

At a Glance

H.R. 6213, National Quantum Initiative Reauthorization Act

As reported by the House Committee on Science, Space, and Technology on July 25, 2024

By Fiscal Year, Millions of Dollars	2025	2025-2029	2025-2034
Direct Spending (Outlays)	0	0	0
Revenues	0	0	0
Increase or Decrease (-) in the Deficit	0	0	0
Spending Subject to Appropriation (Outlays)	57	1,326	not estimated

Increases <i>net direct spending</i> in any of the four consecutive 10-year periods beginning in 2035?	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 2035?	No	Contains intergovernmental mandate?	No
		Contains private-sector mandate?	No

The bill would

- Reauthorize the National Quantum Initiative Act
- Authorize appropriations for the Department of Energy, National Science Foundation, National Institute of Standards and Technology, and National Aeronautics and Space Administration to fund quantum information science research and development

Estimated budgetary effects would mainly stem from

- Spending of the authorized amounts for research and development related to quantum information science

Detailed estimate begins on the next page.

See also

[CBO's Cost Estimates Explained](#), [CBO Describes Its Cost-Estimating Process](#), [Glossary](#)

Bill Summary

H.R. 6213 would authorize appropriations to carry out the National Quantum Initiative Act. The National Quantum Initiative supports research and development (R&D) across the federal government in quantum information science, a field that combines physics, mathematics, computer science, and engineering to better understand how to use quantum mechanics to process, analyze, and transmit information.

The bill also would expand the responsibilities of several offices that coordinate these activities across the federal government and require them to recommend ways to strengthen the National Quantum Initiative.

Estimated Federal Cost

The estimated budgetary effects of H.R. 6213 are shown in Table 1. The costs of the legislation fall within budget functions 250 (general science, space, and technology), 270 (energy), and 370 (commerce and housing credit).

Basis of Estimate

For this estimate, CBO assumes that H.R. 6213 will be enacted by the end of calendar year 2024 and that the authorized and estimated amounts will be provided in each fiscal year.

H.R. 6213 would authorize the appropriation of \$1.8 billion over the 2025-2029 period. Based on historical spending patterns for similar activities, CBO estimates that implementing the bill would cost \$1.3 billion over the 2025-2029 period, assuming appropriation of the authorized amounts. Using information from the President's budget for 2024, CBO estimates that federal agencies spent a total of \$1 billion on research on quantum information science in 2022.

Department of Energy

The bill would authorize the appropriation of \$838 million for DOE over the 2025-2029 period. Of that total, the bill would authorize:

- \$175 million for each of fiscal years 2025 through 2028 to fund a maximum of five national quantum information science research centers,
- \$25 million for each fiscal year 2025 through 2028 to create a quantum instrumentation and infrastructure foundry program, and
- \$38 million for DOE in fiscal year 2028 to fund the department's Quantum User Expansion for Science and Technology program.

CBO estimates that it would cost DOE \$767 million to carry out those activities over the 2025-2029 period and \$71 million after 2029.



**Table 1.
Estimated Increases in Spending Subject to Appropriation Under H.R. 6213**

	By Fiscal Year, Millions of Dollars					2025-2029
	2025	2026	2027	2028	2029	
Department of Energy						
Authorization	200	200	200	238	0	838
Estimated Outlays	48	153	188	205	173	767
National Science Foundation						
Authorization	160	160	160	160	0	640
Estimated Outlays	3	37	76	95	106	317
National Institute for Standards and Technology						
Authorization	54	54	54	54	0	216
Estimated Outlays	3	19	38	50	51	161
National Aeronautics and Space Administration						
Authorization	25	25	25	25	0	100
Estimated Outlays	2	9	18	23	24	76
Expansion of agencies' responsibilities						
Estimated Authorization	1	1	1	1	1	5
Estimated Outlays	1	1	1	1	1	5
Total Increases						
Estimated Authorization	440	440	440	478	1	1,799
Estimated Outlays	57	219	321	374	355	1,326

a. H.R. 6213 would allow the Department of Energy, National Science Foundation, and National Institute of Standards and Technology to use \$1.1 billion of amounts previously authorized to be appropriated for research and development of quantum information science. Because those amounts are already authorized for similar purposes under current law, CBO's estimate does not attribute any additional costs for implementing those provisions.

National Science Foundation

The bill would authorize the appropriation of \$640 million for the NSF over the 2025-2029 period. Of that amount, the bill would authorize the following amounts for each of fiscal years 2025 through 2028:

- \$100 million to fund a maximum of 10 multidisciplinary centers for quantum research and education;
- \$10 million to establish a quantum reskilling, education, and workforce coordination hub; and
- \$50 million to fund quantum testbeds.

CBO estimates that it would cost the NSF \$317 million to carry out those activities over the 2025-2029 period and \$323 million after 2029.



National Institute for Standards and Technology

The bill would authorize the appropriation of \$54 million for each of fiscal years 2025 through 2028 to fund a maximum of three centers to advance R&D for quantum information science. CBO estimates that it would cost NIST \$161 million to support those centers over the 2025-2029 period and \$55 million after 2029.

National Aeronautics and Space Administration

The bill would authorize the appropriation of \$25 million for each of fiscal years 2025 through 2028 to carry out research and establish an institute focused on the space and aeronautics applications of quantum information science. CBO estimates that it would cost NASA \$76 million to support those centers over the 2025-2029 period and \$24 million after 2029.

Expansion of Agencies' Responsibilities

H.R. 6213 would expand the responsibilities of the coordinating bodies for quantum information science, which CBO estimates would cost \$5 million over the 2025-2029 period.

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. 6213 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2035.

Mandates

The bill contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act.

Estimate Prepared By

Federal Costs:

David Hughes (for National Institute for Standards and Technology)
Alaina Rhee (for Department of Energy, National Science Foundation, and the
National Aeronautics and Space Administration).

Mandates: Brandon Lever



Estimate Reviewed By

Justin Humphrey

Chief, Finance, Housing, and Education Cost Estimates Unit

Robert Reese

Chief, Natural and Physical Resources Cost Estimates Unit

Kathleen FitzGerald

Chief, Public and Private Mandates Unit

H. Samuel Papenfuss

Deputy Director of Budget Analysis

Estimate Approved By

A handwritten signature in black ink, appearing to read "Phillip L. Swagel". The signature is fluid and cursive, with a long, sweeping tail.

Phillip L. Swagel

Director, Congressional Budget Office