

At a Glance

H.R. 3560, National Drone and Advanced Air Mobility Research and Development Act

As ordered reported by the House Committee on Science, Space, and Technology on May 24, 2023

By Fiscal Year, Millions of Dollars	2024	2024-2028	2024-2033
Direct Spending (Outlays)	0	0	0
Revenues	0	0	0
Increase or Decrease (-) in the Deficit	0	0	0

Spending Subject to Appropriation (Outlays)	46	811	not estimated
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Increases <i>net direct spending</i> in any of the four consecutive 10-year periods beginning in 2034?	No	Statutory pay-as-you-go procedures apply?	No
	Mandate Effects		
Increases <i>on-budget deficits</i> in any of the four consecutive 10-year periods beginning in 2034?	No	Contains intergovernmental mandate?	No
		Contains private-sector mandate?	No

The bill would

- Require several federal agencies to implement programs related to advanced air mobility and unmanned aircraft systems
- Authorize appropriations for those programs

Estimated budgetary effects would mainly stem from

- Spending subject to appropriation for projects and activities in the Departments of Commerce, Energy, Homeland Security, and Transportation, the National Aeronautics and Space Administration, and the National Science Foundation

Detailed estimate begins on the next page.



Bill Summary

H.R. 3560 would establish and authorize appropriations for several programs related to advanced air mobility (AAM) and unmanned aircraft systems (UAS, often referred to as drones). Those programs would be carried out at multiple agencies including the Departments of Commerce, Energy, Homeland Security, and Transportation, the National Aeronautics and Space Administration (NASA), and the National Science Foundation.

Estimated Federal Cost

The costs of the legislation, detailed in Table 1, fall within budget functions 250 (general science, space, and technology), 270 (energy), 300 (natural resources and environment), 370 (commerce and housing credit), 400 (transportation), and 750 (administration of justice).

Basis of Estimate

For this estimate, CBO assumes that H.R. 3560 will be enacted by the end of calendar year 2023 and that the authorized and estimated amounts will be provided in each fiscal year.

H.R. 3560 would authorize the appropriation of about \$1.1 billion over the 2024-2028 period. CBO estimates that \$75 million in additional funds would be needed to carry out the provisions that do not have a specific amount authorized to be appropriated. Based on historical spending patterns for similar activities, CBO estimates that implementing the bill would cost about \$800 million over the 2024-2028 period, assuming appropriation of the authorized and estimated amounts.

Title I, Interagency Activities

CBO estimates that implementing title I would cost \$43 million over the 2024-2028 period for grants and administrative activities.

The title would authorize the Department of Commerce, in collaboration with the Departments of Defense and Transportation, to establish a national drone technology center as a public-private consortium for research and development (R&D). The center would research UAS manufacturing, design, and components; conduct testing; and carry out workforce development. Using information from the National Institute of Standards and Technology (NIST) and data on the costs of similar efforts, CBO expects that five employees would be needed across NIST and the other departments to hold a competition, enter into a cooperative agreement with a center in 2024, and administer the center in each following year. CBO estimates that it would cost \$37 million over the 2024-2028 period to implement those activities, primarily for providing grants to support the new center.

**Table 1.
Estimated Increases in Spending Subject to Appropriation Under H.R. 3560**

	By Fiscal Year, Millions of Dollars					2024-2028
	2024	2025	2026	2027	2028	
Title I, Interagency Activities						
Estimated Authorization	5	18	17	17	17	74
Estimated Outlays	3	4	8	13	15	43
Title II, National Drone and Advanced Air Mobility						
Research Institutes						
Authorization	5	5	5	5	5	25
Estimated Outlays	1	7	6	6	4	24
Title III, National Institute of Standards and Technology						
Estimated Authorization	21	21	22	23	24	111
Estimated Outlays	10	14	19	21	23	87
Title IV, National Science Foundation						
Authorization	50	53	55	58	61	277
Estimated Outlays	5	22	36	45	51	159
Title V, National Aeronautics and Space Administration						
Authorization	6	6	6	6	6	30
Estimated Outlays	1	4	5	6	6	22
Title VI, Department of Energy						
Authorization	50	53	55	58	61	277
Estimated Outlays	10	36	48	54	57	205
Title VII, Department of Homeland Security						
Authorization	40	37	38	40	41	196
Estimated Outlays	3	18	31	37	37	126
Title VIII, National Oceanic and Atmospheric Administration						
Authorization	15	16	17	17	18	83
Estimated Outlays	9	13	16	17	18	73
Title IX, Federal Aviation Administration						
Estimated Authorization	21	21	22	23	24	111
Estimated Outlays	4	10	16	20	22	72
Total						
Estimated Authorization	213	230	237	247	257	1,184
Estimated Outlays	46	128	185	219	233	811

