

Calendar No. 401

111TH CONGRESS
2^D SESSION**S. 1562****[Report No. 111–193]**

To provide for a study and report on research on the United States Arctic Ocean and for other purposes.

IN THE SENATE OF THE UNITED STATES

AUGUST 3, 2009

Mr. BEGICH introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

MAY 24, 2010

Reported by Mr. ROCKEFELLER, with an amendment

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

A BILL

To provide for a study and report on research on the United States Arctic Ocean 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 “Arctic Ocean Research
5 and Science Policy Review Act of 2009”.

1 **SEC. 2. FINDINGS.**

2 Congress finds the following:

3 (1) The United States is an Arctic nation
4 with—

5 (A) an approximately 700-mile border with
6 the Arctic Ocean;

7 (B) more than 100,000,000 acres of land
8 above the Arctic Circle; and

9 (C) an even broader area defined as Arctic
10 by temperature which includes the Bering Sea
11 and Aleutian Islands.

12 (2) The Arctic region of the United States—

13 (A) is home to an indigenous population
14 which has subsisted for millennia on the abun-
15 dance in marine mammals, fish, and wildlife,
16 many of which are unique to the region;

17 (B) is known to the indigenous population
18 as Inuvikput or the “place where we live”; and

19 (C) has produced more than
20 16,000,000,000 barrels of oil and, according to
21 the United States Geological Survey, may hold
22 an additional 30,000,000,000 barrels of oil and
23 220,000,000,000,000 cubic feet of natural gas,
24 making the region of fundamental importance
25 to the national interest of the United States.

1 (3) Temperatures in the United States Arctic
2 region have warmed by 3 to 4 degrees Celsius over
3 the past half-century, a rate of increase that is twice
4 the global average.

5 (4) The Arctic ice pack is rapidly diminishing
6 and thinning, and the National Oceanic and Atmos-
7 pheric Administration estimates the Arctic Ocean
8 may be ice free during summer months in as few as
9 30 years.

10 (5) Such changes to the Arctic region are hav-
11 ing a significant impact on the indigenous people of
12 the Arctic, their communities and ecosystems, as
13 well as the marine mammals, fish, and wildlife upon
14 which they depend.

15 (6) Such changes are opening new portions of
16 the United States Arctic continental shelf to possible
17 development for offshore oil and gas, commercial
18 fishing, marine shipping, and tourism.

19 (7) Existing Federal research and science advi-
20 sory programs focused on the environmental and so-
21 cioeconomic impacts of a changing Arctic Ocean lack
22 a cohesive, coordinated, and integrated approach and
23 are not adequately coordinated with State, local, and
24 private sector Arctic Ocean research programs.

1 (8) The lack of research integration and syn-
 2 thesis of findings of Arctic Ocean research has im-
 3 peded the progress of the United States and inter-
 4 national community in understanding climate change
 5 impacts and feedback mechanisms in the Arctic
 6 Ocean.

7 (9) An improved scientific understanding of the
 8 changing Arctic Ocean is critical to the development
 9 of appropriate and effective regional, national, and
 10 global climate change adaptation strategies.

11 **SEC. 3. UNITED STATES ARCTIC OCEAN DEFINED.**

12 In this Act, the term “United States Arctic Ocean”
 13 means the United States zone of the Chukchi and Beau-
 14 fort seas north of Cape Prince of Wales, Alaska.

15 **SEC. 4. STUDY OF THE UNITED STATES ARCTIC OCEAN.**

16 (a) **STUDY.**—Not later than 120 days after the date
 17 of the enactment of this Act, the Secretary of Commerce
 18 shall request that the National Research Council conduct
 19 a study on the existing research and research advisory en-
 20 tities of the United States Arctic Ocean. Such study
 21 shall—

22 (1) include a review of the breadth, relation-
 23 ship, and overlap of existing research programs and
 24 research advisory entities engaged in or advising on
 25 United States Arctic Ocean research, including re-

1 search related to any coastal or atmospheric re-
2 search of United States Arctic Ocean, including the
3 operating budgets of such entities;

