

SPACE WEATHER COORDINATION ACT

JANUARY 3, 2019.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. SMITH of Texas, from the Committee on Science, Space, and Technology, submitted the following

R E P O R T

[To accompany S. 141]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science, Space, and Technology, to whom was referred the bill (S. 141) to improve understanding and forecasting of space weather events, and for other purposes, having considered the same, report favorably thereon with amendments and recommend that the bill as amended do pass.

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The amendments are as follows:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the “Space Weather Coordination Act”.

SEC. 2. SPACE WEATHER.

(a) IN GENERAL.—Subtitle VI of title 51, United States Code, is amended by adding after chapter 605 the following:

“CHAPTER 606—SPACE WEATHER

“Sec.

“60601. Space weather findings; policy.

“60602. Space weather coordination.

“60603. Space weather priorities, plan, and research roadmap.

“60604. Space weather reports.

“60605. Pilot program for obtaining commercial sector space weather data.

“60606. Definitions.

“§ 60601. Space weather findings; policy

“(a) FINDINGS.—Congress finds the following:

“(1) Space weather events pose a significant threat to humans working in the space environment, to modern technological systems, and critical terrestrial infrastructure.

“(2) The effects of severe space weather events on the electric power grid, satellites and satellite communications, services, orbits and information, airline operations, astronauts living and working in space, and space based position, navigation, and timing systems could have significant societal, economic, national security, and health impacts.

“(3) Space weather observation and forecasting are essential for the success of deep space exploration.

“(4) Earth and space observations provide crucial data necessary to predict and warn about space weather events.

“(5) Clear roles and accountability of Federal departments and agencies are critical for an efficient and effective response to threats posed by space weather.

“(6) Observations and measurements closer to the sun and advanced instrumentation would provide for more advanced warning of solar activity resulting in space weather activity.

“(7) Coordination and collaboration between Federal departments and agencies, international partners, the academic community, and the commercial sector is necessary to improve the Nation’s ability to understand, prepare for, avoid, mitigate, and respond to severe space weather events.

“(8) The commercial sector should be solicited to support and enable Federal space weather activities and encouraged to provide and separately invest in innovative space weather data and services.

“(b) STATEMENT OF NATIONAL POLICY.—It is the policy of the United States that—

“(1) the United States should establish and maintain baseline capabilities for space weather observation and forecasting to protect civil aviation, space transportation, national security, human life, critical infrastructure, commercial enterprise, and economic vitality in the United States;

“(2) the establishment and maintenance of such baseline capabilities for space weather should, to the extent practicable, leverage the space weather observation capabilities, data, and services of the academic community and commercial sector;

“(3) space weather observation and forecasting are not exclusive functions of the Federal Government; and

“(4) the Federal Government should, as practicable, obtain space weather data and services through contracts with the commercial sector, when the data and services are available, cost-effective, and add value.

“§ 60602. Space weather coordination

“(a) SENSE OF CONGRESS.—

“(1) NATIONAL SPACE COUNCIL.—It is the sense of Congress that—

“(A) members of the National Space Council are key stakeholders of the Federal Government with respect to space weather;

“(B) the Users’ Advisory Group of the National Space Council should effectively and efficiently represent and advocate on behalf of nongovernmental organizations and the academic community within the Nation’s space weather enterprise; and

“(C) the National Space Council is the appropriate Federal entity to review, establish, and coordinate the Nation’s space weather priorities.

“(2) OFFICE OF SCIENCE AND TECHNOLOGY POLICY.—It is the sense of Congress that the Office of Science and Technology Policy—

“(A) efficiently and effectively identifies opportunities and avenues to advance the leadership of the United States in science and technology; and

“(B) is well positioned to identify opportunities for advancement in coordination of space weather research-to-operations and operations-to-research.
“(b) COORDINATING AUTHORITY.—The National Space Council shall oversee efforts and activities of the Federal Government—

“(1) to implement the Nation’s space weather priorities; and

“(2) to prepare for, avoid, mitigate, and respond to space weather events.

“(c) NATIONAL COMMITTEE FOR SPACE WEATHER OBSERVATION AND FORECASTING.—

“(1) ESTABLISHMENT.—In order to address the Nation’s space weather priorities and further coordinate efforts to monitor, prepare for, avoid, mitigate, and respond to space weather events, the President shall, in consultation with the Chair of the National Space Council—

“(A) establish a committee with respect to space weather observation and forecasting to be known as the ‘National Committee for Space Weather Observation and Forecasting’ (in this chapter referred to as the ‘National Committee’); and

“(B) establish one advisory committee for the purpose specified in paragraph (3)(B), the composition of which shall be determined by the Co-Chairs of the National Committee and shall include equal representation from the academic community, commercial sector, and space weather end users.

“(2) NATIONAL COMMITTEE COMPOSITION.—The National Committee shall—

“(A) be co-chaired by the Administrator of the National Aeronautics and Space Administration, the Secretary of Defense, and the Secretary of Commerce, or their designated representatives, provided that such designated representatives are of the Under Secretary or Assistant Secretary level or higher;

“(B) include as permanent voting members all Federal departments or agencies determined to be key space weather stakeholders or otherwise necessary for inclusion as such permanent voting members by the President, with the agreement of the Chair of the National Space Council; and

“(C) be empowered, with the approval of the Chair of the National Space Council, to allow a relevant, non-member Federal department or agency to participate in meetings of the National Committee as either a non-permanent observer or semi-permanent liaison to the National Committee.

“(3) DUTIES.—

“(A) NATIONAL COMMITTEE.—The duties of the National Committee are the following:

“(i) To effectively and efficiently promote coordination between Federal agencies, the academic community, and the commercial sector to advance the Nation’s space enterprise.

“(ii) To coordinate the implementation of the national space weather plan developed under section 60603(b) across the Federal Government, in partnership with the academic community, international partners, and the commercial sector.

“(iii) To collaborate with the Director of the Office of Science and Technology Policy to identify opportunities for the academic community and commercial sectors to advance the understanding of space weather.

“(B) ADVISORY COMMITTEES.—The duty of the advisory committee established pursuant to paragraph (1)(B) shall be to advise the National Committee with respect to—

“(i) the development and implementation of the national space weather plan established under section 60603(b); and

“(ii) the capabilities of the academic community and the commercial sector to meet the national space weather priorities identified under section 60603(a).

