



FY 2013 NASA Budget Comparison

President's FY 2013 NASA Budget Request, Consolidated and Further Continuing Appropriations Act, 2012 (P.L. 112-55), FY 2012 NASA Estimate, House Passed FY 2013 NASA Appropriations Bill (H.R. 5326), and Senate Appropriations Committee Proposed FY 2013 NASA Appropriations Bill (S.2323).

This document provides an overview of the President's NASA FY 2013 Budget request in comparison with the Consolidated and Further Continuing Appropriations Act, 2012 (P.L. 112-55), and NASA's estimate of FY 2012 funding, the House passed FY 2013 NASA Appropriations bill (H.R. 5326), and the Senate Appropriations Committee proposed FY 2013 NASA Appropriations bill. The first section provides a comparison of funding levels provided by each top-line item. The analysis then looks in detail at the differences between the proposals within Science, Exploration, and Space Operations.

NASA Budget Proposals Overview – FY 2013 Funding

Budget Authority, \$ in millions	President's FY 2013 NASA Budget Request	FY 2012 NASA Appropriations (P.L. 112-55)	FY 2012 NASA Estimate	House Passed FY 2013 NASA Approps Bill (H.R. 5326)	Senate Proposed FY 2013 NASA Approps Bill (S. 2323)
Science	4,911.20	5,090.00	5,073.70	5,095.00	5,021.10
Aeronautics Research	551.50	569.90	569.40	569.90	551.50
Space Technology	699.00	575.00	573.70	632.50	651.00
Exploration	3,932.80	3,770.80	3,712.80	3,711.90	3,908.90
Space Operations	4,013.20	4,233.60	4,187.00	3,985.00	3,961.70
Education	100.00	138.40	136.10	100.00	125.00
Cross-Agency Support	2,847.50	2,995.00	2,993.90	2,717.5	2,822.50
Construction and Environmental Compliance and Restoration	619.20	390.00	486.00	598.00	679.00
Inspector General	37.00	37.30	38.30	38.00	37.80
NOAA Weather Satellite Procurement	N/A	N/A	N/A	N/A	1,641.147*
Total	17,711.4	17,800.00	17,770.00	17,447.80	19,400.00*

* The large increase is derived from a reorganization which moves responsibility for purchasing operational weather satellites from NOAA, the client agency, to NASA, which had been NOAA's contracting agency. Without the new account, the total recommendation for NASA is \$47 million above the President's budget request.

NASA Budget Overall and Additional Guidance

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

- The House passed bill would appropriate \$17,447 million for NASA in FY 2013, \$264 million below the President's request. The House passed an amendment, 206-204, to increase the Community Oriented Policing Services (COPS) program by \$126 million, which was offset by a cut to NASA's Cross Agency Support funds.
- In addition to providing specific program funding and guidance, the Committee Report outlines several overall administrative guidelines for NASA as well:
 - First, the House Committee Report notes that the Commerce, Justice, Science, and Related Agencies Appropriations Act, 2008 "mandated that the GAO report on the status of large scale projects at NASA." Now the the Committee now "anticipates these reports biannually." Additionally, the Committee "directs NASA to continue cooperating fully and providing timely program analysis, evaluation data and other relevant information to the GAO so that it can conduct its reviews and meet the congressional mandate." Further, this "information includes, but is not limited to, copies of preliminary cost estimates; access to relevant online agency applications, databases, and web portals; and access to information from contractor and agency personnel."
 - Second, the House Committee Report notes that section 103 of the NASA Authorization Act of 2005 required NASA to "deliver several notifications and reports to the appropriate authorizing committees when project costs or schedules grow in excess of established thresholds." The House Committee Report now directs NASA to "submit concurrently to the Committees on Appropriations the notifications and reports required by section 103."
 - Third, the House Committee Report notes that the "Committee's program and project recommendations for NASA are included in the consolidated funding table" provided in the report and "in additional narrative direction through" the report. The House Committee Report states that "when executing its budget for fiscal year 2013, NASA shall incorporate the funding levels established in both the table and the narrative direction." Any "remaining funding decisions not otherwise specified may be made at NASA's discretion but should be reported as part of the spending plan required by an administrative provisions accompanying title III of this Act." The House Committee Report directs that the "spending plan should be presented at the traditional level of detail down to the activity level."
 - Fourth, the House passed bill would require funds for announced prizes "not to exceed 5 percent of any appropriation made available for the current fiscal year." Further, funds "may be transferred between such appropriations, but no such appropriation, except as otherwise specifically provided, shall be increased by more than 10 percent by any such transfers (or, in the case of 'Construction and Environmental Compliance and Restoration', 15 percent)." In addition, any balances transferred "shall be merged with and available for the same purposes and the same time period as the appropriations to which transferred. Any transfer pursuant to this provision shall be treated as a reprogramming of funds under section 505 [of the Act] and shall not be available for obligation except in compliance with the procedures set forth in that section."
 - Fifth, the House passed bill would require NASA to "submit a spending plan, signed by the Administrator, to the Committees on Appropriations of the House of Representatives and the Senate within 45 days after the enactment" of the act. The plan would require spending details at the "theme, program, project and activity level." Further, the "spending plan, as well as any subsequent change of an amount established in that spending plan that meets the notification requirements of section 505 of this Act, shall be treated as a reprogramming under section 505 of this Act and shall not be available for obligation or expenditure except in compliance with the procedures set forth in that section."