4 (2) assess the gaps in the research and research
5 programs referred to in paragraph (1) and in the co-
6 ordination, integration, and synthesis of research ac-
7 tivities and research data;

8 (3) assess existing scientific information and
9 identify additional information necessary, including
10 local and traditional knowledge, to ensure adequate
11 Federal agency environmental reviews;

12 (4) recommend a comprehensive strategy—

13 (A) to develop priorities for, and coordina-
14 tion, integration, and synthesis of, research and
15 monitoring carried out on United States Arctic
16 Ocean; and

17 (B) to coordinate and integrate such re-
18 search with pan-Arctic research; and

19 (5) provide a comprehensive, 10- to 20-year
20 long-range United States Arctic Ocean research and
21 monitoring plan with applied emphasis on climate
22 impacts, adaption, including response to coastal in-
23 undation issues, resource management, ecosystem
24 function, marine transportation, pollution, ocean
25 acidification, and coastal and offshore oil and gas

1 development, including cold water oil spill response
 2 and marine mammal noise issues.

3 (b) COORDINATION.—The Secretary of Commerce
 4 shall consult with the heads of other agencies and depart-
 5 ments of the United States with appropriate Arctic science
 6 expertise or regulatory responsibilities in preparing the
 7 specifications for the study requested under subsection
 8 (a).

9 **SEC. 5. REPORTS TO CONGRESS.**

10 (a) REQUIREMENT FOR REPORT.—Not later than 18
 11 months after the date of the enactment of this Act, the
 12 Secretary of Commerce shall submit to Congress a report
 13 on the study described in section 4(a). Such report shall
 14 include—

- 15 (1) a description of the findings of such study;
- 16 (2) the recommendations of the National Re-
 17 search Council to improve the coordination, integra-
 18 tion, and synthesis of current Arctic research activi-
 19 ties and research data; and
- 20 (3) a prioritized and scalable research plan for
 21 the United States Arctic Ocean that is arranged the-
 22 matically and includes budget estimates for research
 23 under such plan.

24 (b) INTERIM REPORTS.—Not less frequently than
 25 once every 180-day period until the report described in

1 subsection (a) is submitted, the Secretary of Commerce
 2 shall submit to Congress a report on the progress made
 3 to carry out the study described in section 4(a).

4 **SEC. 6. AUTHORIZATION OF APPROPRIATIONS.**

5 There is authorized to be appropriated to the Admin-
 6 istrator of the National Oceanic and Atmospheric Admin-
 7 istration \$2,000,000 for fiscal year 2010 to carry out this
 8 Act.

9 ***TITLE I—ARCTIC OCEAN***
 10 ***RESEARCH***

11 ***SEC. 101. SHORT TITLE.***

12 *This title may be cited as the “Arctic Ocean Research*
 13 *and Science Policy Review Act of 2009”.*

14 ***SEC. 102. FINDINGS.***

15 *Congress finds the following:*

16 (1) *The United States is an Arctic nation*
 17 *with—*

18 (A) *an approximately 700-mile border with*
 19 *the Arctic Ocean;*

20 (B) *more than 100,000,000 acres of land*
 21 *above the Arctic Circle; and*

22 (C) *an even broader area defined as Arctic*
 23 *by temperature which includes the Bering Sea*
 24 *and Aleutian Islands.*

25 (2) *The Arctic region of the United States—*

1 (A) is home to an indigenous population
2 which has subsisted for millennia on the abun-
3 dance in marine mammals, fish, and wildlife,
4 many of which are unique to the region;

5 (B) is known to the indigenous population
6 as *Inuvikput* or the ‘place where we live’; and

7 (C) has produced more than 16,000,000,000
8 barrels of oil and, according to the United States
9 Geological Survey, may hold an additional
10 30,000,000,000 barrels of oil and
11 220,000,000,000,000 cubic feet of natural gas,
12 making the region of fundamental importance to
13 the national interest of the United States.

14 (3) The Arctic Sea ice cover is rapidly dimin-
15 ishing and thinning, and the National Oceanic and
16 Atmospheric Administration estimates the Arctic
17 Ocean may be ice free during summer months in as
18 few as 30 years.