“(d) USER SURVEY.—

“(1) IN GENERAL.—The Chair of the National Space Council, in consultation with the heads of other relevant Federal agencies, the academic community, and the commercial sector, shall direct the Users’ Advisory Group of the Council to conduct a comprehensive survey to identify the space weather observation, research, modeling, forecasting, and prediction needs of the space weather user community.

“(2) SURVEY CONSIDERATIONS.—The survey conducted under paragraph (1) shall—

“(A) assess the adequacy of current Federal Government goals for lead time, accuracy, coverage, timeliness, data rate, and data quality for space weather observations and forecasting;

“(B) identify options and methods to, in consultation with the academic community and the commercial sector, improve the goals specified in subparagraph (A);

“(C) identify opportunities for the generation of new data to address the needs of the space weather user community;

“(D) identify methods to increase coordination of, with respect to space weather, research-to-operations and operations-to-research;

“(E) identify the most efficient and effective formal mechanism or mechanisms for the sharing of space weather data, operational forecasting needs, research needs, findings, models, and capabilities between the Federal Government, the academic community, the commercial sector, and the space weather user community;

“(F) identify opportunities for new technologies, research, and instrumentation to aid in research, understanding, monitoring, modeling, prediction, and forecasting of space weather; and

“(G) identify methods and technologies to improve preparedness for potential space weather events.

“(e) SPECIAL AUTHORITY.—In order to better understand space weather, the National Space Council may leverage expertise from any Federal agency or partner, as deemed appropriate by the Chair of the National Space Council, including through the use of—

“(1) interagency agreements;

“(2) memoranda of understanding; and

“(3) shared personnel.

“§ 60603. Space weather priorities, plan, and research roadmap

“(a) NATIONAL SPACE WEATHER PRIORITIES.—The National Space Council, in consultation with the Users’ Advisory Group of the National Space Council, the academic community, and the commercial sector, shall establish national priorities for space weather, with respect to—

“(1) the protection of life and property;

“(2) the support of the leadership, economic development, and national security of the United States; and

“(3) the space weather prediction and forecasting needs of end-users.

“(b) NATIONAL SPACE WEATHER PLAN.—The National Committee shall develop a national space weather plan to implement the priorities established under subsection (a). Such plan shall, with respect to activities carried out to meet such priorities—

“(1) delineate appropriate roles among Federal agencies;

“(2) consider small satellite options, hosted payloads, public-private partnerships, and commercial options such as data-buys, and other acquisition approaches, that maximize Federal investment and minimize overall costs to the Federal Government;

“(3) identify knowledge gaps and their resolution through specific research and development activities to improve operational space weather forecasting;

“(4) describe collaborative opportunities with stakeholders, including the academic community, nongovernmental organizations, the commercial sector, and foreign governments;

“(5) leverage the work conducted through the National Space Weather Strategy and National Space Weather Action Plan of the National Science and Technology Council before the date of the enactment of this section;

“(6) include a formal mechanism to share operational needs of space weather forecasters with Federal agencies engaged in space weather research and development activities, the academic community, and the commercial sector; and

“(7) appropriately prioritize the critical land-based, sea-based, air-based, or space-based observation capabilities.

“(c) NATIONAL SPACE WEATHER RESEARCH ROADMAP.—The Director of the Office of Science and Technology Policy shall issue a national space weather research roadmap that—

“(1) considers the national space weather priorities established under subsection (a);

“(2) considers the national space weather plan issued under subsection (b);

“(3) considers the National Academy of Sciences, Engineering, and Medicine’s decadal survey recommendations;

“(4) includes a formal mechanism that provides for the sharing of the research needs, findings, models, and capabilities with space weather operational forecasting centers; and

“(5) enhances coordination between research modeling centers, forecasting centers, and the commercial sector.

“§ 60604. Space weather reports

“(a) SURVEY AND PRIORITIES.—Not later than 180 days after the date of enactment of the Space Weather Coordination Act, the Chair of the National Space Council shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, a report on—

“(1) the findings of the user survey under section 60602(d); and

“(2) the recommended space weather priorities under section 60603(a).

“(b) NATIONAL SPACE WEATHER PLAN.—Not later than 270 days after the date of enactment of the Space Weather Coordination Act, the Chair of the National Space Council shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, the national space weather plan developed under section 60603(b).

“(c) NATIONAL SPACE WEATHER RESEARCH ROADMAP.—Not later than one year after the date of enactment of the Space Weather Coordination Act, the Director of the Office of Science and Technology Policy shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, the national space weather research roadmap issued under section 60603(c).

“(d) REEVALUATION OF CONTENT.—Not later than one year after the date on which each Presidential term begins, as well as when determined to be necessary by the Chair of the National Space Council during the intervening years, the applicable entities shall review and assess the content previously developed under this section and update and resubmit such content when appropriate.

“§ 60605. Pilot program for obtaining commercial sector space weather data

“(a) PILOT PROGRAM.—

“(1) ESTABLISHMENT.—Not later than one year after the date of the enactment of the Space Weather Coordination Act, the Secretary of Commerce, acting through the Under Secretary of Commerce for Oceans and Atmosphere (in this section referred to as the ‘Secretary’), shall establish a pilot program under which the Secretary will offer to enter into contracts with one or more entities in the commercial sector for the provision to the Secretary of space weather data generated by such an entity that meets the standards and specifications published under paragraph (2).

“(2) DATA STANDARDS AND SPECIFICATIONS.—Not later than one year after the date of the enactment of the Space Weather Coordination Act, the Secretary shall publish standards and specifications for ground-based, ocean-based, air-based, and space-based commercial space weather data and metadata.

“(3) CONTRACTS.—

“(A) IN GENERAL.—Not later than 18 months after the date of enactment of the Space Weather Coordination Act, the Secretary shall offer to enter, through an open competition, into at least one contract with one or more commercial sector entities capable of providing space weather data that—

“(i) meets the standards and specifications established by the Secretary for providing such data; and

“(ii) is provided in a manner that allows the Secretary to calibrate and evaluate the data for use in space weather research and forecasting models of the National Oceanic and Atmospheric Administration.

“(B) ASSESSMENT.—Not later than the date that is 3 years after the date on which the Secretary enters into a contract under subparagraph (A), the Secretary shall assess, and submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on, the extent to which data provided under such contract meet the standards and specifications established under paragraph (1) and the extent to which the pilot program has demonstrated—

“(i) the viability of assimilating the commercially provided data into National Oceanic and Atmospheric Administration space weather research and forecasting models;

“(ii) whether, and by how much, the data so provided add value to space weather forecasts of the National Oceanic and Atmospheric Administration; and

“(iii) the accuracy, quality, timeliness, validity, reliability, usability, information technology security, and cost-effectiveness of obtaining commercial space weather data from commercial sector providers.

