

114TH CONGRESS
1ST SESSION

S. 1886

To reauthorize the Integrated Coastal and Ocean Observation System Act of 2009 and for other purposes.

IN THE SENATE OF THE UNITED STATES

JULY 29, 2015

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

A BILL

To reauthorize the Integrated Coastal and Ocean Observation System Act of 2009 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 “Coordinated Ocean
5 Monitoring and Research Act”.

6 **SEC. 2. PURPOSES.**

7 Section 12302 of the Integrated Coastal and Ocean
8 Observation System Act of 2009 (33 U.S.C. 3601) is
9 amended to read as follows:

1 **“SEC. 12302. PURPOSES.**

2 “The purposes of this subtitle are—

3 “(1) to establish and sustain a national inte-
4 grated System of ocean, coastal, and Great Lakes
5 observing systems, comprised of Federal and non-
6 Federal components coordinated at the national level
7 by the Council and at the regional level by a network
8 of Regional Coastal Observing Systems, and that in-
9 cludes in situ, remote, and other coastal and ocean
10 observation and modeling capabilities, technologies,
11 data management systems, communication systems,
12 and product development systems, and is designed to
13 address regional and national needs for ocean and
14 coastal information, to gather specific data on key
15 coastal, ocean, and Great Lakes variables, and to en-
16 sure timely and sustained dissemination and avail-
17 ability of these data—

18 “(A) to the public;

19 “(B) to support national defense, search
20 and rescue operations, marine commerce, navi-
21 gation safety, weather, climate, and marine
22 forecasting, energy siting and production, eco-
23 nomic development, ecosystem-based marine,
24 coastal, and Great Lakes resource management,
25 public safety, and public outreach and edu-
26 cation;

1 “(C) to promote greater public awareness
2 and stewardship of the Nation’s ocean, coastal,
3 and Great Lakes resources and the general
4 public welfare;

5 “(D) to provide easy access to ocean,
6 coastal, and Great Lakes data and promote
7 data sharing between Federal and non-Federal
8 sources and promote public data sharing;

9 “(E) to enable advances in scientific un-
10 derstanding to support the sustainable use, con-
11 servation, management, and understanding of
12 healthy ocean, coastal, and Great Lakes re-
13 sources; and

14 “(F) to monitor and model changes in
15 ocean chemistry;

16 “(2) to improve the Nation’s capability to meas-
17 ure, track, observe, understand, and predict events
18 related directly and indirectly to weather and climate
19 change, natural climate variability, and interactions
20 between the oceanic and atmospheric environments,
21 including the Great Lakes; and

22 “(3) to authorize activities—

23 “(A) to promote basic and applied research
24 to develop, test, and deploy innovations and im-
25 provements in coastal and ocean observation

1 technologies, including advanced observing tech-
2 nologies needed to address critical data gaps,
3 modeling systems, other scientific and techno-
4 logical capabilities to improve the under-
5 standing of weather and climate, ocean-atmos-
6 phere dynamics, global climate change, and the
7 physical, chemical, and biological dynamics of
8 the ocean, coastal and Great Lakes environ-
9 ments; and

10 “(B) to conserve healthy and restore de-
11 graded coastal ecosystems.”.

12 **SEC. 3. DEFINITIONS.**

13 Section 12303 of the Integrated Coastal and Ocean
14 Observation System Act of 2009 (33 U.S.C. 3602) is
15 amended—

16 (1) in paragraph (5), by striking “States, re-
17 gional organizations, universities, nongovernmental
18 organizations, or the private sector.” and inserting
19 “the regional coastal observing systems, the Na-
20 tional Oceanic and Atmospheric Administration, or
21 the Interagency Ocean Observation Committee.”;

22 (2) by amending paragraph (6) to read as fol-
23 lows:

24 “(6) REGIONAL COASTAL OBSERVING SYS-
25 TEM.—The term ‘regional coastal observing system’

1 means an organizational body that is certified or es-
2 tablished by contract or memorandum by the lead
3 Federal agency designated in section 12304(c)(3)
4 and coordinates State, Federal, local, tribal, and pri-
5 vate interests at a regional level with the responsi-
6 bility of engaging the private and public sectors in
7 designing, operating, and improving regional coastal
8 and ocean observing systems in order to ensure the
9 provision of data and information that meet the
10 needs of user groups from the respective regions.”;
11 and

12 (3) in paragraph (7), by striking “National
13 Oceanic and Atmospheric Administration.” and in-
14 serting “Administrator.”.