Senate Appropriations Committee Proposed FY 2013 NASA Appropriations Bill (S. 2323)

- The Senate Appropriations Committee proposed bill would appropriate \$19.4 billion for NASA in FY 2013, \$1.6 billion above the President’s request. However, the increase is a result of a reorganization of operational weather satellite procurement from the National Ocean and Atmospheric Administration [NOAA] into NASA. Without the funds for the NOAA weather satellite procurement, NASA’s budget would be 17,758.5 million, \$47 million above the President’s request.
- The Senate Appropriations Committee’s recommendations “attempt to make tough choices in order to afford the balanced space program that Congress authorized.” While the “Committee was informed by priorities of the Senate as well as the administration,” the “Committee does not always agree with the administration.” The Committee admits that Congress “has often left some amount of discretion to NASA in making choices and offering up spending plans,” but the Committee warns NASA that their “plan should not be viewed as a license to disregard the Congress’s choices about where limited resources should be spent.” Therefore, “if NASA requests funding for programs, projects, and activities in one account,” then the Committee “expects those programs, projects, and activities to be executed in that account, with small and limited exceptions.” The Committee Report continues that “moving major initiatives or beginning a new program in an account other than the one in which it was requested thwarts the Committee’s deliberative process, rendering its efforts at prioritization and balance meaningless.”
- In addition to providing specific program funding and guidance, the Senate Committee Report (S. Rept. 112-158) outlines several overall administrative guidelines for NASA as well:
 - First, NASA’s acquisition management remains on the Government Accountability Office’s [GAO] “high risk” list. The Senate Committee Report notes that in the GAO’s most recent assessment of major NASA projects it “found 5 of 15 projects in the implementation phase had both exceeded their planned budgets by more than 17 percent and delayed their launch date by more than 11 months.” While “NASA is making progress in strengthening financial management,” the Committee Report states “it is imperative that NASA do a better job of managing these large projects.” Therefore, in order to improve GAO’s analysis, the Committee directs NASA to “cooperate fully and to provide timely program analysis, evaluation data, and relevant information to the GAO so that GAO can report to Congress in advance of the annual budget submission of the President and semiannually thereafter on the status of large-scale NASA programs, projects, and activities based on its review of this information.”
 - Second, the Senate Committee Report directs NASA to “include in its budget justification the reserve assumed by NASA to be necessary within the amount proposed for each directorate, theme, program, project, and activity,” or in the case that the “proposed funding level for a directorate, theme, program, project, or activity is based on confidence level budgeting,” then NASA will provide “the confidence level assumed in the proposed funding level.”
 - Third, the Senate Committee Report notes that in November 2011, NASA Office of Inspector General (OIG) identified five top management challenges for NASA: (1) the future of U.S. human spaceflight, (2) project management, (3) infrastructure and facilities management, (4) acquisition and contract management, and (5) information technology security and governance. The Senate Committee Report states that the “Committee believes the report is a roadmap of the challenges that face the agency.” Therefore, the Committee “directs NASA to submit a report within 60 days of enactment of this act outlining NASA’s specific progress in responding to the issues and recommendations highlighted in the report.”
 - Fourth, in order to help NASA “avoid cost overruns and make its programs more affordable,” the Committee directs NASA to “minimize its use of cost plus fee contracting and to employ fixed price contracts for all systems, components, and projects using proven or high technical readiness technology.”
 - Fifth, the Senate Committee Report notes that “NASA has divided the functions of the former Office of Independent Program and Cost Evaluation [IPCE].” Previously, one of the IPCE’s “vital

functions was to conduct self-initiated technical analyses,” which provided “a truly independent perspective not influenced by others within NASA.” Therefore, NASA will “need to vigilantly guard the independence of the new organizations, particularly with regard to program analysis, cost evaluation, and study initiation and conclusions.”

- Sixth, the Senate Appropriations Committee proposed bill would require funds for announced prizes “not to exceed 5 percent of any appropriation made available for the current fiscal year for the National Aeronautics and Space Administration in this Act.” Further, funds “may be transferred between such appropriations, but no such appropriation, except as otherwise specifically provided, shall be increased by more than 10 percent by any such transfers except that funds transferred to ‘Construction and Environmental Compliance and Restoration’ may increase that account by up to 20 percent.” In addition, any balances transferred “shall be merged with and available for the same purposes and the same time period as the appropriations to which transferred. Any transfer pursuant to this provision shall be treated as a reprogramming of funds under section 505 [of the Act] and shall not be available for obligation except in compliance with the procedures set forth in that section.”
- Finally, the Senate Appropriations Committee proposed bill would require NASA to “submit a spending plan, signed by the Administrator, to the Committees on Appropriations of the House of Representatives and the Senate within 45 days after the enactment” of the act. The plan would require spending details at the “theme, program, project and activity level.” Further, the “spending plan, as well as any subsequent change of an amount established in that spending plan that meets the notification requirements of section 505 of this Act, shall be treated as a reprogramming under section 505 of this Act and shall not be available for obligation or expenditure except in compliance with the procedures set forth in that section.”

Science

Budget Authority, \$ in millions	President's FY 2013 NASA Budget Request	FY 2012 NASA Appropriations (P.L. 112-55)	FY 2012 NASA Estimate	House Passed FY 2013 NASA Approps Bill (H.R. 5326)	Senate Proposed FY 2013 NASA Approps Bill (S.2323)
Earth Science	1,784.80	N/A	1,760.50	1,775.00	1,784.70
Planetary Science	1,192.30	N/A	1,501.40	1,400.00	1,292.30
Astrophysics	659.40	N/A	672.70	650.00	669.40
<i>James Webb Space Telescope</i>	627.60	529.60	518.60	628.00	627.60
Heliophysics	647.00	N/A	620.50	642.00	647.00
Total	4,911.00	5,090.00	5,073.70	5,095.00	5,021.00

Earth Science

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

The House passed bill would appropriate \$1,775 million for Earth Science in FY 2013, \$9 million below the President's request. However, the House passed bill would be a "modest" increase over FY 2012. The House Committee Report attributes the increase to "increased prices in the launch vehicle market and the development phasing of high priority decadal missions already underway."

