



FY2013 BUDGET BRIEFING BY NASA'S SCIENCE MISSION DIRECTORATE

On February 13, 2012, NASA Associate Administrator for the Science Mission Directorate (SMD) John Grunsfeld and other SMD officials answered questions from the media via a teleconference about SMD's FY2013 budget request. These notes from the teleconference were originally published on SpacePolicyOnline.com on February 16 under the title "[NASA Science Officials: Future Not Entirely Bleak for Mars, PU-238 Restart Still Needed.](#)"

NASA may be ending its plans to launch two Mars spacecraft with the European Space Agency (ESA) in 2016 and 2018, but smaller Mars missions are not out of the question according to John Grunsfeld, the new head of NASA's Science Mission Directorate (SMD). He and Jim Green, director of SMD's planetary science division, tried to paint a less than bleak picture of the future of NASA's Mars exploration program during a budget briefing on Monday. At the same time, Green reaffirmed NASA's need for the Department of Energy (DOE) to restart production of plutonium-238 (Pu-238), which is needed to power some NASA solar system exploration spacecraft.

The FY2013 budget request for NASA cuts the planetary science budget from \$1.5 billion to \$1.2 billion. Consequently, NASA has informed ESA that it will not be able to participate in two robotic Mars missions in 2016 and 2018 the two agencies were planning to execute cooperatively. The 2016 mission is called ExoMars. The planetary science community has reacted with dire warnings about the consequences of foregoing those missions as well as postponing plans for other planetary programs such as exploration of the outer planets (Jupiter and beyond) and their moons. The Planetary Society [said](#) the cuts "strike at the heart of one of NASA's most productive and successful programs over the past decade."

NASA's total budget request of \$17.711 billion is slightly less than the agency received for FY2012 -- \$17.770 billion after being adjusted for a \$30 million rescission included in the agency's FY2012 appropriations bill. SMD's budget would decline from \$5.074 billion to \$4.911 billion. Earth science, heliophysics and the James Webb Space Telescope (JWST) would get increases, while planetary science and the non-JWST portions of the astrophysics program would decrease. (See our FY2013 NASA budget request [fact sheet](#) for details.)

Grunsfeld stressed that a NASA Mars mission, Curiosity, is currently enroute to Mars with landing expected in August, and another Mars probe, MAVEN, is scheduled for launch in 2013. He did not rule out smaller U.S. missions in 2016 and 2018, but not the "flagship" class missions

that ESA and NASA were discussing. The ESA-NASA missions were first steps in a series of mission intended to culminate in returning a sample of Mars to Earth. Grunsfeld said that he "hoped" a sample return mission still could be accomplished within 20 years. As NASA Administrator Charlie Bolden [explained](#) at his budget briefing earlier in the day, he has charged Grunsfeld, NASA's Chief Scientist, NASA's Chief Technologist, and NASA's Associate Administrator for Human Exploration and Operations to develop an integrated strategy for Mars exploration that would support both human and robotic exploration.

Even though NASA's planetary aspirations are being scaled back, Green said that the agency still needs DOE to restart production of Pu-238, an artificially produced isotope. Three reports from the National Research Council (NRC) since 2009 have characterized the need for "Pu-238 restart" as critical. DOE owns the facilities where Pu-238 can be created, but they were closed years ago. Subsequently, DOE purchased Pu-238 from Russia, but Russia canceled its contract with DOE in 2009. Historically, DOE produced the Pu-238 and provided it to NASA. In its FY2010 budget request, the Obama Administration asked for \$30 million in DOE's budget to restart production, but Congress said no because it felt NASA should fund it. In FY2011, the Administration split the costs equally between the two agencies with the idea that NASA would transfer its money to DOE. The NASA funding was approved, but not DOE's. The situation was [repeated](#) for FY2012.

This year, the Administration is not trying to win support for DOE funding for Pu-238 production. The only requested funding is in NASA's budget -- \$10 million. Green said NASA transferred the money it received to DOE and it is being used for studies on how much Pu-238 could be delivered and when using DOE's existing facilities.

Pu-238 is needed for spacecraft that cannot rely on solar energy to produce electricity to power instruments and systems because they travel too far from the Sun or will be in darkness on lunar or planetary surfaces for long periods of time. NASA has used Radioisotope Power Sources (RPS's) for decades for these types of spacecraft. When it determined its requirements in 2009, many such probes were planned.

The clear message from the NASA budget briefings on Monday is that no new flagship missions -- the most expensive -- are being planned for the indefinite future. A number of lunar surface probes that were to support the Constellation program also disappeared when that program was cancelled. The question then is how much Pu-238 is needed. Green said that several of the contenders for selection in the smaller Discovery and mid-size New Frontiers classes would need Pu-238, so the agency still considers Pu-238 restart to be crucial.

Critics of the cutbacks to planetary exploration blame cost overruns on JWST. NASA officials refused to make that connection, however, insisting that the smaller budget should be expected since development of Curiosity and two other planetary spacecraft -- LADEE and MAVEN -- has ended or soon will.

The JWST overrun, however, has impacted funding for other astrophysics missions. Chief among them is the Wide-Field InfraRed Survey Telescope (WFIRST), which was the top large space mission recommended by the 2010 NRC decadal survey for astronomy and astrophysics. Grunsfeld confirmed there is no money in the FY2013 budget to begin development of WFIRST, whose purpose is three-fold: to search for planets in solar systems elsewhere in the universe

(exoplanets), conduct an all-sky infrared survey, and try to unravel the secrets of dark energy. Instead, NASA is [hoping](#) for a small role in ESA's dark energy mission, Euclid.

The teleconference ended before questions could be asked about plans for Earth science or heliophysics. Both budgets would increase in FY2013, although the OCO-2 mission could be delayed for as many as two years. The original Orbiting Carbon Observatory (OCO) was lost when its Taurus XL launch vehicle failed. NASA quickly began to build a replacement anticipating a relatively fast relaunch, but another Taurus XL failed dooming another NASA earth science satellite (GLORY). The OCO-2 spacecraft should be completed in FY2013, but NASA is continuing to assess its options for launching it and states that the launch could slip to 2015.