15 **SEC. 4. INTEGRATED COASTAL AND OCEAN OBSERVATION**
16 **SYSTEM.**

17 (a) SYSTEM ELEMENTS.—

18 (1) IN GENERAL.—Section 12304(b) of the In-
19 tegrated Coastal and Ocean Observation System Act
20 of 2009 (33 U.S.C. 3603(b)) is amended by striking
21 paragraph (1) and inserting the following:

22 “(1) IN GENERAL.—In order to fulfill the pur-
23 poses of this subtitle, the System shall be national
24 in scope and consist of—

1 “(A) Federal assets to fulfill national and
2 international observation missions and prior-
3 ities;

4 “(B) non-Federal assets, including a net-
5 work of regional coastal observing systems iden-
6 tified under subsection (c)(4), to fulfill regional
7 and national observation missions and prior-
8 ities;

9 “(C) data management, communication,
10 and modeling systems for the timely integration
11 and dissemination of data and information
12 products from the System;

13 “(D) a product development system to
14 transform observations into products in a for-
15 mat that may be readily used and understood;
16 and

17 “(E) a research and development program
18 conducted under the guidance of the Council,
19 consisting of—

20 “(i) basic and applied research and
21 technology development—

22 “(I) to improve understanding of
23 coastal and ocean systems and their
24 relationships to human activities; and

1 “(II) to ensure improvement of
2 operational assets and products, in-
3 cluding related infrastructure, observ-
4 ing technologies, and information and
5 data processing and management
6 technologies;

7 “(ii) an advanced observing tech-
8 nology development program to fill gaps in
9 technology;

10 “(iii) large scale computing resources
11 and research to advance modeling of coast-
12 al and ocean processes;

13 “(iv) models to improve regional
14 weather forecasting capabilities and re-
15 gional weather forecasting products; and

16 “(v) reviews of data collection proce-
17 dures across regions and programs to
18 make recommendations for data collection
19 standards across the System to meet na-
20 tional ocean observation, applied research,
21 and weather forecasting needs.”.

22 (2) AVAILABILITY OF DATA.—Paragraph (3) of
23 section 12304(b) of the Integrated Coastal and
24 Ocean Observation System Act of 2009 (33 U.S.C.
25 3603(b)) is amended by striking the period at the

1 end and inserting “for research and for use in the
2 development of products to address societal needs.”.

3 (3) COORDINATION OF NON-FEDERAL AS-
4 SETS.—Paragraph (4) of section 12304(b) of the In-
5 tegrated Coastal and Ocean Observation System Act
6 of 2009 (33 U.S.C. 3603(b)) is amended—

7 (A) in the paragraph heading, by striking
8 “NON-FEDERAL” and inserting “COORDINA-
9 TION OF NON-FEDERAL”; and

10 (B) by inserting “, the regional coastal ob-
11 serving system,” after “Interagency Ocean Ob-
12 serving Committee”.

13 (b) POLICY OVERSIGHT, ADMINISTRATION, AND RE-
14 GIONAL COORDINATION.—Section 12304(c) of the Inte-
15 grated Coastal and Ocean Observation System Act of
16 2009 (33 U.S.C. 3603(c)) is amended by striking para-
17 graphs (2), (3), and (4), and inserting the following:

18 “(2) INTERAGENCY OCEAN OBSERVATION COM-
19 MITTEE.—

20 “(A) ESTABLISHMENT.—The Council shall
21 establish or designate a committee which shall
22 be known as the Interagency Ocean Observation
23 Committee.