19 (4) Such changes to the Arctic region are having
20 a significant impact on the indigenous people of the
21 Arctic, their communities and ecosystems, as well as
22 the marine mammals, fish, and wildlife upon which
23 they depend.

24 (5) Such changes are opening new portions of the
25 United States Arctic continental shelf to possible de-

1 *velopment for offshore oil and gas, commercial fish-*
 2 *ing, marine shipping, and tourism.*

3 *(6) Existing Federal research and science advi-*
 4 *sory programs focused on the environmental and so-*
 5 *cioeconomic impacts of a changing Arctic Ocean lack*
 6 *a cohesive, coordinated, and integrated approach and*
 7 *are not adequately coordinated with State, local, and*
 8 *private sector Arctic Ocean research programs.*

9 *(7) The lack of research integration and syn-*
 10 *thesis of findings of Arctic Ocean research has im-*
 11 *peded the progress of the United States and inter-*
 12 *national community in understanding climate change*
 13 *impacts and feedback mechanisms in the Arctic*
 14 *Ocean.*

15 *(8) An improved scientific understanding of the*
 16 *changing Arctic Ocean and its influence on, and*
 17 *feedbacks with, the atmosphere and coasts is critical*
 18 *to the development of appropriate and effective re-*
 19 *gional, national, and global climate change adapta-*
 20 *tion strategies.*

21 **SEC. 103. UNITED STATES ARCTIC OCEAN DEFINED.**

22 *In this title, the term “United States Arctic Ocean”*
 23 *means the United States zone of the Chukchi and Beaufort*
 24 *seas north of Cape Prince of Wales, Alaska, and adjacent*
 25 *marine environments.*

1 **SEC. 104. STUDY OF THE UNITED STATES ARCTIC OCEAN.**

2 (a) *STUDY.*— Not later than 120 days after the date
3 of the enactment of this Act, the Secretary of Commerce
4 shall request that the National Research Council conduct
5 a study on the existing research and research advisory enti-
6 ties of the United States Arctic Ocean. Such study shall—

7 (1) include a review of the breadth, relationship,
8 and overlap of existing research programs and re-
9 search advisory entities engaged in or advising on
10 United States Arctic Ocean research, including re-
11 search related to any coastal or atmospheric research
12 of United States Arctic Ocean, including the oper-
13 ating budgets of such entities;

14 (2) assess the gaps in the research and research
15 programs referred to in paragraph (1) and in the co-
16 ordination, integration, and synthesis of research ac-
17 tivities and research data, including gaps in infra-
18 structure and a common Arctic scientific database;

19 (3) assess existing scientific information and
20 identify additional information necessary, including
21 local and traditional knowledge, to improve the sci-
22 entific basis for Federal agency environmental re-
23 views; and

24 (4) provide a comprehensive plan—

25 (A) for 10- to 20-year long-range U.S. Arc-
26 tic Ocean research and monitoring with applied

1 *emphasis on climate impacts, including poten-*
 2 *tially enhanced emissions of methane and other*
 3 *greenhouse gases, adaptation, including response*
 4 *to coastal inundation and erosion issues, re-*
 5 *source management, ecosystem function, marine*
 6 *transportation, pollution, ocean acidification,*
 7 *and coastal and offshore oil and gas develop-*
 8 *ment, including oil spill response in cold water*
 9 *and waters that contain sea ice, and the poten-*
 10 *tial impacts of anthropogenic sound on marine*
 11 *mammals and on the peoples that rely on them*
 12 *for subsistence, and any other information iden-*
 13 *tified as necessary under subsection (a)(3);*

14 *(B) for coordination, integration, and syn-*
 15 *thesis of research and monitoring carried out on*
 16 *U.S. Arctic Ocean and coastal areas, along with*
 17 *priorities for research and monitoring; and*

18 *(C) for coordination and integration of such*
 19 *research with pan-Arctic research, particularly*
 20 *that pertaining to atmosphere and coasts.*

21 *(b) COORDINATION.—The Secretary of Commerce shall*
 22 *consult with the heads of other agencies and departments*
 23 *of the United States with appropriate Arctic science exper-*
 24 *tise or regulatory responsibilities in preparing the specifica-*
 25 *tions for the study requested under subsection (a).*

