

COASTAL COMMUNITIES OCEAN ACIDIFICATION ACT
OF 2023

MAY 5, 2023.—Committed to the Committee of the Whole House on the State of the
Union and ordered to be printed

Mr. LUCAS, from the Committee on Science, Space, and Technology,
submitted the following

R E P O R T

[To accompany H.R. 676]

The Committee on Science, Space, and Technology, to whom was referred the bill (H.R. 676) to amend the Federal Ocean Acidification Research And Monitoring Act of 2009 to require the Secretary of Commerce, acting through the Administrator of the National Oceanic and Atmospheric Administration, to collaborate with State and local governments and Indian Tribes on vulnerability assessments related to ocean acidification, research planning, and similar activities, and for other purposes, having considered the same, reports favorably thereon without amendment and recommends that the bill do pass.

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PURPOSE AND SUMMARY

H.R. 676 increases the involvement of Indian Tribes with ongoing National Oceanic and Atmospheric Administration (NOAA) ocean acidification activities. This bill amends the Federal Ocean Acidification Research and Monitoring Act of 2009 to require the Secretary of Commerce, acting through the Administrator of the National Oceanic and Atmospheric Administration, to collaborate with State and local governments and Indian Tribes on vulnerability assessments related to ocean acidification, research planning, and similar activities.

BACKGROUND AND NEED FOR LEGISLATION

Ocean acidification is the global phenomenon of the gradual decrease in oceanic pH primarily from the absorption of excess carbon. It is a growing problem for coastal communities and economies that are dependent on ocean resources. Coastal economies contribute significantly to the nation's gross domestic product (GDP). According to NOAA, fourteen percent of U.S. counties that are adjacent to the coasts produce 45 percent of the nation's GDP, with nearly three million jobs directly dependent on ocean and coastal resources. Some coastal economies in the United States have already been negatively impacted by ocean acidification, and there is a growing need to understand the social and economic effects of ocean acidification to help communities better prepare and respond.

As required by the Federal Ocean Acidification Research and Monitoring Act of 2009, NOAA has established an Interagency Working Group and conducts a strategic research plan and program research on ocean and coastal acidification. State and local governments, industry, academia, and other representatives are included in this coordination and work, but there is no specific call out for Indian Tribes.

H.R. 676 amends the statute directing collaboration of these activities to include Indian Tribes. Their participation is vital because tribal communities live and work on coasts and have used and conserved the ocean's natural resources for thousands of years.

LEGISLATIVE HISTORY

H.R. 676 was introduced on January 31, 2023, by Representative Pingree (D-ME) and is cosponsored by Waltz (R-FL), Golden (D-ME), Gonzalez-Colon (R-PR), Carson (D-IN), Bonamici (D-OR), Tokuda (D-HI), Huffman (D-CA), Kilmer (D-WA), Scanlon (D-PA), Blunt Rochester (D-DE), Panetta (D-CA), Peltola (D-AK), Thompson (D-CA), McCollum (D-MN), Schiff (D-CA), Lieu (D-CA), Posey (R-FL), Lee (D-PA), and McClellan (D-VA).

On March 29, 2023, the Committee on Science, Space, and Technology met to consider H.R. 676. Chairman Lucas moved that Committee favorably report the bill, H.R. 676, without amendment, to the House of Representatives with the recommendation that the bill be approved. The motion was agreed to by a vote of 35-0.

SECTION-BY-SECTION

Section 1. Short title

The short title of this legislation is “Coastal Communities Ocean Acidification Act of 2023.”

Section 2. Definitions

This section amends the definitions included in the Federal Ocean Acidification Research and Monitoring Act of 2009 to include Indian Tribe as defined by the Indian Self-Determination and Education Assistance Act.

Section 3. Improvement of collaboration on ocean acidification

This section makes a number of minor tweaks to existing code that ensures Indian Tribes are included in coordination, research, and input on ocean acidification and coastal acidification activities. Specifically, this section designates 2 seats on the Interagency Working Group on Ocean Acidification for representatives from Indian Tribes, Tribal organizations, or Tribal consortia. This section also ensures there is an ongoing mechanism to engage affected groups and communities in order to provide input on research, data, and monitoring that is necessary to support on-the-ground management and decision making related to ocean acidification.

Section 4. Technical corrections

This section updates reference and numbering in the Federal Ocean Acidification Research and Monitoring Act of 2009 to reflect changes made by H.R. 676.

COMMITTEE CONSIDERATION

On March 29, 2023, the Committee met in open session and ordered reported favorably the bill, H.R. 676, without amendment, by roll call vote, a quorum being present.

