116TH CONGRESS
1ST SESSION

S. 933

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

IN THE SENATE OF THE UNITED STATES

MARCH 28, 2019

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

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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.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the ''Bolstering Long-Term Understanding and Exploration of the Great Lakes, Oceans, Bays, and Estuaries Act'' or the ''BLUE GLOBE Act''.

SEC. 2. PURPOSE.

The purpose of this Act is to promote and support—

(1) the monitoring, understanding, and exploration of the Great Lakes, oceans, bays, estuaries, and coasts; and

(2) the collection, analysis, synthesis, and sharing of data related to the Great Lakes, oceans, bays, estuaries, and coasts to facilitate science and operational decision making.

SEC. 3. FINDINGS.

Congress makes the following findings:

(1) The Great Lakes, oceans, bays, estuaries, and coasts face significant challenges from, among other things, marine debris, illegal, unreported, and unregulated fishing, and changing conditions.

(2) Most of the ocean floor is mapped only at a very coarse resolution of 5 kilometers per pixel, whereas Mars, the Moon, and Venus are mapped at a much finer resolution of 100 meters per pixel or better.

(3) Many industries, including the fishing and aquaculture, energy, shipping, insurance, telecommunications, weather and climate forecasting, and tourism industries, among others, use ocean data, whether or not the industries collect that data themselves.

(4) In 2017, the National Oceanic and Atmospheric Administration estimated that United States

businesses that collect ocean data or provide enhanced ocean data products have overall revenues of approximately $58,000,000,000.

(5) Although a large amount of data related to the Great Lakes, oceans, bays, estuaries, and coasts is collected internationally, nationally, and regionally, by international bodies, national agencies, institutes, private companies, and other entities, that data collection is often uncoordinated, and the resulting data are not always shared in a timely and useful manner between those entities.

(6) Improved collection, analysis, synthesis, and sharing of such data will improve our understanding of, and responses to, the challenges faced by the Great Lakes, oceans, bays, estuaries, and coasts.

(7) Innovation, research, and a skilled workforce are required to improve our understanding of the Great Lakes, oceans, bays, estuaries, and coasts and the challenges they face.

(8) According to the National Oceanic and Atmospheric Administration, in 2015, the ocean and Great Lakes economy in the United States employed approximately 3,200,000 people and accounted for approximately $320,000,000,000 of the gross domestic product of the United States.

(9) The value and impact of the industries related to the Great Lakes, oceans, bays, estuaries, and coasts on the economy of the United States are evidently immense; however, what is known as the ''Blue Economy'' is neither consistently defined nor regularly quantified.

(10) The Federal Government has a responsibility to support the monitoring, understanding, and exploration of the Great Lakes, oceans, bays, estuaries, and coasts in pursuit of the national security and economic and environmental well-being of the United States, and as a world leader.

SEC. 4. SENSE OF CONGRESS.

It is the sense of Congress that—

(1) agencies should optimize data collection, management, and dissemination, to the extent practicable, to maximize their impact for research, commercial, regulatory, and educational benefits and to foster innovation, scientific discoveries, the development of commercial products, and the development of sound policy with respect to the Great Lakes, oceans, bays, estuaries, and coasts;

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

tural Organization, a founding member of the Atlantic Ocean Research Alliance, and a key partner in developing the United Nations Decade of Ocean Science for Sustainable Development;

(3) the Integrated Ocean Observing System and the Global Ocean Observing System are key assets and networks that bolster our understanding of the marine environment;

(4) the National Oceanographic Partnership Program is a meaningful venue for collaboration and coordination among Federal agencies, scientists, and ocean users;

(5) the National Centers for Environmental Information of the National Oceanic and Atmospheric Administration should be looked to by other Federal agencies as a primary, centralized repository for Federal ocean data;

(6) the Marine Cadastre, a joint effort of the National Oceanic and Atmospheric Administration and the Bureau of Ocean Energy Management, provides access to data and information for specific issues and activities in ocean resources management to meet the needs of offshore energy and planning efforts;

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

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

SEC. 5. DEFINITION.

In this Act, the term ''Administrator'' means the Under Secretary of Commerce for Oceans and Atmosphere in the Under Secretary's capacity as Administrator of the National Oceanic and Atmospheric Administration.