24 “(B) DUTIES.—The Interagency Ocean
25 Observation Committee shall—

1 “(i) prepare annual and long-term
2 plans for consideration and approval by the
3 Council for the integrated design, oper-
4 ation, maintenance, enhancement, and ex-
5 pansion of the System to meet the objec-
6 tives of this chapter and the System Plan;

7 “(ii) develop and transmit to Con-
8 gress, along with the budget submitted by
9 the President to Congress pursuant to sec-
10 tion 1105(a) of title 31, United States
11 Code, an annual coordinated, comprehen-
12 sive budget—

13 “(I) to operate all elements of
14 the System identified in subsection
15 (b); and

16 “(II) to ensure continuity of data
17 streams from Federal and non-Fed-
18 eral assets;

19 “(iii) establish requirements for obser-
20 vation data variables to be gathered by
21 both Federal and non-Federal assets and
22 identify, in consultation with regional in-
23 formation coordination entities, priorities
24 for System observations;

1 “(iv) establish and define protocols
2 and standards for System data processing,
3 management, collection, configuration
4 standards, formats, and communication for
5 new and existing assets throughout the In-
6 tegrated Ocean Observing System network;

7 “(v) develop contract requirements for
8 each Regional Coastal Observing System—

9 “(I) to establish eligibility for in-
10 tegration into the System;

11 “(II) to ensure compliance with
12 all applicable standards and protocols
13 established by the Council; and

14 “(III) to ensure that regional ob-
15 servations are integrated into the Sys-
16 tem on a sustained basis;

17 “(vi) identify gaps in observation cov-
18 erage or needs for capital improvements of
19 both Federal assets and non-Federal as-
20 sets;

21 “(vii) subject to the availability of ap-
22 propriations, establish through one or more
23 participating Federal agencies, in consulta-
24 tion with the System advisory committee
25 established under subsection (d), a com-

1 petitive matching grant or other pro-
2 grams—

3 “(I) to promote intramural and
4 extramural research and development
5 of new, innovative, and emerging ob-
6 servation technologies including test-
7 ing and field trials; and

8 “(II) to facilitate the migration
9 of new, innovative, and emerging sci-
10 entific and technological advances
11 from research and development to
12 operational deployment;

13 “(viii) periodically—

14 “(I) review the System Plan; and

15 “(II) submit to the Council such
16 recommendations as the Interagency
17 Ocean Observation Committee may
18 have for improvements to the System
19 Plan;

20 “(ix) ensure collaboration among Fed-
21 eral agencies participating in the activities
22 of the Interagency Ocean Observation
23 Committee; and

24 “(x) perform such additional duties as
25 the Council may delegate.

1 “(3) LEAD FEDERAL AGENCY.—

2 “(A) IN GENERAL.—The National Oceanic
3 and Atmospheric Administration shall function
4 as the lead Federal agency for the implementa-
5 tion and administration of the System.

6 “(B) CONSULTATION REQUIRED.—In car-
7 rying out this paragraph, the Administrator
8 shall consult with the Council, the Interagency
9 Ocean Observation Committee, other Federal
10 agencies that maintain portions of the System,
11 and the Regional Coastal Observing Systems.