Senate Proposed FY 2013 NASA Appropriations Bill (S.2323)

The Senate Appropriations Committee proposed bill would appropriate \$1,784 million for Earth Science in FY 2013, to fully fund the President's request. The Senate Committee Report provides guidance for several specific Earth Science programs:

- First, the Senate Committee "supports the ongoing development of the Tier I Earth Science missions, and provides the full funding budget request for the Soil Moisture Active and Passive [SMAP] and the Ice, Cloud and land Elevation Satellite (IceSat-2) missions." However, the Committee is "disappointed in plans to delay the Climate Absolute Radiance and Refractivity Observatory [CLARREO] and the Deformation, Ecosystem Structure and Dynamics of the Ice [DESDynI] missions."
- Second, the Committee "supports the pre-Aerosol, Clouds, Ecosystem [PACE] mission," which was "originally introduced as a climate continuity mission in the fiscal year 2011 request."
- Third, the Committee "encourages NASA to use unmanned aerial vehicles [UAVs] for" the IceBridge mission and "to seek competitive proposals to improve IceBridge instruments for use on UAVs."
- Fourth, the Senate Committee Report states that "of the funds provided within the earth science research and analysis activity, the Committee recommends \$10,000,000 to continue efforts for the development of a carbon monitoring system initially funded in fiscal year 2010." In addition, the "majority of the funds should be directed toward acquisition, field sampling, quantification and development of a prototype Monitoring Reporting and Verification [MRV] system which can provide transparent data products achieving levels of precision and accuracy required by current carbon trading protocols." Further, the Committee "recognizes that the current orbital and suborbital platforms are insufficient to meet these objectives." Therefore, the Committee recommends "the use of commercial off-the-shelf technologies," which "could provide robust calibration validation datasets for future NASA missions." Additionally, "up to 20 percent of these funds should be made available to international Reducing Emissions from Deforestation and Forest Degradation [REDD] projects." The Committee Report notes that the Committee is "deeply disappointed with the lack of progress that NASA has made on this initiative thus far within the agency." Therefore, the Committee "directs that the above funds shall be competitively awarded within 120 days of enactment of this act."
- Fifth, the Committee "remains discouraged by NASA's lack of cooperation with NOAA's Ocean and Atmospheric Research office in the area of non-space based Earth science." Therefore, NASA "shall

better coordinate with NOAA on all aspects of relevant NASA-funded projects, including project planning, project execution, and post-project data sharing.”

- Sixth, the Committee is “pleased to see continued support by NASA, in conjunction with the U.S. Agency for International Development and other agencies, for advancing” the SERVIR program.

Planetary Science

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

The House Committee Report states the “Committee understands that budget pressures within and outside of the Science Mission Directorate have required reductions in NASA’s science portfolio.” However, the Committee is concerned “by the Administration’s proposal to make those reductions disproportionately within the planetary science program.” Further, “the cuts proposed in the budget request will endanger” NASA’s planetary science programs’ “strong record and deviate significantly from the program plan envisioned by the most recent planetary science decadal survey.” Ultimately, the Committee’s recommendation for planetary science programs in FY 2013 “seeks to address programmatic areas where the Administration’s proposal is most deficient in meeting the decadal survey’s goals while also ensuring that the program, as a whole, maintains balance among program elements.”

- First, the Committee Report identifies Planetary Science Research as an area that is insufficiently funded in the FY 2013 request. The Committee Report notes that the “decadal survey recommended increasing research funding by a specified rate above inflation,” however, the President’s request “only achieves this standard by including in the total a new Joint Robotics Program for Exploration (JRPE), which is not a traditional research program as envisioned by the NRC.” To address this deficiency the Committee proposes to provide \$192 million for Planetary Science Research, which the Committee Report states would be “sufficient to support both the requested level for JRPE and an additional \$3,500,000 above the request for traditional research and analysis activities in order to achieve better consistency with the decadal recommendations.”
- Second, the Committee Report identifies Discovery and New Frontiers programs as insufficiently funded in the FY 2013 request. The Committee Report states insufficient funding for these programs could result “in significant delays relative to the mission tempos outlined in the decadal.” Therefore, “to improve these tempos” the Committee has proposed \$480 million for Discovery and New Frontiers, which is \$115 million above the aggregate requests for the President’s budget and the Senate’s recommendation for these programs. Further, the Committee Report directs NASA “to divide these funds between Discovery and New Frontiers in a manner that optimizes the potential mission tempos for both programs.”
- Third, the Committee Report identifies Mars Exploration and Outer Planets as the final area that is insufficiently funded in the FY 2013 request. The Committee Report notes that the “decadal survey chose a Mars sample return mission and a Jupiter Europa orbiter as its top two flagship-class priorities.” However, the “budget request reduces funds for a future Mars mission to a fraction of previous planning estimates and eliminates all funding for substantive work on a new outer planets mission,” which would “inhibit significant progress from being made on either priority, even in descoped form.” Therefore, the Committee recommends \$150 million for Mars Next Decade in FY 2013, \$88 million above the President’s request. The Committee Report notes that according to the decision rules of the decadal survey the Mars Next Decade “mission concept must lead to the accomplishment of sample return in order to remain a top funding priority.” The Committee acknowledged that it is “unable to discern whether this condition is being met from the scant information provided to date about Mars Next Decade,” and therefore, directs NASA “to promptly submit its Mars Next Decade mission concept to the NRC for evaluation.” The Committee Report states that the proposed House passed bill contains “language prohibiting the obligation of funds for the mission unless and until the NRC submits to the Committees on Appropriations a certification confirming that the mission concept will lead to the accomplishment of a sample return [mission] as described in the Mars Astrobiology Explorer-Cacher section of the decadal survey.” However, if the NRC “determines that NASA’s chosen mission concept

will not lead to the accomplishment of sample return,” then the Committee directs NASA to “immediately: (1) notify the Committees; (2) reallocate the funds provided for Mars Next Decade to the Outer Planets Flagship program in order to begin substantive work on the second priority mission, a descoped Europa orbiter; and (3) submit the Mars Next Decade mission concept, or any substitute Mars mission concept, for competition in the Discovery or New Frontiers programs.”