- “(4) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this subsection \$6,000,000 for each of fiscal years 2019 through 2022, to remain available until expended.
- “(b) DATA AND HOSTED SATELLITE PAYLOADS.—Notwithstanding any other provision of law, the Secretary may enter into agreements for—
- “(1) the purchase of space weather data through contracts with commercial providers; and
- “(2) the placement of space weather satellite instruments on payloads co-hosted by the Federal Government and the commercial sector.
- “(c) OBTAINING FUTURE DATA.—If an assessment under subsection (a)(3)(B) demonstrates the ability of commercial space weather data to meet data and metadata standards and specifications published under subsection (a)(2), the Secretary shall—
- “(1) where appropriate, cost-effective, and feasible, obtain space weather data from commercial sector providers;
- “(2) as early as possible in the acquisition process for any future National Oceanic and Atmospheric Administration space weather observational capability, consider whether a suitable, cost-effective, commercial capability is or will be available to meet the observational requirements by the planned operational date of the system;
- “(3) if a suitable, cost-effective, commercial capability is or will be available as described in paragraph (2), determine whether it is in the national interest to develop a governmental observational capability; and
- “(4) submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report detailing any determination made under paragraph (2) or (3).
- “(d) DATA SHARING PRACTICES.—
- “(1) IN GENERAL.—The Secretary shall, to the extent practicable, leverage United States leadership in space weather observation and forecasting to incentivize international partners to increase their space weather observational and forecasting capabilities and contribute additional space weather observations, data, models, predictions, and forecasts. The Under Secretary shall continue to meet international data sharing agreements entered into prior to the date of enactment of this Act.
- “(2) NASA AND NSF DATA.—The Administrator of the National Aeronautics and Space Administration and the Director of the National Science Foundation shall each make space weather related data obtained for scientific research purposes available to space weather forecasters, operations centers, and the commercial sector and support model development and model applications for space weather forecasting.
- “(3) NOAA DATA.—The Secretary shall work with the academic community to make space weather related data obtained from operational forecasting available for scientific research.
- “(e) RESEARCH FOR IMPROVED SPACE WEATHER FORECASTING.—The Secretary, the Director of the National Science Foundation, and the Administrator of the National Aeronautics and Space Administration shall support basic and applied research which could improve space weather forecasting lead time and accuracy.

“§ 60606. Definitions

“In this chapter:

- “(1) NATIONAL SPACE COUNCIL.—The term ‘National Space Council’ means the National Space Council established under Executive Order 13803, (82 Fed. Reg. 31429, relating to establishment of National Space Council) or any successor entities as determined by the President.”
- (b) TECHNICAL AND CONFORMING AMENDMENTS.—
- (1) CONFORMING REPEAL.—Section 809 of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18388) and the item relating to that section in the table of contents under section 1(b) of that Act (124 Stat. 2806) are repealed.
- (2) TABLE OF CHAPTERS.—The table of chapters of title 51, United States Code, is amended by adding after the item relating to chapter 605 the following:

“606. Space Weather 60601”.

Amend the title so as to read:

An Act to improve understanding and forecasting of space weather and promote coordination between stakeholders, and for other purposes.

COMMITTEE STATEMENT AND VIEWS

PURPOSE AND SUMMARY

The purpose of S. 141 is to direct the establishment of a national framework to address current and future space weather challenges and needs, to coordinate efforts to monitor, prepare for, avoid, mitigate, and respond to space weather events, and to improve the lead time, accuracy, coverage, and timeliness of space weather forecasts.

BACKGROUND AND NEED FOR LEGISLATION

Space weather refers to the changing conditions of the interplanetary environment that arise from solar activity. In its natural state, the Sun expels a constant stream of magnetically-active, charged energetic particles and radiation, referred to as solar wind, outward in all directions. The strength of solar wind, and concentration of charged particles and radiation, is influenced by three common types of Sun phenomena—coronal mass ejections, coronal holes, and solar flares. While the Earth is constantly buffeted by solar wind, it is usually deflected and redirected around the planet by Earth's magnetosphere, a magnetic field that extends well beyond the atmosphere. During particularly severe space weather events, however, strong solar wind can and does enter Earth's atmosphere causing disruptions known as geomagnetic storms. These storms result in increased radiation and rapid changes in the direction and intensity of the Earth's magnetic field, conditions which can negatively influence the performance and reliability of spaceborne and ground-based technological systems and endanger human life and health.

On the ground, geomagnetic storms can cause unexpected electric currents in long conductors like power lines and pipelines. In 1989, a strong geomagnetic storm set off a major power blackout in Canada that left six million people without electricity. Within Earth's atmosphere, commercial aviation flights, and their passengers, travelling at higher latitudes are also exposed to more radiation when space weather is severe. And disturbances in the Earth's ionosphere can interfere with Global Positioning System navigation and disrupt high frequency radio communications for days to weeks at a time. In space, when space weather is severe, satellites may experience radiation damage, memory upsets, phantom commands, and unplanned charging, and astronauts on the International Space Station can be exposed to dangerous amounts of radiation. Future human exploration beyond Earth's orbit will further expose astronauts to the negative effects of space weather.

Government and private sector organizations concerned with communications, satellite operations, electric power grids, human space flight, and navigation rely heavily on space weather information bulletins and forecasting to inform their decision making. Currently, for civilian operations, several federal agencies under the Science Committee's jurisdiction, primarily the National Oceanic and Atmospheric Administration (NOAA), the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), and the U.S. Geological Survey, provide operational and research resources to forecast, model, and understand space weather and its effects. For the defense and intelligence communities, the Department of Defense, through the U.S. Air Force, pro-

vides operational resources to forecast and model space weather and its effects.

In October 2015, the White House National Science and Technology Council (NSTC) released both the National Space Weather Strategy and the National Space Weather Action Plan, the result of a multiagency task force led by the Office of Science and Technology Policy (OSTP), NOAA, and the Department of Homeland Security seeking to enhance the integration of existing national efforts to understand, predict, prepare for, and mitigate space weather. In January 2018, the Space Weather Operations, Research, and Mitigation (SWORM) Subcommittee of the NSTC Committee on Homeland and National Security, released the Space Weather Phase 1 Benchmarks. Currently, SWORM coordinates many of the interagency efforts dealing with space weather and its effects. S. 141 would build upon these efforts and strengthen the ability of the federal government and private sector to coordinate operational planning and forecasting, in both the civilian and defense spaces, as well as direct and coordinate research activities to better understand the Sun-Earth system and improve forecasting lead-time and accuracy.

