

# Calendar No. 206

117TH CONGRESS  
1ST SESSION

# S. 140

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

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## IN THE SENATE OF THE UNITED STATES

JANUARY 28, 2021

Mr. WHITEHOUSE (for himself, Ms. MURKOWSKI, Mr. MERKLEY, and Mr. PORTMAN) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

DECEMBER 17, 2021

Reported by Ms. CANTWELL, with an amendment

[Strike out all after the enacting clause and insert the part printed in italic]

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## A BILL

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

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “~~Bolstering Long-term~~  
5 ~~Understanding and Exploration of the Great Lakes,~~

1 Oceans, Bays, and Estuaries Act” or the “BLUE GLOBE  
2 Act”.

3 **SEC. 2. PURPOSE.**

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

5 (1) the monitoring, understanding, and explo-  
6 ration of the Great Lakes, oceans, bays, estuaries,  
7 and coasts; and

8 (2) the collection, analysis, synthesis, and shar-  
9 ing of data related to the Great Lakes, oceans, bays,  
10 estuaries, and coasts to facilitate science and oper-  
11 ational decision making.

12 **SEC. 3. SENSE OF CONGRESS.**

13 It is the sense of Congress that—

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

22 (2) agencies should consider current and future  
23 needs relating to supercomputing capacity, data  
24 storage capacity, and public access, address gaps in

1 those areas, and coordinate across agencies as need-  
2 ed;

3 (3) the United States is a leading member of  
4 the Intergovernmental Oceanographic Commission of  
5 the United Nations Educational, Scientific and Cul-  
6 tural Organization, a founding member of the Atlan-  
7 tic Ocean Research Alliance, and a key partner in  
8 developing the United Nations Decade of Ocean  
9 Science for Sustainable Development;

10 (4) the Integrated Ocean Observing System and  
11 the Global Ocean Observing System are key assets  
12 and networks that bolster understanding of the ma-  
13 rine environment;

14 (5) the National Oceanographic Partnership  
15 Program is a meaningful venue for collaboration and  
16 coordination among Federal agencies, scientists, and  
17 ocean users;

18 (6) the National Centers for Environmental In-  
19 formation of the National Oceanic and Atmospheric  
20 Administration should be looked to by other Federal  
21 agencies as a primary, centralized repository for  
22 Federal ocean data;

23 (7) the Marine Cadastre, a joint effort of the  
24 National Oceanic and Atmospheric Administration  
25 and the Bureau of Ocean Energy Management, pro-

1 vides access to data and information for specific  
 2 issues and activities in ocean resources management  
 3 to meet the needs of offshore energy and planning  
 4 efforts;

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

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

17 **SEC. 4. DEFINITION OF ADMINISTRATOR.**

18 In this Act, the term “Administrator” means the  
 19 Under Secretary of Commerce for Oceans and Atmosphere  
 20 in the Under Secretary’s capacity as Administrator of the  
 21 National Oceanic and Atmospheric Administration.

22 **SEC. 5. INCREASED COORDINATION AMONG AGENCIES**  
 23 **WITH RESPECT TO DATA AND MONITORING.**

24 (a) INTERAGENCY OCEAN OBSERVATION COM-  
 25 MITTEE.—In addition to its responsibilities as of the date

1 of the enactment of this Act, and in consultation with the  
2 associated advisory committee authorized by section  
3 12304(d) of the Integrated Coastal and Ocean Observa-  
4 tion System Act of 2009 (33 U.S.C. 3603(d)), the Inter-  
5 agency Ocean Observation Committee shall—

6           (1) work with international coordinating bodies,  
7           as necessary, to ensure robust, direct measurements  
8           of the Great Lakes, oceans, bays, estuaries, and  
9           coasts, including oceanographic data; and

10           (2) support cross-agency and multi-platform  
11           synergy, by coordinating overlapping data collection  
12           by satellites, buoys, submarines, gliders, vessels, and  
13           other data collection vehicles and technologies.

14           (b) FEDERAL GEOGRAPHIC DATA COMMITTEE.—In  
15 addition to its responsibilities as of the date of the enact-  
16 ment of this Act, and in consultation with the National  
17 Geospatial Advisory Committee, the Federal Geographic  
18 Data Committee shall—

19           (1) work with international coordinating bodies,  
20           as necessary, to ensure robust, continuous measure-  
21           ments of the Great Lakes, oceans, bays, estuaries,  
22           and coasts, including satellite and geospatial data;  
23           and

1           (2) support new and old data and metadata cer-  
 2           tification, quality assurance, quality control, integra-  
 3           tion, and archiving.