SEC. 6. INCREASED COORDINATION AMONG AGENCIES WITH RESPECT TO DATA AND MONITORING.

(a) INTERAGENCY OCEAN OBSERVATION COMMITTEE.—In addition to its responsibilities as of the date of the enactment of this Act, and in consultation with the associated advisory committee authorized by section 12304(d) of the Integrated Coastal and Ocean Observa-

tion System Act of 2009 (33 U.S.C. 3603(d)), the Interagency Ocean Observation Committee shall—

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

(2) coordinate supercomputing capacity, data storage capacity, and public access across agencies; and

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

(b) FEDERAL GEOGRAPHIC DATA COMMITTEE.—In addition to its responsibilities as of the date of the enactment of this Act, and in consultation with the National Geospatial Advisory Committee, the Federal Geographic Data Committee shall—

(1) work with international coordinating bodies, as necessary, to ensure robust, continuous measurements of the Great Lakes, oceans, bays, estuaries, and coasts, including satellite and geospatial data;

(2) coordinate supercomputing capacity, data storage capacity, and public access across agencies;

(3) develop and deploy cross-agency, real-time, standardized, centralized, archived, open-source, and publicly available databases (using declassified information to the extent possible) for all federally funded observational and model data, using the example of the World Ocean Database; and

(4) support new and old data and metadata certification, quality assurance, quality control, integration, and archiving.

(c) INTERAGENCY COMMITTEE ON OCEAN AND COASTAL MAPPING.—In addition to its responsibilities as of the date of the enactment of this Act, and in consultation with its associated advisory panel authorized by section 12203(g) of the Ocean and Coastal Mapping Integration Act (33 U.S.C. 3502(g)), the Interagency Committee on Ocean and Coastal Mapping shall—

(1) work with international coordinating bodies, as necessary, to ensure robust, continuous satellite and direct measurements of the Great Lakes, oceans, bays, estuaries, and coasts, including bathymetric data;

(2) coordinate supercomputing capacity, data storage capacity, and public access across agencies; and

(3) make recommendations on how to make data, metadata, and model output accessible to a broader public audience, including through geographic information system layers, graphics, and other visuals.

SEC. 7. INTERAGENCY OCEAN EXPLORATION COMMITTEE.

(a) ESTABLISHMENT.—The President shall establish a committee to promote the exploration and improved understanding of the oceans, to be known as the ''Interagency Ocean Exploration Committee''.

(b) MEMBERSHIP.—The Interagency Ocean Exploration Committee shall be composed of not fewer than one senior-level representative from each of the following Federal agencies:

(1) The Department of the Navy.

(2) The Department of the Interior.

(3) The Department of Commerce.

(4) The department in which the Coast Guard is operating.

(5) The Office of Management and Budget.

(6) The Council on Environmental Quality.

(7) The Office of Science and Technology Policy.

(8) The Department of State.

(9) The National Science Foundation.

(10) The National Aeronautics and Space Administration.

(11) The Subcommittee on Ocean Science and Technology of the National Science and Technology Council.

(12) The elements of the intelligence community (as defined in section 3 of the National Security Act of 1947 (50 U.S.C. 3003)), as the President considers appropriate.

(c) DUTIES.—The Interagency Ocean Exploration Committee shall—

(1) cultivate public-private partnerships, including with Federal agencies, academic institutions, nongovernmental organizations, technology companies, and international partners, to develop and deploy advanced technologies to explore and characterize the oceans; and

(2) coordinate the application of existing innovative technologies and development of emerging technologies to promote the understanding, mapping, and collection of data describing the oceans and the changes the oceans are experiencing and are anticipated to experience in the future, such as changes in temperature, salinity, oxygenation, and acidity, and the biological consequences of those changes.

SEC. 8. COMMITTEE ON OCEAN POLICY.

(a) ESTABLISHMENT.—There is established in the Executive Office of the President a Committee on Ocean Policy, which—

(1) succeeds the Ocean Policy Committee established on June 19, 2018, by Executive Order 13840 (83 Fed. Reg. 29431; relating to ocean policy);

(2) shall continue the activities of that committee as it was in existence on the day before the date of the enactment of this Act; and

(3) shall carry out the functions described in subsection (b).

