

**Calendar No. 504**

115TH CONGRESS }  
2d Session }

SENATE

{ REPORT  
115-291

COMMERCIAL ENGAGEMENT THROUGH  
OCEAN TECHNOLOGY ACT OF 2018

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R E P O R T

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND  
TRANSPORTATION

ON

S. 2511



JULY 9, 2018.—Ordered to be printed

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED FIFTEENTH CONGRESS

SECOND SESSION

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## Calendar No. 504

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### COMMERCIAL ENGAGEMENT THROUGH OCEAN TECHNOLOGY ACT OF 2018

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JULY 9, 2018.—Ordered to be printed  
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Mr. THUNE, from the Committee on Commerce, Science, and  
Transportation, submitted the following

### R E P O R T

[To accompany S. 2511]

[Including cost estimate of the Congressional Budget Office]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 2511) to require the Under Secretary of Commerce for Oceans and Atmosphere to carry out a program on coordinating the assessment and acquisition by the National Oceanic and Atmospheric Administration of unmanned maritime systems, to make available to the public data collected by the Administration using such systems, and for other purposes, having considered the same, reports favorably thereon with an amendment (in the nature of a substitute) and recommends that the bill (as amended) do pass.

#### PURPOSE OF THE BILL

The purpose of this legislation is to direct the National Oceanic and Atmospheric Administration (NOAA) to coordinate with the private and academic sectors and the Navy on evaluating the at-sea data collection capabilities of unmanned maritime system technology and to integrate such technology into NOAA's observation suite.

#### BACKGROUND AND NEEDS

Unmanned maritime systems are remotely operated or autonomous vehicles that operate on or below the water's surface and can be outfitted with a variety of sensors to collect sea floor mapping, oceanographic, meteorological, acoustic, and visual data used to

support at-sea research and operations applications. Autonomous systems are capable of executing pre-programmed missions without operator interaction, and are operated on a continuum from attended to fully autonomous. Autonomous Underwater Vehicles (AUVs) refer to unmanned, untethered systems capable of both autonomous submerged or autonomous surface operations. Unmanned Surface Vehicles (USVs) refer to untethered, self-propelled surface craft ranging in size from small, portable systems to boat-size vessels that are capable of autonomous, semi-autonomous, or remote-controlled operations.<sup>1</sup>

An AUV carries power onboard, enabling propellers or thrusters to move the vessel through the water and for sensor operation. Most AUVs use specialized batteries, although some AUVs have used fuel cells or rechargeable solar power. Some AUVs, such as gliders, minimize energy demands by allowing gravity and buoyancy to propel them.<sup>2</sup> And some USVs may be wind-powered,<sup>3</sup> allowing them to operate for long periods of time and travel long distances without maintenance from ship-based operators. Some unmanned systems are designed to be deployed and recovered from a pier; while many others are deployed and recovered from manned vessels at sea, and may serve as force multipliers for ship-based operations.

Unmanned systems present opportunities to replace, enhance, and augment traditional in-situ marine environmental observation systems, such as moorings, manned vessels, and manned aircraft, while minimizing operational costs. Limited only by demand and innovation, unmanned systems can be outfitted with sensors that collect environmental data relevant to NOAA's research and operational missions. These may include the following:

- Atmospheric and meteorological conditions, such as air temperature, pressure, and wind.
- Oceanographic conditions, such as wave height, water temperature, salinity, and carbon dioxide content.
- Passive acoustic sensors that detect ocean sound and marine mammal presence.
- Active acoustic sensors that can detect fish biomass for fisheries management and bathymetry to map navigable waterways and deeper seabeds.

NOAA currently has unmet demand for environmental data. This legislation would require NOAA to leverage the technical and procurement expertise of the Navy and other partners to assess existing capabilities and initiate acquisition strategies.

#### SUMMARY OF PROVISIONS

If enacted, S. 2511, the Commercial Engagement through Ocean Technology Act of 2018, would do the following:

- Direct NOAA's Office of Oceanic and Atmospheric Research (OAR) and Office of Marine and Aviation Operations (OMAO) to co-

<sup>1</sup>NOAA Office of Coast Survey, April 2017, "Executive Summary of Autonomous Systems Strategy" ([https://www.iho.int/mtg\\_docs/rhc/ArHC/ARHC7/Executive-Summary-OCSO-Autonomous-Systems-Roadmap%20%282%29.pdf](https://www.iho.int/mtg_docs/rhc/ArHC/ARHC7/Executive-Summary-OCSO-Autonomous-Systems-Roadmap%20%282%29.pdf)).