4           (e) INTERAGENCY COMMITTEE ON OCEAN AND  
 5 COASTAL MAPPING.—In addition to its responsibilities as  
 6 of the date of the enactment of this Act, and in consulta-  
 7 tion with its associated advisory panel authorized by sec-  
 8 tion 12203(g) of the Ocean and Coastal Mapping Integra-  
 9 tion Act (33 U.S.C. 3502(g)), the Interagency Committee  
 10 on Ocean and Coastal Mapping shall—

11           (1) work with international coordinating bodies,  
 12           as necessary, to ensure robust, continuous satellite  
 13           and direct measurements of the Great Lakes,  
 14           oceans, bays, estuaries, and coasts, including bathy-  
 15           metric data; and

16           (2) make recommendations on how to make  
 17           data, metadata, and model output accessible to a  
 18           broader public audience, including through geo-  
 19           graphic information system layers, graphics, and  
 20           other visuals.

21 **SEC. 6. TECHNOLOGY INNOVATION TO COMBAT ILLEGAL,**  
 22 **UNREPORTED, AND UNREGULATED FISHING.**

23           (a) DEFINITIONS.—Section 3532 of the Maritime Se-  
 24           curity and Fisheries Enforcement Act (16 U.S.C. 8001)  
 25           is amended—

1           (1) by redesignating paragraphs (6) through  
2           (13) as paragraphs (7) through (14), respectively;  
3           and

4           (2) by inserting after paragraph (5) the fol-  
5           lowing:

6           “(6) INNOVATIVE TECHNOLOGIES.—The term  
7           ‘innovative technologies’ includes the following:

8                   “(A) Improved satellite imagery and track-  
9                   ing.

10                   “(B) Advanced electronic monitoring  
11                   equipment.

12                   “(C) Vessel location data.

13                   “(D) Improved genetic, molecular, or other  
14                   biological methods of tracking sources of sea-  
15                   food.

16                   “(E) Electronic catch documentation and  
17                   traceability.

18                   “(F) Such other technologies as the Ad-  
19                   ministrator of the National Oceanic and Atmos-  
20                   pheric Administration considers appropriate.”.

21           (b) TECHNOLOGY PROGRAMS.—Section 3546 of the  
22           Maritime Security and Fisheries Enforcement Act (16  
23           U.S.C. 8016) is amended—

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

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

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

4           “~~(5)~~ coordinating the application of existing in-  
5           novative technologies and the development of emerg-  
6           ing innovative technologies.”.

7   **SEC. 7. WORKFORCE STUDY.**

8           (a) **IN GENERAL.**—Section 303(a) of the America  
9   **COMPETES** Reauthorization Act of 2010 (33 U.S.C.  
10 893e(a)) is amended—

11           (1) in the matter preceding paragraph (1), by  
12           striking “Secretary of Commerce” and inserting  
13           “Under Secretary of Commerce for Oceans and At-  
14           mosphere”;

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

17           (3) in paragraph (3), by inserting “or highly  
18           qualified technical professionals and tradespeople”  
19           after “atmospheric scientists”;

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

22           (5) in paragraph (5)—

23                   (A) by striking “scientist”; and

24                   (B) by striking “; and” and inserting “;  
25           observations, and monitoring;”



1           (6) in paragraph (6), by striking “into Federal”  
2           and all that follows and inserting “, technical profes-  
3           sionals, and tradespeople into Federal career posi-  
4           tions;”

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

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

9           “(2) whether there is a shortage in the number  
10          of individuals with technical or trade-based skillsets  
11          or credentials suited to a career in oceanic and at-  
12          mospheric data collection, processing, satellite pro-  
13          duction, or satellite operations;” and

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

15          “(8) workforce diversity and actions the Fed-  
16          eral Government can take to increase diversity in the  
17          scientific workforce; and

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

20          (b) COORDINATION.—Section 303(b) of such Act (33  
21          U.S.C. 893e(b)) is amended by striking “Secretary of  
22          Commerce” and inserting “Under Secretary of Commerce  
23          for Oceans and Atmosphere”.

