



BUDGET BULLETIN



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INFORMED BUDGETEER:

HOUSTON... WE HAVE A BUDGET PROBLEM

- Fiscal year 2011 arrives on October 1, 2010, and the Congress will have enacted not one of the 12 annual appropriation bills needed to fund the operations of federal agencies for the whole year. Instead, Congress will enact a continuing resolution (CR) to operate most federal programs at 2010 enacted levels for the first few months of FY 2011, or until it figures out what it wants to do for the whole year. Sometimes the uncertainty of operating under a CR poses planning challenges for agencies. This *Bulletin* examines one possible example of such challenges at the federal government's space agency – the National Aeronautics and Space Administration (NASA).
- Not all informed budgeteers may be equally informed rocketeers, so you might not be aware of the fact that there are only two scheduled launches of the space shuttle remaining – [November 1, 2010](#) and [February 26, 2011](#). What will NASA do when the space shuttle program ends? The answer has been a source of debate and uncertainty that remains unresolved.
- In 2004, then-President Bush announced his [Vision for U.S. Space Exploration](#). The primary focus of that vision was:
 - 1) returning the Space Shuttle to service (after the investigation into the loss of the shuttle *Columbia* on February 1, 2003), but only to finish construction of the International Space Station (ISS), and then retiring the Shuttle in six years in favor of safer transport for crew in future space exploration; and
 - 2) returning humans to the Moon by 2020, “in preparation for human exploration of Mars and other destinations.”
- To accomplish this goal, NASA began the Constellation Program to develop and then operate new vehicles, including the Ares I crew launch vehicle, the Orion crew exploration vehicle, the Ares V cargo launch vehicle, and the Altair lunar lander.

CBO Analysis of NASA's Plan

- Fast forward to April 2009, right after President Obama's first budget where he essentially adhered to NASA's plan that had been in place since 2004. The Congressional Budget Office (CBO) issued a report on [The Budgetary Implications of NASA's Current Plans for Space Exploration](#).
- The report assessed NASA's claim that it could implement its long-term plans at an average funding level (in real terms) of \$19.1 billion per year from 2010 through 2025. (CBO notes that NASA's average figure of \$19.1 billion is based on NASA's budget request for 2009 through 2013, with NASA's 2013 assumed funding level increased by NASA's assumed inflation rate of 2.4% per year thereafter. Since CBO expects inflation would only be 1.9% per year, if actual inflation turns out to be closer to CBO's estimate than NASA's, then NASA is building a real increase into its future budgets.)
- CBO's bottom line? **That NASA's annual funding target of \$19.1 billion was insufficient to accomplish all NASA's plans for the next 15 years.**
- CBO concluded that NASA either: 1) would have to receive higher appropriations than it had contemplated in order to achieve all its plans according to schedule, or 2) would have to scale back some of its goals and/or delay the target dates for achieving some of its goals in order to live within NASA's planned funding level.

- CBO reached this conclusion because its analysis showed that NASA's claimed funding requirements underestimated the cost growth that would occur in its new programs, given the cost growth that had occurred in previous NASA programs. Put simply, NASA had consistently underestimated the final cost of its past programs and was continuing that error going forward.
- If NASA is going to pursue all aspects of its long-term plan according to its schedule, CBO concluded NASA would need \$22.1 billion per year – 16% more than the \$19.1 billion NASA was seeking.
- If NASA and Congress insist on NASA making do with only \$19.1 billion per year, then CBO outlined several scenarios that mix and match how NASA would have to delay and/or eliminate parts of its future plans for the Constellation program, returning humans to the Moon, support of the International Space Station, and robotic science missions.

