



SPACE FOUNDATION

THE SPACE REPORT

THE AUTHORITATIVE GUIDE
TO GLOBAL SPACE ACTIVITY

2 0 2 1

Q2



2020 GLOBAL SPACE ECONOMY | PRESIDENT BIDEN'S SPACE BUDGET | MIDYEAR LAUNCH UPDATE



President Biden's Space Budget: Challenges, Opportunities for Industry



Courtney Stadd evaluates the first space budget proposal from President Joe Biden and its implications for civil and military programs. Stadd has spent more than 40 years in the space sector, including stints at the White House, NASA, Department of Transportation, Department of Commerce, helping draft and implement federal policies and regulations to spur the growth of space commerce, including public-private partnerships. He is widely consulted by industry.

*"Don't tell me what you value, show me your budget, and I'll tell you what you value."
- Sen. Joe Biden, 2008*

With the release of the President's Budget Request (PBR) for the Fiscal Year 2022 on May 28, 2021, Congress now undertakes its much-anticipated authorization and appropriations reviews of the budget.

By the time this paper is released in early July 2021, the PBR will have been dissected by innumerable corporate lobbyists, trade associations, think tanks, academics, and investment houses.

Accordingly, this paper is primarily intended to help those following the civil and military space domains who either lack the bandwidth to track the political daily drama or are focused on specific areas of special interest — and thus might benefit from a discussion of the critical overarching policy and programmatic challenges that sometimes get lost in the daily coverage.

This is also intended to provide the larger FY22 budgetary context within which the various senior government officials and aerospace executives will be speaking Aug. 23-26 at the 36th Space Symposium.

The following analysis is based on more than a dozen interviews with senior officials in the administration at the various affected agencies. All of them agreed to the interviews based on non-attribution in order to be as candid as possible.¹

Each new year, the release of a PBR triggers the formal start of the annual appropriations process on Capitol Hill. Normally the PBR comes out in February, followed by Congressional authorization hearings with agency heads defending their portion of the PBR and the appropriations where the real block-and-tackle debates on concrete spending priorities are made. All of which is ideally done per budget allocations determined by the pertinent Senate and House budget committees.

It is not unusual for a PBR to be delayed in presidential transition years to allow a new administration time to review its predecessor's budget submission, factor in recommendations from the various post-election agency transition teams, and adjudicate — led by the Office of Management and Budget (OMB) leadership and the President's senior White House staff — its initial spending priorities. (This is the latest, however, a PBR has been released dating back to when annual budget submissions were required in the 1920s.)

In this case, the Biden administration also released a budget outline or "skinny budget" in April. This document outlined the administration's top-line funding priorities, which the PBR has now fleshed out with detailed funding requests for thousands of programs in the overall federal bureaucracy — unclassified and classified.

¹ Velocity Government Relations, a leading government relations bipartisan consulting firm focused on the aerospace sector, also shared its summary analyses of the PBR and space related budget impacts. <https://www.velocitygr.com/>



This April “appetizer” budget signaled that the new administration would include additional spending for health and technology, including a new technology directorate in the National Science Foundation currently proposed in new legislation by the Senate and the House. The budget proposes increasing the non-defense budget authority by \$105 billion, or about 16 percent, of which NASA’s top line continues an overall positive trend line. The total non-defense budget authority, if enacted, promises the largest such increase in the past decade. In addition, the budget would increase defense spending by less than 2 percent and hit a lower level than non-defense spending for the first time in at least a decade.

Now that the PBR details are available, we can see how the president’s priorities will translate into various demand signals vis-a-vis the civil and defense space markets — still heavily shaped and driven by the federal government’s investments.

By the way, contrary to the conventional wisdoms that PBR’s are usually DOA on Capitol Hill, the Planetary Society has undertaken a compelling analysis that reveals that more of a president’s requested funds for space (for NASA at least) tend to be appropriated than conventional wisdom might suggest.²

Before a deeper dive into the PBR and what it portends for some of the major civil and space programs, let us take a moment to appreciate the formidable political headwinds that will determine the ultimate fate of these funding initiatives in FY22.