LEGISLATIVE HISTORY

Over the past six years, the House Committee on Science, Space, and Technology held two hearings and one markup relevant to this bill.

COMMITTEE VIEWS

The Committee recognizes the ways in which severe space weather could adversely impact life on Earth and assets and activities in space. Accordingly, the Committee elevates the development, coordination, and implementation of federal efforts and activities in the space weather enterprise, specifically by directing the National Space Council to create priorities for the national space weather enterprise which are focused on the protection of life and property and advancing the leadership, economic development, and national security of the United States. Additionally, the Committee calls on the President to create a National Committee for Space Weather Observation and Forecasting, independent of the SWORM, which will be responsible for creating and helping implement a national space weather plan to meet the national space weather priorities. Finally, the Committee calls on the National Space Council, the National Committee, and OSTP to streamline efforts to coordinate public and private operational and research activities to mitigate space weather's impacts and increase our understanding of the Sun, and to survey the end users of space weather products to ensure their needs are being met.

The Committee also recognizes that, as with terrestrial weather, there is a burgeoning commercial sector involved in space weather observation, research, and forecasting that could help meet the Nation's needs at a lower cost. Accordingly, the Committee authorizes the creation of a Commercial Space Weather Data Pilot program for the purchase of space weather data from the commercial sector to examine the possibility of using this data for operational forecasting.

SECTION-BY-SECTION

Section 1. Short title

This section establishes the short title of the bill as the “Space Weather Coordination Act.”

Section 2. Space weather

This section amends subtitle VI of title 51, U.S. Code, by adding chapter 606, containing sections 60601 (space weather findings; policy), 60602 (space weather coordination), 60603 (space weather priorities, plan, and research roadmap), 60604 (space weather reports), 60605 (pilot program for obtaining commercial sector space weather data), and 60606 (definitions).

Section 60601 presents the findings of Congress on: threats posed by space weather to human life, critical infrastructure, national security, and the economy; the need for coordination and collaboration between key stakeholders of the national space weather enterprise; the importance of thorough observation and advanced instrumentation in order to understand, prepare for, avoid, mitigate, and respond to severe space weather events; and the preference to solicit and engage the commercial sector to support and enable space weather activities.

Additionally, section 60601 details that the policy of the United States is to: establish a baseline capability for space weather observation and forecasting to protect life, property, and economic vitality; leverage commercial and academic capabilities whenever practicable, including the use of contracts for the provision of data and services, in establishing that baseline; and operate with the mindset that space weather observation and forecasting are not exclusive functions of the Federal Government.

Section 60602 outlines the coordinating efforts and activities of the Federal Government as it relates to promulgating national space weather priorities, as well as the identification of avenues to advance U.S. leadership in science and technology and the coordination of space weather research-to-operations and operations-to-research.

Additionally, this section creates the National Committee for Space Weather Observation and Forecasting (“National Committee”), co-chaired by the secretaries of Defense and Commerce and the NASA Administrator, to create and coordinate the implementation of a national space weather plan to meet national space weather priorities. This section also creates a Federal Advisory Committee to advise the National Committee on the development and implementation of the national space weather plan, including using the capabilities of the academic community and the commercial sector to meet the national space weather priorities. Finally, this section tasks the National Space Council’s Users’ Advisory Group with conducting a comprehensive survey to identify the space weather observation, research, modeling, forecasting, and prediction needs of the space weather user community.

Section 60603 instructs the White House National Space Council to establish national space weather priorities, the National Committee to develop a national space weather plan to meet those priorities, and OSTP to develop a research roadmap that considers the

priorities and plan to enhance coordination between research and forecasting centers and the commercial sector.

Section 60604 establishes timelines for the issuance of reports and publication of the plan and research roadmap required under section 60603. This section also requires reevaluation of the priorities, plan, and research roadmap at least as often as at the beginning of every Presidential term and requires resubmission and republication of that content if updated.

Section 60605 establishes a pilot program for the purchase of commercial space weather data and tasks the NOAA Under Secretary with developing data and metadata standards for the pilot program. Section 60605 requires a formal assessment of the quality of the data, the viability of assimilating the data into research and forecasting models, and whether and by how much the purchased data adds value to space weather forecasts.

Section 60605 authorizes appropriations of \$6 million for each of fiscal years 2019 through 2022, to remain available until expended, to carry out the pilot program. Additionally, this section requires the federal government to obtain commercial space weather data when it is appropriate, cost effective, and feasible, if the formal assessment of pilot program data demonstrates the ability for commercial space weather data to meet the standards and specifications set by the Under Secretary.

Lastly, this section instructs: the Under Secretary to leverage American leadership in space weather to encourage international partners to increase their space weather observational and forecasting capabilities and sharing of data; the heads of NOAA, NASA, and NSF to make space weather data obtained for research available to space weather forecasting and operations centers, including the commercial sector, to support model development and application; and the heads of NOAA, NASA, and NSF to support research on observation, technologies, and instrumentation which could improve space weather forecasting lead time and accuracy.

Section 60606 defines the term “National Space Council.”

EXPLANATION OF AMENDMENTS

An amendment in the nature of a substitute offered by Representative Ed Perlmutter was agreed to by voice vote. The amendment provides new text that elevates the National Space Council to coordinate federal agency responsibilities and implementation of space weather research and forecasting and encourages involvement with the academic community and commercial sector. The substitute text also removes language authorizing or directing activities of the Department of Transportation and the Federal Aviation Administration.

A manager’s amendment offered by Representative Ed Perlmutter was agreed to by voice vote. The amendment makes technical and clarifying improvements.

An amendment in the nature of a substitute offered by Representative Eddie Bernice Johnson was defeated by a roll call vote of 13–19.

COMMITTEE CONSIDERATION

On July 24, 2018, the Committee met in open session and ordered reported favorably the bill, S. 141, as amended, by voice vote, a quorum being present.