24          (c) REPORT.—Section 303(e) of such Act (33 U.S.C.  
25          893e(e)) is amended—

1           (1) by striking “the date of enactment of this  
2     Act” and inserting “the date of the enactment of the  
3     Bolstering Long-term Understanding and Explo-  
4     ration of the Great Lakes, Oceans, Bays, and Estu-  
5     aries Act”;

6           (2) by striking “Secretary of Commerce” and  
7     inserting “Under Secretary of Commerce for Oceans  
8     and Atmosphere”; and

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

16    (d) PROGRAM AND PLAN.—Section 303(d) of such  
17    Act (~~33~~ U.S.C. 893e(d)) is amended—

18           (1) by striking “Administrator of the National  
19    Oceanic and Atmospheric Administration” and in-  
20    serting “Under Secretary of Commerce for Oceans  
21    and Atmosphere”; and

22           (2) by striking “academic partners” and all  
23    that follows and inserting “academic partners.”.

1 **SEC. 8. ACCELERATING INNOVATION AT COOPERATIVE IN-**  
2 **STITUTES.**

3 (a) **FOCUS ON EMERGING TECHNOLOGIES.**—The Ad-  
4 ministrator shall ensure that the goals of the Cooperative  
5 Institutes of the National Oceanic and Atmospheric Ad-  
6 ministration include focusing on advancing or applying  
7 emerging technologies, which may include—

8 (1) applied uses and development of real-time  
9 and other advanced genetic technologies and applica-  
10 tions, including such technologies and applications  
11 that derive genetic material directly from environ-  
12 mental samples without any obvious signs of biologi-  
13 cal source material;

14 (2) deployment of, and improvements to, the  
15 durability, maintenance, and other lifecycle concerns  
16 of advanced unmanned vehicles, regional small re-  
17 search vessels, and other research vessels that sup-  
18 port and launch unmanned vehicles and sensors; and

19 (3) supercomputing and big data management,  
20 including data collected through electronic moni-  
21 toring and remote sensing.

22 (b) **DATA SHARING.**—Each Cooperative Institute  
23 shall ensure that data collected from the work of the insti-  
24 tute, other than classified, confidential, or proprietary  
25 data, are archived and made publicly accessible.

1       (c) ~~COORDINATION WITH OTHER PROGRAMS.—The~~  
2 Cooperative Institutes shall work with the Interagency  
3 Ocean Observation Committee, the regional associations  
4 of the Integrated Ocean Observing System, and other  
5 ocean observing programs to coordinate technology needs  
6 and the transition of new technologies from research to  
7 operations.

8 **SEC. 9. OCEAN INNOVATION PRIZE AND PRIORITIZATION.**

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

22       (b) ~~AREAS.—The areas specified in this subsection~~  
23 are the following:

24               (1) ~~Improved eDNA analytics and deployment~~  
25               with autonomous vehicles.

1           (2) Plastic pollution detection, quantification,  
2           and mitigation, including with respect to used fish-  
3           ing gear and tracking technologies to reduce or  
4           eliminate bycatch.

5           (3) Advanced satellite data and other advanced  
6           technology for improving scientific assessment.

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

9           (5) Advanced electronic fisheries monitoring  
10          equipment and data analysis tools, including im-  
11          proved fish species recognition software, confidential  
12          data management, data analysis and visualization,  
13          and storage of electronic reports, imagery, location  
14          information, and other data.

15          (6) Autonomous and other advanced surface ve-  
16          hicles, underwater vehicles, or airborne platforms for  
17          data collection and monitoring.

18          (7) Artificial intelligence and machine learning  
19          applications for data collection and monitoring re-  
20          lated to the Great Lakes, oceans, bays, estuaries,  
21          and coasts.

22          (8) Coral reef ecosystem monitoring.

23          (9) Electronic equipment, chemical or biological  
24          sensors, data analysis tools, and platforms to iden-  
25          tify and fill gaps in robust and shared continuous

1 data related to the Great Lakes, oceans, bays, estu-  
2 aries, and coasts to inform global earth system mod-  
3 els.

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

7 (11) Discovery and dissemination of data re-  
8 lated to the Great Lakes, oceans, bays, estuaries,  
9 and coasts.

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

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

15 (14) Such other areas as may be identified by  
16 the Administrator.

17 (c) **PRIORITIZATION OF PROPOSALS.**—In selecting re-  
18 cipients of Small Business Innovation Research (SBIR)  
19 and Small Business Technology Transfer (STTR) solicita-  
20 tions and interagency grants for ocean innovation, includ-  
21 ing the National Oceanographic Partnership Program, the  
22 Administrator shall prioritize proposals for fiscal years  
23 2021 and 2022 that address at least one of the areas spe-  
24 cified in subsection (b).