Major Headwinds: From Threats of Shutdowns to Revolts within the President’s Party

Between the \$1.9 Trillion American Rescue Plan signed into law by Biden on March 11, the likelihood of a trillion-dollar pending infrastructure bill combined with major spending increases proposed in the President’s Budget FY22 request, the federal government is looking at appropriating more overall budgetary dollars than in decades. Given the 50-50 split in the Senate, the thin majority in the House, and the overall highly partisan, almost toxic, political climate — exacerbated by both parties seizing on partisan messages to position themselves for the 2022 Congressional elections — how NASA’s highly discretionary budget and DoD’s overall request will fare in the coming months is nearly impossible to predict as of this writing.

As if the political climate in the nation’s capital were not sufficiently fraught, the next government shutdown threat is a mere few months away, and already top lawmakers assume they may “not strike a deal in time to prevent another funding punt.” Politico reports that six senators on the Senate Appropriations Committee are resigned to the fact that a Continuing Resolution (CR) is most assuredly coming.³

Powerful long time Senate Appropriations Committee (SAC) ranking member Sen. Richard Shelby (R-AL), was quoted as admitting, “I think we’ll be around here in December, trying to fund the government. . . It’s going to be a long winter.” (Shelby announced that he will not be running for re-election in the 2022 cycle but both majority and minority committee staff affirm that the senator, a longtime supporter of NASA and programs such as the Space Launch System, intends to exercise his formidable influence on the FY22 budget.)

The SAC Chairman, Sen. Patrick Leahy (D-VT) said, “It’s a different time than we’ve ever seen before. Under normal circumstances, we’d have everything locked down now.” Sen. Jon Tester (D-MT), chairman, House Appropriations Committee - (Defense), said, “We’re still analyzing what’s in the budget. There will be plenty of conversations on top lines for defense, top lines for non-defense, and all that.” Sen. Lindsey Graham (R-S.C.), said, “We’re headed toward a CR, which is a disaster for the military.”

Even if one discounts the calculated posturing verbiage by these politicians, there is no denying the political obstacles to securing 12 annual appropriations by the end of the fiscal year 2021 (or by September 30) and having them signed into law by the president.

2 The Planetary Society. <https://docs.google.com/spreadsheets/d/1NMRYCCRWXwpn3pZU57-Bb0P1Zp3yg2ITTVUzvc5Gkls/htmlview#gid=648185885>

3 “Going to be a Long Winter.” Politico. June 15, 2021. <https://www.politico.com/news/2021/06/15/going-to-be-a-long-winter-congress-hits-snooze-on-funding-the-government-494410>. Accessed June 21, 2021.



In the best of political times that has always been a heavy lift — with Congress usually extending deadlines beyond the October 1 into the last weeks of the year with outstanding bills wrapped into a large Omnibus spending morass which few members have time to review in detail before it is signed into law. Or, in the worst case, if the majority and minority cannot bridge their differences – which seems more likely than not at the moment — the Congress punts in favor of a continuing resolution (CR) and maintains status quo funding levels. After a year-end holiday recess, they come back to battle through another fiscal year.

In a political climate characterized by extreme polarization between the major parties and fault lines within the majority party (extreme leftists vs progressives vs moderates within the Democrat Party) one staffer with a senior member's office described trying to anticipate the outcome of this year's budget deliberations as equivalent to “aspiring to fly a plane across the U.S. with an overall sense of a destination in the cockpit but without consistently working navigation gear or a pilot and co-pilot and their support crews agreeing on the best course to reach that destination or indeed whether that destination is desirable.”

Another unusual feature of deliberations focused on FY22 is that discretionary spending levels are no longer subject to caps, as they were for the 10 years between FY2012 and FY2021. This may sound arcane, but the absence of those caps can have profound implications on funding levels.

The Budget Control Act (BCA) of 2011 established legal limits on the amount of discretionary spending that could be provided each fiscal year. Under the BCA, for each fiscal year, two separate spending limits have been in effect: one for defense discretionary spending and one for nondefense discretionary spending. This reflected Congressional concerns about the rapidly growing federal deficit and the need to put in place spending limits that could make, even if on the margins, an attempt to controlling the deficit.