ROLL CALL VOTES

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY - 115th

Full Committee Roll Call

Working Quorum: 13

Reporting Quorum: 20

DATE: July 24, 2018

Bill: S. 141
ROLL CALL NO. 1

AMENDMENT NO. 035

Amendment Sponsor: Rep. Eddie Bernice Johnson

DEFEATED

MEMBER	AYE	NO	PRESENT	NOT VOTING
1 Mr. SMITH, <i>Chair</i> - TX		X		
2 Mr. LUCAS - OK **		X		
3 Mr. ROHRBACHER - CA		X		
4 Mr. BROOKS - AL		X		
5 Mr. HULTGREN - IL		X		
6 Mr. POSEY - FL		X		
7 Mr. MASSIE - KY				
8 Mr. WEBER - TX		X		
9 Mr. KNIGHT - CA		X		
10 Mr. BABIN - TX		X		
11 Mrs. COMSTOCK - VA		X		
12 Mr. LOUDERMILK - GA		X		
13 Mr. ABRAHAM - LA				
14 Mr. PALMER - AL				
15 Mr. WEBSTER - FL		X		
16 Mr. BIGGS - AZ		X		
17 Mr. MARSHALL - KS		X		
18 Mr. DUNN - FL		X		
19 Mr. HIGGINS - LA		X		
20 Mr. NORMAN - SC		X		
21 Mrs. LESKO - AZ		X		
22 Mr. CLOUD - TX				
1 Ms. JOHNSON, <i>Ranking</i> - TX	X			
2 Ms. LOFGREN - CA	X			
3 Mr. LIPINSKI - IL	X			
4 Ms. BONAMICI - OR				
5 Mr. BERA - CA	X			
6 Ms. ESTY - CT	X			
7 Mr. VEASEY - TX	X			
8 Mr. BEYER - VA	X			
9 Ms. ROSEN - NV	X			
10 Mr. LAMB - PA	X			
11 Mr. MCNERNEY - CA	X			
12 Mr. PERLMUTTER - CO		X		
13 Mr. TONKO - NY	X			
14 Mr. FOSTER - IL				
15 Mr. TAKANO - CA	X			
16 Ms. HANABUSA - HI				
17 Mr. CRIST - FL	X			
TOTALS	13	19		

** Vice Chair

* The vote was changed by unanimous consent to reflect a vote of No by Mr. Palmer and a vote of Aye by Ms. Bonamici.

APPLICATION OF LAW TO THE LEGISLATIVE BRANCH

Section 102(b)(3) of Public Law 104–1 requires a description of the application of this bill to the legislative branch where the bill relates to the terms and conditions of employment or access to public services and accommodations. This bill establishes a coordinating framework for the creation and implementation of a national space weather plan. As such this bill does not relate to employment or access to public services and accommodations.

Legislative branch employees and their families, to the extent that they are otherwise eligible for the benefits provided by this legislation, have equal access to its benefits.

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 of the Rules of the House of Representatives, the Committee's oversight findings and recommendations are reflected in the descriptive portions of this report.

STATEMENT OF GENERAL PERFORMANCE GOALS AND OBJECTIVES

In accordance with clause 3(c)(4) of rule XIII of the Rules of the House of Representatives, the Committee's performance goals and objectives are reflected in the descriptive portions of this report.

DUPLICATION OF FEDERAL PROGRAMS

No provision of S. 141 establishes or reauthorizes a program of the Federal Government known to be duplicative of another Federal program, a program that was included in any report from the Government Accountability Office to Congress pursuant to section 21 of Public Law 111–139, or a program related to a program identified in the most recent Catalog of Federal Domestic Assistance.

DISCLOSURE OF DIRECTED RULE MAKINGS

The Committee estimates that enacting S. 141 does not direct the completion of any specific rule makings within the meaning of 5 U.S.C. 551.

FEDERAL ADVISORY COMMITTEE ACT

The Committee finds that the legislation establishes or authorizes the establishment of an advisory committee within the definition of 5 U.S.C. App., Section 5(b). The Committee estimates that the functions of the advisory committee are not and could not be performed by one or more agencies, by an advisory committee already in existence, or by enlarging the mandate of an existing advisory committee.

UNFUNDED MANDATE STATEMENT

Section 423 of the Congressional Budget and Impoundment Control Act (as amended by Section 101(a)(2) of the Unfunded Mandate Reform Act, P.L. 104–4) requires a statement as to whether the provisions of the reported bill include unfunded mandates. In com-

pliance with this requirement the Committee has received a letter from the Congressional Budget Office included herein.

EARMARK IDENTIFICATION

S. 141 does not include any congressional earmarks, limited tax benefits, or limited tariff benefits as defined in clause 9 of rule XXI.

COMMITTEE ESTIMATE

Clause 3(d)(2) of rule XIII of the Rules of the House of Representatives requires an estimate and a comparison by the Committee of the costs that would be incurred in carrying out S. 141. However, clause 3(d)(3)(B) of that rule provides that this requirement does not apply when the Committee has included in its report a timely submitted cost estimate of the bill prepared by the Director of the Congressional Budget Office under section 402 of the Congressional Budget Act.

BUDGET AUTHORITY AND CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

With respect to the requirements of clause 3(c)(2) of rule XIII of the Rules of the House of Representatives and section 308(a) of the Congressional Budget Act of 1974 and with respect to requirements of clause (3)(c)(3) of rule XIII of the Rules of the House of Representatives and section 402 of the Congressional Budget Act of 1974, the Committee has received the following cost estimate for S. 141 from the Director of Congressional Budget Office:

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, October 2, 2018.

Hon. LAMAR SMITH,
*Chairman, Committee on Science, Space, and Technology,
House of Representatives, Washington, DC.*

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for S. 141, the Space Weather Coordination Act.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Robert Reese.

Sincerely,

KEITH HALL,
Director.

Enclosure.

S. 141—Space Weather Coordination Act

Summary: S. 141 would authorize the annual appropriation of \$6 million over the 2019–2022 period for the National Oceanic and Atmospheric Administration (NOAA) to implement a pilot program to gather data on space weather. The legislation also would transfer the responsibility to coordinate inter-agency activities related to space weather from the Office of Science and Technology Policy (OSTP) to the National Space Council (NSC). CBO estimates that implementing S. 141 would cost \$23 million over the 2019–2023 period, assuming appropriation of the authorized amounts.

Enacting S. 141 would not affect direct spending or revenues; therefore, pay-as-you-go procedures do not apply.

CBO estimates that enacting S. 141 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2029.

S. 141 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA).

Estimated cost to the Federal Government: The estimated budgetary effect of S. 141 is shown in the following table. The costs of the legislation fall within budget functions 300 (natural resources and environment) and 800 (general government).