ROLL CALL VOTES

Clause 3(b) of rule XIII requires the Committee to list the record votes on the motion to report legislation and amendments thereto. The following reflects the record votes taken during the Committee consideration:

Full Committee Markup
 Bill: HR 676, motion to
 report

Sponsor: Pinegree, Waltz

Majority	Aye	No	Present
Frank Lucas, Oklahoma	1		
Bill Posey, Florida	1		
Randy Weber, Texas	1		
Brian Babin, Texas	1		
Jim Baird, Indiana	1		
Daniel Webster, Florida	1		
Mike Garcia, California	1		
Stephanie Bice, Oklahoma	1		
Jay Obernolte, California	1		
Chuck Fleischmann, Tennessee			
Darrell Issa, California	1		
Rick Crawford, Arkansas	1		
Claudia Tenney, New York	1		
Ryan Zinke, Montana	1		
Scott Franklin, Florida	1		
Dale Strong, Alabama	1		
Max Miller, Ohio	1		
Rich McCormick, Georgia			
Mike Collins, Georgia	1		
Brandon Williams, New York	1		
Tom Kean, New Jersey	1		
Minority	Aye	No	Present
Zoe Lofgren, California	1		
Suzanne Bonamici, Oregon	1		
Haley Stevens, Michigan	1		
Jamaal Bowman, New York	1		
Deborah Ross, New Carolina	1		
Eric Sorensen, Illinois	1		
Andrea Salinas, Oregon	1		
Val Foushee, North Carolina	1		
Kevin Mullin, California	1		
Jeff Jackson, North Carolina	1		
Emilia Sykes, Ohio	1		
Maxwell Frost, Florida	1		
Yadira Caraveo, Colorado	1		
Summer Lee, Pennsylvania	1		
Jennifer McClellan, Virginia	1		
Ted Lieu, California			
Sean Casten, Illinois	1		
Paul Tonko			
Total	35	0	

Date: 3/29/23

Measure: _____

Offered By: _____

Amendment No.: _____

Result?	Agreed To: [X]		
	Not Agreed To: []		
	Withdrawn: []		
Voice Vote	Ayes	Nays	Present
	35	0	

APPLICATION OF LAW TO THE LEGISLATIVE BRANCH

The Committee finds that H.R. 676 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

STATEMENT OF OVERSIGHT FINDINGS AND RECOMMENDATIONS
OF THE COMMITTEE

In compliance with clause 3(c)(1) of rule XIII and clause (2)(b)(1) of rule X, the Committee's oversight findings and recommendations are reflected in the descriptive portions of this report.

STATEMENT OF GENERAL PERFORMANCE GOALS AND OBJECTIVES

Pursuant to clause (3)(c)(4) of rule XIII, the goal of H.R. 676 is to improve collaboration under the Federal Ocean Acidification Research and Monitoring Act with regard to vulnerability assessments related to ocean and coastal acidification, as well as other ongoing NOAA activities, by requiring the inclusion of tribal groups in this research and planning.

DUPLICATION OF FEDERAL PROGRAMS

Pursuant to clause 3(c)(5) of rule XIII, the Committee finds that no provision of H.R. 676 establishes or reauthorizes a program of the Federal Government known to be duplicative of another Federal program, including any program that was included in a report to Congress pursuant to section 21 of Public Law 111–139 or identified in the most recent Catalog of Federal Domestic Assistance.

FEDERAL ADVISORY COMMITTEE ACT

The Committee finds that the legislation does not establish or authorize the establishment of an advisory committee within the definition of section 5(b) of the Federal Advisory Committee Act.

UNFUNDED MANDATE STATEMENT

The Committee adopts as its own the estimate of Federal mandates prepared by the Director of the Congressional Budget Office pursuant to section 423 of the Unfunded Mandates Reform Act.

EARMARK IDENTIFICATION

Pursuant to clauses 9(e), 9(f), and 9(g) of rule XXI, the Committee finds that H.R. 676 does not include any congressional earmarks, limited tax benefits, or limited tariff benefits.

COMMITTEE COST ESTIMATE

Pursuant to clause 3(d)(1) of rule XIII, the Committee adopts as its own the cost estimate prepared by the Director of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974. At the time this report was filed, the estimate was not available.

NEW BUDGET AUTHORITY, ENTITLEMENT AUTHORITY,
AND TAX EXPENDITURES

Pursuant to clause 3(c)(2) of rule XIII, the Committee finds that H.R. 676 would result in no new or increased budget authority, entitlement authority, or tax expenditures or revenues.

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

Pursuant to clause 3(c)(3) of rule XIII, at the time this report was filed, the cost estimate prepared by the Director of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974 was not available.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3(e) of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics, and existing law in which no change is proposed is shown in roman):

**FEDERAL OCEAN ACIDIFICATION RESEARCH AND
MONITORING ACT OF 2009**

* * * * *

**TITLE XII—NOAA UNDERSEA RESEARCH
PROGRAM ACT OF 2009**

* * * * *

**Subtitle D—Federal Ocean Acidification
Research and Monitoring Act of 2009**

* * * * *

SEC. 12402. PURPOSES.