If the appropriations-generated-funding levels exceeded the statutory limits for a given fiscal year, an automatic process, called sequestration, was triggered to eliminate the excess spending. That enforcement mechanism ended in FY21 so that now there are, in theory, no statutory limits on NASA, defense and other discretionary-related FY22 funding.

In recent days, the House approved a \$1.5 trillion appropriations ceiling for FY22 by adopting a rule (H Res 473) with the “deeming” resolution⁴. This resolution sets a total spending level for House appropriators. It is now on Rep. Rosa DeLauro (D-CT), chairwoman, HAC, to break the money down into the 12 annual spending bills.

That number is about \$16 billion below the president's budget request, which Democrats said this does not reflect a reduction in either defense or domestic programs. Instead, it is attributed to budget scorekeeping and technical adjustments, including estimated changes in mandatory spending.

House Budget Committee Chair John Yarmuth (D-KY) said that his plan is to hold a markup of the budget resolution in mid-July and then adopt the resolution before the August recess. Republicans are pushing back on that number, with Rep. Mike Rogers (R-AL), the House Armed Services Committee (HASC) ranking member, emphasizing that “not one cent of that \$16 billion cut can come from national defense accounts.” So, the battle lines are being drawn.

The deeming resolution does not break out the topline limits for defense and non-defense spending, so it is not yet clear if Democrats will push for cuts to defense spending, though Yarmuth has suggested that defense spending might be kept flat instead of the small increase requested in the president's budget and that the extra money would go to domestic programs.

4 A “deeming resolution” reflects, in part, the divisive politics currently roiling Capitol Hill. Every year the House and Senate strive for a concurrent budget resolution for a given fiscal year reflecting an agreement between the House of Representatives and Senate on a budgetary plan for the upcoming fiscal year. In the absence of agreement on such a resolution, Congress may employ alternative legislative tools to serve as a substitute for such a concurrent resolution. These substitutes are typically referred to as “deeming resolutions” because they are “deemed” to serve in place of an annual budget resolution for the purposes of establishing enforceable budget levels and enforcement procedures for the upcoming fiscal year. Since the establishment of concurrent resolutions on the budget in 1974, there have been nine years in which Congress did not come to agreement on a budget resolution and one or other body resorted to a “deeming resolution.”



The House Appropriations Committee will use the deeming resolution to set the topline ceilings for each of the 12 spending bills (the so-called “302b’s”) and DeLauro has announced specific dates for the remainder of June and part of July during which her various committees will markup their respective spending bills. (Meanwhile, the House Science Committee has announced its Authorization hearing schedule as well.)

Meanwhile, Senate Budget Committee Chair Bernie Sanders (I-VT) and his colleagues are initiating their own budget resolution with a final version to be worked out in a conference. It can be expected that their efforts to forge such a consensus will lead to many partisan flashpoints between the two parties in the evenly split Senate.

As if matters could not be more fraught, as noted above, it is now predicted that the U.S. debt ceiling limit will be met by end of July, with the Treasury Department asking Congress to raise the limit by the August recess. In the past, Treasury has shown it has various strategies to stretch out the time before hitting the debt limit freezes the government’s finances, but sources say that October is the latest that the Congress can defer the issue. Again, one can expect that opposition forces in the Congress may use the debt ceiling issue to threaten a government shutdown unless the administration concedes on issues such as, for example, increased defense spending.

NASA Budget: Continuity is Overriding Theme

As expected, based on the administration’s “skinny budget” release in April, NASA’s proposed budget is \$24.8 billion — a 6.6 percent increase over last year’s FY21 allocation.

Perhaps as important as the funding level is that after years of the space community steeling itself for major disruptions in human spaceflight and other major programs due to a change in priorities by a new administration, this PBR reflects more continuity than not from its successor. In fact, senior White House officials confirmed that this budget for NASA can be seen as a statement of the administration’s outyear priorities. As one official stated, “There is no need for yet another task force or commission to develop recommendations for space goals under a Biden presidency. This budget clearly outlines what our priorities are and so now we can invest our bureaucratic and political capital in executing on those priorities.”

