

AMENDMENT NO. _____ Calendar No. _____

Purpose: In the nature of a substitute.

IN THE SENATE OF THE UNITED STATES—116th Cong., 2d Sess.

S. 933

To improve data collection and monitoring of the Great Lakes, oceans, bays, estuaries, and coasts, and for other purposes.

Referred to the Committee on _____ and
ordered to be printed

Ordered to lie on the table and to be printed

AMENDMENT IN THE NATURE OF A SUBSTITUTE intended
to be proposed by _____

Viz:

1 Strike all after the enacting clause and insert the fol-
2 lowing:

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Bolstering Long-Term
5 Understanding and Exploration of the Great Lakes,
6 Oceans, Bays, and Estuaries Act” or the “BLUE GLOBE
7 Act”.

8 **SEC. 2. PURPOSE.**

9 The purpose of this Act is to promote and support—

1 (1) the monitoring, understanding, and explo-
2 ration of the Great Lakes, oceans, bays, estuaries,
3 and coasts; and

4 (2) the collection, analysis, synthesis, and shar-
5 ing of data related to the Great Lakes, oceans, bays,
6 estuaries, and coasts to facilitate science and oper-
7 ational decision making.

8 **SEC. 3. SENSE OF CONGRESS.**

9 It is the sense of Congress that—

10 (1) agencies should optimize data collection,
11 management, and dissemination, to the extent prac-
12 ticable, to maximize their impact for research, com-
13 mercial, regulatory, and educational benefits and to
14 foster innovation, scientific discoveries, the develop-
15 ment of commercial products, and the development
16 of sound policy with respect to the Great Lakes,
17 oceans, bays, estuaries, and coasts;

18 (2) agencies should consider current and future
19 needs relating to supercomputing capacity, data
20 storage capacity, and public access, address gaps in
21 those areas, and coordinate across agencies as need-
22 ed;

23 (3) the United States is a leading member of
24 the Intergovernmental Oceanographic Commission of
25 the United Nations Educational, Scientific and Cul-

1 tural Organization, a founding member of the Atlan-
2 tic Ocean Research Alliance, and a key partner in
3 developing the United Nations Decade of Ocean
4 Science for Sustainable Development;

5 (4) the Integrated Ocean Observing System and
6 the Global Ocean Observing System are key assets
7 and networks that bolster understanding of the ma-
8 rine environment;

9 (5) the National Oceanographic Partnership
10 Program is a meaningful venue for collaboration and
11 coordination among Federal agencies, scientists, and
12 ocean users;

13 (6) the National Centers for Environmental In-
14 formation of the National Oceanic and Atmospheric
15 Administration should be looked to by other Federal
16 agencies as a primary, centralized repository for
17 Federal ocean data;

18 (7) the Marine Cadastre, a joint effort of the
19 National Oceanic and Atmospheric Administration
20 and the Bureau of Ocean Energy Management, pro-
21 vides access to data and information for specific
22 issues and activities in ocean resources management
23 to meet the needs of offshore energy and planning
24 efforts;

1 (8) the regional associations of the Integrated
2 Ocean Observing System, certified by the National
3 Oceanic and Atmospheric Administration for the
4 quality and reliability of their data, are important
5 sources of observation information for the Great
6 Lakes, oceans, bays, estuaries, and coasts; and

7 (9) the Regional Ocean Partnerships and re-
8 gional data portals, which provide publicly available
9 tools such as maps, data, and other information to
10 inform decisions and enhance marine development,
11 should be supported by and viewed as collaborators
12 with Federal agencies and ocean users.

13 **SEC. 4. DEFINITION OF ADMINISTRATOR.**

14 In this Act, the term “Administrator” means the
15 Under Secretary of Commerce for Oceans and Atmosphere
16 in the Under Secretary’s capacity as Administrator of the
17 National Oceanic and Atmospheric Administration.

18 **SEC. 5. TECHNOLOGY INNOVATION TASK FORCE TO COM-**
19 **BAT ILLEGAL, UNREPORTED, AND UNREGU-**
20 **LATED FISHING.**

21 (a) DEFINITIONS.—The National Defense Authoriza-
22 tion Act for Fiscal Year 2020 (Public Law 116–92) is
23 amended in section 3532 by adding at the end the fol-
24 lowing:

1 “(14) INNOVATIVE TECHNOLOGIES.—The term
2 ‘innovative technologies’ includes the following:

3 “(A) Improved satellite imagery and track-
4 ing.