Title I also would direct the National Science and Technology Council to establish an interagency working group to coordinate federal AAM and UAS research, development, and education. That group would report to the Congress every two years until 2033 and develop and periodically update two strategic plans. Based on the cost of similar activities, CBO estimates that implementing those provisions would cost \$6 million over the 2024-2028 period.



Title II, National Drone and Advanced Air Mobility Research Institutes

CBO estimates that implementing title II would cost \$24 million over the 2024-2028 period. The title would authorize the appropriation of \$25 million over the 2024-2028 period for NASA to establish and support a national network of drone and advanced air mobility research institutes.

Title III, National Institute of Standards and Technology

CBO estimates that implementing title III would cost \$87 million over the 2024-2028 period. The title would authorize the appropriation of \$110 million over the 2024-2028 period for NIST to conduct R&D on technical standards, award prizes, and support research institutes authorized under title II. In addition, CBO estimates it would cost \$1 million for NIST to conduct a required survey on the ability of U.S. manufacturers to support AAM and UAS industries.

Title IV, National Science Foundation

CBO estimates that implementing title IV would cost \$159 million over the 2024-2028 period. The title would authorize the appropriation of \$277 million over the 2024-2028 period for the National Science Foundation to support fundamental research, R&D, data modeling, education, and workforce development.

Title V, National Aeronautics and Space Administration

CBO estimates that implementing title V would cost \$22 million over the 2024-2028 period. The title would authorize the appropriation of \$30 million over the 2024-2028 period for NASA to establish a national pilot program for a UAS technology competition for high school students and undergraduates.

Additionally, title V would require NASA to conduct R&D on the integration of AAM and UAS into the national airspace system, share data with the Federal Aviation Administration (FAA), and participate in AAM and UAS standards development. The bill also would require NASA to report to the Congress on progress toward such integration within 120 days of enactment. Using information from NASA, CBO expects that the section would largely codify current activities; any additional costs to implement those requirements would be insignificant.

Title VI, Department of Energy

CBO estimates that implementing title VI would cost \$205 million over the 2024-2028 period. The title would authorize the appropriation of \$277 million over the 2024-2028 period for the Department of Energy to award UAS research, development, and demonstration grants to support various activities including applied science, advanced sensor technologies, wireless charging systems, cybersecurity, and energy-efficient manufacturing.



Title VII, Department of Homeland Security

CBO estimates that implementing title VII would cost \$126 million over the 2024-2028 period. Title VII would authorize the appropriation of \$196 million over the 2024-2028 period for the Department of Homeland Security to support UAS research, development, testing, and evaluation and to create a center of excellence within a postsecondary education institution to support R&D on capabilities to counter UAS.

Title VIII, National Oceanic and Atmospheric Administration

CBO estimates that implementing title VIII would cost \$73 million over the 2024-2028 period. The title would authorize the appropriation of \$83 million over the 2024-2028 period for the National Oceanic and Atmospheric Administration to provide financial assistance to postsecondary institutions, National Laboratories, cooperative institutes, state and local agencies, and private-sector entities for projects that use UAS to collect environmental and climate data.

Title IX, Federal Aviation Administration

CBO estimates that implementing title IX would cost \$72 million over the 2024-2028 period. The title would authorize the appropriation of \$110 million over the 2024-2028 period for the FAA to conduct AAM and UAS research, development, testing, and implementation. In addition, CBO estimates it would cost \$1 million for requirements that the National Academy of Public Administration study the FAA's partnerships in those areas and for the FAA to report to the Congress on certain regulatory activities.

Pay-As-You-Go Considerations

Enacting the bill would not affect direct spending or revenues; therefore, pay-as-you-go procedures do not apply.

Increase in Long-Term Net Direct Spending and Deficits

CBO estimates that enacting H.R. 3560 would not increase net direct spending or deficits in any of the four consecutive 10-year periods beginning in 2034.

Mandates

H.R. 3560 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act.



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