	By fiscal year, in millions of dollars—					2019–2023
	2019	2020	2021	2022	2023	
INCREASES IN SPENDING SUBJECT TO APPROPRIATION						
Authorization Level	6	6	6	6	0	24
Estimated Outlays	4	5	6	6	2	23

Basis of estimate: For this estimate, CBO assumes that S. 141 will be enacted in 2019 and that the authorized amounts will be appropriated each year.

S. 141 would authorize the appropriation of \$6 million annually over the 2019–2022 period for NOAA to implement a pilot program to procure space weather data from private entities. Based on historical spending patterns for similar activities, CBO estimates implementing that program would cost \$23 million over the 2019–2023 period.

S. 141 also would codify existing space weather activities and transfer the responsibility for inter-agency coordination from the OSTP to the NSC. In addition, the legislation would require the OSTP to develop a roadmap for space weather research, and would direct the NSC to oversee the development of a national space weather plan. CBO expects that plan would be similar to the national space weather action plan that was released in 2015. Based on the costs of similar tasks, CBO estimates that implementing those provisions would cost less than \$500,000; such spending would be subject to the availability of appropriated funds.

Pay-As-You-Go considerations: None.

Increase in long-term direct spending and deficits: CBO estimates that enacting S. 141 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2029.

Mandates: S. 141 contains no intergovernmental or private-sector mandates as defined in UMRA.

Previous CBO estimate: On February 24, 2017, CBO transmitted a cost estimate of S. 141, the Space Weather Research and Forecasting Act, as ordered reported by the Senate Committee on Commerce, Science, and Transportation on January 24, 2017. The two versions of the legislation have different provisions; accordingly, CBO’s estimates of their budgetary effects differ.

Estimate prepared by: Federal costs: Robert Reese and Janani Shankaran, Mandates: Jon Sperl.

Estimate reviewed by: Kim P. Cawley, Chief, Natural and Physical Resources Cost Estimates Unit; H. Samuel Papenfuss, Deputy Assistant Director for Budget Analysis.

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 italic, and existing law in which no change is proposed is shown in roman):

TITLE 51, UNITED STATES CODE

Subtitle I—General

Chap.		Sec.
101. Definitions	10101
	* * * * *	

Subtitle VI—Earth Observations

	* * * * *	
606. Space Weather	60601
	* * * * *	

Subtitle VI—EARTH OBSERVATIONS

* * * * *

CHAPTER 606—SPACE WEATHER

- Sec.
 60601. *Space weather findings; policy.*
 60602. *Space weather coordination.*
 60603. *Space weather priorities, plan, and research roadmap.*
 60604. *Space weather reports.*
 60605. *Pilot program for obtaining commercial sector space weather data.*
 60606. *Definitions.*

§ 60601. Space weather findings; policy

- (a) *FINDINGS.—Congress finds the following:*
- (1) *Space weather events pose a significant threat to humans working in the space environment, to modern technological systems, and critical terrestrial infrastructure.*
 - (2) *The effects of severe space weather events on the electric power grid, satellites and satellite communications, services, orbits and information, airline operations, astronauts living and working in space, and space based position, navigation, and timing systems could have significant societal, economic, national security, and health impacts.*
 - (3) *Space weather observation and forecasting are essential for the success of deep space exploration.*
 - (4) *Earth and space observations provide crucial data necessary to predict and warn about space weather events.*
 - (5) *Clear roles and accountability of Federal departments and agencies are critical for an efficient and effective response to threats posed by space weather.*
 - (6) *Observations and measurements closer to the sun and advanced instrumentation would provide for more advanced warning of solar activity resulting in space weather activity.*

(7) *Coordination and collaboration between Federal departments and agencies, international partners, the academic community, and the commercial sector is necessary to improve the Nation's ability to understand, prepare for, avoid, mitigate, and respond to severe space weather events.*

(8) *The commercial sector should be solicited to support and enable Federal space weather activities and encouraged to provide and separately invest in innovative space weather data and services.*

(b) *STATEMENT OF NATIONAL POLICY.—It is the policy of the United States that—*

(1) *the United States should establish and maintain baseline capabilities for space weather observation and forecasting to protect civil aviation, space transportation, national security, human life, critical infrastructure, commercial enterprise, and economic vitality in the United States;*

(2) *the establishment and maintenance of such baseline capabilities for space weather should, to the extent practicable, leverage the space weather observation capabilities, data, and services of the academic community and commercial sector;*

(3) *space weather observation and forecasting are not exclusive functions of the Federal Government; and*

(4) *the Federal Government should, as practicable, obtain space weather data and services through contracts with the commercial sector, when the data and services are available, cost-effective, and add value.*

§ 60602. Space weather coordination

(a) *SENSE OF CONGRESS.—*

(1) *NATIONAL SPACE COUNCIL.—It is the sense of Congress that—*

(A) *members of the National Space Council are key stakeholders of the Federal Government with respect to space weather;*

(B) *the Users' Advisory Group of the National Space Council should effectively and efficiently represent and advocate on behalf of nongovernmental organizations and the academic community within the Nation's space weather enterprise; and*

(C) *the National Space Council is the appropriate Federal entity to review, establish, and coordinate the Nation's space weather priorities.*

(2) *OFFICE OF SCIENCE AND TECHNOLOGY POLICY.—It is the sense of Congress that the Office of Science and Technology Policy—*

(A) *efficiently and effectively identifies opportunities and avenues to advance the leadership of the United States in science and technology; and*

(B) *is well positioned to identify opportunities for advancement in coordination of space weather research-to-operations and operations-to-research.*

(b) *COORDINATING AUTHORITY.—The National Space Council shall oversee efforts and activities of the Federal Government—*

(1) *to implement the Nation's space weather priorities; and*

(2) to prepare for, avoid, mitigate, and respond to space weather events.

(c) NATIONAL COMMITTEE FOR SPACE WEATHER OBSERVATION AND FORECASTING.—

(1) ESTABLISHMENT.—In order to address the Nation’s space weather priorities and further coordinate efforts to monitor, prepare for, avoid, mitigate, and respond to space weather events, the President shall, in consultation with the Chair of the National Space Council—

(A) establish a committee with respect to space weather observation and forecasting to be known as the “National Committee for Space Weather Observation and Forecasting” (in this chapter referred to as the “National Committee”); and

(B) establish one advisory committee for the purpose specified in paragraph (3)(B), the composition of which shall be determined by the Co-Chairs of the National Committee and shall include equal representation from the academic community, commercial sector, and space weather end users.

