

**Resolved: “U.S. federal budget funding for NASA (National Aeronautics & Space Administration) should be substantially decreased.”**

## **Space vs. education?**

Monday, November 26, 2007 by Alan Boyle

Democratic presidential candidate Barack Obama’s education policy is causing a stir ... but not all in a good way. Advocates for space exploration are noting with dismay that he’d take billions of dollars from NASA to pay for the educational programs he’d like to expand.

The shift from exploration to education came last week when Obama talked up his \$18 billion education plan during a New Hampshire campaign swing. Actually, the reference to NASA comes at the end of a 15-page document laying out the details behind the plan:

### **“IX. A COMMITMENT TO FISCAL RESPONSIBILITY**

Barack Obama’s early education and K-12 plan package costs about \$18 billion per year. He will maintain fiscal responsibility and prevent any increase in the deficit by offsetting cuts and revenue sources in other parts of the government. The early education plan will be paid for by delaying the NASA Constellation Program for five years, using purchase cards and the negotiating power of the government to reduce costs of standardized procurement, auctioning surplus federal property, and reducing the erroneous payments identified by the Government Accountability Office, and closing the CEO pay deductibility loophole. The rest of the plan will be funded using a small portion of the savings associated with fighting the war in Iraq.”

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erroneous payments identified by the Government Accountability Office, and closing the CEO pay deductibility loophole. ..."

The Constellation Program is NASA's \$104 billion effort to send astronauts back to the moon in the 2018-2020 time frame, as an initial step toward wider space exploration and settlement. Although the policy paper doesn't lay out the figures, our own First Read political blog said Obama would keep Constellation on a \$500 million-per-year maintenance diet during the five-year delay - with the implication that the timeline would be shifted to 2023-2025 for the first 21st-century moon landing.

The first years of an Obama administration would be particularly critical for NASA, because that's the time frame during which the shuttle fleet is due to retire. The schedule already calls for the space agency to hitch rides into orbit on other people's spaceships for up to four years, and if Obama follows through that gap could go for years longer - even assuming that Constellation goes into hurry-up mode if and when the budgetary spigots are opened wider.

USA Today quoted the Illinois senator as defending his plan to put NASA's vision on hold: "We're not going to have the engineers and the scientists to continue space exploration if we don't have kids who are able to read, write and compute," he said.

Over the long Thanksgiving weekend, space activists have had a lot of time to chew over Obama's views - and as you might expect, it's not to their taste.

"That would be very destructive," rocket scientist Robert Zubrin, the president of the Mars Society, told me today. "There's so much more we could do for education by having a visionary space program than by just throwing it away into the educational bureaucracy."

If anything, the focus of the Constellation Program should be shifted to a more ambitious goal of Martian exploration, Zubrin said. (What else would you expect?)

"That would send a message to every young person, saying 'learn your math and science, and you can be part of this important new challenge,'" he said.

washingtonpost.com

## A Decrease for the EPA; a Boost for NASA

Tuesday, February 5, 2008

The Environmental Protection Agency's proposed discretionary budget would decrease by \$330 million from fiscal 2008 to \$7.1 billion, with significant drops in spending on clean-water projects. The proposal calls for an overall decrease of almost \$600 million from EPA spending in 2007 and the elimination of five programs.

The proposed NASA discretionary budget would increase by 1.8 percent, to \$17.6 billion -- with new funds to restore Earth science projects that had been shelved. The agency said the additional money would also allow it to finish building the international space station in 2010, retire the space shuttle fleet and have a new spacecraft ready to launch by the spring of 2015.

"This increase demonstrates the president's commitment to funding the balanced priorities he set forth for the agency in space exploration, Earth and space science, and aeronautics research," said Deputy Administrator Shana Dale.

But Rep. Bart Gordon (D-Tenn.), chairman of the House Committee on Science and Technology, said the budget appears to shortchange the agency. "It unfortunately appears to be a 'business-as-usual' budget that does little to address the significant challenges NASA is facing," he said in a statement. "It continues the Administration's practice of underfunding the agency."

The budget also calls for an increase of 14 percent in the National Science Foundation's discretionary budget over the allocation in 2008, including big increases for nanotechnology research and for advanced supercomputing and networking.

-- Marc Kaufman

## Major NASA projects over budget

By Traci Watson, USA TODAY

WASHINGTON — Two-thirds of NASA's major new programs are significantly over budget or behind schedule, according to the agency's latest report to Congress.