5 “(B) Advanced electronic monitoring
6 equipment.

7 “(C) Vessel location data.

8 “(D) Improved genetic, molecular, or other
9 biological methods of tracking sources of sea-
10 food.

11 “(E) Electronic catch documentation and
12 traceability.

13 “(F) Such other technologies as the Ad-
14 ministrators considers appropriate.”.

15 (b) TECHNOLOGY PROGRAMS.—The National De-
16 fense Authorization Act for Fiscal Year 2020 (Public Law
17 116–92) is amended in section 3546—

18 (1) in paragraph (3), by striking “and” after
19 the semicolon;

20 (2) in paragraph (4), by striking the period at
21 the end and inserting “; and”; and

22 (3) by adding at the end the following:

23 “(5) coordinating the application of existing in-
24 novative technologies and the development of emerg-
25 ing innovative technologies.”.

1 **SEC. 6. WORKFORCE STUDY.**

2 (a) IN GENERAL.—Section 303(a) of the America
3 COMPETES Reauthorization Act of 2010 (33 U.S.C.
4 893c(a)) is amended—

5 (1) in the matter preceding paragraph (1), by
6 striking “Secretary of Commerce” and inserting
7 “Under Secretary of Commerce for Oceans and At-
8 mosphere”;

9 (2) in paragraph (2), by inserting “, skillsets,
10 or credentials” after “degrees”;

11 (3) in paragraph (3), by inserting “or highly
12 qualified technical professionals and tradespeople”
13 after “atmospheric scientists”;

14 (4) in paragraph (4), by inserting “, skillsets,
15 or credentials” after “degrees”;

16 (5) in paragraph (5)—

17 (A) by striking “scientist”; and

18 (B) by striking “; and” and inserting “,
19 observations, and monitoring;”

20 (6) in paragraph (6), by striking “into Federal”
21 and all that follows and inserting “, technical profes-
22 sionals, and tradespeople into Federal career posi-
23 tions;”

24 (7) by redesignating paragraphs (2) through
25 (6) as paragraphs (3) through (7), respectively;

1 (8) by inserting after paragraph (1) the fol-
2 lowing:

3 “(2) whether there is a shortage in the number
4 of individuals with technical or trade-based skillsets
5 or credentials suited to a career in oceanic and at-
6 mospheric data collection, processing, satellite pro-
7 duction, or satellite operations;” and

8 (9) by adding at the end the following:

9 “(8) workforce diversity and actions the Fed-
10 eral Government can take to increase diversity in the
11 scientific workforce; and

12 “(9) actions the Federal Government can take
13 to shorten the hiring backlog for such workforce.”.

14 (b) COORDINATION.—Section 303(b) of such Act is
15 amended by striking “Secretary of Commerce” and insert-
16 ing “Under Secretary of Commerce for Oceans and At-
17 mosphere”;

18 (c) REPORT.—Section 303(c) of such Act is amend-
19 ed—

20 (1) by striking “the date of enactment of this
21 Act” and inserting “the date of the enactment of the
22 Bolstering Long-Term Understanding and Explo-
23 ration of the Great Lakes, Oceans, Bays, and Estu-
24 aries Act”;

1 (2) by striking “Secretary of Commerce” and
2 inserting “Under Secretary of Commerce for Oceans
3 and Atmosphere”; and

4 (3) by striking “to each committee” and all
5 that follows through “section 302 of this Act” and
6 inserting “to the Committee on Commerce, Science,
7 and Transportation of the Senate and the Com-
8 mittee on Natural Resources and the Committee on
9 Science, Space, and Technology of the House of
10 Representatives”.

11 (d) PROGRAM AND PLAN.—Section 303(d) of such
12 Act is amended—

13 (1) by striking “Administrator of the National
14 Oceanic and Atmospheric Administration” and in-
15 serting “Under Secretary of Commerce for Oceans
16 and Atmosphere”; and

17 (2) by striking “academic partners” and all
18 that follows and inserting “academic partners.”.

