CONGRESSIONAL BUDGET OFFICE
COST ESTIMATE

November 7, 2016

S. 3346
National Aeronautics and Space Administration Transition Authorization Act of 2016

As ordered reported by the Senate Committee on Commerce, Science, and Transportation on September 21, 2016

SUMMARY

S. 3346 would amend current law and authorize the appropriation of $19.5 billion in 2017 for the National Aeronautics and Space Administration (NASA). The legislation would reaffirm existing policy regarding use of the International Space Station (ISS) and would require NASA to develop a transition plan that would enable greater participation in the ISS and low-earth orbit by NASA's industry partners and additional partner countries. It also would require NASA to develop propulsion technologies intended to reduce travel time to Mars and a strategic framework for human space flight to Mars.

Assuming appropriation of the specified amount, CBO estimates that implementing the legislation would cost $19.4 billion over the 2017-2021 period.

CBO also estimates that enacting the legislation would increase net direct spending by $35 million over the 2017-2026 period; therefore, pay-as-you-go procedures apply. Enacting the bill would not affect revenues.

CBO estimates that enacting the bill would not increase net direct spending or on-budget deficits by more than $5 billion in any of the four consecutive 10-year periods beginning in 2027.

S. 3346 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA) and would impose no costs on state, local, or tribal governments.

ESTIMATED COST TO THE FEDERAL GOVERNMENT

The estimated budgetary effect of S. 3346 is shown in the following table. The costs of this legislation fall within budget function 250 (general science, space, and technology).

	By Fiscal Year, in Millions of Dollars											
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2017-2021	2017-2026
INCREASES IN SPENDING SUBJECT TO APPROPRIATION												
Estimated Authorization Level	19,509	0	0	0	0	0	0	0	0	0	19,509	19,509
Estimated Outlays	12,266	5,917	947	233	79	0	0	0	0	0	19,442	19,442
INCREASES IN DIRECT SPENDING												
Estimated Budget Authority	0	2	3	4	4	5	5	5	6	6	13	40
Estimated Outlays	0	1	2	3	4	4	5	5	5	6	10	35

BASIS OF ESTIMATE

For this estimate, CBO assumes S. 3346 will be enacted before the end of calendar year 2016 and that the necessary amounts will be appropriated for that year. Estimated outlays are based on historical spending patterns for existing programs.

Spending Subject to Appropriation

S. 3346 would authorize appropriations totaling $19.5 billion to finance the activities of NASA for fiscal year 2017. In 2016, NASA received an appropriation of $19.3 billion. Based on historical spending patterns, CBO estimates that implementing the bill would cost $19.4 billion over the 2017-2021 period. Specifically, the bill would authorize appropriations for the following activities:

- $5.4 billion for programs under NASA's Science account. In 2016, those programs received an appropriation of $5.6 billion;

- $4.5 billion for NASA activities related to space exploration. In 2016, exploration programs received an appropriation of $4.0 billion;

- $5.0 billion for programs within space operations. In 2016, those programs received an appropriation of $5.0 billion;

- $2.8 billion for NASA expenses related to safety, security, and mission services. Those programs received an appropriation of $2.8 billion in 2016; and

- $1.8 billion in 2017 for other NASA activities, including aeronautics, space technology, education, construction and environmental compliance and restoration, and the NASA inspector general. In 2016, those programs received appropriations totaling $1.9 billion.

Direct Spending

By authorizing private parties to provide funds or other in-kind support for improvements to NASA's space transportation infrastructure, CBO estimates that enacting S. 3346 would increase direct spending by $40 million over the next 10 years. Provisions of the bill that would modify NASA's authority to indemnify contractors for certain losses also could affect direct spending, but CBO estimates that any such effects would not be significant over the 10-year period.

Financing of Space Transportation Infrastructure. Section 623 would authorize NASA to accept funds, services, and equipment from nonfederal entities for improvements to the agency's space transportation infrastructure. Agreements with nonfederal entities would be subject to various conditions, including criteria focused on promoting greater use of NASA's facilities by the private sector, requirements for documenting the ownership and usage rights for the affected assets or services, restrictions on investors' ability to directly recover their costs from the government, and directives for NASA to treat such cash or in-kind investments in a manner consistent with existing laws regarding the sale or use of space transportation property or services.