NASA's nearly stagnant budget requires the agency to cut projects to make up for unexpected expenses, and cost overruns nearly shut down one of the rovers on Mars — until it got a reprieve Tuesday. They also threaten completion of a climate-change satellite called Glory.

Under a 2005 law, the space agency must tell Congress when a major project under development will exceed its budget by more than 15% or fall more than six months behind schedule. Four of the 12 new major projects are over budget, and eight are behind schedule to the point where lawmakers needed to be notified.

NASA's procedures "are not what they need to be," says Rep. Mark Udall, D-Colo., chairman of the House space subcommittee. "They have to be accountable. These are ... very significant amounts of taxpayer dollars."

Some of the problems are not NASA's fault, says Roy Maizel, the top budget official for the agency's science division. He cited one satellite that's behind schedule because of delays at the European Space Agency. Developing spacecraft "is very hard stuff," he says. "There are a lot of technical challenges."

Last week, NASA's planetary science director Jim Green ordered a \$12 million cut to the Mars rovers, which roam the Martian surface collecting geological data. The reason: a newly discovered \$170 million rise in the development cost of a new project, the Mars Science Laboratory. That was in addition to a \$66 million cost overrun in the program that NASA reported to Congress in February.

Green rescinded the cut on Tuesday after he learned it would mean that one of the rovers would have to be turned off. Now NASA will have to look elsewhere to find \$12 million in savings.

Hard choices also will have to be made to make up for the skyrocketing cost of the Glory satellite, which is 31% over budget. Under the 2005 law, NASA can't spend any money on the project after the summer of 2009 without congressional approval — a requirement that could be moot if NASA launches Glory as planned in April 2009.

To make up for the extra \$274 million that Glory and the other three programs will cost, NASA could reduce pre-flight testing, strip planned scientific sensors from over-budget spacecraft and scale back operations of older space missions, Maizel says.

The overruns "all the more put a crimp in NASA's budget," which is too small for the agency "to do everything it's trying to do," says Sen. Bill Nelson, D-Fla.

Project	Percent over budget	Amount over budget	Purpose
Glory	31%	\$52 million	Measure sunlight, atmosphere
Kepler	25%	\$78 million	Search for Earth-like planets
Polar satellite preparatory project	19%	\$111 million	Record ocean, atmospheric temper
Orbiting Carbon Observatory	18%	\$33 million	Measure carbon dioxide in atmospi

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## NASA Hearings Highlight Continuing Funding Problems

NASA continues to have too little funding for everything that the space agency, authorizing committees, appropriations committees, and the science community want it to do. This lack of money was a consistent theme at a series of recent hearings, echoing the same problem that was raised a year ago at hearings on Capitol Hill.

In late February, Senator Bill Nelson (D-FL) and his colleagues on the Space, Aeronautics, and Related Sciences Subcommittee received testimony from NASA Administrator Michael Griffin. Nelson highlighted the funding problem in his opening remarks, citing the NASA Authorization Act of 2005 and then commenting that *"the White House has requested less funding for NASA than authorized by that act. For that reason, and due to the continuing resolution for this fiscal year, NASA will receive \$1.7 billion less than authorized in 2007. If the President's 2008 budget is adopted, NASA will have received \$3 billion less than the amount planned under the two-year authorization act. These shortfalls are in addition to the \$2 billion that this little agency had to take from other programs to recover from the tragedy of the Columbia accident and return the shuttle to flight. If we continue on the President's path, we face an extended period when the United States will have no human access to space. I say this is unacceptable – especially at a time when other nations are aggressively developing space technology."* The "extended period" Nelson was referring to is the time between the retirement of the space shuttle by the fall of 2010 and the earliest operation of its replacement vehicle that has been delayed by funding shortfalls to late 2014 or 2015. During these four+ years, NASA will spend hundreds of millions of dollars to purchase transportation to the space station from Russia, China, or yet-to-be developed private interests. Griffin acknowledged that this was "unseemly."

NASA's funding shortfall was highlighted at a March 9 hearing of the House Commerce, Justice, Science Appropriations Subcommittee. Lennard Fisk, Chair of the National Research Council's Space Studies Board and Raymond Colladay, Chair of the NRC's Aeronautics and Space Engineering Board, provided their views on NASA's budget to Chairman Alan Mollohan (D-WV) and his colleagues. Mollohan opened the hearing saying that NASA has been "tasked with an impossible mission," and there was "too much on their plate." Ranking Member Rodney Frelinghuysen (R-NJ) agreed.