19 **SEC. 7. ACCELERATING INNOVATION AT COOPERATIVE IN-**
20 **STITUTES.**

21 (a) FOCUS ON EMERGING TECHNOLOGIES.—The Ad-
22 ministrator shall ensure that the goals of the Cooperative
23 Institutes of the National Oceanic and Atmospheric Ad-
24 ministration include focusing on advancing or applying
25 emerging technologies, which may include—

1 (1) applied uses and development of real-time
2 and other advanced genetic technologies and applica-
3 tions, including such technologies and applications
4 that derive genetic material directly from environ-
5 mental samples without any obvious signs of biologi-
6 cal source material;

7 (2) deployment of, and improvements to, the
8 durability, maintenance, and other lifecycle concerns
9 of advanced unmanned vehicles, regional small re-
10 search vessels, and other research vessels that sup-
11 port and launch unmanned vehicles and sensors; and

12 (3) supercomputing and big data management,
13 including data collected through electronic moni-
14 toring and remote sensing.

15 (b) DATA SHARING.—Each Cooperative Institute
16 shall ensure that data collected from the work of the insti-
17 tute, other than classified, confidential, or proprietary
18 data, are archived and made publicly accessible.

19 (c) COORDINATION WITH OTHER PROGRAMS.—The
20 Cooperative Institutes shall work with the Interagency
21 Ocean Observation Committee, the regional associations
22 of the Integrated Ocean Observing System, and other
23 ocean observing programs to coordinate technology needs
24 and the transition of new technologies from research to
25 operations.

1 **SEC. 8. OCEAN INNOVATION PRIZE AND PRIORITIZATION.**

2 (a) OCEAN INNOVATIVE PRIZES.—Not later than 4
3 years after the date of the enactment of this Act, and
4 under the authority provided by section 24 of the Steven-
5 son-Wylder Technology Innovation Act of 1980 (15 U.S.C.
6 3719), the Administrator, in consultation with the heads
7 of relevant Federal agencies, including the Secretary of
8 Defense, and in conjunction with nongovernmental part-
9 ners, as appropriate and at the discretion of the Adminis-
10 trator, shall establish at least one Ocean Innovation Prize
11 to catalyze the rapid development and deployment of data
12 collection and monitoring technology related to the Great
13 Lakes, oceans, bays, estuaries, and coasts in at least one
14 of the areas specified in subsection (b).

15 (b) AREAS.—The areas specified in this subsection
16 are the following:

17 (1) Improved eDNA analytics and deployment
18 with autonomous vehicles.

19 (2) Plastic pollution detection, quantification,
20 and mitigation, including with respect to used fish-
21 ing gear and tracking technologies to reduce or
22 eliminate bycatch.

23 (3) Advanced satellite data and other advanced
24 technology for improving scientific assessment.

25 (4) New stock assessment methods using sat-
26 ellite data or other advanced technologies.

1 (5) Advanced electronic fisheries monitoring
2 equipment and data analysis tools, including im-
3 proved fish species recognition software, confidential
4 data management, data analysis and visualization,
5 and storage of electronic reports, imagery, location
6 information, and other data.

7 (6) Autonomous and other advanced surface ve-
8 hicles, underwater vehicles, or airborne platforms for
9 data collection and monitoring.

10 (7) Artificial intelligence and machine learning
11 applications for data collection and monitoring re-
12 lated to the Great Lakes, oceans, bays, estuaries,
13 and coasts.

14 (8) Coral reef ecosystem monitoring.

15 (9) Electronic equipment, chemical or biological
16 sensors, data analysis tools, and platforms to iden-
17 tify and fill gaps in robust and shared continuous
18 data related to the Great Lakes, oceans, bays, estu-
19 aries, and coasts to inform global earth system mod-
20 els.

21 (10) Means for protecting aquatic life from in-
22 jury or other ill effects caused, in whole or in part,
23 by monitoring or exploration activities.

1 (11) Discovery and dissemination of data re-
2 lated to the Great Lakes, oceans, bays, estuaries,
3 and coasts.

4 (12) Water quality monitoring, including im-
5 proved detection and prediction of harmful algal
6 blooms and pollution.

7 (13) Enhancing blue carbon sequestration and
8 other ocean acidification mitigation opportunities.