1 **SEC. 10. REAUTHORIZATION OF NOAA PROGRAMS.**

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

4 (1) in paragraph (1), by striking “\$70,814,000  
5 for each of fiscal years 2019 through 2023” and in-  
6 serting “\$71,000,000 for each of fiscal years 2021  
7 through 2024”;

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

12 (3) in paragraph (3), by striking “\$29,932,000  
13 for each of fiscal years 2019 through 2023” and in-  
14 serting “\$38,000,000 for each of fiscal years 2021  
15 through 2024”;

16 (4) in paragraph (4), by striking “\$26,800,000  
17 for each of fiscal years 2019 through 2023” and in-  
18 serting “\$45,000,000 for each of fiscal years 2021  
19 through 2024”; and

20 (5) in paragraph (5), by striking “\$30,564,000  
21 for each of fiscal years 2019 through 2023” and in-  
22 serting “\$35,000,000 for each of fiscal years 2021  
23 through 2024”.

24 **SEC. 11. BLUE ECONOMY VALUATION.**

25 (a) **MEASUREMENT OF BLUE ECONOMY INDUS-**  
26 **TRIES.**—The Administrator, the Director of the Bureau

1 of Economic Analysis, the Commissioner of the Bureau  
2 of Labor Statistics, the Secretary of the Treasury, and  
3 the heads of other relevant Federal agencies, shall  
4 prioritize the collection, aggregation, and analysis of data  
5 to measure the value and impact of industries related to  
6 the Great Lakes, oceans, bays, estuaries, and coasts on  
7 the economy of the United States, including living re-  
8 sources, marine construction, marine transportation, off-  
9 shore mineral extraction, ship and boat building, tourism,  
10 recreation, subsistence, and such other industries the Ad-  
11 ministrator considers appropriate (known as “Blue Econ-  
12 omy” industries).

13 (b) COLLABORATION.—In carrying out subsection  
14 (a), the Administrator shall—

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

23 (2) collaborate with national and international  
24 organizations and governments to promote consist-



1       ency of methods, measurements, and definitions to  
2       ensure comparability of results between countries.

3       (c) REPORT.—Not less frequently than once every 2  
4       years, the Administrator, in consultation with the Director  
5       of the Bureau of Economic Analysis, the Commissioner  
6       of the Bureau of Labor Statistics, the Secretary of the  
7       Treasury, and the heads of other relevant Federal agen-  
8       cies, shall publish a report that—

9               (1) defines the Blue Economy, in coordination  
10       with Tribal governments, academia, industry, non-  
11       governmental organizations, and other relevant ex-  
12       perts;

13               (2) makes recommendations for updating North  
14       American Industry Classification System (NAICS)  
15       reporting codes to reflect the Blue Economy; and

16               (3) provides a comprehensive estimate of the  
17       value and impact of the Blue Economy with respect  
18       to each State and territory of the United States, in-  
19       cluding—

20                       (A) the value and impact of—

21                               (i) economic activities that are de-  
22                               pendent upon the resources of the Great  
23                               Lakes, oceans, bays, estuaries, and coasts;

1 (ii) the population and demographic  
2 characteristics of the population along the  
3 coasts;

4 (iii) port and shoreline infrastructure;

5 (iv) the volume and value of cargo  
6 shipped by sea or across the Great Lakes;  
7 and

8 (v) data collected from the Great  
9 Lakes, oceans, bays, estuaries, and coasts,  
10 including such data collected by businesses  
11 that purchase and commodify the data, in-  
12 cluding weather prediction and seasonal  
13 agricultural forecasting; and

14 (B) to the extent possible, the qualified  
15 value and impact of the natural capital of the  
16 Great Lakes, oceans, bays, estuaries, and coasts  
17 with respect to tourism, recreation, natural re-  
18 sources, and cultural heritage, including other  
19 indirect values.

20 **SEC. 12. ADVANCED RESEARCH PROJECTS AGENCY-**  
21 **OCEANS.**

22 (a) **AGREEMENT.**—Not later than 45 days after the  
23 date of the enactment of this Act, the Administrator shall  
24 seek to enter into an agreement with the National Acad-

1 emy of Sciences to conduct the comprehensive assessment  
2 under subsection (b).