Both witnesses decried the funding situation. Fisk said "every part of the agency is under funded for its mission," later saying "I think the nation should know that this budget doesn't cover all the things that NASA should do to be successful." Mollohan characterized NASA's science and aeronautics programs as "bill payers" for other agency programs. Frelinghuysen used the word "cannibalization" to describe the shifting of money between programs.

Speaking strongly in favor of greater NASA funding was Rep. John Culberson (R-TX) who

said that the agency's funding cuts were "burning our fleet at the waterline," remarking that the Administration's request was "just ink on paper." Fisk recommended that space science funding be restored to recent levels, and then increased with inflation. Earth science funding, he said, would require a 33 percent increase over the current budget because of cuts that have been made.

It was against this backdrop that Mollohan and his colleagues reconvened on March 13 to hear from Administrator Griffin. Mollohan summed up the situation well: *"As I said last year, Mr. Administrator, you're in a difficult position. NASA has too many responsibilities and not enough resources to accomplish them all. Although the administration gave you a reasonably high budget request as compared to many other domestic discretionary programs, it really is not sufficient. In fact, generally this budget is not much different than the one we saw last year. Most of the new funding goes to the activities associated with the moon/Mars initiative. For a second year in a row, the science and aeronautics programs are being requested at a level too low to accurately support important programs and projects."*

In his remarks, Griffin told the subcommittee: *"In reality, we have to make tough choices in the allocation of scarce resources. We just cannot do everything that our many constituencies would like us to do. We need to set carefully considered priorities of time, energy and resources, and for this we're guided by the NASA Authorization Act of 2005, our annual appropriations, presidential policy, and the decadal surveys of the National Academy of Sciences."* He later said, *"Now, budget cuts are a fact of life in public service, and I accept that. But it is my responsibility to keep you informed of their impact upon our programs and projects. I cannot sugar-coat this issue. The effect of FY '07 appropriation is to impose approximately six months' delay in our ability to bring on-line our new human space flight capabilities."*

Mollohan asked Griffin a number of exacting questions about the impact of the shortfall on the shuttle replacement schedule. Griffin replied "that we're fine in '07 and '08," to which Mollohan remarked that "we do have two years to address this." Griffin responded that was "correct to a certain point," but added that contractors' planning assumptions required good budget forecasts.

Frelinghuysen asked Griffin to respond to critics who say that scientific research is being cut to pay for manned exploration. Griffin replied: *"Well, I say that that is a value judgment as to whether or not the research being dropped is more valuable or less valuable than human space flight. I personally will note that scientific research at NASA is 32 percent of our portfolio. That is a historic high forever in the agency's budget. And we have a historically high budget. Any of our disciplines can easily advance valid plans, really valid plans of work that they could do which would utilize the whole budget. . . . I take very seriously the necessity to prioritize the balance between our portfolios and within our portfolios. So I do not believe that we are dropping research, which is more valuable than human space flight. I believe that NASA . . . must be able to walk and chew gum at the same time. We must be able to do human space flight. We must be able to do science. We must be able to do aeronautics."* Later in the (2)

*that they could do more and better research if they had more money. Of course they could. The human space flight community could equally well say, 'Well, we could do more and better expansion of humans into space if we had more money.' There is a technique to balancing all this. and I think we have done a pretty good job within the agency of balancing our different portfolios in a fair and effective manner on behalf of the taxpayers."*

In response to a question from Rep. Adam Schiff (D-CA) about the adequacy of the President's budget request, Griffin remarked: *"The president's budget reflects the view . . . that he has provided a healthy increase for NASA with the '08 request, leaving aside all issues of '07. But the '08 request is a healthy request. It reflects a 3.2 percent increase for NASA at a time when pressures on domestic discretionary funding are very tight. . . . NASA has been provided with an increase greater than that for other agencies. So I believe that reflects good support. Our budget is adequate to develop and protect both human space flight, scientific research and aeronautics research in appropriate and timely ways, if we get it."*

