Congressional Budget Office
Cost Estimate

October 16, 2026

At a Glance

S. 3923, Weather Research and Forecasting Innovation Reauthorization Act of 2026

As reported by the Senate Committee on Commerce, Science, and Transportation on September 28, 2026

By Fiscal Year, Millions of Dollars	2027	2027-2031	2027-2036
Direct Spending (Outlays)	*	*	*
Revenues	0	0	0
Increase or Decrease (-) in the Deficit	*	*	*
Spending Subject to Appropriation (Outlays)	430	2,912	not estimated

Increases *net direct spending* in any of the four consecutive 10-year periods beginning in 2037?	No	Statutory pay-as-you-go procedures apply?	Yes
Increases *on-budget deficits* in any of the four consecutive 10-year periods beginning in 2037?	No	**Mandate Effects**	
		Contains intergovernmental mandate?	No
		Contains private-sector mandate?	Yes, Under Threshold

* = between zero and $500,000.

The bill would

- Reauthorize and amend programs related to weather research and forecasting
- Impose a private-sector mandate

Estimated budgetary effects would mainly stem from

- Authorizing appropriations for weather research and forecasting programs
- Raising the limit on premium pay for federal wildfire emergency responders in calendar year 2026

Detailed estimate begins on the next page.

Bill Summary

S. 3923 would reauthorize and amend weather research and forecasting activities managed by the National Oceanic and Atmospheric Administration (NOAA) and require that agency to expand partnerships with private, academic, and international entities; improve communication concerning hazardous-weather events; and incorporate new technology such as cloud-computing and artificial intelligence (AI) in its modeling. The bill also would reauthorize certain weather observation and response programs managed by the Environmental Protection Agency (EPA), Geological Survey (USGS), and National Science Foundation; require the National Institute of Standards and Technology to develop weather-warning standards; and authorize activities to combat illegal, unreported, and unregulated fishing.

Estimated Federal Cost

The estimated budgetary effects of S. 3923 are shown in Table 1. The costs of the legislation fall within budget functions 050 (national defense), 250 (general science, space, and technology), 300 (natural resources and environment), and 370 (commerce and housing credit).

Table 1.
Estimated Increases in Spending Subject to Appropriation Under S. 3923

	By Fiscal Year, Millions of Dollars					
	2027	2028	2029	2030	2031	2027-2031
	Increases in Spending Subject to Appropriation					
Estimated Authorization	748	769	770	789	118	3,194
Estimated Outlays	430	616	720	758	388	2,912

CBO estimates that enacting S. 3923 would increase direct spending by less than $500,000 in 2027 and over the 2027-2036 period.

Basis of Estimate

For this estimate, CBO assumes that the bill will be enacted by the end of calendar year 2026 and that the specified and necessary amounts will be provided in each year. Estimated outlays are based on historical spending patterns for the affected programs.

Spending Subject to Appropriation

S. 3923 would authorize and amend the weather research and forecasting programs of NOAA, USGS, and other agencies. CBO estimates that implementing S. 3923 would cost $2.9 billion over the 2027-2031 period, assuming appropriation of the specified and estimated amounts (see Table 2).

Table 2.
Estimated Increases in Spending Subject to Appropriation Under S. 3923

	By Fiscal Year, Millions of Dollars					
	2027	2028	2029	2030	2031	2027-2031
Weather Research and Forecasting						
Authorization	168	170	172	174	0	684
Estimated Outlays	101	139	166	171	67	644
USGS Weather Programs						
Authorization	117	117	117	117	70	538
Estimated Outlays	53	87	104	112	88	444
Artificial Intelligence for Weather Forecasting						
Authorization	76	76	76	76	0	304
Estimated Outlays	46	62	74	75	30	287
National Mesonet Program						
Authorization	55	61	68	70	0	254
Estimated Outlays	33	49	62	67	27	238
Integrated Ocean Observing System						
Authorization	56	56	56	56	0	224
Estimated Outlays	34	46	54	55	22	211
National Water Center						
Authorization	46	46	46	46	0	184
Estimated Outlays	28	38	45	46	18	175
Weather Information for Agriculture and Water Management						
Authorization	40	40	40	40	0	160
Estimated Outlays	24	33	39	40	16	152
Tsunami Forecasting and Alerts						
Estimated Authorization	31	30	30	30	0	121
Estimated Outlays	19	25	29	30	12	115
Wildfire Research and Response						
Estimated Authorization	21	28	36	50	0	135
Estimated Outlays	6	17	24	35	31	113
Harmful Algal Bloom and Hypoxia Research and Control						
Authorization	30	30	30	30	0	120
Estimated Outlays	18	25	28	29	12	112
NOAA Weather Radio						
Authorization	25	25	25	25	25	125
Estimated Outlays	15	21	21	22	22	101
Other Provisions						
Estimated Authorization	83	90	74	75	23	345
Estimated Outlays	53	74	74	76	43	320
Total Changes						
Estimated Authorization	748	769	770	789	118	3,194
Estimated Outlays	430	616	720	758	388	2,912