12 “(C) REQUIREMENTS.—In carrying out
13 this paragraph, the Administrator shall—

14 “(i) establish and operate an Inte-
15 grated Ocean Observing System Program
16 Office within the National Oceanic and At-
17 mospheric Administration—

18 “(I) that utilizes, to the extent
19 necessary, personnel from member
20 agencies participating on the Inter-
21 agency Ocean Observation Committee;
22 and

23 “(II) oversees daily operations
24 and coordination of the System;

1 “(ii) implement policies, protocols,
2 and standards approved by the Council
3 and delegated by the Interagency Ocean
4 Observation Committee;

5 “(iii) promulgate program guide-
6 lines—

7 “(I) to certify and integrate re-
8 gional associations into the System;
9 and

10 “(II) to provide regional coastal
11 and ocean observation data that meet
12 the needs of user groups from the re-
13 spective regions;

14 “(iv) have the authority to enter into
15 and oversee contracts, leases, grants or co-
16 operative agreements with non-Federal as-
17 sets, including regional information coordi-
18 nation entities, to support the purposes of
19 this chapter on such terms as the Adminis-
20 trator deems appropriate;

21 “(v) implement and maintain a merit-
22 based, competitive funding process to sup-
23 port non-Federal assets, including the de-
24 velopment and maintenance of a network
25 of Regional Coastal Observing Systems,

1 and develop and implement a process for
2 the periodic review and evaluation of the
3 regional associations;

4 “(vi) provide opportunities for com-
5 petitive contracts and grants for dem-
6 onstration projects to design, develop, inte-
7 grate, deploy, maintain, and support com-
8 ponents of the System;

9 “(vii) establish and maintain efficient
10 and effective administrative procedures for
11 allocation of funds among contractors,
12 grantees, and non-Federal assets, including
13 regional associations in a timely manner;

14 “(viii) develop and implement a proc-
15 ess for the periodic review and evaluation
16 of the Regional Coastal Observing Sys-
17 tems;

18 “(ix) formulate an annual process by
19 which gaps in observation coverage or
20 needs for capital improvements of Federal
21 assets and non-Federal assets of the Sys-
22 tem are—

23 “(I) identified by the regional as-
24 sociations described in the System

1 Plan, the Administrator, or other
2 members of the System; and

3 “(II) submitted to the Inter-
4 agency Ocean Observing Committee;

5 “(x) develop and be responsible for a
6 data management and communication sys-
7 tem, in accordance with standards and
8 protocols established by the Interagency
9 Ocean Observing Committee, by which all
10 data collected by the System regarding
11 ocean and coastal waters of the United
12 States including the Great Lakes, are proc-
13 essed, stored, integrated, and made avail-
14 able to all end-user communities;

15 “(xi) not less frequently than once
16 each year, submit to the Interagency
17 Ocean Observing Observation Committee a
18 report on the accomplishments, operational
19 needs, and performance of the System to
20 contribute to the annual and long-term
21 plans prepared pursuant to paragraph
22 (2)(B)(i);

23 “(xii) develop and periodically update
24 a plan to efficiently integrate into the Sys-
25 tem new, innovative, or emerging tech-

1 nologies that have been demonstrated to be
2 useful to the System and which will fulfill
3 the purposes of this chapter and the Sys-
4 tem Plan; and

5 “(xiii) work with users and Regional
6 Associations to develop products to enable
7 real-time data sharing for decisionmakers,
8 including with respect to weather fore-
9 casting and modeling, search and rescue
10 operations, corrosive seawater forecasts,
11 water quality monitoring and communica-
12 tion, and harmful algal bloom forecasting.

13 “(4) REGIONAL COASTAL OBSERVING SYS-
14 TEMS.—

15 “(A) IN GENERAL.—A Regional Coastal
16 Observing System operated by a Regional Asso-
17 ciation described in the System Plan may not
18 be certified or established under this subtitle
19 unless it—

20 “(i) has been or shall be certified or
21 established by contract or agreement by
22 the Administrator;

23 “(ii) meets—

1 “(I) the certification standards
2 and compliance procedure guidelines
3 issued by the Administrator; and

4 “(II) the information needs of
5 user groups in the region while adher-
6 ing to national standards;

7 “(iii) demonstrates an organizational
8 structure, that under funding limitations is
9 capable of—

10 “(I) gathering required System
11 observation data;

12 “(II) supporting and integrating
13 all aspects of coastal and ocean ob-
14 serving and information programs
15 within a region; and