(b) FUNCTIONS.—The Committee on Ocean Policy shall—

(1) facilitate coordination and integration of Federal activities in ocean and coastal waters to inform ocean policy and identify priority ocean research, technology, and data needs; and

(2) engage and collaborate with stakeholders, including Regional Ocean Partnerships, to address ocean-related matters that may require interagency or intergovernmental solutions.

SEC. 9. TECHNOLOGY INNOVATION TASK FORCE TO COMBAT ILLEGAL, UNREPORTED, AND UNREGULATED FISHING.

(a) ESTABLISHMENT.—The President shall establish a technology innovation task force (in this Act referred to as the ''IUU Tech Force'') to combat IUU fishing.

(b) LEADERSHIP.—The IUU Tech Force shall be led by the Director of the National Maritime Intelligence-Integration Office, who shall coordinate with the National Ocean Counsel Committee on IUU Fishing and Seafood Fraud.

(c) MEMBERSHIP.—The IUU Tech Force shall be composed of not fewer than one senior-level representative from each of the following Federal agencies:

(1) The Department of the Navy.

(2) The Department of Justice.

(3) The Department of the Interior.

(4) The Department of Agriculture.

(5) The Department of Commerce.

(6) The Department of Labor.

(7) The Department of Health and Human Services.

(8) The department in which the Coast Guard is operating.

(9) The Office of Management and Budget.

(10) The Council on Environmental Quality.

(11) The Office of Science and Technology Policy.

(12) The Office of the United States Trade Representative.

(13) The United States Agency for International Development.

(14) The Department of State.

(15) The National Science Foundation.

(16) The National Aeronautics and Space Administration.

(17) The Subcommittee on Ocean Science and Technology of the National Science and Technology Council.

(d) DUTIES.—The IUU Tech Force shall—

(1) cultivate public-private partnerships, including with Federal agencies, academic institutions, nongovernmental organizations, technology companies, and international partners, to develop and deploy advanced technologies to identify and combat IUU fishing;

(2) identify opportunities to declassify and make more publicly available imagery from the Department of Defense and the department in which the Coast Guard is operating and other information

that can be used to identify IUU fishing or be used in enforcement actions against violators; and

(3) coordinate the application of existing innovative technologies and development of emerging technologies to address—

(A) IUU fishing; and

(B) associated forced labor, human trafficking, and other illicit activities.

(e) DEFINITIONS.—In this section:

(1) INNOVATIVE TECHNOLOGIES.—The term ''innovative technologies'' includes the following:

(A) Improved satellite imagery and tracking.

(B) Advanced electronic monitoring equipment.

(C) Vessel location data.

(D) Improved genetic, molecular, or other biological methods of tracking sources of seafood.

(E) Electronic catch documentation and traceability.

(F) Such other technologies as the Administrator considers appropriate.

(2) IUU FISHING.—The term ''IUU fishing''—

(A) means illegal fishing, unreported fishing, or unregulated fishing (as such terms are defined in paragraph 3 of the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, adopted at the 24th Session of the Committee on Fisheries of the Food and Agriculture Organization of the United Nations in Rome on March 2, 2001); and

(B) includes fishing activities conducted in contravention of applicable laws and regulations related to labor conditions.

SEC. 10. WORKFORCE DEVELOPMENT.

(a) WORKFORCE DEVELOPMENT PROGRAM.—The Administrator shall develop a workforce development program, in consultation with the following:

(1) The Secretary of Defense.

(2) The Commandant of the Coast Guard.

(3) The Chief of Engineers of the Army Corps of Engineers.

(4) The Secretary of Education.

(5) The Director of the Office of Management and Budget.

(6) The Administrator of the National Aeronautics and Space Administration.

(7) The Assistant Director for Geosciences of the National Science Foundation.

(8) The Secretary of the Navy.

(9) The Director of the Office of Science and Technology Policy.

(10) The Secretary of Labor.

(11) The heads of other relevant Federal agencies.

(12) The Interagency Ocean Observation Committee and the associated advisory committee authorized by section 12304(d) of the Integrated Coastal and Ocean Observation System Act of 2009 (33 U.S.C. 3603(d)).

(13) The Federal Geographic Data Committee and the National Geospatial Advisory Committee.