3 (b) COMPREHENSIVE ASSESSMENT.—

4 (1) IN GENERAL.—Under an agreement be-  
5 tween the Administrator and the National Academy  
6 of Sciences under this section, the National Acad-  
7 emy of Sciences shall conduct a comprehensive as-  
8 sessment of the need for and feasibility of estab-  
9 lishing an Advanced Research Projects Agency—  
10 Oceans (ARPA-O) that operates in coordination  
11 with and with nonduplication of existing Federal  
12 oceanic research programs, including programs of  
13 the Office of Oceanic and Atmospheric Research of  
14 the National Oceanic and Atmospheric Administra-  
15 tion.

16 (2) ELEMENTS.—The comprehensive assess-  
17 ment carried out pursuant to paragraph (1) shall in-  
18 clude—

19 (A) an assessment of how an ARPA-O  
20 could help overcome the long-term and high-risk  
21 technological barriers in the development of  
22 ocean technologies, with the goal of enhancing  
23 the economic, ecological, and national security  
24 of the United States through the rapid develop-  
25 ment of technologies that result in—

- 1 (i) improved data collection, moni-  
2 toring, and prediction of the ocean environ-  
3 ment, including sea ice conditions;
- 4 (ii) overcoming barriers to the appli-  
5 cation of new and improved technologies,  
6 such as high costs and scale of operational  
7 missions;
- 8 (iii) improved management practices  
9 for protecting ecological sustainability;
- 10 (iv) improved national security capac-  
11 ity;
- 12 (v) improved technology for fishery  
13 population assessments;
- 14 (vi) expedited processes between and  
15 among Federal agencies to successfully  
16 identify, transition, and coordinate re-  
17 search and development output to oper-  
18 ations, applications, commercialization, and  
19 other uses; and
- 20 (vii) ensuring that the United States  
21 maintains a technological lead in devel-  
22 oping and deploying advanced ocean tech-  
23 nologies;

1           (B) an evaluation of the organizational  
2 structures under which an ARPA-O could be  
3 organized, which takes into account—

4           (i) best practices for new research  
5 programs;

6           (ii) consolidation and reorganization  
7 of existing Federal oceanic programs to ef-  
8 fectuate coordination and nonduplication of  
9 such programs;

10          (iii) metrics and approaches for peri-  
11 odic program evaluation;

12          (iv) capacity to fund and manage ex-  
13 ternal research awards; and

14          (v) options for oversight of the activ-  
15 ity through a Federal agency, an inter-  
16 agency organization, nongovernmental or-  
17 ganization, or other institutional arrange-  
18 ment; and

19          (C) an estimation of the scale of invest-  
20 ment necessary to pursue high priority ocean  
21 technology projects.

22          (e) REPORT.—Not later than 18 months after the  
23 date of the enactment of this Act, the Administrator shall  
24 submit to Congress a report on the comprehensive assess-  
25 ment conducted under subsection (b).

1 **SECTION 1. SHORT TITLE.**

2 *This Act may be cited as the “Bolstering Long-term*  
3 *Understanding and Exploration of the Great Lakes, Oceans,*  
4 *Bays, and Estuaries Act” or the “BLUE GLOBE Act”.*

5 **SEC. 2. PURPOSE.**

6 *The purpose of this Act is to promote and support—*

7 *(1) the monitoring, understanding, and explo-*  
8 *ration of the Great Lakes, oceans, bays, estuaries, and*  
9 *coasts; and*

10 *(2) the collection, analysis, synthesis, and shar-*  
11 *ing of data related to the Great Lakes, oceans, bays,*  
12 *estuaries, and coasts to facilitate science and oper-*  
13 *ational decision making.*

14 **SEC. 3. SENSE OF CONGRESS.**

15 *It is the sense of Congress that Federal agencies should*  
16 *optimize data collection, management, and dissemination,*  
17 *to the extent practicable, to maximize their impact for re-*  
18 *search, conservation, commercial, regulatory, and edu-*  
19 *cational benefits and to foster innovation, scientific discov-*  
20 *eries, the development of commercial products, and the de-*  
21 *velopment of sound policy with respect to the Great Lakes,*  
22 *oceans, bays, estuaries, and coasts.*

23 **SEC. 4. DEFINITIONS.**

24 *In this Act:*

25 *(1) ADMINISTRATOR.—The term “Adminis-*  
26 *trator” means the Under Secretary of Commerce for*

1       *Oceans and Atmosphere in the Under Secretary’s ca-*  
 2       *capacity as Administrator of the National Oceanic and*  
 3       *Atmospheric Administration.*