NOAA = National Oceanic and Atmospheric Administration; USGS = Geological Survey.

Weather Research and Forecasting. Section 102 would authorize the appropriation of specific amounts totaling $684 million over the 2027-2030 period for programs and activities administered by NOAA under title I of the Weather Research and Forecasting Innovation Act of 2017. They include weather laboratories and cooperative institutes; the United States Weather Research Program; tornado, severe storm, and next-generation radar research; and technology transfers between the National Weather Service and its industry and academic partners. CBO estimates that implementing the section would cost $644 million over the 2027-2031 period and $33 million after 2031.

USGS Weather Programs. Section 802 would reauthorize and amend programs established under the National Landslide Preparedness Act. The section would authorize the appropriation of $47 million each year through 2030 for the National Landslide Hazards Reduction Program, which monitors hazards and develops mitigation strategies. Section 802 also would authorize the appropriation of $40 million each year through 2034 for USGS's 3D Elevation program to acquire high-resolution, 3-dimensional elevation data.

Section 804 would reauthorize and amend the Federal Priority Streamgages program, a network of automated stations that monitor the hydrological conditions of the nation's rivers and streams, and would authorize the appropriation of $30 million each year through 2033 for that program. CBO estimates that implementing sections 802 and 804 would cost $444 million over the 2027-2031 period and $266 million after 2031.

Artificial Intelligence for Weather Forecasting. Section 213 would authorize the appropriation of $76 million each year from 2027 through 2030 for NOAA to develop comprehensive datasets for training weather-forecasting models in coordination with other federal entities and technical experts. The section also would allow NOAA to develop weather models based on AI technology and explore the use of AI for disseminating information on weather risks. CBO estimates that implementing section 213 would cost $287 million over the 2027-2031 period and $14 million after 2031.

National Mesonet Program. Section 503 would authorize the appropriation of specific amounts totaling $254 million over the 2027-2030 period for NOAA to maintain and expand the National Mesonet Program, a network of automated weather stations in locations prone to severe weather. The stations collect data on temperatures, humidity, and atmospheric pressure. The section also would require NOAA to allocate 10 percent of the authorized amounts to help public and private entities expand monitoring stations and establish an advisory committee for the program. CBO estimates that implementing section 503 would cost $238 million over the 2027-2031 period and $13 million after 2031.

Integrated Ocean Observing System. Section 1206 would authorize the appropriation of $56 million each year from 2027 through 2030 for NOAA's Integrated Ocean Observing System, consisting of buoys, ships, radar, autonomous vessels, and other devices that

continuously monitor and report on marine conditions. CBO estimates that implementing the section would cost $211 million over the 2027-2031 period and $11 million after 2031.

National Water Center. Section 505 would authorize the appropriation of $46 million each year through 2030 for operations of NOAA's National Water Center, a water research and weather forecasting center within the National Weather Service. The section would require the center to coordinate with other federal agencies and to use a supercomputing system to improve water resource modeling. CBO estimates that implementing section 505 would cost $175 million over the 2027-2031 period and $9 million after 2031.

Weather Information for Agriculture and Water Management. Section 501 would authorize the appropriation of $40 million annually over the 2027-2030 period for NOAA to improve shorter- and longer-term forecasting of temperatures and precipitation and establish at least two pilot projects for that purpose. CBO estimates that implementing section 501 would cost $152 million over the 2027-2031 period and $8 million after 2031.