- Finally, the Committee Report notes that any “progress on a Europa orbiter or any other long-range planetary science mission will require a sustainable source of Plutonium-238 (Pu-238),” which is “an essential source of electricity for spacecraft venturing beyond the range of solar power.” The House passed bill would provide \$14.5 million to restart production of Pu-238, and “directs NASA to provide a plan, including an anticipated schedule and milestones, for the Pu-238 program through the reestablishment of production.” Further, this “plan should be coordinated with NASA’s partners at [Department of Energy] DOE and should be provided to the Committees on Appropriations no later than 120 days after the enactment of this Act.” In addition, the Committee “directs the Planetary Science Division, in conjunction with elements of the Space Technology program, to continue working on Advanced Stirling Radioisotope Generator (ASRG) technology, which will enable NASA to make more efficient use of available radioisotope fuels in the future.” Towards that end, NASA’s “Office of the Chief Technologist shall assist the Planetary Science Division in maturing ASRG technology to a flight demonstration level so that it can be appropriately utilized on a long distance space mission.”

Senate Proposed FY 2013 NASA Appropriations Bill (S.2323)

The Senate Committee Report states that the Committee “supports NASA’s flagship missions,” however, “notes that future large projects will need to have a scope that is aligned with a sound and executable budget.” Further, “once NASA has committed to a mission with an executable funding profile, the Committee does not believe mid-session reviews and other management tools that serve to undermine established missions with broad consensus within their scientific discipline do anything more than unnerve the scientific community.” Therefore, the Committee “encourages NASA to focus its management efforts on rigorous requirements definition, program management, and cost discipline so that it can meet the commitments it makes within projected budgets.”

- The Senate Report notes that a Mars sample return mission “was identified as the top priority for planetary science by the National Research Council’s Decadal Survey.” However, the President’s “budget request proposes to cut and radically restructure the program of robotic rovers and in-space observatories” that were “expected to culminate in a Mars sample return.” Therefore, the Committee recommends “\$100,100,000 above the request level for Mars Exploration” and provides a total of \$460 million for Planetary Science funds. The \$460 million recommended for Planetary Science by the Committee would fund the full budget request for MAVEN and “supports any re-planned Mars program that can take advantage of upcoming opportunities to launch robotic science platforms to Mars as early as 2016.” Further, the Committee expects NASA to “use these funds to retain core U.S. competencies in areas such as entry, descent, and landing.”
- The Senate Appropriations bill would appropriate \$189 million for Discovery and \$175 million for New Frontiers in FY 2013, to fully fund the President’s request. However, the Senate’s recommendation is \$115 million below the House’s recommendation. The Senate Report states that the Committee “fully expects NASA to continue both programs as distinct opportunities awarded on a merit-based, competitive basis, in order [to] maximize the delivery of more high quality science within a constrained fiscal environment.” Further, the Committee is “insistent that NASA select proposals for both programs based upon the ability to deliver the highest quality science that is evaluated by peer review.”
- Finally, the Senate Appropriations Committee proposed bill would allow “for the transfer of up to \$14.5 million to the Department of Energy to re-establish facilities capable of producing fuel needed to enable future missions.”

Astrophysics

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

The House passed bill would appropriate \$650 million for Astrophysics in FY 2013, \$9 million below the President's request. In addition, the Committee Report states "that NASA's proposal to spend up to \$9,000,000 in fiscal year 2013 on a hardware contribution to the European Space Agency's Euclid mission is in conflict with the NRC's recommendation to make such an investment only in the context of a strong commitment to NASA's Wide Field Infra-Red Survey Telescope, for which no funding is requested." Therefore, before obligating any funds for Euclid hardware, "NASA is directed to report to the Committees on Appropriations on how its proposed plans are consistent with the results of the NRC Euclid review."

Senate Proposed FY 2013 NASA Appropriations Bill (S.2323)

The Senate Appropriations Committee proposed bill would appropriate \$669 million for Astrophysics in FY 2013, \$10 million above the President's request. Within the funds provided for Cosmic Origins, Other Missions and Data Analysis, the Committee recommends \$10 million in FY 2013 to "begin planning and technology development for a cost-effective Wide Field Infrared Survey Telescope [WFIRST] project that builds on the work of the Joint Dark Energy Mission project." The Senate Committee Report notes that "scientists identified the WFIRST as the highest priority in the recent astronomy and astrophysics decadal survey."

James Webb Space Telescope

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

The House passed bill would appropriate \$628 million for JWST in FY 2013, to fully fund the President's request. The Committee Report notes that the House passed bill "retains language establishing a cap of \$8,000,000,000 for JWST formulation and development costs and requiring NASA to have the program reauthorized by Congress in the event of further cost increases," in order to "ensure that NASA is appropriately managing risks and containing costs." The Committee Report goes on to state that due to the "absence of a high confidence joint cost and schedule confidence level (JCL)" the Committee will require "additional information in order to regularly monitor the program's fiscal health." Therefore, the Committee directs NASA to "submit to the Committees on Appropriations, on a quarterly basis, a listing of all JWST performance milestones met and not met for that quarter; a description of the budget and schedule ramifications associated with those milestones; and an overall assessment of the current budget and schedule posture of the program." Finally, the Committee Report states that "NASA is expected to continue cooperating with the GAO review of JWST" and "to give GAO access to all relevant and necessary program information."