4               (2) *INDIAN TRIBE.*—*The term “Indian Tribe”*  
 5       *has the meaning given that term in section 4 of the*  
 6       *Indian Self-Determination and Education Assistance*  
 7       *Act (25 U.S.C. 5304).*

8       **SEC. 5. WORKFORCE STUDY.**

9               (a) *IN GENERAL.*—*Section 303(a) of the America*  
 10       *COMPETES Reauthorization Act of 2010 (33 U.S.C.*  
 11       *893c(a)) is amended—*

12               (1) *in the matter preceding paragraph (1), by*  
 13       *striking “Secretary of Commerce” and inserting*  
 14       *“Under Secretary of Commerce for Oceans and At-*  
 15       *mosphere”;*

16               (2) *in paragraph (2), by inserting “, skillsets, or*  
 17       *credentials” after “degrees”;*

18               (3) *in paragraph (3), by inserting “or highly*  
 19       *qualified technical professionals and tradespeople”*  
 20       *after “atmospheric scientists”;*

21               (4) *in paragraph (4), by inserting “, skillsets, or*  
 22       *credentials” after “degrees”;*

23               (5) *in paragraph (5)—*

24               (A) *by striking “scientist”; and*

1                   (B) by striking “; and” and inserting “, ob-  
2                   servations, and monitoring;”

3                   (6) in paragraph (6), by striking “into Federal”  
4                   and all that follows and inserting “, technical profes-  
5                   sionals, and tradespeople into Federal career posi-  
6                   tions;”

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

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

11                  “(2) whether there is a shortage in the number  
12                  of individuals with technical or trade-based skillsets  
13                  or credentials suited to a career in oceanic and at-  
14                  mospheric data collection, processing, satellite produc-  
15                  tion, or satellite operations;”; and

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

17                  “(8) workforce diversity and actions the Federal  
18                  Government can take to increase diversity in the sci-  
19                  entific workforce; and

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

22                  (b) COORDINATION.—Section 303(b) of such Act (33  
23                  U.S.C. 893c(b)) is amended by striking “Secretary of Com-  
24                  merce” and inserting “Under Secretary of Commerce for  
25                  Oceans and Atmosphere”.



1       (c) *REPORT.*—Section 303(c) of such Act (33 U.S.C.  
2 893c(c)) is amended—

3           (1) by striking “the date of enactment of this  
4 Act” and inserting “the date of the enactment of the  
5 Bolstering Long-term Understanding and Exploration  
6 of the Great Lakes, Oceans, Bays, and Estuaries Act”;

7           (2) by striking “Secretary of Commerce” and in-  
8 serting “Under Secretary of Commerce for Oceans  
9 and Atmosphere”; and

10          (3) by striking “to each committee” and all that  
11 follows through “section 302 of this Act” and insert-  
12 ing “to the Committee on Commerce, Science, and  
13 Transportation of the Senate and the Committee on  
14 Natural Resources and the Committee on Science,  
15 Space, and Technology of the House of Representa-  
16 tives”.

17       (d) *PROGRAM AND PLAN.*—Section 303(d) of such Act  
18 (33 U.S.C. 893c(d)) is amended—

19           (1) by striking “Administrator of the National  
20 Oceanic and Atmospheric Administration” and in-  
21 serting “Under Secretary of Commerce for Oceans  
22 and Atmosphere”; and

23           (2) by striking “academic partners” and all that  
24 follows and inserting “academic partners.”.

1 **SEC. 6. ACCELERATING INNOVATION AT COOPERATIVE IN-**  
2 **STITUTES.**

3 (a) *FOCUS ON EMERGING TECHNOLOGIES.*—The Ad-  
4 ministrator shall consider evaluating the goals of one or  
5 more Cooperative Institutes of the National Oceanic and  
6 Atmospheric Administration to include focusing on advanc-  
7 ing or applying emerging technologies, which may in-  
8 clude—

9 (1) *applied uses and development of real-time*  
10 *and other advanced genetic technologies and applica-*  
11 *tions, including such technologies and applications*  
12 *that derive genetic material directly from environ-*  
13 *mental samples without any obvious signs of biologi-*  
14 *cal source material;*

15 (2) *deployment of, and improvements to, the du-*  
16 *rability, maintenance, and other lifecycle concerns of*  
17 *advanced unmanned vehicles, regional small research*  
18 *vessels, and other research vessels that support and*  
19 *launch unmanned vehicles and sensors; and*