<sup>2</sup>National Oceanic and Atmospheric Administration, "What Are AUVs, and Why Do We Use Them?" (<https://oceanexplorer.noaa.gov/explorations/08aUVfest/background/auvs/auvs.html>) (accessed April 9, 2018).

<sup>3</sup>NOAA Arctic Program, "Arctic Saildrone" (<https://www.arctic.noaa.gov/Arctic-News/ArtMID/5556/ArticleID/388/Arctic-Saildrone>) (accessed April 9, 2018).

ordinate acquisition and assessment of unmanned maritime systems, to regularly assess how unmanned technologies can support NOAA’s mission and data needs, and to establish a committee to coordinate cross-agency requirements.

- Authorize partnership with the Navy, other Federal agencies, the academic sector, and private industry on unmanned maritime technology to leverage existing technical expertise and acquisition capacity.

- Require the NOAA Administrator to submit a report to Congress not later than 1 year after the DOE, and every 4 years thereafter, on the usage of unmanned maritime systems.

#### LEGISLATIVE HISTORY

S. 2511 was introduced by Senator Wicker (for himself and Senator Schatz) on March 7, 2018. On April 25, 2018, the Committee met in open Executive Session and, by voice vote, ordered the bill reported favorably with an amendment in the nature of a substitute.

Representative Palazzo of Mississippi and Representative Pannetta of California introduced a companion to S. 2511, H.R. 5196, (the CENOTE Act of 2018), on March 7, 2018, which was referred to the Armed Services Committee, the Science, Space, and Technology Committee, and the Natural Resources Committee of the House of Representatives.

#### ESTIMATED COSTS

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

##### *S. 2511—CENOTE Act of 2018*

Summary: S. 2511 generally would codify current practices of the National Oceanic and Atmospheric Administration (NOAA) related to the acquisition of unmanned vehicles, known as drones, for oceanic research. Other sections of the bill would require NOAA to regularly assess publicly and commercially available unmanned vehicles and centralize the agency’s acquisition of such vehicles.

Using information from NOAA, CBO estimates that implementing S. 2511 would cost \$5 million over the 2019–2023 period, subject to the availability of appropriated funds. Such spending would be for additional employees to research the purchase of new unmanned vehicles.

Enacting the bill could affect direct spending; therefore, pay-as-you-go procedures apply. However, CBO estimates that the net effect on direct spending would be negligible. Enacting S. 2511 would not affect revenues.

CBO estimates that enacting S. 2511 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2029.

S. 2511 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA).

Estimated cost to the Federal Government: The estimated budgetary effect of S. 2511 is shown in the following table. The costs

of the legislation fall within budget function 300 (natural resources and environment).

	By fiscal year, in millions of dollars—						
	2018	2019	2020	2021	2022	2023	2019–2023
INCREASES IN SPENDING SUBJECT TO APPROPRIATION							
Estimated Authorization Level .....	0	1	1	1	1	1	5
Estimated Outlays .....	0	1	1	1	1	1	5

Basis of estimate: For this estimate, CBO assumes that S. 2511 will be enacted near the end of fiscal year 2018 and that the necessary amounts will be appropriated for each fiscal year beginning in 2019.

S. 2511 would direct NOAA to implement a program to coordinate the assessment and acquisition of vehicles for oceanic research. NOAA currently uses such vehicles; therefore, much of S. 2511 would codify current NOAA practices. The bill also would establish a new requirement that the agency consolidate the research and acquisition of all unmanned vehicles within one office. That office would assess the costs and benefits of publicly and commercially available vehicles and coordinate their acquisition. Finally, NOAA would be directed to create a prioritized list of projects requiring unmanned vehicles to help it develop an acquisition schedule.

Using information from NOAA, CBO estimates that the agency would need seven employees—three with highly specialized computer engineering skills—to evaluate and procure more and increasingly complex unmanned vehicles for NOAA’s use in future years. CBO estimates that salaries and benefits of \$100,000 to \$200,000 per person per year for those employees would total about \$5 million over the 2019–2023 period.

CBO does not expect that changes in the research and acquisition process of unmanned vehicles would alter the future need for acquiring such vehicles. According to NOAA, the agency currently owns or jointly manages 138 unmanned vehicles and they anticipate purchasing four additional unmanned vehicles in 2019.