Senate Proposed FY 2013 NASA Appropriations Bill (S.2323)

The Senate Appropriations Committee proposed bill would appropriate \$628 million for JWST in FY 2013, to fully fund the President's request. The Senate Committee Report states that the Committee "strongly supports completion of the James Webb Space Telescope," which will "be 100 times more powerful than the Hubble Space Telescope." The Senate Committee Report notes that a 2011 Congressional directed independent assessment of JWST found that the program was technically sound, however, "NASA had never requested adequate resources to fund its development." NASA's "budget optimism led to massive ongoing cost overruns because the project did not have adequate reserves or contingency to address the kinds of technical projects that are expected to arise in a complex, cutting edge project." In response to the report, NASA has "submitted a new baseline for JWST with an overall life-cycle cost of \$8,700,000,000." The Committee has been assured by NASA that "this new baseline includes adequate reserves to achieve a 2018 launch without further cost overruns." In addition, the Committee "intends to hold NASA and its contractors to that commitment, and the bill caps the overall development cost for JWST at \$8,000,000,000." Finally, the Committee "expects to be kept fully informed on issues relating to program and risk management, achievement of cost and schedule goals, and program technical status."

Heliophysics

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

The House passed bill would appropriate \$642 million for Heliophysics in FY 2013, \$5 million below the President's request. However, the House passed bill would be a "modest" increase over FY 2012. The Committee Report attributes the increase to "increased prices in the launch vehicle market and the development phasing of high priority decadal missions already underway."

Senate Proposed FY 2013 NASA Appropriations Bill (S.2323)

The Senate Appropriations Committee proposed bill would appropriate \$647 million for Heliophysics in FY 2013, to fully fund the President's request. The Senate Committee Report provides additional guidance for two Heliophysics programs. First, the Committee "encourages NASA to provide necessary budget resources in fiscal year 2014 for the Magnetospheric Multiscale [MMS] mission to achieve a launch in early 2015 with the full complement of instruments and both orbit phases." Second, the Committee "strongly supports [the Solar Probe Plus] mission and affirms its multi-year commitment to a 2018 launch."

Exploration

Budget Authority, \$ in millions	President's FY 2013 NASA Budget Request	FY 2012 NASA Appropriations (P.L. 112-55)	FY 2012 NASA Estimate	House Passed FY 2013 NASA Approps Bill (H.R. 5326)	Senate Proposed FY 2013 NASA Approps Bill (S.2323)
Exploration Research and Development	333.70	304.80	299.70	330.00	308.00
Human Research	164.70	N/A	157.70	N/A	N/A
Advanced Exploration Systems	169.00	N/A	142.00	N/A	N/A
Commercial Spaceflight	829.70	406.00	406.00	500.00	525.00
Commercial Crew	829.70	406.00	406.00	500.00	525.00
Exploration Systems Development	2,769.40	3,060.00	3,007.10	2,881.90	3,075.90
Multipurpose Crew Vehicle(s)	1,024.90	1,200.00	1,200.00	1,024.90	1,200.00
Space Launch System	1,340.00	1,502.60	1,502.60	1,454.20	1,481.90
Exploration Ground Systems	404.50	N/A	304.5	402.80	394.00
Total	3,933.00	3,770.80	3,712.80	3,711.90	3,980.90

Space Launch System

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

The House passed bill would appropriate \$1,454 million for the Space Launch System in FY 2013, \$114 million above the President's request. The House Committee Report states that the "Committee remains committed to the development of the full 130 metric ton SLS capability," which it designates as "necessary for NASA to achieve its most aggressive beyond Earth orbit exploration goals." The Committee supports NASA's evolutionary heavy lift launch vehicle plan "as long as its execution remains consistent with NASA's legal obligations to design the system from inception to the 130 metric ton standard and to proceed with simultaneous development of the core and upper stages." With that said, the Committee "urges NASA to continue seeking innovative design and management strategies that will accelerate the currently projected schedule for attaining the 130 metric ton capability."

The House Committee Report outlines several areas that NASA has undertaken or will undertake as directed by the Appropriations Committees to provide the Congress with greater insight and oversight of the SLS program.

- The House Committee Report states that the Committee is interested in "more insight into the level of effort being dedicated to each component of the SLS," and directs NASA to "continue submitting quarterly reports on SLS spending by major program element, as first requested in the statement accompanying Public Law 112-55." The House Committee Report outlines several issues that NASA should cover in the reports. First, the "first such quarterly report of fiscal year 2013 should include a narrative description of how NASA's design and development approach is currently supporting the ultimate attainment of a 130 metric ton SLS capability." Second, the "report should include a discussion of how the SLS will evolve from a 70 metric ton to a 130 metric ton capability and provide objective evidence showing that the ultimate 130 metric ton capability is being advanced through current activities, such as the design and development of common manufacturing systems for the core and upper stage and planning and implementation of ground launch systems that can accommodate the 130 metric ton capability." Third, the report should include "an explanation of the technical benefits that NASA believes are provided by developing a system that can be flown with a variety of different lift capabilities."
- The House Committee Report notes that the "statement accompanying Public Law 112-55 mandated several changes to NASA's presentation of the human exploration program budget, primarily affecting

the SLS,” which NASA has done “by shifting funds between accounts as directed and identifying SLS ground operations as a separate, consolidated program line entitled Exploration Ground Systems (EGS).” The Committee “continues to believe these are beneficial changes that improve oversight by reducing the transfer of funds after an appropriation is enacted.”