20 (3) *supercomputing and big data management,*  
21 *including data collected through model outputs, elec-*  
22 *tronic monitoring, and remote sensing.*

23 (b) *COORDINATION WITH OTHER PROGRAMS.*—If ap-  
24 propriate, the Cooperative Institutes shall work with the  
25 Interagency Ocean Observation Committee, the regional as-  
26 sociations of the Integrated Ocean Observing System, and

1 *other ocean observing programs to coordinate technology*  
2 *needs and the transition of new technologies from research*  
3 *to operations.*

4 **SEC. 7. ELECTRONIC MONITORING INNOVATION PRIZE.**

5 *Not later than 2 years after the date of the enactment*  
6 *of this Act, and under the authority provided by section*  
7 *24 of the Stevenson-Wydler Technology Innovation Act of*  
8 *1980 (15 U.S.C. 3719), the Administrator, in consultation*  
9 *with the heads of relevant Federal agencies and nongovern-*  
10 *mental partners, as appropriate, shall establish an Elec-*  
11 *tronic Monitoring Innovation Prize, which may be awarded*  
12 *for the development of advanced electronic fisheries moni-*  
13 *toring equipment and data analysis tools, including im-*  
14 *proved fish species recognition software.*

15 **SEC. 8. BLUE ECONOMY VALUATION.**

16 *(a) MEASUREMENT OF BLUE ECONOMY INDUS-*  
17 *TRIES.—The Administrator, in consultation with the heads*  
18 *of other relevant Federal agencies, shall establish a program*  
19 *to improve the collection, aggregation, and analysis of data*  
20 *to measure the value and impact of industries related to*  
21 *the Great Lakes, oceans, bays, estuaries, and coasts on the*  
22 *economy of the United States, including living resources,*  
23 *marine construction, marine transportation, offshore en-*  
24 *ergy development and siting including for renewable en-*  
25 *ergy, offshore mineral production, ship and boat building,*

1 *tourism, recreation, subsistence, commercial, recreational,*  
2 *and charter fishing, seafood processing, and other fishery-*  
3 *related businesses, aquaculture such as kelp and shellfish,*  
4 *and other industries the Administrator considers appro-*  
5 *priate (known as “Blue Economy” industries).*

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

8 (1) *work with the Director of the Bureau of Eco-*  
9 *nomics Analysis and the heads of other relevant Fed-*  
10 *eral agencies to develop a Coastal and Ocean Econ-*  
11 *omy Satellite Account that includes national, Tribal,*  
12 *and State-level statistics to measure the contribution*  
13 *of the Great Lakes, oceans, bays, estuaries, and coasts*  
14 *to the overall economy of the United States; and*

15 (2) *collaborate with national and international*  
16 *organizations and governments to promote consist-*  
17 *ency of methods, measurements, and definitions to en-*  
18 *sure comparability of results between countries.*

19 (c) *REPORT.*—*Not less frequently than once every 2*  
20 *years until the date that is 20 years after the date of the*  
21 *enactment of this Act, the Administrator, in consultation*  
22 *with the heads of other relevant Federal agencies, shall pub-*  
23 *lish a report that—*

24 (1) *defines the Blue Economy, in coordination*  
25 *with Indian Tribes, academia, the private sector,*

1        *nongovernmental organizations, and other relevant*  
2        *experts;*

3            (2) *makes recommendations for updating North*  
4        *American Industry Classification System (NAICS)*  
5        *reporting codes to reflect the Blue Economy; and*

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

10            (A) *the value and impact of—*

11                    (i) *economic activities that are depend-*  
12                    *ent upon the resources of the Great Lakes,*  
13                    *oceans, bays, estuaries, and coasts;*

14                    (ii) *the population and demographic*  
15                    *characteristics of the population along the*  
16                    *coasts;*

17                    (iii) *port and shoreline infrastructure;*

18                    (iv) *the volume and value of cargo*  
19                    *shipped by sea or across the Great Lakes;*  
20                    *and*

21                    (v) *data collected from the Great*  
22                    *Lakes, oceans, bays, estuaries, and coasts,*  
23                    *including such data collected by businesses*  
24                    *that purchase and commodify the data, in-*

1                    *cluding weather prediction and seasonal ag-*  
2                    *ricultural forecasting; and*