1 (c) *EVALUATION.*—*The Secretary of Commerce shall*
 2 *evaluate the National Research Council study and develop*
 3 *a long-term strategy to implement, as appropriate, its rec-*
 4 *ommendations, including necessary funding. The strategy*
 5 *should be designed to ensure the study’s recommendations*
 6 *are integrated into existing agency research and science ad-*
 7 *visory programs to the extent practicable.*

8 **SEC. 105. REPORTS TO CONGRESS.**

9 (a) *REQUIREMENT FOR REPORT.*—*Not later than 18*
 10 *months after the date of the enactment of this Act, the Sec-*
 11 *retary of Commerce shall submit to Congress a report on*
 12 *the study described in section 104(a). the report shall in-*
 13 *clude—*

14 (1) *a description of the findings of such study;*

15 (2) *the recommendations of the National Re-*
 16 *search Council to improve the coordination, integra-*
 17 *tion, and synthesis of current Arctic ocean and coast-*
 18 *al research activities and research data; and*

19 (3) *a prioritized and scalable research plan for*
 20 *the United States Arctic Ocean that is arranged the-*
 21 *matically and includes budget estimates for research*
 22 *under such plan.*

23 (b) *INTERIM REPORTS.*—*Not less frequently than once*
 24 *every 180-day period until the report described in sub-*
 25 *section (a) is submitted, the Secretary of Commerce shall*

1 *submit to Congress a report on the progress made to carry*
 2 *out the study described in section 104(a).*

3 **SEC. 106. AUTHORIZATION OF APPROPRIATIONS.**

4 *There are authorized to be appropriated to the Admin-*
 5 *istrator of the National Oceanic and Atmospheric Adminis-*
 6 *tration \$2,000,000 for fiscal year 2010 to carry out this*
 7 *title.*

8 **TITLE II—BLACK CARBON**

9 **SEC. 201. SHORT TITLE.**

10 *This title may be cited as the “Black Carbon and Other*
 11 *Aerosols Research Act of 2009”.*

12 **SEC. 202. PURPOSES.**

13 *The purposes of this title are—*

14 *(1) to develop a monitoring and research plan—*

15 *(A) to identify natural and anthropogenic*
 16 *sources of black carbon and other aerosols and to*
 17 *monitor their atmospheric and deposited con-*
 18 *centrations on both a temporal and a spatial*
 19 *scale;*

20 *(B) to measure, monitor, model, and assess*
 21 *black carbon and other aerosols in regard to*
 22 *their atmospheric concentrations and deposited*
 23 *forms—*

1 (i) to establish how these substances
2 impact regional- and global-scale climate
3 and air quality;

4 (ii) to determine their regional im-
5 pacts, with a focus on the polar regions and
6 other snow and ice covered areas; and

7 (iii) to estimate, in the United States
8 and globally, spatial and temporal black
9 carbon and other aerosol concentrations,
10 and deposition trends in collaboration with
11 the National Institute of Standards and
12 Technology and other appropriate partners;
13 and

14 (C) to develop models to assist policy mak-
15 ers and to increase understanding of—

16 (i) the transport and transformation of
17 black carbon and other aerosols to improve
18 knowledge of their distributions and cli-
19 mate-forcing properties; and

20 (ii) the individual and combined roles
21 of black carbon and other aerosols on re-
22 gional and global climate on both a tem-
23 poral and a spatial scale; and

1 (2) *to establish a black carbon and other aerosols*
 2 *monitoring and research program within the Na-*
 3 *tional Oceanic and Atmospheric Administration.*

4 **SEC. 203. DEFINITIONS.**

5 *In this title:*

6 (1) *ADMINISTRATOR.*—*The term “Adminis-*
 7 *trator” means the Administrator of the National Oce-*
 8 *anic and Atmospheric Administration.*

9 (2) *BLACK CARBON.*—*The term “black carbon”*
 10 *means the strongly light absorbing aerosol that—*

11 *(A) is composed of fine particles containing*
 12 *carbon produced by the incomplete combustion of*
 13 *fossil fuels, biofuel, and biomass and other activi-*
 14 *ties; and*