9 (14) Such other areas as may be identified by
10 the Administrator.

11 (c) **PRIORITIZATION OF PROPOSALS.**—In selecting re-
12 cipients of Small Business Innovation Research (SBIR)
13 and Small Business Technology Transfer (STTR) solicita-
14 tions and interagency grants for ocean innovation, includ-
15 ing the National Oceanographic Partnership Program, the
16 Administrator shall prioritize proposals for fiscal years
17 2021 and 2022 that address at least one of the areas spec-
18 ified in subsection (b).

19 **SEC. 9. REAUTHORIZATION OF NOAA PROGRAMS.**

20 Section 306 of the Hydrographic Services Improve-
21 ment Act of 1998 (33 U.S.C. 892d) is amended—

22 (1) in paragraph (1), by striking “\$70,814,000
23 for each of fiscal years 2019 through 2023” and in-
24 serting “\$71,000,000 for each of fiscal years 2021
25 through 2024”;

1 (2) in paragraph (2), by striking “\$25,000,000
2 for each of fiscal years 2019 through 2023” and in-
3 serting “\$34,000,000 for each of fiscal years 2021
4 through 2024”;

5 (3) in paragraph (3), by striking “\$29,932,000
6 for each of fiscal years 2019 through 2023” and in-
7 serting “\$38,000,000 for each of fiscal years 2021
8 through 2024”;

9 (4) in paragraph (4), by striking “\$26,800,000
10 for each of fiscal years 2019 through 2023” and in-
11 serting “\$45,000,000 for each of fiscal years 2021
12 through 2024”; and

13 (5) in paragraph (5), by striking “\$30,564,000
14 for each of fiscal years 2019 through 2023” and in-
15 serting “\$35,000,000 for each of fiscal years 2021
16 through 2024”.

17 **SEC. 10. BLUE ECONOMY VALUATION.**

18 (a) MEASUREMENT OF BLUE ECONOMY INDUS-
19 TRIES.—The Administrator, the Director of the Bureau
20 of Economic Analysis, the Commissioner of the Bureau
21 of Labor Statistics, the Secretary of the Treasury, and
22 the heads of other relevant Federal agencies, shall
23 prioritize the collection, aggregation, and analysis of data
24 to measure the value and impact of industries related to
25 the Great Lakes, oceans, bays, estuaries, and coasts on

1 the economy of the United States, including living re-
2 sources, marine construction, marine transportation, off-
3 shore mineral extraction, ship and boat building, tourism,
4 recreation, subsistence, and such other industries the Ad-
5 ministrator considers appropriate (known as “Blue Econ-
6 omy” industries).

7 (b) COLLABORATION.—In carrying out subsection
8 (a), the Administrator shall—

9 (1) work with the Director of the Bureau of
10 Economic Analysis and the heads of other relevant
11 Federal agencies to develop a Coastal and Ocean
12 Economy Satellite Account that includes national
13 and State-level statistics to measure the contribution
14 of the Great Lakes, oceans, bays, estuaries, and
15 coasts to the overall economy of the United States;
16 and

17 (2) collaborate with national and international
18 organizations, governments, and Tribes to promote
19 consistency of methods, measurements, and defini-
20 tions to ensure comparability of results between
21 countries.

22 (c) REPORT.—Not less frequently than once every 2
23 years, the Administrator, in consultation with the Director
24 of the Bureau of Economic Analysis, the Commissioner
25 of the Bureau of Labor Statistics, the Secretary of the

1 Treasury, and the heads of other relevant Federal agen-
2 cies, shall publish a report that—

3 (1) defines the Blue Economy, in consultation
4 Tribal governments, academia, industry, nongovern-
5 mental organizations, and other relevant experts;

6 (2) makes recommendations for updating North
7 American Industry Classification System (NAICS)
8 reporting codes to reflect the Blue Economy; and

9 (3) provides a comprehensive estimate of the
10 value and impact of the Blue Economy with respect
11 to each State and territory of the United States, in-
12 cluding—

13 (A) the value and impact of—

14 (i) economic activities that are de-
15 pendent upon the resources of the Great
16 Lakes, oceans, bays, estuaries, and coasts;