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. Enacting S. 2511 could affect direct spending by allowing NOAA to accept donations of money from private individuals and foreign governments for the purposes outlined in S. 2511; therefore, pay-as-you-go procedures apply. However, CBO estimates that the bill’s net effect on direct spending would be negligible because any new collections would probably be spent soon thereafter. Enacting the bill would not affect revenues.

Increase in long-term direct spending and deficits: CBO estimates that enacting S. 2511 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2029.

Mandates: S. 2511 contains no intergovernmental or private-sector mandates as defined in UMRA.

Estimate prepared by: Federal Costs: Robert Reese; Mandates: Zach Byrum.

Estimate reviewed by: Kim P. Cawley, Chief, Natural and Physical Resources Cost Estimates Unit; H. Samuel Papenfuss, Deputy Assistant Director for Budget Analysis.

#### REGULATORY IMPACT STATEMENT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported:

##### NUMBER OF PERSONS COVERED

S. 2511, as reported, would not create any new programs or impose any new regulatory requirements, and therefore will not subject any individual or business to new regulations.

##### ECONOMIC IMPACT

Enactment of this legislation is not expected to have any significant adverse impacts on the Nation's economy.

##### PRIVACY

The reported bill is not expected to impact the personal privacy of individuals.

##### PAPERWORK

This Act requires the NOAA Administrator to submit, not later than 1 year after the date of enactment of this Act, and every 4 years thereafter, a report to the appropriate committees of Congress on the usage of unmanned maritime systems, including an inventory of systems used by NOAA, the value of their associated data, and a list of data requirements that NOAA could meet with unmanned systems.

##### CONGRESSIONALLY DIRECTED SPENDING

In compliance with paragraph 4(b) of rule XLIV of the Standing Rules of the Senate, the Committee provides that no provisions contained in the bill, as reported, meet the definition of congressionally directed spending items under the rule.

##### SECTION-BY-SECTION ANALYSIS

###### *Section 1. Short title; table of contents.*

This section would provide that the bill may be cited as the "Commercial Engagement through Ocean Technology Act of 2018" or the "CENOTE Act of 2018", and includes a table of contents.

###### *Section 2. Definitions.*

This section would provide technical definitions for the purposes of this Act, notably "unmanned maritime systems," which would be defined as remotely operated or autonomous vehicles produced by the commercial sector designed to travel in the air, on or under the ocean surface, on land, or any combination, and that function without an on-board human presence, and that may include associated components, such as control and communications, instrumentation, data transmission, and processing systems.

*Section 3. Coordination regarding assessment and acquisition by National Oceanic and Atmospheric Administration of unmanned maritime systems.*

This section would direct the NOAA Administrator to coordinate the procurement and assessment of unmanned vehicle technologies through OAR and OMAO, including authority to establish a coordinating committee with NOAA's Office of Ocean Exploration, the program office of the Integrated Ocean Observing System, and other offices engaged with unmanned maritime systems. This section would also require coordination with the Secretary of the Navy to leverage expertise in the development and operational transition of unmanned maritime systems. This section would authorize coordination with other Federal agencies, the academic sector, and private sector to maximize research opportunities and to support commercialization.

*Section 4. Regular assessment of unmanned maritime systems to support National Oceanic and Atmospheric Administration missions.*

This section would require the NOAA Administrator, through OAR and OMAO, and in consultation with the academic and private sectors, to conduct regular science-based assessments of available systems' abilities to meet data specifications and the operational utility of making at-sea observations.

*Section 5. Acquisition of unmanned maritime systems.*

This section would direct the NOAA Administrator to coordinate acquisition of unmanned maritime systems and would authorize NOAA to enter into a memorandum of agreement with the Navy to realize greater savings and efficiency.

*Section 6. Reports on unmanned maritime systems and usage for mission of the National Oceanic and Atmospheric Administration.*

This section would require a report not later than 1 year after the date of enactment to Congress, and then every 4 years, documenting the current inventory of unmanned vehicles used by NOAA and a summary of the data they have returned, the benefits of having that data, and a prioritized list of NOAA data requirements that could be met with unmanned maritime systems.

*Section 7. Funding and additional authorities.*

This section would direct the NOAA Administrator to carry out this Act using existing funding. This section would authorize the NOAA Administrator to enter into contracts and cooperative agreements, to accept funds and uncompensated services, and to promulgate rules and regulations.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, the Committee states that the bill as reported would make no change to existing law.