Augustine Committee

- In the month following the CBO report, President Obama created the U.S. Human Spaceflight Plans Committee (commonly known as the Augustine Committee – after its chairman, Norm Augustine) to conduct an “independent review of ongoing U.S. human space flight plans and programs, as well as alternatives, to ensure the nation is pursuing the best trajectory for the future of human space flight – one that is safe, innovative, affordable, and sustainable.” The Committee's Statement of Task required it to complete the review “in sufficient time to support an August 2009 decision on the way forward. . . . Based on the results of this review, the Administration will notify Congress of any needed changes to the FY2010 President's Budget Request.”
- [The Committee's report](#), submitted in October 2009, outlined five options for NASA's human spaceflight program:
 - **Option #1 – Current Plans (Modified) and Current Budget.** The Committee's base case assumes Congress will fund exactly NASA's request of an average of \$19.1 billion per year and that NASA will still seek to implement its “Program of Record,” which, in effect, is the same program outlined in President Bush's 2004 Vision.
 - The Committee's Option #1 added two changes to NASA's base plan that it deemed necessary because of likely slippage in NASA's schedule: funds for one additional Shuttle flight in FY 2011 and funds to extend the life of the International Space Station by one year to 2016.
 - If NASA was constrained to this slightly augmented budget, the Committee concluded that the Ares I crew launch vehicle (which was intended to ferry astronauts to the ISS for the next five years after the Shuttle retires next year) and the Orion crew exploration vehicle **would not be available until after 2016**. This means that after the last Shuttle flight next summer (under this option), NASA would not have its own means of transporting U.S. astronauts to the Space Station (NASA would have to send astronauts on Russian space missions instead). By the time NASA's budget could build the next ride to the ISS, the ISS will no longer be orbiting the Earth. Further, the Committee concluded that the Ares V cargo launch vehicle would not be available until the late 2020s, and funds would be **insufficient** to develop the lunar lander “until well into the 2030s, **if ever.**” [emphasis added]
- Essentially, the Augustine Committee reached the same conclusion as CBO: NASA can't get there from here – NASA

cannot achieve some of its plans according to its schedule within the budget it has requested and “[h]uman exploration beyond low-Earth orbit is not viable” under NASA’s budget plan.

- **Option #2 – Further Modified Current Plan with Current Budget.** This option is the same as the Committee’s Option #1 (base case) for the funding level and for continuing the Shuttle into 2011, but varies NASA’s plan in several ways: extending the life of the Space Station to 2020, relying on commercial firms to provide crew access to low-Earth orbit, and developing a scaled-down version (Ares IV) of the Ares V cargo launch vehicle.
- **All Other Committee Options.** The Committee’s other options outlined ways for NASA to conduct “meaningful human exploration” of space, but all those options would require an annual budget that ramps up from \$19.1 billion in 2010 to \$22.1 billion by 2014 and remains at that level in real terms thereafter.

Congressional and Presidential Action

- It has been nearly a year since the Augustine Committee submitted its report. What have Congress and the President done since then?
- For 2010, Congress (in December 2009) enacted the amount of NASA funding that the President had requested in February 2009 – \$18.7 billion (the President did not modify his request for 2010 based on the Augustine Committee report).
- In that same appropriation bill, Congress, perhaps wary that NASA might begin to implement some of the recommendations of the Augustine Committee, moved to restrict NASA by saying no funds “shall be available for the termination or elimination of any program, project or activity of the architecture for the Constellation program nor shall such funds be available to create or initiate a new program, project or activity, unless such program termination, elimination, creation, or initiation is provided in subsequent appropriations Acts.” In essence, Congress was telling NASA to not change plans or chart a new course until Congress tells NASA what to do in the next (2011) appropriation bill.
- In his budget request for 2011 (submitted in February 2010), the President sought \$19.0 billion for NASA and, using the conclusions of the Augustine Committee as justification,

proposed eliminating NASA’s Constellation program because it was unaffordable. Instead of the Constellation program, the President proposed funds to develop a private-sector capacity to ferry astronauts back and forth from the space station.

- This chronology brings us to the beginning of FY 2011. We know that the CR will allow NASA to operate into early December at its “current rate” of funding for 2010 – \$18.7 billion at an annualized level. This will be sufficient funding for NASA to proceed with its two planned Shuttle flights in November and February.
- But what about conducting another Shuttle flight after that (as the Augustine Committee recommended), and how should NASA proceed on its other dilemmas (remember that the CR not only maintains the 2010 funding level into 2011, it also maintains all the general provisions and other instructions in the 2010 funding law, so NASA will continue to be prohibited from implementing the President’s plan to drop the Constellation program and develop alternate ways of reaching space)?
- After the CR, Congress will have to enact another law to provide NASA with better clarity on funding and direction for the rest of the year. Thus far for 2011, Congress has only taken one step on funding. The Senate Appropriations Committee has reported a Commerce-Justice-Science appropriation bill for 2011 that would provide the \$19 billion for NASA that the President requested, along with report language that specifies that some of that amount is for “an additional shuttle logistics flight to the International Space Station,” which would occur in the second half of the fiscal year.
- The Senate has not taken any action on this appropriation bill, however, and the House Appropriations Committee has not even marked up and reported a companion bill.
- The Senate has passed an authorization bill (S. 3729) for NASA that, whether it is enacted or not, suggests a possible direction that Congress is headed for whenever it provides NASA with full-year funding in a regular 2011 appropriation bill. Similar to the Augustine Committee’s Option Two, the Senate-passed authorization bill would direct NASA to rely on commercial providers to provide access to the International Space Station and to begin work on a heavy lift vehicle.