In his conference call with media announcing the PBR, recently confirmed NASA Administrator Bill Nelson underscored those priorities by noting the continuing commitment to Artemis (retaining a commitment to a 2024 landing on the Moon⁵), earth and climate science, with the largest request in the agency’s history for science-related programs. (The budget cancels SOFIA, the stratospheric observatory for infrared astronomy platform, but based on past Congressional action it is likely that funds will be restored for the program.) The agency provided a 30% increase for Space Technology and Space Operations, including \$101 million for commercial low Earth orbit development.

Deep Space Exploration Systems has \$6.88 billion for SLS/Orion/Ground Systems and Gateway/ Human Landing System (HLS)/surface systems, along with the human research program. In contrast to the previous administration’s PBR zeroing out funds for NASA’s Education/STEM program office (with Congress restoring the funding and in FY21 report language essentially admonishing the agency to stop using the education office as a bargaining chip), the Biden administration has embraced funding for a robust education/STEM initiative.

Regarding earth science, one of the Biden NASA transition team members indicated that, notwithstanding the anti-climate change rhetoric from the previous White House, they were “pleasantly surprised” to find that NASA’s earth science programs were more robust and funded than expected. Rather than reengineering the program, the PBR injects more funds into overall earth science — reflecting the president’s emphasis on enhancing NASA’s resources as part of a whole of government effort to combat climate change.

5 Based on off-the-record interviews with officials within the Artemis program office, none believed that 2024 was anywhere near a realistic date for landing astronauts on the Moon. As one official stated, “It is not even a stretch goal. It is simply an impossible goal.” Most agree that a more realistic time frame was in FY27 or beyond with a lot of fundamental technical challenges yet to be resolved.



Prior to Administrator Nelson coming on board the agency in May, NASA announced that SpaceX had beaten out the Dynetics and Blue Origin teams to win funding for the HLS. This procurement is being protested by the losing teams. As one White House official noted, “If Congress decides to fund another (HLS) contract (in addition to the one awarded to SpaceX), these multibillion dollars will likely come from other programs such as Space Technology.”

One of the mysteries in the NASA portion of the PBR is the absence funding for nuclear propulsion notwithstanding internal studies supporting continued research. As one NASA official noted, if the administration is “committed to sending humans to Mars one day, it is baffling as to why they have opted to ax such a promising technology.” This is yet another area where Congress may weigh in and add some resources.

Just about everyone I spoke to in the White House, in NASA, and on Capitol Hill agreed that the good news for the space community is that Nelson brings decades of relationship-building within and between the Senate and the House. As the bipartisan messages from his Senate confirmation hearing emphasized, members tend to defer to his expertise regarding NASA — garnered over years as chair and ranking member on House and Senate NASA oversight committees — and that with his knowledge of “deal-cutting” on the Hill he may be, as one member of his team said, “the right man, at the right time, with unique qualifications” to perform the requisite block and tackle to defend his agency’s portion of the PBR.

With that said, few veteran observers of previous budget year battles dispute Sen. Shelby’s warning that “it’s going to be a long winter.”

Defense Space: FY23 Will Reveal Administration’s Real Priorities

The PBR calls for defense top-line funding of \$753 billion for the total national security community, or approximately a 2% increase over FY21. The Pentagon’s portion is \$715 billion (weapons, national security priorities) while \$38 billion goes to defense-related programs at the Department of Energy and other defense-related agencies. (Even NASA supports defense-related programs, but these are highly classified, and the exact level is not publicly available.)

Administration and Congressional officials all acknowledge that as this is the administration’s first defense budget request, it has not had time for a “deep dive” to rework the many complex program that constitute the defense domain. There is general consensus that unlike NASA’s budget, it will not be until FY23 that the administration’s real priorities will be fleshed out. Now that the president (in stark contrast to his predecessor) is not requesting war-related funding or Overseas Contingency Operations (OCO) funding, the war-related part of the budget is being merged with the regular base budget.