- The Committee’s recommendation “aligns the SLS vehicle development budget with the fiscal year 2013 levels established in the SLS Independent Cost Assessment (ICA) plus an additional amount to account for cost margins, which external evaluators found to be a weakness in the ICA.” The Committee Report states that the Committee “feels that the ICA remains the safest basis for program budgetary estimates until such time that NASA has finished a comprehensive, bottom-up cost estimate for the program; definitized remaining contracts; and completed other actions that could have a significant impact on cost.”

Senate Proposed FY 2013 NASA Appropriations Bill (S.2323)

The Senate Appropriations Committee proposed bill would appropriate \$1,481 million for the Space Launch System in FY 2013, \$141 million above the President’s request. The Senate Appropriations Committee proposed bill would commit the Space Launch System to “have a lift capability not less than 130 metric tons” and “have an upper stage and other core elements developed simultaneously.” Further, the SLS shall be a “sustained, evolvable effort around a common core” that will “culminate in an initial human capability by 2017, using fixed price contracts for components wherever possible.” The Senate Committee Report states that the SLS “shall be managed under a strict cost cap of \$10,000,000,000 through fiscal year 2017, as evaluated by the Independent Cost Analysis [ICA].” Finally, the Senate Committee Report directs NASA to “update its previous report to the Committee on planned milestones, expected performance of the low-Earth orbit and beyond low-Earth orbit configurations, planned ground and early flight testing programs and deliverables for the heavy lift launch vehicle program, along with any existing contract vehicles the agency intends to use for this purpose,” within 60 days of enactment of the Act. In addition, the report “shall evaluate the [\$10 billion] cost cap and validate the cap or provide a viable and validated alternative.”

Orion Multi-Purpose Crew Vehicle

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

The House passed bill would appropriate \$1,024 million for the Orion Multi-Purpose Crew Vehicle (MPCV) FY 2013, which would fully fund the President’s request. The Committee Report states that “in keeping with the Committee’s approach to the SLS budget, the Committee looked to the MPCV ICA as an indicator of the sufficiency of NASA’s request for the MPCV program.” The Committee Report notes that while the MPCV “request represents a decrease from fiscal year 2012,” the request is “consistent with the ICA for fiscal year 2013.” And, “according to NASA” the level requested “will keep the program on track for an MPCV flight test in 2014, an ascent abort test in 2016 and a joint MPCV-SLS test flight in 2017.”

Senate Proposed FY 2013 NASA Appropriations Bill (S.2323)

The Senate Appropriations Committee proposed bill would appropriate \$1,200 million for the Orion Multi-Purpose Crew Vehicle FY 2013, \$175 million above the President’s request. In keeping with the Committee’s approach to the SLS budget, the MPCV “shall be managed under a strict cost cap of \$6,000,000,000 through fiscal year 2017, as evaluated by the ICA,” and will use “fixed price contracts for components wherever possible.” Finally, the Senate Committee Report directs NASA to “update its previous report to the Committee on planned milestones, expected performance and configurations, planned testing program, and deliverables for the crew exploration vehicle program, along with any suggestions for streamline oversight,” within 60 days of enactment of the Committee bill. In addition, the report “shall evaluate the preceding cost cap and validate the cap or provide a viable and validated alternative.”

Commercial Crew

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

The House passed bill would appropriate \$500 million for Commercial Spaceflight in FY 2013, \$329 million below the President's request. The House Committee Report states that the Committee "supports the goal of achieving independent and redundant access to the International Space Station (ISS)," however it "remains concerned about many aspects of NASA's approach to the commercial crew development program."

- First, the Committee "believes that the program's total estimated development costs of \$4,868,000,000 are too high given that the current commitment o the ISS leaves NASA with only a few years to make use of commercial crew services and no sufficient additional market has been clearly demonstrated in the absence of NASA as a base customer."
- Second, the "current structure of the program has insufficient safeguards in place to protect the government's interests in intellectual or physical property developed with Federal money in the event that companies are terminated from or opt to leave the program." Therefore, the Committee is concerned "there is a risk of repeating the government's experience from last year's bankruptcy of the solar energy firm Solyndra."
- Third, the House Committee Report states the "Administration appears to be pursuing potentially inconsistent goals for the program: (1) the achievement of the fastest, safest, most cost effective means of domestic access to the ISS, and (2) the 'seeding' of a new commercial spaceflight industry." The Committee Report goes on to state that "given the overwhelming importance of the first of these two goals, any funding, time and effort expended in pursuit of the second is potentially a distraction from other necessary work, and, in an environment of fiscal constraint, a dilution of limited resources."
- Fourth, the "program's current acquisition strategy lacks any defined plan to transition from the planned Space Act Agreement (SAA)-based Commercial Crew Integrated Capability (CCiCap) round of awards to a Federal Acquisition Regulation (FAR)-based certification and service contract." Therefore, the Committee believes the "strategy presents a significant risk of costly, lengthy delays as NASA attempts to retroactively assess competitors" designs on safety and other standards and companies attempt to make changes in fully mature integrated designs to address instances in which NSAA cannot verify that a necessary qualification criterion has been met."

To address many of these concerns the Committee believes "an immediate downselect to a single competitor, or, at most, the execution of a leader-follower paradigm in which NASA makes one large award to a main commercial partner and a second small award to a back-up partner" should be instituted.

The House Committee Report outlined several reasons why it believed an immediate downselect would be beneficial:

- First, "fewer companies remaining in the program, NASA could reduce its annual budget needs for the program and fund other priorities like planetary science, human exploration or aeronautics research."
- Second, "an accelerated downselect would allow NASA to focus its remaining funds and technical assistance resources on the most promising contender, potentially enabling that competitor to produce a final capability faster than otherwise possible."
- Third, it would "allow NASA to return to its previous acquisition strategy of holding an open competition and following a more traditional FAR-based management approach, avoiding a complex transition from SAAs late in the development process and allowing the government to better protect its interests in intellectual and physical property developed with taxpayer funds."
- Fourth, the above outlined "strategy is more consistent with current overarching fiscal guidance included in the fiscal year 2013 House budget resolution."