16 “(III) reflecting the needs of
17 State, local, and tribal governments,
18 commercial interests, and other users
19 and beneficiaries of the System and
20 other requirements specified under
21 this subtitle and the System Plan;

22 “(iv) identifies—

23 “(I) gaps in observation coverage
24 needs for capital improvements of

1 Federal assets and non-Federal assets
2 of the System; and

3 “(II) other recommendations to
4 assist in the development of the an-
5 nual and long-term plans prepared
6 pursuant to paragraph (2)(B)(i) and
7 transmit such information to the
8 Interagency Ocean Observation Com-
9 mittee via the Program Office estab-
10 lished under paragraph (3)(C)(i);

11 “(v) develops and operates under a
12 strategic operational plan that will ensure
13 the efficient and effective administration of
14 programs and assets to support daily data
15 observations for integration into the Sys-
16 tem, pursuant to the standards approved
17 by the Council;

18 “(vi) works cooperatively with govern-
19 mental and nongovernmental entities at all
20 levels to identify and provide information
21 products of the System for multiple users
22 within the service area of the regional
23 coastal observing system; and

24 “(vii) complies with all financial over-
25 sight requirements established by the Ad-

1 administrator, including requirements relat-
2 ing to audits.

3 “(B) PARTICIPATION.—For the purposes
4 of this title, employees of Federal agencies are
5 permitted to be members of the governing body
6 for the Regional Coastal Observing Systems
7 and may participate in the functions of the re-
8 gional information coordination entities.”.

9 (c) SYSTEM ADVISORY COMMITTEE.—Section
10 12304(d) of the Integrated Coastal and Ocean Observa-
11 tion System Act of 2009 (33 U.S.C. 3603(d)) is amend-
12 ed—

13 (1) in paragraph (1), by striking “or the Inter-
14 agency Ocean Observing Observation Committee.”
15 and inserting “the Council under this subtitle”; and

16 (2) in paragraph (2)—

17 (A) in subparagraph (A), by inserting
18 “data sharing,” after “data management”;

19 (B) in subparagraph (C), by striking
20 “and” at the end;

21 (C) by striking subparagraph (D) and in-
22 serting the following:

23 “(D) additional priorities, including—

24 “(i) a national surface current map-
25 ping network designed to improve fine

1 scale sea surface mapping using high fre-
2 quency radar technology and other emerg-
3 ing technologies to address national prior-
4 ities, including Coast Guard search and
5 rescue operation planning and harmful
6 algal bloom forecasting and detection
7 that—

8 “(I) is comprised of existing
9 high-frequency radar and other sea
10 surface current mapping infrastruc-
11 ture operated by regional associations;

12 “(II) incorporates new high-fre-
13 quency radar assets or other fine scale
14 sea surface mapping technology as-
15 sets, and other assets needed to fill
16 gaps in coverage on United States
17 coastlines; and

18 “(III) follows a deployment plan
19 that prioritizes closing gaps in high
20 frequency radar infrastructure in the
21 United States, starting with areas
22 demonstrating significant sea surface
23 current data needs, especially in areas
24 where additional data will improve

1 Coast Guard search and rescue mod-
2 els;

3 “(ii) fleet acquisition for autonomous
4 underwater and surface vehicles for deploy-
5 ment and data integration to fulfill the
6 purposes of the Act;

7 “(iii) an integrative survey program
8 for application of manned and unmanned
9 vehicles to the real-time or near real-time
10 collection and transmission of seafloor,
11 water column, and sea surface data on bi-
12 ology, chemistry, geology, physics and hy-
13 drography;

14 “(iv) remote sensing and data assimi-
15 lation to develop new analytical methodolo-
16 gies to assimilate data from the Integrated
17 Ocean Observing System into hydro-
18 dynamic models;

19 “(v) integrated, multi-State moni-
20 toring to assess sources, movement and
21 fate of sediments in coastal regions; and