The Air Force is benefiting from an increase of 2.2%. Secretary of the Air Force nominee Frank Kendall brings enormous experience to the position — having held senior positions in previous administrations, including as Under Secretary of Defense for Acquisition, Technology and Logistics during the Obama Administration (2012-2016).

DOD sources who have worked with Kendall say he promises to be “a formidable player” as the recently constituted Space Force addresses its own efforts to establish the type of streamlined procurement system being called for by the House and Senate oversight committees.

Congressional concerns about the Space Force being the lean and mean service to which its leaders claim to aspire was captured by Rep. Anthony Brown (D-MD), who sits on the House Armed Services Committee recently stated, “What we don’t want to see in the Space Force is a burgeoning headquarters and a Fourth Estate.”⁶

6 The “Fourth Estate” refers to support agencies that are not viewed as core to a given military service mission, detailed in “Congress Plans to Keep a Close Eye on Bloat in Space Force.” FedScoop. May 12, 2021. <https://www.fedscoop.com/space-force-budget-fy-2022/>. Accessed June 17, 2021.



Speaking of the Space Force, its leadership is requesting a net increase of 9%. One DoD budget analyst anticipated that such an increase might trigger opposition from “anti-defense progressives in Congress” but he cautioned that this increase is on a smaller base budget and that some of the funds are transfers from the Army and Navy.

Another recently retired former defense official with insight into the unclassified and classified space programs stated that his takeaway from this PBR is that “Military space programs continue in transition with the new administration with major unresolved matters and related resource needs.” He also underscored that the new leadership at the Pentagon (e.g., the comptroller was only recently installed) will need the coming months to begin to address many of these challenges.

With that said, most of the staff in Congress, the Pentagon, and outside experts believe that the new administration is persuaded that our unclassified and classified space programs are critically needed to defend against growing peer threats—especially from China. It is acknowledged that space programs are expensive, challenging, and will require continued increases in budgets.

As for the Space Force itself, more than one analyst and defense official noted that the Space Force was originally created under great urgency but without “broad agreement” on the nature of that urgency. Some believe the priority is to fix acquisition processes while improving the support to the joint force and focus on terrestrial warfighting (missile warning, communications, Positioning, Navigation and Timing (PNT), weather, and the launch capabilities that support these missions.) Others believe the Space Force was established to address China’s and Russia’s investments in space and counterspace capabilities — and that space has transitioned from a sanctuary to a warfighting domain.

This has two dramatic resource implications — redesigning the space architecture to be more resilient and developing capabilities to achieve space superiority to preserve U.S. freedom of operations in the space domain.

The last administration had strong rhetoric that implied the U.S. could effectively dominate the domain through military strength. It can be argued that the Biden administration appears more balanced and measured in its posture, but the FY22 budget arguably does not clearly lay out a path forward. Regardless of the priority and the success of building consensus for the new service, most of the experts interviewed (in and out of the Pentagon) agreed that significant new resources will be required. There appeared to be no consensus, however, as to the size and scope of those resources.

Space Force joined other service branches in sending its unfunded priorities list to Congress. This funding comes to \$831.7 million for initiatives such as new payload and propulsion system development, procurement of space-rated crypto systems to support the Space Force’s anti-jamming protected tactical satcom satellites, Wideband Global Satellites, GPS III, Next-Gen OPIR satellite launches, sustaining current satellites, and launch facilities.

Under the Air Force budget is an intriguing line item called Space Cargo (\$47.9 million) with an interesting description: “The Department of the Air Force seeks to leverage the current multibillion dollar commercial investment to develop the largest rockets ever, and with full reusability to develop and test the capability to leverage a commercial rocket to deliver AF cargo anywhere on the Earth in less than one hour, with a 100-ton capacity.” These funds seem to support science and technology investments.