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

9    **SEC. 9. ADVANCED RESEARCH PROJECTS AGENCY–OCEANS.**

10            *(a) AGREEMENT.—Not later than 45 days after the*  
11            *date of the enactment of this Act, the Administrator shall*  
12            *seek to enter into an agreement with the National Academy*  
13            *of Sciences to conduct the comprehensive assessment under*  
14            *subsection (b).*

15            *(b) COMPREHENSIVE ASSESSMENT.—*

16                    *(1) IN GENERAL.—Under an agreement between*  
17                    *the Administrator and the National Academy of*  
18                    *Sciences under this section, the National Academy of*  
19                    *Sciences shall conduct a comprehensive assessment to*  
20                    *evaluate—*

21                            *(A) whether there is a need for an Advanced*  
22                            *Research Projects Agency–Oceans (ARPA–O)*  
23                            *that operates within the National Oceanic and*  
24                            *Atmospheric Administration in coordination*  
25                            *with, but not duplicative of, existing Federal re-*

1 search programs relating to oceanic, coastal,  
2 Great Lakes, estuarine, and related systems, in-  
3 cluding programs of the Office of Oceanic and  
4 Atmospheric Research of the National Oceanic  
5 and Atmospheric Administration; and

6 (B) if there is such a need, the feasibility of  
7 establishing such an ARPA-O.

8 (2) *ELEMENTS.*—The comprehensive assessment  
9 conducted under paragraph (1) shall include—

10 (A) an assessment of how an ARPA-O may  
11 help overcome the long-term and high-risk tech-  
12 nological barriers in the development of ocean  
13 technologies, with the goal of enhancing the eco-  
14 nomic, ecological, and national security of the  
15 United States through the rapid development of  
16 technologies that result in—

17 (i) improved data collection, moni-  
18 toring, and prediction of the ocean environ-  
19 ment, including sea ice conditions;

20 (ii) overcoming barriers to the applica-  
21 tion of new and improved technologies, such  
22 as high costs and scale of operational mis-  
23 sions;

24 (iii) improved technology for fishery  
25 stock assessments and surveys; and

1                   (iv) ensuring that the United States  
2                   maintains a technological lead in devel-  
3                   oping and deploying advanced ocean tech-  
4                   nologies;

5                   (B) an evaluation of the organizational  
6                   structures under which an ARPA–O could be or-  
7                   ganized, which takes into account—

8                   (i) best practices for new research pro-  
9                   grams;

10                  (ii) metrics and approaches for peri-  
11                  odic program evaluation;

12                  (iii) capacity to fund and manage ex-  
13                  ternal research awards; and

14                  (iv) options for oversight of the activity  
15                  through the National Oceanic and Atmos-  
16                  pheric Administration;

17                  (C) an estimation of the scale of investment  
18                  necessary to pursue high priority ocean tech-  
19                  nology projects; and

20                  (D) in a case in which an ARPA–O is not  
21                  recommended as an independent office, rec-  
22                  ommendations to improve the Office of Oceanic  
23                  and Atmospheric Research of the National Oce-  
24                  anic and Atmospheric Administration to achieve  
25                  the goals described in subparagraph (A).



1       (c) *REPORT.*—

2           (1) *IN GENERAL.*—Not later than 18 months  
3 after the date of the enactment of this Act, the Admin-  
4 istrator shall submit to the appropriate committees of  
5 Congress a report on the comprehensive assessment  
6 conducted under subsection (b).

7           (2) *DEFINITION OF APPROPRIATE COMMITTEES*  
8 *OF CONGRESS.*—In this section, the term “appro-  
9 priate committees of Congress” means—

10           (A) the Committee on Commerce, Science,  
11 and Transportation of the Senate;

12           (B) the Committee on Appropriations of the  
13 Senate;

14           (C) the Committee on Natural Resources of  
15 the House of Representatives;

16           (D) the Committee on Science, Space, and  
17 Technology of the House of Representatives; and

18           (E) the Committee on Appropriations of the  
19 House of Representatives.

20 **SEC. 10. NO ADDITIONAL FUNDS AUTHORIZED.**

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

23 **SEC. 11. NO ADDITIONAL FUNDS AUTHORIZED.**

24       No additional funds are authorized to be appropriated  
25 to carry out this Act.

Calendar No. 206

117<sup>TH</sup> CONGRESS  
1<sup>ST</sup> Session  
**S. 140**

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**A BILL**

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

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DECEMBER 17, 2021  
Reported with an amendment