(2) NATIONAL COMMITTEE COMPOSITION.—The National Committee shall—

(A) be co-chaired by the Administrator of the National Aeronautics and Space Administration, the Secretary of Defense, and the Secretary of Commerce, or their designated representatives, provided that such designated representatives are of the Under Secretary or Assistant Secretary level or higher;

(B) include as permanent voting members all Federal departments or agencies determined to be key space weather stakeholders or otherwise necessary for inclusion as such permanent voting members by the President, with the agreement of the Chair of the National Space Council; and

(C) be empowered, with the approval of the Chair of the National Space Council, to allow a relevant, non-member Federal department or agency to participate in meetings of the National Committee as either a non-permanent observer or semi-permanent liaison to the National Committee.

(3) DUTIES.—

(A) NATIONAL COMMITTEE.—The duties of the National Committee are the following:

(i) To effectively and efficiently promote coordination between Federal agencies, the academic community, and the commercial sector to advance the Nation’s space enterprise.

(ii) To coordinate the implementation of the national space weather plan developed under section 60603(b) across the Federal Government, in partnership with the academic community, international partners, and the commercial sector.

(iii) To collaborate with the Director of the Office of Science and Technology Policy to identify opportunities for the academic community and commercial sectors to advance the understanding of space weather.

(B) *ADVISORY COMMITTEES.*—*The duty of the advisory committee established pursuant to paragraph (1)(B) shall be to advise the National Committee with respect to—*

(i) *the development and implementation of the national space weather plan established under section 60603(b); and*

(ii) *the capabilities of the academic community and the commercial sector to meet the national space weather priorities identified under section 60603(a).*

(d) *USER SURVEY.*—

(1) *IN GENERAL.*—*The Chair of the National Space Council, in consultation with the heads of other relevant Federal agencies, the academic community, and the commercial sector, shall direct the Users' Advisory Group of the Council to conduct a comprehensive survey to identify the space weather observation, research, modeling, forecasting, and prediction needs of the space weather user community.*

(2) *SURVEY CONSIDERATIONS.*—*The survey conducted under paragraph (1) shall—*

(A) *assess the adequacy of current Federal Government goals for lead time, accuracy, coverage, timeliness, data rate, and data quality for space weather observations and forecasting;*

(B) *identify options and methods to, in consultation with the academic community and the commercial sector, improve the goals specified in subparagraph (A);*

(C) *identify opportunities for the generation of new data to address the needs of the space weather user community;*

(D) *identify methods to increase coordination of, with respect to space weather, research-to-operations and operations-to-research;*

(E) *identify the most efficient and effective formal mechanism or mechanisms for the sharing of space weather data, operational forecasting needs, research needs, findings, models, and capabilities between the Federal Government, the academic community, the commercial sector, and the space weather user community;*

(F) *identify opportunities for new technologies, research, and instrumentation to aid in research, understanding, monitoring, modeling, prediction, and forecasting of space weather; and*

(G) *identify methods and technologies to improve preparedness for potential space weather events.*

(e) *SPECIAL AUTHORITY.*—*In order to better understand space weather, the National Space Council may leverage expertise from any Federal agency or partner, as deemed appropriate by the Chair of the National Space Council, including through the use of—*

(1) *interagency agreements;*

(2) *memoranda of understanding; and*

(3) *shared personnel.*

§ 60603. Space weather priorities, plan, and research roadmap

(a) *NATIONAL SPACE WEATHER PRIORITIES.*—*The National Space Council, in consultation with the Users' Advisory Group of the Na-*

tional Space Council, the academic community, and the commercial sector, shall establish national priorities for space weather, with respect to—

- (1) the protection of life and property;
- (2) the support of the leadership, economic development, and national security of the United States; and
- (3) the space weather prediction and forecasting needs of end-users.

(b) NATIONAL SPACE WEATHER PLAN.—The National Committee shall develop a national space weather plan to implement the priorities established under subsection (a). Such plan shall, with respect to activities carried out to meet such priorities—

- (1) delineate appropriate roles among Federal agencies;
- (2) consider small satellite options, hosted payloads, public-private partnerships, and commercial options such as data-buys, and other acquisition approaches, that maximize Federal investment and minimize overall costs to the Federal Government;
- (3) identify knowledge gaps and their resolution through specific research and development activities to improve operational space weather forecasting;
- (4) describe collaborative opportunities with stakeholders, including the academic community, nongovernmental organizations, the commercial sector, and foreign governments;
- (5) leverage the work conducted through the National Space Weather Strategy and National Space Weather Action Plan of the National Science and Technology Council before the date of the enactment of this section;
- (6) include a formal mechanism to share operational needs of space weather forecasters with Federal agencies engaged in space weather research and development activities, the academic community, and the commercial sector; and
- (7) appropriately prioritize the critical land-based, sea-based, air-based, or space-based observation capabilities.

(c) NATIONAL SPACE WEATHER RESEARCH ROADMAP.—The Director of the Office of Science and Technology Policy shall issue a national space weather research roadmap that—

- (1) considers the national space weather priorities established under subsection (a);
- (2) considers the national space weather plan issued under subsection (b);
- (3) considers the National Academy of Sciences, Engineering, and Medicine’s decadal survey recommendations;
- (4) includes a formal mechanism that provides for the sharing of the research needs, findings, models, and capabilities with space weather operational forecasting centers; and
- (5) enhances coordination between research modeling centers, forecasting centers, and the commercial sector.

§ 60604. Space weather reports

(a) SURVEY AND PRIORITIES.—Not later than 180 days after the date of enactment of the Space Weather Coordination Act, the Chair of the National Space Council shall submit to the Committee on Science, Space, and Technology of the House of Representatives and

the Committee on Commerce, Science, and Transportation of the Senate, a report on—

(1) the findings of the user survey under section 60602(d); and

(2) the recommended space weather priorities under section 60603(a).

(b) NATIONAL SPACE WEATHER PLAN.—Not later than 270 days after the date of enactment of the Space Weather Coordination Act, the Chair of the National Space Council shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, the national space weather plan developed under section 60603(b).

(c) NATIONAL SPACE WEATHER RESEARCH ROADMAP.—Not later than one year after the date of enactment of the Space Weather Coordination Act, the Director of the Office of Science and Technology Policy shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, the national space weather research roadmap issued under section 60603(c).