In addition, other space-related programs of interest:

- \$1.2 billion for military space managed by the Space Development Agency (SDA), the Missile Defense Agency (MDA), and Defense Advanced Research Projects Agency (DARPA)
- \$936.7 million for SDA, including \$808.8 million for research, development, testing, and evaluation, \$53.8 million for operations and maintenance, and \$74 million for procurement
- Which includes funds for the demonstration of SDA’s first 28 satellites (20 for the transport layer and eight for the tracking layer)



- \$292.8 million for MDA's space programs, including \$260 million for space sensors to track hypersonic missiles, \$15.2 million to retire the Space Tracking and Surveillance System satellites. Another \$32 million has been requested for the Space-based Kill Assessment (SKA) project, which places a network of infrared sensors on commercial satellites
- \$42 million for DARPA's Blackjack program
- \$800 million for classified space programs
- "Accelerated buying strategy" for hypersonic weapons that will move some programs from R&D to procurement

Other Civil Space Agency Requests of Interest

The National Oceanic and Atmospheric Administration (NOAA) includes a budget request of \$7 billion, an increase of \$1.5 billion from the FY2021 enacted level. "These additional funds would allow NOAA to expand its climate observation and forecasting work and provide better data and information to decisionmakers; support coastal resilience programs that would help protect communities from the economic and environmental impacts of climate change; and invest in modern infrastructure to enable these critical efforts."

The Office of Space Commerce, housed within the U.S. Department of Commerce, but administratively supported by NOAA in the previous administration, is requesting \$10 million for FY22, the same amount it received last year. The Office was assigned the lead for Space Traffic Management (STM) by the last White House, and it is pursuing a pilot project to demonstrate its capabilities. With that said, its future and its mandate for managing STM is still uncertain with the Congress and the new Administration, it seems, still debating the nature and scope of the office.

The FAA Office of Commercial Space Transportation requested \$32.5 million for FY22, a major increase over its FY21 \$27.6 million request. If a recent statement from Rep. Pete DeFazio (D-OR), chair of the House Committee on Transportation and Infrastructure is any indication, this office will be facing some pushback from a powerful member as it pursues its funding priorities for FY22. DeFazio was emphatic in stating that "It's time to end the FAA's 'dual mandate' of both regulating and promoting the commercial space industry. It is an anachronism, a paradox, and no serious safety regulator can regulate and promote at the same time."⁷

Conclusion

The PBR has a combination of mostly good news for the space community in terms of the new administration showing that it remains committed overall to building on the civil and national security space priorities that it inherited from its predecessor. The NASA and NOAA budgets seem solid and form the basis for a stable and predictable funding investment for the space industry. In contrast, the defense budget is fraught with many continuing resource allocation challenges but even here the good news is that administration is recognizing the critical importance of the nation's national security-related space programs.

As the PBR goes from the executive branch to the Congress, that is where the proverbial crystal ball becomes very foggy – given the political polarization and the narrow margins that allow even one member to have outsized power. How the administration manages such a politically fraught climate will determine, in large measure, whether the PBR is translated into new spending bills, or it finds itself captive to a spate of continuing resolutions and political impasses that turn FY22 into a major disruptive planning challenge for space program managers in the public and private sectors.

Circling back to Senator Shelby's earlier statement, the overriding question, as of this writing, is how long and cold a winter the FY22 space budget will be facing.

7 "Chairs DeFazio, Larsen Statements from Hearing on the FAA's Role in the Future of Spaceflight." [Transportation.house.gov](https://transportation.house.gov/news/press-releases/chairs-defazio-larsen-statements-from-hearing-on-the-faas-role-in-the-future-of-spaceflight). June 16, 2021. <https://transportation.house.gov/news/press-releases/chairs-defazio-larsen-statements-from-hearing-on-the-faas-role-in-the-future-of-spaceflight>. Accessed June 21, 2021.



SPACE FOUNDATION'S MISSION:

Be the preeminent resource for space education, a trusted source of space information, and a provider of exceptional forums for the exchange of ideas.

As a 501(c)(3) nonprofit organization, philanthropic support is vital in fueling the Space Foundation's important programs and services. Every gift is significant in funding our work to **inspire, educate, connect, and advocate** for the global space community.

Discover the impact of giving at www.SpaceFoundation.org/Donate

SPACE FOUNDATION HQ

4425 Arrowswest Drive
Colorado Springs, CO 80907
+1.719.576.8000

WASHINGTON, D.C.

1700 North Moore Street, Suite 1105
Arlington, VA 22209

www.SpaceFoundation.org