15 *(B) exists in both atmospheric and depos-*
 16 *ited forms.*

17 (3) *OTHER AEROSOLS.*—*The term “other*
 18 *aerosols” means the components of atmospheric*
 19 *aerosols, fine particles suspended in air, including in-*
 20 *organic, organic, dust, and carbonaceous substances,*
 21 *either separately or in combination.*

22 **SEC. 204. BLACK CARBON AND OTHER AEROSOLS MONI-**
 23 **TORING AND RESEARCH PLAN.**

24 (a) *IN GENERAL.*—*The Administrator shall develop an*
 25 *observation, monitoring, modeling, and research plan for*

1 *black carbon and other aerosols in support of the United*
 2 *States Global Change Research Program that includes—*

3 *(1) analysis of gaps in scientific methods and re-*
 4 *search on—*

5 *(A) black carbon and other aerosols; and*

6 *(B) the effect of black carbon, both singly*
 7 *and in combination with other factors, on cli-*
 8 *mate and air quality on both a regional and a*
 9 *global scale; and*

10 *(2) identification of priorities for Federal re-*
 11 *search on black carbon and other aerosols necessary to*
 12 *understand their role on climate and air quality on*
 13 *both a regional and a global scale;*

14 *(3) a framework for—*

15 *(A) the temporal and spatial effects of black*
 16 *carbon and other aerosols on climate, both singly*
 17 *and in combination, on regional and global*
 18 *scales and processes;*

19 *(B) the transportation and transformation*
 20 *of black carbon and other aerosols to gain insight*
 21 *into their distribution and climate-forcing prop-*
 22 *erties; and*

23 *(C) the influence of black carbon on clouds*
 24 *and cloud particles to understand and quantify*

1 *their role in large-scale circulation and the hy-*
 2 *drologic cycle;*

3 *(4) appropriate methods that—*

4 *(A) identify sources of black carbon and*
 5 *other aerosols, both anthropogenic and naturally*
 6 *occurring, and*

7 *(B) measure, monitor, and increase under-*
 8 *standing of the atmospheric concentrations and*
 9 *properties as well as the deposited forms,*
 10 *on both a temporal and a spatial scale;*

11 *(5) a comparative evaluation of the global and*
 12 *regional climate-forcing properties of black carbon*
 13 *and other aerosols and their effect on regional and*
 14 *global climate and the loss of Arctic sea ice; and*

15 *(6) observation systems, needs, and assets nec-*
 16 *essary to develop and implement a black carbon and*
 17 *other aerosols monitoring and research program with-*
 18 *in the National Oceanic and Atmospheric Adminis-*
 19 *tration.*

20 *(b) ADVISORY PANEL.—The Administrator shall estab-*
 21 *lish a Black Carbon and Other Aerosols Advisory Panel to*
 22 *assist in the development and implementation of the plan.*

23 *(c) REPORT.—No later than 270 days after the date*
 24 *of enactment of this Act, the Administrator shall submit*
 25 *a report to the Senate Committee on Commerce, Science,*

1 *and Transportation and the House of Representatives Com-*
 2 *mittee on Science and Technology describing the plan re-*
 3 *quired by subsection (a).*

4 **SEC. 205. BLACK CARBON AND OTHER AEROSOLS RE-**
 5 **SEARCH AND MONITORING PROGRAM.**

6 *(a) IN GENERAL.—The Administrator shall establish*
 7 *and maintain a black carbon and other aerosols monitoring*
 8 *and research program that combines observations, research,*
 9 *monitoring, modeling, and other activities within the Na-*
 10 *tional Oceanic and Atmospheric Administration, consistent*
 11 *with the plan required by section 204(a), and in support*
 12 *of the United States Global Change Research Program, that*
 13 *includes—*

14 *(1) coordinated monitoring and research activi-*
 15 *ties to improve understanding of the sources, atmos-*
 16 *pheric concentrations, deposited forms, and inter-*
 17 *actions among black carbon and other aerosols that*
 18 *influence their contribution to climate processes on*
 19 *both a regional and a global scale;*