The purposes of this subtitle are to provide for—

(1) **[development coordination and implementation]** *development, coordination, and implementation* of a comprehensive interagency plan to—

(A) monitor and conduct research on the processes and consequences of ocean acidification and coastal acidification on marine organisms and ecosystems; and

(B) maintain and advise an interagency research, monitoring, and public outreach program on ocean acidification and coastal acidification;

(2) maintenance of an ocean acidification program within the National Oceanic and Atmospheric Administration;

(3) assessment and consideration of regional and national ecosystem and socioeconomic impacts of increased ocean acidification and coastal acidification; and

(4) research adaptation strategies and mitigating the impacts of ocean and coastal acidification and related co-stressors on marine ecosystems.

SEC. 12403. DEFINITIONS.

In this subtitle:

(1) **COASTAL ACIDIFICATION.**—The term “coastal acidification” means the decrease in pH and changes in the water chemistry of coastal oceans, estuaries, and Great Lakes from atmospheric pollution, freshwater inputs, and excess nutrient run-off from land.

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

[(2)] (3) **OCEAN ACIDIFICATION.**—The term “ocean acidification” means the decrease in pH and changes in the water chemistry of the Earth’s oceans, coastal estuaries, marine waterways, and Great Lakes caused by *an increase of* carbon dioxide from the atmosphere and the breakdown of organic matter.

[(3)] (4) **SECRETARY.**—The term “Secretary” means the Secretary of Commerce, acting through the Administrator of the National Oceanic and Atmospheric Administration.

[(4)] (5) **SUBCOMMITTEE.**—The term “Subcommittee” means the National Science and Technology Council Subcommittee on Ocean Science and Technology.】

(5) **STATE.**—The term “State” means each State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, the Virgin Islands of the United States, and any other territory or possession of the United States.

(6) **SUBCOMMITTEE.**—*The term “Subcommittee” means the National Science and Technology Council Subcommittee on Ocean Science and Technology.*

(7) **UNITED STATES.**—*The term “United States” means the States, collectively.*

SEC. 12404. INTERAGENCY WORKING GROUP.

(a) **DESIGNATION.**—

(1) **IN GENERAL.**—The Subcommittee shall coordinate Federal activities on ocean and coastal acidification and establish and maintain an interagency working group.

(2) **MEMBERSHIP.**—The interagency working group on ocean acidification shall be comprised of senior representatives from the National Oceanic and Atmospheric Administration, the National Science Foundation, the National Aeronautics and Space Administration, the United States Geological Survey, the United States Fish and Wildlife Service, the Bureau of Ocean Energy Management, the Environmental Protection Agency, the Department of Agriculture, the Department of State, the Department of Energy, the Department of the Navy, the National Park Service, the Bureau of Indian Affairs, the National Institute of Standards and Technology, the Smithsonian Institution, and such other Federal agencies as appropriate.

(3) CHAIR.—The interagency working group shall be chaired by the representative from the National Oceanic and Atmospheric Administration.

(b) DUTIES.—The Subcommittee shall—

(1) develop the strategic research and monitoring plan to guide Federal research on ocean acidification required under section 12405 of this subtitle and oversee the implementation of the plan;

(2) oversee the development of—

(A) an assessment of the potential impacts of ocean acidification and coastal acidification on marine organisms and marine ecosystems; and

(B) adaptation and mitigation strategies to conserve marine organisms and ecosystems exposed to ocean acidification and coastal acidification;

(3) facilitate communication and outreach opportunities with nongovernmental organizations and members of the stakeholder community with interests in marine resources;

(4) coordinate the United States Federal research and monitoring program with research and monitoring programs and scientists from other nations;

(5) establish or designate, and contribute to as appropriate, an Ocean Acidification Information Exchange to make information on ocean acidification and coastal acidification developed through or utilized by the interagency ocean acidification program accessible through electronic means, including information which would be useful to policymakers, researchers, and other stakeholders in mitigating or adapting to the impacts of ocean acidification and coastal acidification; and

(c) ADVISORY BOARD.—

(1) ESTABLISHMENT.—The Chair of the Subcommittee shall establish an Ocean Acidification Advisory Board.

(2) DUTIES.—The Advisory Board shall—

(A) maintain a process for reviewing and making recommendations to the Subcommittee on—

(i) the biennial report specified in [subsection (d)(2)] subsection (e)(2); and

(ii) the strategic research plan in [subsection (d)(3)] subsection (e)(3);

(B) provide ongoing advice to the Subcommittee and the interagency working group on matters related to Federal activities on ocean and coastal acidification, including impacts and mitigation of ocean and coastal acidification; and

(C) advise the Subcommittee and the interagency working group on—

(i) efforts to coordinate research and monitoring activities related to ocean acidification and coastal acidification; and

(ii) the best practices for the standards developed for data archiving under section 12406(d); and

(D) maintain or establish an ongoing mechanism (such as a liaison or other contact of the National Oceanic and Atmospheric Administration, standing meetings, or an on-line platform) to engage affected industry members, coastal

stakeholders, community acidification networks, fishery management councils and commissions, indigenous knowledge groups, non-Federal resource managers, and scientific experts not employed by the Federal Government to provide input on research, data, and monitoring that is necessary to support on-the-ground management, decision making, and adaptation related to ocean acidification and coastal acidification and the impacts of ocean acidification and coastal acidification.

