

Union Calendar No. 896

115TH CONGRESS
2D SESSION

S. 141

[Report No. 115–1128, Part I]

IN THE HOUSE OF REPRESENTATIVES

MAY 3, 2017

Referred to the Committee on Science, Space, and Technology, and in addition to the Committees on Armed Services, Transportation and Infrastructure, Foreign Affairs, and the Permanent Select Committee on Intelligence, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

JANUARY 3, 2019

Reported from the Committee on Science, Space, and Technology with amendments

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

JANUARY 3, 2019

Committees on Armed Services, Transportation and Infrastructure, Foreign Affairs, and the Permanent Select Committee on Intelligence discharged; committed to the Committee of the Whole House on the State of the Union and ordered to be printed

[For text of Senate passed bill, see copy of bill as printed in the House of Representatives on May 3, 2017]

AN ACT

To improve understanding and forecasting of space weather
events, 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 “Space Weather Coordi-*
 5 *nation Act”.*

6 **SEC. 2. SPACE WEATHER.**

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

10 **“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.

11 **“§ 60601. Space weather findings; policy**

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

13 *“(1) Space weather events pose a significant*
 14 *threat to humans working in the space environment,*
 15 *to modern technological systems, and critical terres-*
 16 *trial infrastructure.*

17 *“(2) The effects of severe space weather events on*
 18 *the electric power grid, satellites and satellite commu-*
 19 *nications, services, orbits and information, airline op-*
 20 *erations, astronauts living and working in space, and*
 21 *space based position, navigation, and timing systems*

1 *could have significant societal, economic, national se-*
2 *curity, and health impacts.*

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

5 *“(4) Earth and space observations provide cru-*
6 *cial data necessary to predict and warn about space*
7 *weather events.*

8 *“(5) Clear roles and accountability of Federal*
9 *departments and agencies are critical for an efficient*
10 *and effective response to threats posed by space weath-*
11 *er.*

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

16 *“(7) Coordination and collaboration between*
17 *Federal departments and agencies, international*
18 *partners, the academic community, and the commer-*
19 *cial sector is necessary to improve the Nation’s ability*
20 *to understand, prepare for, avoid, mitigate, and re-*
21 *spond to severe space weather events.*

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

1 “(b) *STATEMENT OF NATIONAL POLICY.—It is the pol-*
 2 *icy of the United States that—*

3 “(1) *the United States should establish and*
 4 *maintain baseline capabilities for space weather ob-*
 5 *servaion and forecasting to protect civil aviation,*
 6 *space transportation, national security, human life,*
 7 *critical infrastructure, commercial enterprise, and*
 8 *economic vitality in the United States;*

9 “(2) *the establishment and maintenance of such*
 10 *baseline capabilities for space weather should, to the*
 11 *extent practicable, leverage the space weather observa-*
 12 *tion capabilities, data, and services of the academic*
 13 *community and commercial sector;*

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

17 “(4) *the Federal Government should, as prac-*
 18 *ticable, obtain space weather data and services*
 19 *through contracts with the commercial sector, when*
 20 *the data and services are available, cost-effective, and*
 21 *add value.*

22 **“§ 60602. *Space weather coordination***

23 “(a) *SENSE OF CONGRESS.—*

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

1 “(A) members of the National Space Coun-
2 cil are key stakeholders of the Federal Govern-
3 ment with respect to space weather;

4 “(B) the Users’ Advisory Group of the Na-
5 tional Space Council should effectively and effi-
6 ciently represent and advocate on behalf of non-
7 governmental organizations and the academic
8 community within the Nation’s space weather
9 enterprise; and

10 “(C) the National Space Council is the ap-
11 propriate Federal entity to review, establish, and
12 coordinate the Nation’s space weather priorities.