The House Committee Report concludes that it is "for all of these reasons, the Committee believes that the advantages offered by an immediate downselect and a return to FAR-based contracts outweigh the potential benefits of maintaining the current program structure." Therefore, "the Committee directs NASA to execute the program as described above and in accordance with a fiscal year 2013 funding level of \$500,000,000, which is equal to the level agreed to by Congress and the Administration in the NASA Authorization Act of 2010."

Senate Proposed FY 2013 NASA Appropriations Bill (S.2323)

The Senate Appropriations Committee proposed bill would appropriate \$525 million for the Commercial Crew Development in FY 2013, \$304 million below the President's request. The Senate Committee Report states that the Committee "shares the administration's enthusiasm for new acquisition models intended to keep the cost of space access low and for investments in new technologies that can radically reduce the cost of human transportation." However, the Senate Committee Report states that "NASA cannot abdicate its responsibility for safety and oversight of entities receiving Federal dollars as an investment in developing launch and crew capabilities regardless of the acquisition model used." Currently, the "Committee is pleased by NASA's commitment to hold commercially developed launch vehicles to be used to carry out NASA missions to the same safety standards as Government-developed launch vehicles."

The Committee outlines several suggestions and directions for NASA's commercial crew efforts:

- First, the Committee "encourages NASA to develop plans to fully utilize NASA-owned rocket testing infrastructure for commercially developed launch vehicles to ensure that these vehicles are tested in the same manner as Government-developed launch vehicles."
- Second, "NASA should strive to ensure that multiple competitors remain" in the commercial crew development program, "but should also be mindful that, faced with a stagnant future budget, NASA should not take on obligations to more companies than can be practically supported." Further, it is "vital that NASA wisely invest available funds in companies that agree to adhere to NASA's safety guidelines."
- Third, the Committee "shares concern expressed by the ASAP, the OIG, and others that Space Act Agreements may not give NASA sufficient oversight to correct safety defects." While "NASA has assured the Committee that any subsequent phase of the commercial crew program will be awarded as a contract under the Federal Acquisition Regulations [FAR]," the Committee "directs NASA to only place astronauts on a commercial crew vehicle that NASA acquired under a contract that allows NASA to require the company to meet all safety requirements."

Exploration Ground Systems

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

The House passed bill would appropriate \$402 million for Exploration Ground Systems in FY 2013, \$1.7 million below the President's request.

Senate Proposed FY 2013 NASA Appropriations Bill (S.2323)

The Senate Appropriations Committee proposed bill would appropriate \$394 million for Exploration Ground Systems in FY 2013, \$10 million below the President's request. In keeping with the Committee's approach to the SLS and MPCV budget, the Exploration Ground Systems "shall be managed under a strict cost cap of [\$2 billion] through fiscal year 2017, as evaluated by the ICA." Further, the Committee directs NASA to report on "planned milestones, expected performance, planned testing program, and deliverables for the exploration ground systems program." In addition, the report "shall evaluate the preceding cost cap and validate the cap or provide a validated and viable alternative."

Space Operations

Budget Authority, \$ in million	President's FY 2013 NASA Budget Request	FY 2012 NASA Appropriations (P.L. 112-55)	FY 2012 NASA Estimate	House Passed FY 2013 NASA Approps Bill (H.R. 5326)	Senate Proposed FY 2013 NASA Approps Bill (S.2323)
Space Shuttle	70.6	N/A	556.20	70.00	70
International Space Station	3,007.60	N/A	2,829.90	2,990.00	2,957.60
Space and Flight Support	935.00	N/A	800.90	925.00	893.00
Total	4,013.00	4,233.60	4,187.00	3,985.00	3,961.70

Space Shuttle

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

The House passed bill would appropriate \$70 million for the Space Shuttle in FY 2013, to fully fund the President's request. The House Committee Report notes that in the "statement accompanying Public Law 112-55" NASA was directed "to provide by September 30, 2012 a report with comprehensive outcome data for the Shuttle workforce." However, "according to the current schedule for completing Shuttle transition and retirement (T&R) activities, some Shuttle workers may remain on the job beyond the requested due date for that report." Therefore, the Committee directs NASA to "provide to the Committees on Appropriations a supplement to the Shuttle workforce report no later than 90 days after the formal completion of T&R activities." Further, "this supplement should provide the previously requested outcome data for any Shuttle workers who continued to execute Shuttle T&R beyond the original report completion date."

Senate Proposed FY 2013 NASA Appropriations Bill (S.2323)

The Senate Appropriations Committee bill would appropriate \$70 million for the Space Shuttle in FY 2013, to fully fund the President's request.

International Space Station

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

The House passed bill would appropriate \$2,990 million for the International Space Station (ISS) in FY 2013, \$17 million below the President's request. Currently, the Administration's committed to operate the ISS through 2020. The House Committee Report states that whether the ISS continues to be utilized beyond 2020 "is a critical factor in the decision making about the future of NASA's other human spaceflight activities, especially the commercial crew and beyond Earth orbit exploration programs." Therefore, "NASA is urged to begin as soon as possible the process of making a firm decision on whether the ISS program will continue beyond 2020." The House Committee Report states that an "important element in the decision making about the long term status of ISS is whether it can demonstrate sufficient research value to justify the continuation of its operating budget." However, only a small "fraction of the overall ISS budget [is] devoted to research," and "plans for leveraging outside funding through the ISS National Lab are moving slowly because the National Lab's manager, the Center for the Advancement of Science in Space (CASIS), is still establishing its management and governance structures." Ultimately, "if the ISS is going to demonstrate its long-term value as a research facility and technology testbed," then "all research-related planning and support will need to be executed with greater urgency to maximize utilization of the space." Therefore, "NASA is directed to take all necessary steps to do this, including providing appropriate technical and management support for the ISS National Lab."