(3) **MEMBERSHIP.**—The Advisory Board shall consist of 25 members as follows:

(A) Two representatives of the shellfish, lobster, or crab industry.

(B) One representative of the finfish industry.

(C) One representative of seafood processors.

(D) Three representatives from academia, including both natural and social sciences.

(E) One representative of recreational fishing.

(F) One representative of a relevant nongovernmental organization.

(G) *Two representatives from Indian Tribes, Tribal organizations, and Tribal consortia affected by ocean acidification and coastal acidification.*

[(G) Six] (H) *Four* representatives from relevant State and local governments with policy or regulatory authorities related to ocean acidification and coastal acidification.

[(H)] (I) One representative from the Alaska Ocean Acidification Network or a subsequent entity that represents the same geographical region and has a similar purpose.

[(I)] (J) One representative from the California Current Acidification Network or a subsequent entity that represents the same geographical region and has a similar purpose.

[(J)] (K) One representative from the Northeast Coastal Acidification Network or a subsequent entity that represents the same geographical region and has a similar purpose.

[(K)] (L) One representative from the Southeast Coastal Acidification Network or a subsequent entity that represents the same geographical region and has a similar purpose.

[(L)] (M) One representative from the Gulf of Mexico Coastal Acidification Network or a subsequent entity that represents the same geographical region and has a similar purpose.

[(M)] (N) One representative from the Mid-Atlantic Coastal Acidification Network or a subsequent entity that represents the same geographical region and has a similar purpose.

[(N)] (O) One representative from the Pacific Islands Ocean Observing System or a subsequent entity that represents the island territories and possessions of the United States in the Pacific Ocean, and the State of Hawaii and has a similar purpose.

[(O)] (P) One representative from the Caribbean Regional Association for Coastal Ocean Observing or a subsequent entity that represents Puerto Rico and the United States Virgin Islands and has a similar purpose.

[(P)] (Q) One representative from the National Oceanic and Atmospheric Administration Olympic Coast Ocean Acidification Sentinel Site or a subsequent entity that represents the same geographical representation.

[(Q)] (R) One representative from the National Oceanic and Atmospheric Administration shall serve as an ex-officio member of the Advisory Board without a vote.

(4) APPOINTMENT OF MEMBERS.—The Chair of the Subcommittee shall—

(A) appoint members to the Advisory Board (taking into account the geographical interests of each individual to be appointed as a member of the Advisory Board to ensure that an appropriate balance of geographical interests are represented by the members of the Advisory Board) who—

(i) represent the interest group for which each seat is designated;

(ii) demonstrate expertise on ocean acidification or coastal acidification and its scientific, economic, industry, cultural, and community impacts; and

(iii) have a record of distinguished service with respect to ocean acidification or coastal acidification, and such impacts;

(B) give consideration to nominations and recommendations from the members of the interagency working group and the public for such appointments; and

(C) ensure that an appropriate balance of scientific, industry, [State and local] *State, local, and Tribal* resource managers, and geographical interests are represented by the members of the Advisory Board.

(5) TERM OF MEMBERSHIP.—Each member of the Advisory Board—

(A) shall be appointed for a 5-year term; and

(B) may be appointed to no more than two terms.

(6) CHAIR.—The Chair of the Subcommittee shall appoint one member of the Advisory Board to serve as the Chair of the Advisory Board.

(7) MEETINGS.—Not less than once each calendar year, the Advisory Board shall meet at such times and places as may be designated by the Chair of the Advisory Board, in consultation with the Chair of the Subcommittee and the Chair of the interagency working group.

(8) BRIEFING.—The Chair of the Advisory Board shall brief the Subcommittee and the interagency working group on the progress of the Advisory Board as necessary or at the request of the Subcommittee.

[(9) TRIBAL GOVERNMENT ENGAGEMENT AND COORDINATION.—

[(A) IN GENERAL.—The Advisory Board shall maintain mechanisms for coordination, and engagement with Tribal governments.

[(i) RULE OF CONSTRUCTION.—Nothing in subparagraph (A) may be construed as affecting any requirement to consult with Indian Tribes under Executive Order 13175 (25 U.S.C. 5301 note; relating to consultation and coordination with Tribal governments) or any other applicable law or policy.]