Tsunami Forecasting and Alerts. Section 105 would reauthorize and amend NOAA's tsunami forecasting and mitigation research program and authorize the appropriation of $30 million each year from 2027 through 2030 for that purpose. The section also would require the Federal Communications Commission (FCC), the Federal Emergency Management Agency, and NOAA to update their memorandum of understanding with regard to using the Integrated Public Alert and Warning System to deliver tsunami alerts. The Government Accountability Office also would need to report on federal tsunami preparation and mitigation strategies. Those activities are not included in the specified authorization of appropriation. CBO estimates that the cost of preparing the memorandum of understanding and the report would cost less than $500,000 for each agency and total $1 million. Thus, CBO estimates that implementing section 105 would total $115 million over the 2027-2031 period and $6 million after 2031.

The FCC is authorized to collect fees each year sufficient to offset the appropriated costs of its regulatory activities; thus, CBO estimates that the net cost for the FCC to implement the bill would be negligible, assuming appropriation actions consistent with that authority.

Wildfire Research and Response. Title VII of S. 3923 would authorize the appropriation of specific amounts totaling $133 million over the 2027-2030 period for NOAA to establish a program for wildfire forecasting, responsiveness, and local collaboration. The bill would have NOAA undertake pilot projects and conduct research in areas that include how uncrewed systems can be used for data collection and management, the use of post-fire-season surveys and assessments, and a project to establish the Incident Meteorologist Service within the National Weather Service. Title VII also would require the Interagency Council for Advancing Meteorological Services to establish an interagency working group on fire weather research and forecasting. In addition, the Government Accountability Office would need to prepare four reports on activities related to wildfire research and response. Based on

the cost of similar activities, CBO estimates that together those reports would cost $2 million. In total, CBO estimates that implementing title VII would cost $113 million over the 2027-2031 period and $19 million after 2031.

Harmful Algal Bloom and Hypoxia Research and Control. Title VI of S. 3923 would reauthorize and expand activities administered by NOAA and EPA related to research, observation, and control of harmful algal blooms and hypoxia. Harmful blooms occur when colonies of algae grow uncontrollably and become toxic, which can lead to hypoxia, or reduced oxygen concentrations in water. Sections 601 and 602 would authorize the appropriation of $27.5 million to NOAA and $2 million to EPA each year from 2027 through 2030 for those purposes. CBO estimates that implementing title VI would cost $112 million over the 2027-2031 period and $5 million after 2031.

NOAA Weather Radio. Section 404 would authorize the appropriation of specific amounts totaling $125 million over the 2027-2031 period for NOAA to maintain and modernize NOAA Weather Radio, a nationwide network that continuously broadcasts weather forecasts and warnings. CBO estimates that implementing the section would cost $101 million over the 2027-2031 period and $8 million after 2031.

Other Provisions. S. 3923 would require the implementation of programs and activities involving weather- and ocean-related research, projects, assessments, and reports. CBO estimates that the effective authorization of appropriations for those activities over the 2027-2031 period would be $345 million. Those activities include a partnership program managed by the National Environmental Satellite, Data, and Information Service; research and forecasting under the National Integrated Drought Information System and the National Integrated Heat Health Information System; a project to improve forecasts of coastal marine fog; the development of national standards for flood warning systems; and efforts to combat illegal, unreported, and unregulated fishing. CBO estimates that implementing those activities would cost $320 million over the 2027-2031 period.

Direct Spending

Section 707 of the bill would authorize additional premium pay in calendar year 2026 for Department of Commerce employees involved in emergency wildfire suppression whose earnings, including premium pay, exceed a threshold. Under current law, employees can earn premium pay only to the extent that their combined base and premium pay does not exceed the greater of the GS-15 maximum or Executive Schedule Level V salary. Because the additional pay would apply to work already completed, that authorization of additional pay is treated as direct spending. Using information from the Forest Service, CBO estimates that enacting that section would increase direct spending by less than $500,000 over the 2027-2036 period.

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. CBO estimates that enacting the bill would increase direct spending by less than $500,000 in fiscal year 2027 and over the 2027-2036 period.

Increase in Long-Term Net Direct Spending and Deficits

CBO estimates that enacting S. 3923 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2037.