Griffin stressed these same points when he was back on Capitol Hill on March 15, testifying before the Senate Commerce, Justice and Science Appropriations Subcommittee. Chairman Barbara Mikulski's (D-MD) opening remarks provided insight into her thinking. On science, including the Hubble mission and the Webb Telescope, she remarked: *"While I'm pleased that these missions are properly funded in 2008, I see a significant problem with future science budgets. From 2008 through 2011, the science budget grows by just 1 percent per year. Even worse, the budget for earth science actually shows a cut in funding starting next year. By 2012, the budget for earth science will decline to \$1.5 billion -- \$200 million less than the earth science budget in 2008."* Regarding the space shuttle replacement, Mikulski said: *"NASA estimates it will cost \$16 billion to build the Ares and Orion launch system by the year 2012. While this is a significant investment, there will still be a four-year delay between the retirement of the space shuttle and the launch of Orion and Ares. This delay is not caused by the Congress, but by the Administration's own budget, because under the President's budget, Orion and Ares won't be ready until 2014."* Mikulski favors the Administration's vision for NASA, saying: *"I am absolutely committed to the goal of returning to the Moon and staying there."*

In looking ahead, Mikulski stated: *"With almost no real growth in NASA's budget, there is no margin for errors in NASA's budgets. If there are cost overruns, other NASA programs will suffer. There is simply too much pressure on NASA's budget -- now and in the future. The only way to reduce the pressure on the budget, and maintain a balanced space program, is to raise the top line for NASA."* Mikulski is working with Senator Kay Bailey Hutchison (R-TX) to increase NASA's budget by \$1 billion in FY 2008, an amount approximately equal to the Administration's request. She advocates NASA being made a component of the American Competitiveness Initiative. Mikulski also wants to meet with President Bush for a space summit to chart the agency's future, MIKULSKI saying: *"Only through the active cooperation of the White House and the Congress, can we have a healthy, robust and balanced space program."*

Ranking Member Richard Shelby (R-AL) touched on many of these same points. He cited the requested \$1 billion increase for NASA's base programs over the current budget, calling it a "sizeable sum." Shelby said *"It is my hope that the implementation of the President's vision can be accomplished while maintaining the capabilities that NASA has developed in other mission areas. I do not believe that we should sacrifice missions and capabilities that will be vital to the future of exploration while trying to obtain this goal. I believe that we can and should find a balance."*

This Senate hearing was much briefer than the House appropriations hearing, and covered much of the same ground. Griffin described how the percentage of NASA's budget has grown over the decades, concluding "science is doing very well at NASA." Mikulski called the Hubble servicing mission, scheduled for September 2008, a "must do." She said developments regarding earth observing satellites were "very disappointing," citing what she said would be a 40 percent reduction in observation capabilities by the end of the decade. Mikulski also asked Griffin about the pending retirement of the shuttle, the completion of the space station, future commercial transportation to the station, and the implications of this schedule on the workforce. "Gotta get going," Mikulski told Griffin.

Shelby started by asking Griffin about NASA's education programs which includes summer institutes and academies for teacher preparation. He later said he was surprised that NASA was not included in the American Competitiveness Initiative, calling the agency "a natural fit." In concluding the hearing, Mikulski told Griffin that "NASA doesn't have two bigger supporters" than Shelby and herself.

The House Science Committee's March 15 hearing on NASA's FY 2008 request explored the issues discussed above. Committee Chairman Bart Gordon (D-TN) described the committee's thinking well: "I'm afraid that NASA is headed for a 'train wreck' if things don't change." He outlined a series of damaging funding shortages and under budgeting of the shuttle and station programs, and concluded *"I could go on, but I think it's clear we have [a] budgetary situation that bears little resemblance to the rosy projections offered by the Administration when the President announced his 'Vision for Space Exploration' three years ago - a vision that is now increasingly blurred."*

The budget situation was viewed in the same light by the committee's Republicans. Ranking Member Ralph Hall (R-TX) asked Griffin to talk to the White House and the Office of Management and Budget "and tell them that NASA's friends on Capitol Hill are growing concerned that the agency is squeezing too hard and will suffer for it unless more realistic budgets are presented." He then added, *"Congress supports the Vision. Congress also supports NASA's science and aeronautics programs but if forced to choose between science, aeronautics or human spaceflight, I'm not sure at the end of the day what the final choice would be."*

Richard M. Jones  
Media and Government Relations Division  
American Institute of Physics