22 “(vi) a multi-region marine sound
23 monitoring system to be—

24 “(I) planned in consultation with
25 the International Ocean Observing

1 Committee, the National Oceanic and
2 Atmospheric Administration, and aca-
3 demic research institutions; and

4 “(II) developed, installed, and op-
5 erated in coordination with the Na-
6 tional Oceanic and Atmospheric Ad-
7 ministration and academic research
8 institutions; and

9 “(E) any other purpose identified by the
10 Administrator or the Council.”;

11 (D) in paragraph (3)(B), by inserting
12 “The Secretary has the ability to stagger the
13 terms of the System advisory committee mem-
14 bers.” before “Members”; and

15 (E) in paragraph (4)—

16 (i) in subparagraph (A), by striking
17 “and the Interagency Ocean Observing
18 Committee”; and

19 (ii) in subparagraph (C), by striking
20 “Observing” and inserting “Observation”.

21 (d) CIVIL LIABILITY.—Section 12304(e) of the Inte-
22 grated Coastal and Ocean Observation System Act of
23 2009 (33 U.S.C. 3603(e)) is amended—

24 (1) by striking “information coordination enti-
25 ty” and inserting “coastal observation system”; and

1 (2) by striking “non-Federal asset or regional
2 information coordination entity” and inserting “Re-
3 gional Coastal Observing System,”.

4 **SEC. 5. INTERAGENCY FINANCING AND AGREEMENTS.**

5 Section 12305(a) of the Integrated Coastal and
6 Ocean Observation System Act of 2009 (33 U.S.C.
7 3604(a)) is amended to read as follows:

8 “(a) IN GENERAL.—To carry out interagency activi-
9 ties under this subtitle, the Secretary of Commerce may
10 execute an agreement, on a reimbursable or nonreimburs-
11 able basis, with any State or subdivision thereof, any Fed-
12 eral agency, or any public or private organization, or indi-
13 vidual to carry out interagency activities under this sub-
14 title.”.

15 **SEC. 6. REPORTS TO CONGRESS.**

16 Section 12307 of the Integrated Coastal and Ocean
17 Observation System Act of 2009 (33 U.S.C. 3606) is
18 amended to read as follows:

19 “(a) REQUIREMENT.—Not later than 2 years after
20 March 30, 2009, and every 3 years thereafter, the Admin-
21 istrator shall prepare and the President acting through the
22 Council shall approve and transmit to the Congress a re-
23 port on progress made in implementing this subtitle.

24 “(b) CONTENTS.—Each report required by sub-
25 section (a) shall include—

1 “(1) a description of activities carried out under
2 this subtitle and the System Plan;

3 “(2) an evaluation of the effectiveness of the
4 System, including an evaluation of progress made by
5 the Council to achieve the goals identified under the
6 System Plan;

7 “(3) identification of Federal and non-Federal
8 assets as determined by the Council that have been
9 integrated into the System, including assets essential
10 to the gathering of required observation data vari-
11 ables necessary to meet the respective missions of
12 Council agencies;

13 “(4) a review of procurements, planned or initi-
14 ated, by each Council agency to enhance, expand, or
15 modernize the observation capabilities and data
16 products provided by the System, including data
17 management and communication subsystems;

18 “(5) a summary of the existing gaps in observa-
19 tion infrastructure and monitoring data collection,
20 including—

21 “(A) priorities considered by the System
22 advisory committee;

23 “(B) the national sea surface current map-
24 ping network;

25 “(C) coastal buoys; and

- 1 “(D) ocean chemistry monitoring;
- 2 “(6) an assessment regarding activities to inte-
- 3 grate Federal and non-Federal assets, nationally and
- 4 on the regional level, and discussion of the perform-
- 5 ance and effectiveness of regional information co-
- 6 ordination entities to coordinate regional observation
- 7 operations;
- 8 “(7) a description of benefits of the program to
- 9 users of data products resulting from the System
- 10 (including the general public, industries, scientists,
- 11 resource managers, emergency responders, policy
- 12 makers, and educators);
- 13 “(8) recommendations concerning—
- 14 “(A) modifications to the System; and
- 15 “(B) funding levels for the System in sub-
- 16 sequent fiscal years; and
- 17 “(9) the results of a periodic external inde-
- 18 pendent programmatic audit of the System.”.