(9) *ENGAGEMENT AND COORDINATION WITH INDIAN TRIBES.*—

(A) *POLICY REQUIRED.*—*Not later than one year after the date on which the Advisory Board is established, the Advisory Board shall develop and commence maintaining a policy for engagement and coordination with Indian Tribes affected by ocean acidification and coastal acidification.*

(B) *CONSULTATION.*—*In developing the policy under subparagraph (A), the Advisory Board shall consult with Indian Tribes affected by ocean acidification and coastal acidification.*

(10) *FEDERAL ADVISORY COMMITTEE ACT.*—Section 14 of the Federal Advisory Committee Act shall not apply to the Advisory Board for 10 years from the date of enactment of this Act.

(d) *PRIZE COMPETITIONS.*—

(1) *IN GENERAL.*—Any Federal agency with a representative serving on the interagency working group established under this section may, either individually or in cooperation with one or more agencies, carry out a program to award prizes competitively under section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3719). An agency seeking to carry out such a program shall carry out such program in coordination with the chair of such interagency working group.

(2) *PURPOSES.*—Any prize competition carried out under this subsection shall be for the purpose of stimulating innovation to advance our Nation's ability to understand, research, or monitor ocean acidification or its impacts, or to develop management or adaptation options for responding to ocean and coastal acidification.

(3) *PRIORITY PROGRAMS.*—Priority shall be given to establishing programs under [this section] *this subsection* that address communities, environments, or industries that are in distress due to the impacts of ocean and coastal acidification.

(e) *REPORTS TO CONGRESS.*—

(1) *INITIAL REPORT.*—Not later than 1 year after the date of enactment of this Act, the Subcommittee shall transmit a report to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science and Technology and the Committee on Natural Resources of the House of Representatives that—

(A) includes a summary of federally funded ocean acidification research and monitoring activities, including the budget for each of these activities; and

(B) describes the progress in developing the plan required under section 12405 of this subtitle.

(2) *BIENNIAL REPORT.*—Not later than 2 years after the delivery of the initial report under paragraph (1) and every 2 years thereafter until 2032, the Subcommittee shall transmit a report to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science and Tech-

nology and the Committee on Natural Resources of the House of Representatives, and to the Office of Management and Budget, that includes—

(A) a summary of federally funded ocean acidification research and monitoring activities, including the budget for each of these activities; and

(B) an analysis of the progress made toward achieving the goals and priorities for ~~the~~ **[interagency]** *the* strategic research plan developed by the Subcommittee under section 12405.

(3) STRATEGIC RESEARCH PLAN.—Not later than 2 years after the date of enactment of this Act, the Subcommittee shall transmit the strategic research plan developed under section 12405 to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science and Technology and the Committee on Natural Resources of the House of Representatives. A revised plan shall be submitted at least once every 5 ~~years until 2031 thereafter~~ *years thereafter until 2031*.

(4) ECONOMIC VULNERABILITY REPORT.—

(A) IN GENERAL.—Not later than 2 years after the date of the enactment of the Coordinated Ocean Observations and Research Act of 2020, and every 6 years thereafter until 2032, the Subcommittee shall transmit to the appropriate committees of Congress a report that—

(i) is named the “Ocean Chemistry Coastal Community Vulnerability Assessment”;

(ii) identifies gaps in ocean acidification monitoring by public, academic, and private assets in the network of regional coastal observing systems;

(iii) identifies geographic areas which have gaps in ocean acidification research;

(iv) identifies United States coastal communities, including island communities, fishing communities, low-population rural communities, tribal and subsistence communities, and island communities, that may be impacted by ocean acidification;

(v) identifies impacts of changing ocean carbonate chemistry on the communities described in clause (iv), including impacts from changes in ocean and coastal marine resources that are not managed by the Federal Government;

(vi) identifies gaps in understanding of the impacts of ocean acidification on economically or commercially important species, particularly those which support United States commercial, recreational, and tribal fisheries and aquaculture;

(vii) identifies habitats that may be particularly vulnerable to corrosive sea water, including areas experiencing multiple stressors such as hypoxia, sedimentation, and harmful algal blooms;

(viii) identifies areas in which existing National Integrated Coastal and Ocean Observation System assets, including unmanned maritime systems, may be

leveraged as platforms for the deployment of new sensors or other applicable observing technologies;

(ix) identifies the efforts of the Secretary to collaborate with State and local governments and Indian Tribes on community vulnerability assessments, research planning, and similar activities, pursuant to section 12406(e);

[(ix)] (x) is written in collaboration with Federal agencies responsible for carrying out this subtitle, including representatives of—

(I) the National Marine Fisheries Service and the Office for Coastal Management of the National Oceanic and Atmospheric Administration;

(II) regional coastal observing systems established under section 12304(c)(4);

(III) regional ocean acidification networks; and

(IV) sea grant programs (as defined in section 203 of the National Sea Grant College Program Act (33 U.S.C. 1122)); and

[(x)] (xi) is written in consultation with experts, including subsistence users, academia, and stakeholders familiar with the economic, social, ecological, geographic, and resource concerns of coastal communities in the United States.