(14) The Interagency Committee on Ocean and Coastal Mapping and its associated advisory panel authorized by section 12203(g) of the Ocean and Coastal Mapping Integration Act (33 U.S.C. 3502(g)).

(15) The Interagency Ocean Exploration Committee established under section 7.

(16) The Committee on Ocean Policy established under section 8.

(17) The IUU Tech Force established under section 9.

(18) Non-Federal partners and other experts.

(b) DUTIES.—The workforce development program developed under subsection (a) shall—

(1) support undergraduate and graduate education in the fields of engineering, marine sciences, data science and analytics, machine learning, robotics, cybersecurity, and other fields related to the advancement of the monitoring, collection, synthesis, and analysis of data relating to the Great Lakes, oceans, bays, estuaries, and coasts;

(2) support citizen science and public outreach related to the Great Lakes, oceans, bays, estuaries, and coasts that may encourage people to develop scientific skills and to enter the fields described in paragraph (1);

(3) promote diversity in the fields described in paragraph (1); and

(4) build on existing science, technology, engineering, and math (known as ''STEM'') education, veterans' training, and programs to support indigenous people and other underrepresented groups to facilitate education and training through programs that include—

(A) grants to members of the Armed Forces and veterans for vocational training or other educational opportunities in the fields of engineering, marine sciences, and data management and collection;

(B) grants to marine trade associations, engineering associations, and other professional organizations to provide apprenticeships; and

(C) scholarships for trade schools, vocational institutes, institutions of higher education, and educational coalitions such as the Alaska Native Science and Engineering Program.

(c) DEFINITIONS.—In this section:

(1) INSTITUTION OF HIGHER EDUCATION.—The term ''institution of higher education'' has the meaning given that term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

(2) VETERAN.—The term ''veteran'' has the meaning given that term in section 101 of title 38, United States Code.

SEC. 11. ACCELERATING INNOVATION AT COOPERATIVE INSTITUTES.

(a) FOCUS ON EMERGING TECHNOLOGIES.—The Administrator shall ensure that the goals of the Cooperative

Institutes of the National Oceanic and Atmospheric Administration include focusing on advancing or applying emerging technologies, which may include—

(1) applied uses and development of real-time and other advanced genetic technologies and applications, including such technologies and applications that derive genetic material directly from environmental samples without any obvious signs of biological source material;

(2) deployment of, and improvements to, the durability, maintenance, and other lifecycle concerns of advanced unmanned vehicles, regional small research vessels, and other research vessels that support and launch unmanned vehicles and sensors; and

(3) supercomputing and big data management, including data collected through electronic monitoring and remote sensing.

(b) DESIGNATION OF NEW INSTITUTES.—The Administrator may carry out subsection (a) by—

(1) incorporating the goals described in that subsection into one or more Cooperative Institutes in existence on the date of the enactment of this Act; or

(2) designating through a competitive selection process the development of not more than 2 new Cooperative Institutes to carry out those goals.

(c) DATA SHARING.—Each Cooperative Institute shall ensure that data collected from the work of the institute, other than classified, confidential, or proprietary data, are archived and made publicly accessible.

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

(e) AUTHORIZATION OF APPROPRIATIONS.—

(1) IN GENERAL.—There are authorized to be appropriated such sums as may be necessary to carry out this section.

(2) LIMITATION ON USE OF FUNDS.—No funds authorized to be appropriated to carry out this section may be obligated or expended for the construction of new buildings or facilities for Cooperative Institutes.

SEC. 12. BUILDING DATA SOURCES.

(a) ENGAGING INDIGENOUS, SUBSISTENCE, AND FISHING COMMUNITIES.—

(1) IN GENERAL.—The Administrator shall establish opportunities to engage indigenous, subsistence, and fishing communities to understand the needs of those communities and to provide improved products and services that are practical and useful to those communities, including collecting and integrating traditional ecological data and narrative records into national datasets.

(2) DATA RIGHTS.—In carrying out paragraph (1), the Administrator shall—

(A) consider issues relating to data ownership; and

(B) ensure that indigenous, subsistence, and fishing communities retain any specific rights or ownership of data provided to Federal agencies.