19 **SEC. 7. PUBLIC-PRIVATE USE POLICY.**

20 Section 12308 of the Integrated Coastal and Ocean

21 Observation System Act of 2009 (33 U.S.C. 3607) is

22 amended to read as follows:

23 “The Council shall maintain a policy that defines

24 processes for making decisions about the roles of the Fed-

25 eral Government, the States, regional information coordi-

1 nation entities, the academic community, and the private
2 sector in providing to end-user communities environmental
3 information, products, technologies, and services related to
4 the System. The Administrator shall ensure that National
5 Oceanic and Atmospheric Administration adheres to the
6 decisionmaking process developed by the Council regard-
7 ing the roles of the Federal Government, the States, the
8 Regional Coastal Observing Systems, the academic com-
9 munities, and the private sector in providing the end-user
10 communities environmental information, data products,
11 technologies, and services related to the System.”.

12 **SEC. 8. INDEPENDENT COST ESTIMATE.**

13 The Integrated Coastal and Ocean Observation Sys-
14 tem Act of 2009 is amended by striking section 12309
15 (33 U.S.C. 3608).

16 **SEC. 9. AUTHORIZATION OF APPROPRIATIONS.**

17 Section 12311 of the Integrated Coastal and Ocean
18 Observation System Act of 2009 (33 U.S.C. 3610) is
19 amended by striking section “2013” and inserting
20 “2019”.

21 **SEC. 10. REPORTS AND RESEARCH PLANS.**

22 Section 12404(c) of the Federal Ocean Acidification
23 Research And Monitoring Act of 2009 (33 U.S.C.
24 3703(c)) is amended by adding at the end the following:

1 “(4) ECONOMIC VULNERABILITY REPORT.—Not
2 later than 1 year after the enactment of the Coordi-
3 nated Ocean Monitoring and Research Act, and
4 every 5 years thereafter, the Subcommittee shall
5 transmit to the Committee on Commerce, Science,
6 and Transportation of the Senate and the Com-
7 mittee on Science, Space, and Technology and the
8 Committee on Natural Resources of the House of
9 Representatives a report that—

10 “(A) is named ‘The Ocean Chemistry
11 Coastal Community Vulnerability Assessment’;

12 “(B) identifies gaps in ocean acidification
13 monitoring by public, academic, and private as-
14 sets in the network of regional coastal observing
15 systems;

16 “(C) identifies areas which have gaps in
17 ocean acidification research;

18 “(D) identifies United States coastal com-
19 munities, including fishing communities, low-
20 population rural communities, tribal and sub-
21 sistence communities, and island communities,
22 that may be impacted by ocean acidification;

23 “(E) identifies impacts of changing ocean
24 pH on the communities described in subpara-
25 graph (D), including impacts from changes in

1 ocean and coastal marine resources that are not
2 managed by the Federal Government;

3 “(F) identifies gaps in understanding of
4 the impacts of ocean acidification on economi-
5 cally or commercially important species, par-
6 ticularly those which support United States
7 commercial, recreational, and tribal fisheries
8 and aquaculture;

9 “(G) identifies habitats that are particu-
10 larly vulnerable to corrosive sea water, includ-
11 ing areas experiencing multiple stressors such
12 as hypoxia, sedimentation and harmful algal
13 blooms;

14 “(H) identifies areas in which existing In-
15 tegrated Ocean Observing System assets, in-
16 cluding buoys and gliders, that may be lever-
17 aged as platforms for the deployment of new
18 sensors; and

19 “(I) is written in collaboration with the
20 agencies responsible for carrying out this Act.