(B) FORM OF REPORT.—

(i) INITIAL REPORT.—The initial report required under subparagraph (A) shall include the information described in clauses (i) through (viii) of that subparagraph on a national level.

(ii) SUBSEQUENT REPORTS.—Each report required under subparagraph (A) after the initial report—

(I) may describe the information described in clauses (i) through (viii) of that subparagraph on a national level; or

(II) may consist of separate reports for each region of the National Oceanic and Atmospheric Administration.

(iii) REGIONAL REPORTS.—If the Subcommittee opts to prepare a report required under subparagraph (A) as separate regional reports under clause (ii)(II), the Subcommittee shall submit a report for each region of the National Oceanic and Atmospheric Administration not less frequently than once during each 6-year reporting period.

(C) APPROPRIATE COMMITTEES OF CONGRESS DEFINED.—

In this paragraph and in paragraph (5), the term “appropriate committees of Congress” means the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Science, Space, and Technology of the House of Representatives, and the Committee on Natural Resources of the House of Representatives.

(5) MONITORING PRIORITIZATION PLAN.—Not later than 180 days after the date of the submission of the initial report under paragraph (4)(A), the Subcommittee shall transmit to the appropriate committees of Congress a report that develops a plan

to deploy new sensors or other applicable observing technologies such as unmanned maritime systems—

- (A) based on such initial report;
- (B) prioritized by—
 - (i) the threat to coastal economies and ecosystems;
 - (ii) gaps in data; and
 - (iii) research needs; and
- (C) that leverage existing platforms, where possible.

SEC. 12405. STRATEGIC RESEARCH PLAN.

(a) **IN GENERAL.**—Not later than 2 years after the date of enactment of this Act, and not later than every 5 years following the publication of each subsequent strategic research plan until 2035, the Subcommittee shall develop a strategic plan for Federal research and monitoring on ocean acidification and coastal acidification that will provide for an assessment of the impacts of ocean acidification and coastal acidification on marine organisms and ecosystems and the development of adaptation and mitigation strategies to address the socioeconomic impacts of ocean acidification and coastal acidification and coastal acidification and coastal acidification and to conserve marine organisms and ecosystems. In developing the plan, the Subcommittee shall consider and use information, reports, and studies of ocean acidification and coastal acidification that have identified research and monitoring needed to better understand ocean acidification and coastal acidification and its potential impacts, and recommendations made by the Advisory Board established in section 12404(c).

(b) **CONTENTS OF THE PLAN.**—The plan shall—

(1) provide for interdisciplinary research among the ocean sciences and social sciences, and coordinated research and activities to improve the understanding of ocean chemistry that will affect marine ecosystems;

(2) establish, for the 10-year period beginning in the year the plan is submitted, the goals and priorities for Federal research and monitoring which will—

(A) advance understanding of ocean acidification and its physical, chemical, and biological impacts on marine organisms and marine ecosystems;

(B) assess the short-term and long-term socioeconomic impacts of ocean acidification;

(C) provide information for the development of adaptation and mitigation strategies to address—

(i) socioeconomic impacts of ocean acidification and coastal acidification;

(ii) conservation of marine organisms and ecosystems;

(iii) assessment of the effectiveness of such adaptation and mitigation strategies; and

(D) improve research on—

(i) ocean acidification and coastal acidification;

(ii) the interactions between and effects of ocean and coastal acidification and multiple combined stressors including changes in water chemistry, changes in sediment delivery, hypoxia, and harmful algal blooms, on ocean acidification and coastal acidification; and

- (iii) the effect or effects of clauses (i) and (ii) on marine resources and ecosystems;
- (3) describe specific activities, including—
 - (A) efforts to determine user needs;
 - (B) research activities;
 - (C) monitoring activities;
 - (D) technology and methods development;
 - (E) data collection;
 - (F) data management;
 - (G) modeling activities;
 - (H) assessment of ocean acidification impacts;
 - (I) participation in international research efforts;
 - (J) assessment of adaptation and mitigation strategies;
 and
 - (K) education and outreach activities;
- (4) identify relevant programs and activities of the Federal agencies that contribute to the interagency program directly and indirectly and ensure an appropriate balance of contribution in establishing the role of each Federal agency in implementing the plan;
- (5) consider and utilize, as appropriate, the best available peer-reviewed scientific reports and studies conducted by Federal agencies, the National Research Council, or other entities;
- (6) make recommendations for the coordination of the ocean acidification and coastal acidification research and monitoring activities within the United States with such activities of other nations and international organizations;
- (7) outline budget requirements for Federal ocean acidification research and monitoring and assessment activities to be conducted by each agency under the plan;
- (8) identify the monitoring systems and sampling programs currently employed in collecting data relevant to ocean acidification and coastal acidification and prioritize additional monitoring systems that may be needed to ensure adequate data collection and monitoring of ocean acidification and coastal acidification and their impacts;
- (9) describe specific activities designed to facilitate outreach and data and information exchange with stakeholder communities;
- (10) make recommendations for research to be conducted, including in the social sciences and economics, to address the key knowledge gaps identified in the Ocean Chemistry Coastal Community Vulnerability Assessment conducted under [section 12404(c)(4)] *section 12404(e)(4)*;
- (11) describe monitoring needs necessary to support [potentially affected industry members, coastal stakeholders, fishery management councils and commissions, Tribal governments, non-Federal resource managers, and scientific experts] *affected industry members, coastal stakeholders, community acidification networks, fishery management councils and commissions, indigenous knowledge groups, non-Federal resource managers, and scientific experts not employed by the Federal Government* on decision-making and adaptation related to ocean acidification and coastal acidification; and