17 (ii) the population and demographic
18 characteristics of the population along the
19 coasts;

20 (iii) port and shoreline infrastructure;

21 (iv) the volume and value of cargo
22 shipped by sea or across the Great Lakes;
23 and

24 (v) data collected from the Great
25 Lakes, oceans, bays, estuaries, and coasts,

1 including such data collected by businesses
2 that purchase and commodify the data, in-
3 cluding weather prediction and seasonal
4 agricultural forecasting; and

5 (B) to the extent possible, the qualified
6 value and impact of the natural capital of the
7 Great Lakes, oceans, bays, estuaries, and coasts
8 with respect to tourism, recreation, natural re-
9 sources, and cultural heritage, including other
10 indirect values.

11 (d) DEFINITION OF TRIBE.—In this section, the term
12 “Tribe” has the meaning given the term “Indian tribe”
13 in section 4 of the Indian Self-Determination and Edu-
14 cation Assistance Act (25 U.S.C. 5304).

15 **SEC. 11. ADVANCED RESEARCH PROJECTS AGENCY-**
16 **OCEANS.**

17 (a) AGREEMENT.—Not later than 45 days after the
18 date of the enactment of this Act, the Administrator shall
19 seek to enter into an agreement with the National Acad-
20 emy of Sciences to conduct the comprehensive assessment
21 under subsection (b).

22 (b) COMPREHENSIVE ASSESSMENT.—

23 (1) IN GENERAL.—Under an agreement be-
24 tween the Administrator and the National Academy
25 of Sciences under this section, the National Acad-

1 emy of Sciences shall conduct a comprehensive as-
2 sessment of the need for and feasibility of estab-
3 lishing an Advanced Research Projects Agency–
4 Oceans (ARPA–O) that operates in coordination
5 with and with nonduplication of existing Federal
6 oceanic research programs, including programs of
7 the Office of Oceanic and Atmospheric Research of
8 the National Oceanic and Atmospheric Administra-
9 tion.

10 (2) ELEMENTS.—The comprehensive assess-
11 ment carried out pursuant to paragraph (1) shall in-
12 clude—

13 (A) an assessment of how an ARPA–O
14 could help overcome the long-term and high-risk
15 technological barriers in the development of
16 ocean technologies, with the goal of enhancing
17 the economic, ecological, and national security
18 of the United States through the rapid develop-
19 ment of technologies that result in—

20 (i) improved data collection, moni-
21 toring, and prediction of the ocean environ-
22 ment, including sea ice conditions;

23 (ii) overcoming barriers to the appli-
24 cation of new and improved technologies,

1 such as high costs and scale of operational
2 missions;

3 (iii) improved management practices
4 for protecting ecological sustainability;

5 (iv) improved national security capac-
6 ity;

7 (v) improved technology for fishery
8 population assessments;

9 (vi) expedited processes between and
10 among Federal agencies to successfully
11 identify, transition, and coordinate re-
12 search and development output to oper-
13 ations, applications, commercialization, and
14 other uses; and

15 (vii) ensuring that the United States
16 maintains a technological lead in devel-
17 oping and deploying advanced ocean tech-
18 nologies;

19 (B) an evaluation of the organizational
20 structures under which an ARPA-O could be
21 organized, which takes into account—

22 (i) best practices for new research
23 programs;

24 (ii) consolidation and reorganization
25 of existing Federal oceanic programs to ef-

1 fectuate coordination and nonduplication of
2 such programs;

3 (iii) metrics and approaches for peri-
4 odic program evaluation;

5 (iv) capacity to fund and manage ex-
6 ternal research awards; and

7 (v) options for oversight of the activ-
8 ity through a Federal agency, an inter-
9 agency organization, nongovernmental or-
10 ganization, or other institutional arrange-
11 ment; and

12 (C) an estimation of the scale of invest-
13 ment necessary to pursue high priority ocean
14 technology projects.

15 (c) REPORT.—Not later than 18 months after the
16 date of the enactment of this Act, the Administrator shall
17 submit to Congress a report on the comprehensive assess-
18 ment conducted under subsection (b).

19 **SEC. 12. NO ADDITIONAL FUNDS AUTHORIZED.**

20 No additional funds are to be authorized to carry out
21 this Act.