(b) REPORT TO CONGRESS.—

(1) REPORT REQUIRED.—Not later than one year after the date of the enactment of this Act, the Administrator shall submit to Congress a report identifying potential opportunities to encourage voluntary actions and partnerships between the National Oceanic and Atmospheric Administration and

non-Federal partners to increase and enhance data collection.

(2) OPPORTUNITIES FOR PARTNERSHIP.—The opportunities described in paragraph (1) may include opportunities that can be pursued in conjunction with Federal permits, leases, and other actions requiring Federal approval or funding, such as partnering with companies to acquire and share bathymetric data or supplying fishermen with sensors that can collect data through fishing gear.

SEC. 13. OCEAN INNOVATION PRIZE AND PRIORITIZATION.

(a) OCEAN INNOVATIVE PRIZES.—The Administrator, in consultation with the heads of relevant Federal agencies, including the Secretary of Defense, and in conjunction with nongovernmental partners, as appropriate and at the discretion of the Administrator, shall establish at least one Ocean Innovation Prize to catalyze the rapid development and deployment of data collection and monitoring technology related to the Great Lakes, oceans, bays, estuaries, and coasts in at least one of the areas specified in subsection (b).

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

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

(2) Plastic pollution detection, quantification, and mitigation, including with respect to used fishing gear and tracking technologies to reduce or eliminate bycatch.

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

(4) New stock assessment methods using satellite data or other advanced technologies.

(5) Identifying forced labor or human trafficking (or other illicit activity) often associated with IUU fishing (as defined in section 9).

(6) Advanced electronic fisheries monitoring equipment and data analysis tools, including improved fish species recognition software, confidential data management, data analysis and visualization, and storage of electronic reports, imagery, location information, and other data.

(7) Autonomous and other advanced surface vehicles, underwater vehicles, or airborne platforms for data collection and monitoring.

(8) Artificial intelligence and machine learning applications for data collection and monitoring related to the Great Lakes, oceans, bays, estuaries, and coasts.

(9) Coral reef ecosystem monitoring.

(10) Electronic equipment, chemical or biological sensors, data analysis tools, and platforms to identify and fill gaps in robust and shared continuous data related to the Great Lakes, oceans, bays, estuaries, and coasts to inform global earth system models.

(11) Means for protecting aquatic life from injury or other ill effects caused, in whole or in part, by monitoring or exploration activities.

(12) Discovery and dissemination of data related to the Great Lakes, oceans, bays, estuaries, and coasts.

(13) Water quality monitoring, including improved detection and prediction of harmful algal blooms and pollution.

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

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

(c) PRIORITIZATION OF PROPOSALS.—In selecting recipients of Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) solicitations and interagency grants for ocean innovation, including the National Oceanographic Partnership Program, the Administrator shall prioritize proposals for fiscal years

2020 and 2021 that address at least one of the areas specified in subsection (b).

SEC. 14. REAUTHORIZATION OF NOAA PROGRAMS.

(a) NOAA OCEAN EXPLORATION PROGRAM.—Section 12006 of the Omnibus Public Land Management Act of 2009 (33 U.S.C. 3406) is amended—

(1) in paragraph (6), by striking ''and'';

(2) in paragraph (7), by striking the period at the end and inserting ''; and''; and

(3) by adding at the end the following:

''(8) $60,000,000 for each of fiscal years 2019 through 2024.''.

(b) OCEAN AND COASTAL MAPPING INTEGRATION ACT.—Section 12207 of the Ocean and Coastal Mapping Integration Act (33 U.S.C. 3506) is amended—

(1) in subsection (a)—

(A) in paragraph (3), by striking ''and'';

(B) in paragraph (4), by striking the period at the end and inserting ''; and''; and

(C) by adding at the end the following:

''(5) $45,000,000 for each of fiscal years 2019 through 2024.''; and

(2) in subsection (b), by adding at the end the following:

''(5) $15,000,000 for each of fiscal years 2019 through 2024.''.