Based on information from NASA, CBO expects that this new authority would primarily be used at the Kennedy Space Center (KSC) in Florida and the Wallops Flight Facility in Virginia. NASA's strategic plans for those sites call for NASA to retain ownership and control over the land and key assets but to gradually shift operational and financial responsibility for most space launch services to nonfederal entities.[1] As part of that transition, NASA has transferred certain launch pads, buildings, and services to the states and private-sector firms by exercising its existing leasing and contractual authorities. Reports on aeronautical facilities in Florida suggest that nonfederal entities are able to obtain financing for projects at such sites when they can secure the debt with project cash flows, liens on assets, or assignments of rights to use federal facilities, where applicable.[2]

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1. See Kennedy Space Center, *Future Development Concept, 2012-2031*, p. 17. http://www.nasa.gov/centers/kennedy/pdf/634026main_future-concept.pdf

2. See Space Florida, *Florida Economic Development Financing and Incentives Available to Aerospace Companies*, June, 2013. http://www.spaceflorida.gov/docs/fact-sheets/florida-economic-development-incentives-update-6-4-2013.pdf?sfvrsn=2

CBO expects that the authorities provided by section 623 would be used for projects that could not be implemented using NASA's existing authorities to obtain financing; such projects would probably involve infrastructure or services that are owned or controlled by NASA with the new agreements providing the contractual assurances necessary to allow private partners to secure financing. There is a mix of federal and nonfederal uses at KSC and the Wallops Flight Facility and CBO estimates that federal users would receive about half of the benefit of those investments. Although the legislation would prohibit commercial firms from directly charging NASA for the cost of any infrastructure improvements to federal facilities, CBO expects those firms would recover some of their investments from NASA. CBO considers private financing on behalf of the federal government for government activities to be similar to an agency using federal borrowing authority to improve its physical infrastructure. Such indefinite borrowing authority is classified as direct spending because funding to cover the full cost of the project is not provided in advance in appropriation acts.

Considering trends in NASA's capital expenditures and spending by private firms on aeronautical facilities, CBO estimates that implementing S. 3346 would increase net direct spending by an average of about $4 million a year, or $35 million over the 2017-2026 period. Such spending would be equivalent to less than 5 percent of the average amounts appropriated for construction-related activities at KSC over the last five years, reflecting CBO's expectation that the legal and financial complexity of these transactions would limit their use during this period. That cost also would be less than 10 percent of the $480 million in financing arranged by the state of Florida for aerospace facilities over the 2000-2013 period.

Indemnification of Launch and Recovery Services. Section 304 would modify the statutory framework governing NASA's liability for certain third-party claims stemming from space launch or reentry activities that are classified as nuclear or unusually hazardous in nature. CBO estimates that implementing section 304 would change the allocation of risk to NASA from its contractors but would have no significant net effect on direct spending or spending subject to appropriation.

NASA's existing authority and policy is to indemnify contractors involved in activities using nuclear or unusually hazardous materials from any liability that exceeds $500 million per vehicle launch or reentry.[3] Any federal payments for damage claims made under this existing authority are not subject to appropriation.

Under the bill, NASA could set the liability of its contractors for each vehicle launch or reentry at an estimate of the maximum probable loss from the launch or reentry, subject to a ceiling of either $500 million or the amount of liability insurance available on the world

3. NASA's existing authority derives from a 1958 statute regarding national defense contracts (Public Law 85-804), which was made applicable to NASA by Executive Order 10789, as amended.

market at a reasonable cost. The bill also would allow NASA to limit the government's liability for third-party claims to $3 billion (plus additional amounts to account for future changes in inflation). Finally, NASA would initially be required to pay any such claims using funds provided in appropriation acts.[4]

CBO estimates that NASA's liability for claims of less than $500 million probably would increase under the bill because firms historically have been required to provide less than $100 million in primary insurance when the coverage is based on estimates of the maximum probable loss. On the other hand, the bill also would allow NASA to limit the government's liability for third party losses to $3 billion. CBO estimates that those changes would have no significant net budgetary effect over the 2017-2026 period because the probability of events leading to significant damage claims by third-parties is very small and because private insurance has been sufficient to cover previous claims associated with vehicle launches and reentries.

PAY-AS-YOU-GO CONSIDERATIONS

The Statutory Pay-As-You-Go Act of 2010 establishes budget-reporting and enforcement procedures for legislation affecting direct spending or revenues. The net changes in outlays that are subject to those pay-as-you-go procedures are shown in the following table.

CBO Estimate of Pay-As-You-Go Effects for S.3346, as ordered reported by the Senate Committee on Commerce, Science, and Transportation on September 21, 2016

	By Fiscal Year, in Millions of Dollars											
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2017-2021	2017-2026
NET INCREASE IN THE DEFICIT												
Statutory Pay-As-You-Go Impact	0	1	2	3	4	4	5	5	5	6	10	35

INCREASE IN LONG-TERM DIRECT SPENDING AND DEFICITS

CBO estimates that enacting the bill would not increase net direct spending or on-budget deficits by more than $5 billion in any of the four consecutive 10-year periods beginning in 2027.

4. If NASA were obligated to pay claims in excess of the amounts available from private insurance and appropriations, CBO assumes that any additional payments would be made from the Claims and Judgments Fund. Such spending would be an increase in direct spending.

INTERGOVERNMENTAL AND PRIVATE-SECTOR IMPACT

S. 3346 contains no intergovernmental or private-sector mandates as defined in UMRA and would impose no costs on state, local, or tribal governments.

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