(12) describe the extent to which the Subcommittee incorporated feedback from the Advisory Board established in section 12404(c).

(c) PROGRAM ELEMENTS.—The plan shall include at a minimum the following program elements:

(1) Monitoring of ocean chemistry and biological impacts associated with ocean acidification at selected coastal and open-ocean monitoring stations, including satellite-based monitoring to characterize—

- (A) marine ecosystems;
- (B) changes in marine productivity; and
- (C) changes in ocean chemistry.

(2) Research to understand the species specific physiological responses of marine organisms to ocean acidification and coastal acidification, impacts on marine food webs of ocean acidification and coastal acidification, and to develop environmental and ecological indices that track marine ecosystem responses to ocean acidification and coastal acidification.

(3) Modeling to predict changes in the ocean carbon cycle as a function of carbon dioxide and atmosphere-induced changes in temperature, ocean circulation, biogeochemistry, ecosystem and terrestrial inputs, modeling to determine impacts on marine ecosystems, marine food webs, and individual marine organisms, and modeling that supports fisheries management.

(4) Technology development and standardization of carbonate chemistry measurements on moorings and autonomous floats.

(5) Assessment of socioeconomic impacts of ocean acidification and coastal acidification and development of adaptation and mitigation strategies to conserve marine organisms and marine ecosystems.

(6) Research to understand the combined impact of changes in ocean chemistry and other stressors, including sediment delivery, hypoxia, and harmful algal blooms, on each other and on living marine resources, including aquaculture and coastal ecosystems.

(7) Applied research to identify adaptation strategies for species impacted by changes in ocean chemistry including vegetation-based systems, shell recycling, species and genetic diversity, applied technologies, aquaculture methodologies, and management recommendations.

(8) Research to understand related and cumulative stressors and other biogeochemical processes occurring in conjunction with ocean acidification and coastal acidification.

(d) PUBLICATION.—Concurrent with the submission of the plan to Congress, the Subcommittee shall publish the plan on a public website.

SEC. 12406. NOAA OCEAN ACIDIFICATION ACTIVITIES.

(a) IN GENERAL.—The Secretary shall establish and maintain an ocean acidification program within the National Oceanic and Atmospheric Administration to conduct research, monitoring, coordination, and other activities consistent with the strategic research and implementation plan developed by the Subcommittee under section 12405 that—

- (1) includes—

(A) interdisciplinary research among the ocean and atmospheric sciences, and coordinated research and activities to improve understanding of ocean acidification and coastal acidification;

(B) the establishment of a long-term monitoring program of ocean acidification and coastal acidification utilizing existing global and national ocean observing assets, including leveraging, as appropriate, the Integrated Ocean Observing System and the ocean observing assets of other Federal, State, and Tribal agencies, and adding instrumentation and sampling stations as appropriate to the aims of the research program;

(C) prioritization of the location of monitoring instruments, assets, and projects to **【maximize】** *take into consideration* the efficiency of resources and agency and department missions;

(D) an optimization of understanding of socioeconomic impacts and ecosystem health;

(E) research to identify and develop adaptation and mitigation strategies and techniques for effectively conserving marine ecosystems as they cope with increased ocean acidification and coastal acidification;

(F) technical assistance to socioeconomically vulnerable States, local governments, **【Tribal governments】** *Indian Tribes*, communities, and industries impacted by ocean and coastal acidification to support their development of ocean and coastal acidification mitigation strategies;

(G) as an integral part of the research programs described in this subtitle, educational opportunities that encourage an interdisciplinary and international approach to exploring the impacts of ocean acidification and coastal acidification;

(H) as an integral part of the research programs described in this subtitle, national public outreach activities to improve the understanding of current scientific knowledge of ocean acidification and coastal acidification and their respective impacts on marine resources;

(I) coordination of ocean acidification and coastal acidification research, monitoring, and adaptation and mitigation strategies with other appropriate international ocean science bodies such as the International Oceanographic Commission, the International Council for the Exploration of the Sea, the North Pacific Marine Science Organization, and others;