(c) HYDROGRAPHIC SERVICES IMPROVEMENT ACT OF 1998.—Section 306 of the Hydrographic Services Improvement Act of 1998 (33 U.S.C. 892d) is amended—

(1) in paragraph (1)—

(A) in subparagraph (C), by striking ''and'';

(B) in subparagraph (D), by striking the period at the end and inserting ''; and''; and

(C) by adding at the end the following:

''(E) $71,000,000 for each of fiscal years 2019 through 2024.'';

(2) in paragraph (2)—

(A) in subparagraph (C), by striking ''and'';

(B) in subparagraph (D), by striking the period at the end and inserting ''; and''; and

(C) by adding at the end the following:

''(E) $34,000,000 for each of fiscal years 2019 through 2024.'';

(3) in paragraph (3)—

(A) in subparagraph (C), by striking ''and'';

(B) in subparagraph (D), by striking the period at the end and inserting ''; and''; and

(C) by adding at the end the following:

''(E) $38,000,000 for each of fiscal years 2019 through 2024.'';

(4) in paragraph (4)—

(A) in subparagraph (C), by striking ''and'';

(B) in subparagraph (D), by striking the period at the end and inserting ''; and''; and

(C) by adding at the end the following:

''(E) $45,000,000 for each of fiscal years 2019 through 2024.''; and

(5) in paragraph (5)—

(A) in subparagraph (C), by striking ''and'';

(B) in subparagraph (D), by striking the period at the end and inserting ''; and''; and

(C) by adding at the end the following:

''(E) $35,000,000 for each of fiscal years 2019 through 2024.''.

SEC. 15. BLUE ECONOMY VALUATION.

(a) MEASUREMENT OF BLUE ECONOMY INDUSTRIES.—The Administrator, the Director of the Bureau of Economic Analysis, the Commissioner of the Bureau

of Labor Statistics, the Secretary of the Treasury, and the heads of other relevant Federal agencies, shall prioritize the collection, aggregation, and analysis of data to measure the value and impact of industries related to the Great Lakes, oceans, bays, estuaries, and coasts on the economy of the United States, including living resources, marine construction, marine transportation, offshore mineral extraction, ship and boat building, tourism, recreation, subsistence, and such other industries the Administrator considers appropriate (known as ''Blue Economy'' industries).

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

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

(2) collaborate with national and international organizations and governments to promote consistency of methods, measurements, and definitions to ensure comparability of results between countries.

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

(1) defines the Blue Economy, in coordination with academia, industry, nongovernmental organizations, and other relevant experts;

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

(3) provides a comprehensive estimate of the value and impact of the Blue Economy with respect to each State and territory of the United States, including—

(A) the value and impact of—

(i) economic activities that are dependent upon the resources of the Great Lakes, oceans, bays, estuaries, and coasts;

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

(iii) port and shoreline infrastructure;

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

(v) data collected from the Great Lakes, oceans, bays, estuaries, and coasts, including such data collected by businesses that purchase and commodify the data, including weather prediction and seasonal agricultural forecasting; and

(B) to the extent possible, the qualified value and impact of the natural capital of the Great Lakes, oceans, bays, estuaries, and coasts with respect to tourism, recreation, natural resources, and cultural heritage, including other indirect values.

SEC. 16. ADVANCED RESEARCH PROJECTS AGENCY–OCEANS.

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

(b) COMPREHENSIVE ASSESSMENT.—

(1) IN GENERAL.—Under an agreement between the Administrator and the National Academy

of Sciences under this section, the National Academy of Sciences shall conduct a comprehensive assessment of the need for and feasibility of establishing an Advanced Research Projects Agency–Oceans (ARPA–O).

(2) ELEMENTS.—The comprehensive assessment carried out pursuant to paragraph (1) shall include—

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

(i) improved data collection, monitoring, and prediction of the ocean environment, including sea ice conditions;

(ii) overcoming barriers to the application of new and improved technologies, such as high costs and scale of operational missions;

(iii) improved management practices for protecting ecological sustainability;

(iv) improved national security capacity;

(v) improved technology for fishery population assessments;

(vi) expedited processes between and among Federal agencies to successfully identify, transition, and coordinate research and development output to operations, applications, commercialization, and other uses; and

(vii) ensuring that the United States maintains a technological lead in developing and deploying advanced ocean technologies;

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

(i) best practices for new research programs;

(ii) metrics and approaches for periodic program evaluation;

(iii) capacity to fund and manage external research awards; and

(iv) options for oversight of the activity through a Federal agency, an inter-

agency organization, nongovernmental organization, or other institutional arrangement; and

(C) an estimation of the scale of investment necessary to pursue high priority ocean technology projects.

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

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