly mission to study Saturn's moon Titan, and to what's known as the Geospace Constellation Dynamics mission. The latter, a study of Earth's upper atmosphere, would be put on hiatus under Biden's budget, with funding redirected to the Mars program.

The Senate bill would already fully fund the administration's Dragonfly request. And it would add \$35 million on top of the request to keep the atmospheric study going, part of a broader push to support NASA's Heliophysics budget, which would receive more than the White House request.

Both programs were cited in the Maryland and Virginia delegations' letter, which sought more for Dragonfly than the Senate bill would provide. Goddard is a partner in the Saturn mission along with Johns Hopkins University's Applied Physics Laboratory in Laurel, Md., and NASA's Langley Research Center in Hampton, Va.

The Virginia and Maryland lawmakers, while agreeing with the Senate's proposed Mars cut, oppose any diversion of funding to Artemis, however, arguing the money should be reallocated within NASA's science programs.

## **Next steps**

California lawmakers argued in their letter to Young that NASA should develop a reworked Mars program that is simpler and cheaper instead of

scrapping it.

Chu said she thinks the program could continue with \$650 million in the current fiscal year and again next year, in line with what was appropriated two years ago. A compromise along those lines, she said, would allow the program "to go forth, perhaps with less money, but would enable this project to be able to survive."

Meanwhile, NASA needs to start briefing Congress on its plans to restructure the program, Garcia said, as appropriators prepare to cut deals on fiscal 2024 spending.

"The Senate, their concerns aren't invalid," he said. "But the mission priority is still there, so when things get harder, or things change, you don't just give up on it."

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