(d) REVALUATION OF CONTENT.—Not later than one year after the date on which each Presidential term begins, as well as when determined to be necessary by the Chair of the National Space Council during the intervening years, the applicable entities shall review and assess the content previously developed under this section and update and resubmit such content when appropriate.

§ 60605. Pilot program for obtaining commercial sector space weather data

(a) PILOT PROGRAM.—

(1) ESTABLISHMENT.—Not later than one year after the date of the enactment of the Space Weather Coordination Act, the Secretary of Commerce, acting through the Under Secretary of Commerce for Oceans and Atmosphere (in this section referred to as the “Secretary”), shall establish a pilot program under which the Secretary will offer to enter into contracts with one or more entities in the commercial sector for the provision to the Secretary of space weather data generated by such an entity that meets the standards and specifications published under paragraph (2).

(2) DATA STANDARDS AND SPECIFICATIONS.—Not later than one year after the date of the enactment of the Space Weather Coordination Act, the Secretary shall publish standards and specifications for ground-based, ocean-based, air-based, and space-based commercial space weather data and metadata.

(3) CONTRACTS.—

(A) IN GENERAL.—Not later than 18 months after the date of enactment of the Space Weather Coordination Act, the Secretary shall offer to enter, through an open competition, into at least one contract with one or more commercial sector entities capable of providing space weather data that—

(i) meets the standards and specifications established by the Secretary for providing such data; and

(ii) is provided in a manner that allows the Secretary to calibrate and evaluate the data for use in space weather research and forecasting models of the National Oceanic and Atmospheric Administration.

(B) ASSESSMENT.—Not later than the date that is 3 years after the date on which the Secretary enters into a contract under subparagraph (A), the Secretary shall assess, and submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report on, the extent to which data provided under such contract meet the standards and specifications established under paragraph (1) and the extent to which the pilot program has demonstrated—

(i) the viability of assimilating the commercially provided data into National Oceanic and Atmospheric Administration space weather research and forecasting models;

(ii) whether, and by how much, the data so provided add value to space weather forecasts of the National Oceanic and Atmospheric Administration; and

(iii) the accuracy, quality, timeliness, validity, reliability, usability, information technology security, and cost-effectiveness of obtaining commercial space weather data from commercial sector providers.

(4) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this subsection \$6,000,000 for each of fiscal years 2019 through 2022, to remain available until expended.

(b) DATA AND HOSTED SATELLITE PAYLOADS.—Notwithstanding any other provision of law, the Secretary may enter into agreements for—

(1) the purchase of space weather data through contracts with commercial providers; and

(2) the placement of space weather satellite instruments on payloads co-hosted by the Federal Government and the commercial sector.

(c) OBTAINING FUTURE DATA.—If an assessment under subsection (a)(3)(B) demonstrates the ability of commercial space weather data to meet data and metadata standards and specifications published under subsection (a)(2), the Secretary shall—

(1) where appropriate, cost-effective, and feasible, obtain space weather data from commercial sector providers;

(2) as early as possible in the acquisition process for any future National Oceanic and Atmospheric Administration space weather observational capability, consider whether a suitable, cost-effective, commercial capability is or will be available to meet the observational requirements by the planned operational date of the system;

(3) if a suitable, cost-effective, commercial capability is or will be available as described in paragraph (2), determine whether it is in the national interest to develop a governmental observational capability; and

(4) submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on

Commerce, Science, and Transportation of the Senate a report detailing any determination made under paragraph (2) or (3).
 (d) DATA SHARING PRACTICES.—

(1) IN GENERAL.—The Secretary shall, to the extent practicable, leverage United States leadership in space weather observation and forecasting to incentivize international partners to increase their space weather observational and forecasting capabilities and contribute additional space weather observations, data, models, predictions, and forecasts. The Under Secretary shall continue to meet international data sharing agreements entered into prior to the date of enactment of this Act.

(2) NASA AND NSF DATA.—The Administrator of the National Aeronautics and Space Administration and the Director of the National Science Foundation shall each make space weather related data obtained for scientific research purposes available to space weather forecasters, operations centers, and the commercial sector and support model development and model applications for space weather forecasting.

(3) NOAA DATA.—The Secretary shall work with the academic community to make space weather related data obtained from operational forecasting available for scientific research.

(e) RESEARCH FOR IMPROVED SPACE WEATHER FORECASTING.—The Secretary, the Director of the National Science Foundation, and the Administrator of the National Aeronautics and Space Administration shall support basic and applied research which could improve space weather forecasting lead time and accuracy.

§ 60606. Definitions

In this chapter:

(1) NATIONAL SPACE COUNCIL.—The term “National Space Council” means the National Space Council established under Executive Order 13803, (82 Fed. Reg. 31429, relating to establishment of National Space Council) or any successor entities as determined by the President.

* * * * *

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 AUTHORIZATION ACT OF 2010**

SEC. 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the “National Aeronautics and Space Administration Authorization Act of 2010”.

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

Sec. 1. Short title; table of contents.	*	*	*	*	*	*	*
	TITLE VIII—SPACE SCIENCE						
	*	*	*	*	*	*	*
Sec. 801. Technology development.							
	*	*	*	*	*	*	*
[Sec. 809. Space weather.]							
	*	*	*	*	*	*	*

TITLE VIII—SPACE SCIENCE

* * * * *

SEC. 809. SPACE WEATHER.

(a) FINDINGS.—The Congress finds the following:

(1) Space weather events pose a significant threat to modern technological systems.

(2) The effects of severe space weather events on the electric power grid, telecommunications and entertainment satellites, airline communications during polar routes, and space-based position, navigation and timing systems could have significant societal, economic, national security, and health impacts.

(3) Earth and Space Observing satellites, such as the Advanced Composition Explorer, Geostationary Operational Environmental Satellites, Polar Operational Environmental Satellites, and Defense Meteorological Satellites, provide crucial data necessary to predict space weather events.

(b) ACTION REQUIRED.—The Director of OSTP shall—

(1) improve the Nation’s ability to prepare, avoid, mitigate, respond to, and recover from potentially devastating impacts of space weather events;

(2) coordinate the operational activities of the National Space Weather Program Council members, including the NOAA Space Weather Prediction Center and the U.S. Air Force Weather Agency; and

(3) submit a report to the appropriate committees of Congress within 180 days after the date of enactment of this Act that—

(A) details the current data sources, both space- and ground-based, that are necessary for space weather forecasting; and

(B) details the space- and ground-based systems that will be required to gather data necessary for space weather forecasting for the next 10 years.]

* * * * *