20 *(2) strategic modeling activities that improve*
 21 *understanding of—*

22 *(A) the transportation and transformation*
 23 *of aerosols, to improve knowledge of their dis-*
 24 *tributions and climate-forcing properties; and*

1 *(B) the separate and combined roles of black*
 2 *carbon and other aerosols in regional and global*
 3 *climate and air quality, on regional, global and*
 4 *temporal scales, to improve understanding of*
 5 *these substances and their roles on climate;*

6 *(3) educational opportunities that—*

7 *(A) encourage an interdisciplinary and*
 8 *international approach to exploring the associ-*
 9 *ated sources and impacts of black carbon and*
 10 *other aerosols; and*

11 *(B) increase interactions between the meas-*
 12 *urement and modeling communities in order to*
 13 *optimize use of available data;*

14 *(4) public outreach activities that improve un-*
 15 *derstanding of the current scientific knowledge of*
 16 *black carbon and other aerosols and their impact on*
 17 *climate;*

18 *(5) coordination of black carbon and other*
 19 *aerosols monitoring research with the National Insti-*
 20 *tute of Standards and Technology and other appro-*
 21 *priate international and national government agen-*
 22 *cies, private entities, and others; and*

23 *(6) an assessment of the role black carbon and*
 24 *other aerosols have in regional and global climate and*
 25 *air quality.*

1 (b) *GRANT PROGRAM.*—

2 (1) *IN GENERAL.*—*The Administrator shall es-*
3 *tablish a grant program to provide grants for critical*
4 *research and projects that improve the ability to*
5 *measure, monitor, and assess black carbon and other*
6 *aerosols with respect to their atmospheric concentra-*
7 *tions and deposited forms, including research that*
8 *supports means of reducing the impacts of black car-*
9 *bon and other aerosols on climate.*

10 (2) *CONSULTATION WITH PANEL.*—*The Adminis-*
11 *trator shall consult with the Black Carbon and Other*
12 *Aerosols Advisory Panel, and shall work cooperatively*
13 *with the National Institute of Standards and Tech-*
14 *nology and other Federal agencies, to establish cri-*
15 *teria for such research and projects.*

16 (3) *PARTICIPATION BY FEDERAL AGENCIES.*—
17 *Federal agencies may collaborate with, and partici-*
18 *pate in, such research and projects to the extent re-*
19 *quested by the grant recipient.*

20 (4) *AWARD PROCESS.*—*Grants under this sub-*
21 *section shall be awarded extramurally through a com-*
22 *petitive peer-reviewed, merit-based process that may*
23 *be conducted jointly with other Federal agencies work-*
24 *ing on black carbon and aerosols and their role in*
25 *and relationship to climate.*

1 (c) *COORDINATION WITH OTHER AGENCIES.*—*The Ad-*
 2 *ministrator shall coordinate development of the plan under*
 3 *section 204 and the monitoring and research program*
 4 *under subsection (a) of this section with the Office of*
 5 *Science and Technology Policy, the National Aeronautics*
 6 *and Space Administration, the National Institute of Stand-*
 7 *ards and Technology, and other relevant Federal agencies.*

8 (d) *ADDITIONAL AUTHORITY.*—*In conducting the pro-*
 9 *gram, the Administrator may execute and perform such*
 10 *contracts, leases, grants, or cooperative agreements as may*
 11 *be necessary to carry out the purposes of this title on such*
 12 *terms as the Administrator considers appropriate.*

13 **SEC. 206. AUTHORIZATION OF APPROPRIATIONS.**

14 *There are authorized to be appropriated to the Admin-*
 15 *istrator for each of fiscal years 2010 through 2015—*

16 (1) *\$10,000,000 for grants under section 205(b);*

17 *and*

18 (2) *\$10,000,000 for the National Oceanic and*
 19 *Atmospheric Administration to carry out the other*
 20 *provisions of this title.*

Calendar No. 401

11TH CONGRESS
2^D Session

S. 1562

[Report No. 111-193]

A BILL

To provide for a study and report on research on the United States Arctic Ocean and for other purposes.

MAY 24, 2009

Reported with an amendment