21 “(5) MONITORING PRIORITIZATION PLAN.—Not
22 later than 180 days after the submission of the re-
23 port required by paragraph (4), the Subcommittee
24 shall transmit to the Committee on Commerce,
25 Science, and Transportation of the Senate and the

1 Committee on Science, Space, and Technology and
2 the Committee on Natural Resources of the House
3 of Representatives a report that develops a plan to
4 deploy new sensors—

5 “(A) based on the report required by para-
6 graph (4);

7 “(B) prioritized by—

8 “(i) the threat to coastal economies
9 and ecosystems;

10 “(ii) gaps in data; and

11 “(iii) research needs; and

12 “(C) that leverage existing platforms,
13 where possible.”.

14 **SEC. 11. STRATEGIC RESEARCH PLAN.**

15 (a) CONTENTS.—Section 12405(b) of the Federal
16 Ocean Acidification Research And Monitoring Act of 2009
17 (33 U.S.C. 3704(b)) is amended—

18 (1) in paragraph (8), by striking “and” at the
19 end;

20 (2) in paragraph (9), by striking the period at
21 the end and inserting a semicolon and “and”; and

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

23 “(10) make recommendations for research to be
24 conducted, including in the social sciences and eco-
25 nomics, to address the key knowledge gaps identified

1 in the economic vulnerability report conducted under
2 section 12404(c).”.

3 (b) PROGRAM ELEMENTS.—Section 12405(c) of the
4 Federal Ocean Acidification Research And Monitoring Act
5 of 2009 (33 U.S.C. 3704(c)) is amended by adding at the
6 end the following:

7 “(6) Research to understand combined effects
8 of changes in ocean chemistry, sediment delivery, hy-
9 poxia and harmful algal blooms and the impact
10 these processes have on one another, and how these
11 multiple stressors impact living marine resources
12 and coastal ecosystems.

13 “(7) Applied research to identify adaptation
14 strategies for species impacted by changes in ocean
15 chemistry including vegetation-based systems, shell
16 recycling, species and genetic diversity, applied tech-
17 nologies, aquaculture methodologies, and manage-
18 ment recommendations.”.

19 **SEC. 12. STAKEHOLDER INPUT ON MONITORING.**

20 Section 12406(a) of the Federal Ocean Acidification
21 Research And Monitoring Act of 2009 (33 U.S.C.
22 3705(a)) is amended—

23 (1) in paragraph (2), by striking “and” at the
24 end;

1 (2) in paragraph (3), by striking the period at
2 the end and inserting a semicolon and “and”; and

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

4 “(4) includes an ongoing mechanism that allows
5 potentially affected industry members, coastal stake-
6 holders, fishery management councils and commis-
7 sions, non-Federal resource managers, and scientific
8 experts to provide input on monitoring needs that
9 are necessary to support on the ground manage-
10 ment, decisionmaking, and adaptation related to
11 ocean acidification.”.

12 **SEC. 13. RESEARCH ACTIVITIES.**

13 Section 12407(a) of the Federal Ocean Acidification
14 Research And Monitoring Act of 2009 (33 U.S.C.
15 3706(a)) is amended to read as follows:

16 “(a) RESEARCH ACTIVITIES.—The Director of the
17 National Science Foundation shall continue to carry out
18 research activities on ocean acidification which shall sup-
19 port competitive, merit-based, peer-reviewed proposals for
20 research, observatories and monitoring of ocean acidifica-
21 tion and its impacts, including—

22 “(1) impacts on marine organisms and marine
23 ecosystems;

24 “(2) impacts on ocean, coastal, and estuarine
25 biogeochemistry;

1 “(3) the development of methodologies and
2 technologies to evaluate ocean acidification and its
3 impacts; and

4 “(4) impacts of multiple stressors on eco-
5 systems exhibiting hypoxia, harmful algal blooms, or
6 sediment delivery, combined with changes in ocean
7 chemistry.”.

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