Mandates

If the Federal Communications Commission increased annual fees to offset the costs of complying with title I (Reauthorization of the Weather Research and Forecasting Innovation Act of 2017), S. 3923 would increase the cost of an existing mandate on private entities required to pay those fees. CBO estimates that the incremental cost of the mandate would be small and would fall well below the annual threshold established in the Unfunded Mandates Reform Act (UMRA) for private-sector mandates ($214 million in 2026, adjusted annually for inflation).

S. 3923 contains no intergovernmental mandates as defined in UMRA.

Previous CBO Estimates

Starting in February 2025, CBO transmitted multiple cost estimates for bills that contained provisions similar to those in S. 3923. Differences between the 12 previous pieces of legislation and S. 3923 are reflected in this estimate.

- On February 25, 2025, CBO transmitted a cost estimate for S. 93, the Harmful Algal Bloom and Hypoxia Research and Control Amendments Act of 2025, as ordered reported by the Senate Committee on Commerce, Science, and Transportation on February 5, 2025.
- On March 17, 2025, CBO transmitted a cost estimate for S. 258, the TORNADO Act, as ordered reported by the Senate Committee on Commerce, Science, and Transportation on February 5, 2025.
- On April 7, 2025, CBO transmitted a cost estimate for S. 613, the Improving Flood and Agricultural Forecasts Act of 2025, as ordered reported by the Senate Committee on Commerce, Science, and Transportation on March 12, 2025.
- On June 10, 2025, CBO transmitted a cost estimate for S. 1378, the TAME Extreme Weather and Wildfires Act, as ordered reported by the Senate Committee on Commerce, Science, and Transportation on April 30, 2025.

- On July 11, 2025, CBO transmitted a cost estimate for S. 306, the Fire Ready Nation Act of 2025, as ordered reported by the Senate Committee on Commerce, Science, and Transportation on February 5, 2025.
- On July 11, 2025, CBO transmitted a cost estimate for S. 1523, the Water Research Optimization Act of 2025, as ordered reported by the Senate Committee on Commerce, Science, and Transportation on May 21, 2025.
- On July 11, 2025, CBO transmitted a cost estimate for S. 1626, the National Landslide Preparedness Act Reauthorization Act of 2025, as ordered reported by the Senate Committee on Commerce, Science, and Transportation on May 21, 2025.
- On July 14, 2025, CBO transmitted a cost estimate for S. 318, the ANCHOR Act, as ordered reported by the Senate Committee on Commerce, Science, and Transportation on May 21, 2025.
- On August 1, 2025, CBO transmitted a cost estimate for S. 1278, the Fog Observations and Geographic Forecasting Act, as ordered reported by the Senate Committee on Commerce, Science, and Transportation on April 30, 2025.
- On August 19, 2025, CBO transmitted a cost estimate for H.R. 3705, the Fog Observations and Geographic Forecasting Act, as ordered reported by the House Committee on Science, Space, and Technology on June 11, 2025.
- On October 22, 2025, CBO transmitted a cost estimate for H.R. 2294, a bill to reauthorize the Integrated Coastal and Ocean Observation System Act of 2009, as ordered reported by the House Committee on Natural Resources on July 23, 2025.
- On May 27, 2026, CBO transmitted a cost estimate for H.R. 7813, the NOAA Weather Radio Modernization Act, as ordered reported by the House Committee on Science, Space, and Technology on March 18, 2026.

Estimate Prepared By

Federal Costs:

Katherine Chou (for the National Science Foundation)
David Hughes (for the National Institute of Standards and Technology and the Federal Communications Commission)
William Ma (for the Department of Defense)
Emilia Oliva (for NOAA and USGS)
Jon Sperl (for the Federal Emergency Management Agency)
Aurora Swanson (for NOAA and the Environmental Protection Agency)

Mandates: Erich Dvorak

Estimate Reviewed By

Ann E. Futrell
Chief, Natural and Physical Resources Cost Estimates Unit

Justin Humphrey
Chief, Finance, Housing, and Education Cost Estimates Unit

David Newman
Chief, Defense, International Affairs, and Veterans' Affairs Cost Estimates Unit

Kathleen FitzGerald
Chief, Public and Private Mandates Unit

H. Samuel Papenfuss
Deputy Director of Budget Analysis

Estimate Approved By

Phillip L. Swagel
Director, Congressional Budget Office