(J) research to improve understanding of—

(i) the impact of ocean acidification and coastal acidification; and

(ii) how multiple environmental stressors may contribute to and exacerbate ocean and coastal acidification on living marine resources and coastal ecosystems; and

(K) research to support the development of adaptation and mitigation strategies to address the socioeconomic impacts of ocean and coastal acidification on coastal communities;

(2) provides grants for critical research, education, and outreach projects that explore and communicate the effects of ocean acidification and coastal acidification on ecosystems and the socioeconomic impacts of increased ocean acidification and coastal acidification that are relevant to the goals and priorities of the strategic research plan;

(3) incorporates a competitive merit-based process for awarding grants that may be conducted jointly with other participating agencies or under the National Oceanographic Partnership Program under section 8931 of title 10, United States Code; and

(4) includes an ongoing mechanism that allows [industry members, coastal stakeholders, fishery management councils and commissions, non-Federal resource managers, community acidification networks, indigenous knowledge groups, and scientific experts] *affected industry members, coastal stakeholders, community acidification networks, fishery management councils and commissions, indigenous knowledge groups, non-Federal resource managers, and scientific experts not employed by the Federal Government* to provide input on monitoring needs that are necessary to support on the ground management, decision making, and adaptation related to ocean acidification and its impacts.

(b) ADDITIONAL AUTHORITY.—In conducting the Program, the Secretary may enter into and perform such contracts, leases, grants, or cooperative agreements as may be necessary to carry out the purposes of this subtitle on such terms as the Secretary considers appropriate.

(c) RELATIONSHIP TO INTERAGENCY WORKING GROUP.—The National Oceanic and Atmospheric Administration shall serve as the lead Federal agency responsible for coordinating the Federal response to ocean and coastal acidification. The Administration may enter into Memoranda of Understanding to—

(1) coordinate monitoring and research efforts among Federal agencies in cooperation with [State, local, and Tribal governments] *State and local governments, Indian Tribes*, and international partners; this may include analysis and synthesis of the results of monitoring and research;

(2) maintain an Ocean Acidification Information Exchange described under section 12404(b)(5) to allow for information to be electronically accessible, including information—

(A) on ocean acidification developed through or used by the ocean acidification program described under subsection (a)[; or];

(B) *on ocean acidification and coastal acidification research, data, and monitoring from affected industry members, coastal stakeholders, community acidification networks, fishery management councils and commissions, indigenous knowledge groups, non-Federal resource managers, and scientific experts not employed by the Federal Government; or*

[(B)] (C) that would be useful to [State governments, local governments, Tribal governments] *State and local governments, Indian Tribes*, resource managers, policy-makers, researchers, and other stakeholders in mitigating

or adapting to the impacts of ocean acidification and coastal acidification; and

(3) establishing and maintaining the data archive system under subsection (d).

(d) DATA ARCHIVE SYSTEM.—

(1) IN GENERAL.—The Secretary, in coordination with the members of the interagency working group, shall support the long-term stewardship of, and access to, data relating to ocean and coastal acidification through providing the data on a publicly accessible data archive system. To the extent possible, this data archive system shall collect and provide access to ocean and coastal acidification data—

(A) from relevant federally funded research;

(B) provided by a Federal, State, or local government, academic scientist, citizen scientist, or industry organization;

(C) voluntarily submitted by **Indian Tribes, Tribal organizations, and Tribal consortia**; and

(D) from existing global or national data assets that are currently maintained within Federal agencies.

(2) DATA STANDARDS.—**The Secretary to,** *The Secretary*, to the extent possible, shall ensure all such data adheres to data and metadata standards to support the public findability, accessibility, interoperability, and reusability of such data.

(e) *BETTER COLLABORATION ON VULNERABILITY ASSESSMENTS, RESEARCH PLANNING, AND SIMILAR ACTIVITIES.*—

(1) *IN GENERAL.*—*In carrying out the program under subsection (a), and in support of vulnerability assessments transmitted under section 12404(e)(4) and recommendations included in the strategic research plan described in section 12405(b)(10), the Secretary shall build upon existing activities and collaborate with State and local governments and Indian Tribes that are conducting or have completed vulnerability assessments, research planning, climate action plans, or other similar activities related to ocean acidification and coastal acidification and the impacts of ocean acidification and coastal acidification on coastal communities, for the purpose of—*

(A) supporting collaborative interagency relationships and information sharing at the State, local, and Tribal levels; and

(B) assisting State and local governments and Indian Tribes in—

(i) improving existing systems and programs to better address ocean acidification and coastal acidification; and

(ii) identifying whether such activities can be used as a model for other communities.

(2) *PRIORITY.*—*In carrying out paragraph (1), the Secretary shall prioritize underserved populations and entities in the use*

*of resources of the National Oceanic and Atmospheric Adminis-
tration.*

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