The House Committee Report also outlines several other areas of concern related to the ISS:

- First, the Committee is "concerned that NASA does not have a short-term back-up plan to provide access to the ISS in the event of a Soyuz failure or delay." Therefore, "NASA is directed to report to the Committees on Appropriations on its planned means of providing short-term emergency access to the

Station, including the potential use of the MPCV from its earliest availability, and the timeline necessary to bring such an emergency access capability online under existing budgetary assumptions.”

- Second, the Committee is “concerned about the lack of a certified medium class launch vehicle currently in production.” Therefore, the Committee “encourages NASA to ensure that the budgets of its medium class missions reflect an appropriate amount of risk associated with this uncertainty.”
- Third, the Committee is “concerned about the causes and impacts of a recent increase in launch vehicle prices across all classes,” which the GAO attributes, “in part, to the failure of the government to effectively leverage its full bargaining power by consolidating the purchase of launch vehicles across agencies.” Therefore, the Committee “urges NASA to continue working with DOD to ensure that launch vehicle services are procured in the most efficient and cost effective manner.”

Senate Proposed FY 2013 NASA Appropriations Bill (S.2323)

The Senate Appropriations Committee proposed bill would appropriate \$2,957 million for the International Space Station in FY 2013, \$50 million below the President’s request. The Senate Committee Report states that the Committee has “consistently supported the construction and operation of the ISS on the promise that it would support world class science that could improve life on Earth.” Further, the Senate Committee Report notes that “due to the retirement of the space shuttle, commercial cargo transportation of experiments and logistics is essential to ensure that ISS can function as a national laboratory.”

21st Century Space Launch Complex

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

The House passed bill would appropriate \$41 million for NASA’s 21st Century Space Launch Complex, to fully fund the President’s request. The Committee directs that “all multi-user projects and other launch infrastructure activities not associated with the ground operations needs of the SLS should be supported with this funding and not with EGS funds in the Exploration account.” In addition, “NASA shall submit to the Committees on Appropriations a five year strategic plan for upgrades and modernization associated with the launch infrastructure at the Wallops Flight Facility.”

Senate Proposed FY 2013 NASA Appropriations Bill (S.2323)

The Senate Appropriations Committee proposed bill would appropriate \$41 million for NASA’s 21st Century Space Launch Complex, to fully fund the President’s request. The Senate Committee Report notes that these funds are “intended to revitalize the aging infrastructure at the Kennedy Space Center and other NASA facilities to support the human space flight program.” The Senate Committee Report directs NASA to “place a priority on the use of funds for future ground operations and to improve only NASA-owned facilities for launch vehicles intended to serve NASA missions, including the heavy lift launch vehicle system.” Further, these funds “may be used at other NASA flight facilities that are currently scheduled to launch cargo to the International Space Station under the COTS program, to upgrade the launch infrastructure to improve efficiency and safety.” Finally, the Committee directs NASA to provide “an updated 5-year plan for this funding within 60 days of the date of enactment of this act that includes all NASA-owned flight facilities.”

Cybersecurity

House Passed FY 2013 NASA Appropriations Bill (H.R. 5326)

The House Committee Report states that the Committee is “concerned by the persistence of significant security vulnerabilities in NASA’s information technology systems, including those systems that control spacecraft and maintain critical data sources,” and the “nearly universal lack of encryption on agency laptops.” The Committee Report notes that “many of the findings on NASA’s information technology security vulnerabilities stem from oversight work by the NASA Office of Inspector General (OIG), which has done 21 cybersecurity-related audits.” Therefore, the Committee directs NASA to “include a listing of all open OIG recommendations relating to those audits, along with a description of NASA’s current progress in resolving those recommendations and a date by which the agency anticipates completing that resolution.”

Senate Proposed FY 2013 NASA Appropriations Bill (S.2323)

The Senate Committee Report notes that “cybersecurity has been identified as one of NASA’s top management challenges by the OIG.” Therefore, the Committee directs NASA “within 60 days of the date of enactment of this act,” to “report to the Committee on specific actions it will take to improve IT security, with particular focus on IT-security governance.” Further, NASA shall “submit these actions to the OIG for an evaluation of whether these actions meet the recommendations of the OIG and have the potential to remove cybersecurity from the top management challenges list.”

About the Space Foundation

The Space Foundation is an international, nonprofit organization and the foremost advocate for all sectors of the space industry - civil, commercial, military and intelligence. Founded in 1983, the Space Foundation is a leader in space awareness activities, educational programs that bring space into the classroom, and major industry events, all in support of its mission "to advance space-related endeavors to inspire, enable, and propel humanity." An expert in all aspects of the global space industry, the Space Foundation publishes [*The Space Report: The Authoritative Guide to Global Space Activity*](#) and provides three [indices](#) that track daily performance of the space industry. Through its [Space Certification](#) and [Space Technology Hall of Fame](#) programs, the Space Foundation recognizes space-based technologies and innovations that have been adapted to improve life on Earth. Headquartered in Colorado Springs, the Space Foundation conducts research and analysis and government affairs activities from its Washington, D.C., office and has field representatives in Houston, Texas, and Cape Canaveral, Fla. For more information, visit www.SpaceFoundation.org. Follow us on [Twitter](#), [Facebook](#), and [LinkedIn](#), and read about the latest space news and Space Foundation activities in [Space Watch](#).

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