13 “(2) OFFICE OF SCIENCE AND TECHNOLOGY POL-
14 ICY.—It is the sense of Congress that the Office of
15 Science and Technology Policy—

16 “(A) efficiently and effectively identifies op-
17 portunities and avenues to advance the leader-
18 ship of the United States in science and tech-
19 nology; and

20 “(B) is well positioned to identify opportu-
21 nities for advancement in coordination of space
22 weather research-to-operations and operations-to-
23 research.

1 “(b) *COORDINATING AUTHORITY.*—*The National*
 2 *Space Council shall oversee efforts and activities of the Fed-*
 3 *eral Government—*

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

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

8 “(c) *NATIONAL COMMITTEE FOR SPACE WEATHER OB-*
 9 *SERVATION AND FORECASTING.—*

10 “(1) *ESTABLISHMENT.*—*In order to address the*
 11 *Nation’s space weather priorities and further coordi-*
 12 *nate efforts to monitor, prepare for, avoid, mitigate,*
 13 *and respond to space weather events, the President*
 14 *shall, in consultation with the Chair of the National*
 15 *Space Council—*

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

22 “(B) *establish one advisory committee for*
 23 *the purpose specified in paragraph (3)(B), the*
 24 *composition of which shall be determined by the*
 25 *Co-Chairs of the National Committee and shall*

1 *include equal representation from the academic*
 2 *community, commercial sector, and space weath-*
 3 *er end users.*

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

6 “(A) *be co-chaired by the Administrator of*
 7 *the National Aeronautics and Space Administra-*
 8 *tion, the Secretary of Defense, and the Secretary*
 9 *of Commerce, or their designated representatives,*
 10 *provided that such designated representatives are*
 11 *of the Under Secretary or Assistant Secretary*
 12 *level or higher;*

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

19 “(C) *be empowered, with the approval of the*
 20 *Chair of the National Space Council, to allow a*
 21 *relevant, non-member Federal department or*
 22 *agency to participate in meetings of the National*
 23 *Committee as either a non-permanent observer or*
 24 *semi-permanent liaison to the National Com-*
 25 *mittee.*

1 “(3) *DUTIES.*—

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

4 “(i) *To effectively and efficiently pro-*
 5 *mote coordination between Federal agencies,*
 6 *the academic community, and the commer-*
 7 *cial sector to advance the Nation’s space en-*
 8 *terprise.*

9 “(ii) *To coordinate the implementation*
 10 *of the national space weather plan devel-*
 11 *oped under section 60603(b) across the Fed-*
 12 *eral Government, in partnership with the*
 13 *academic community, international part-*
 14 *ners, and the commercial sector.*

15 “(iii) *To collaborate with the Director*
 16 *of the Office of Science and Technology Pol-*
 17 *icy to identify opportunities for the aca-*
 18 *demie community and commercial sectors to*
 19 *advance the understanding of space weath-*
 20 *er.*

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

1 “(i) the development and implementa-
 2 tion of the national space weather plan es-
 3 tablished under section 60603(b); and

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

8 “(d) *USER SURVEY*.—

9 “(1) *IN GENERAL*.—*The Chair of the National*
 10 *Space Council, in consultation with the heads of other*
 11 *relevant Federal agencies, the academic community,*
 12 *and the commercial sector, shall direct the Users’ Ad-*
 13 *visory Group of the Council to conduct a comprehen-*
 14 *sive survey to identify the space weather observation,*
 15 *research, modeling, forecasting, and prediction needs*
 16 *of the space weather user community.*

17 “(2) *SURVEY CONSIDERATIONS*.—*The survey con-*
 18 *ducted under paragraph (1) shall—*

19 “(A) *assess the adequacy of current Federal*
 20 *Government goals for lead time, accuracy, cov-*
 21 *erage, timeliness, data rate, and data quality for*
 22 *space weather observations and forecasting;*

23 “(B) *identify options and methods to, in*
 24 *consultation with the academic community and*

1 *the commercial sector, improve the goals speci-*
 2 *fied in subparagraph (A);*

3 *“(C) identify opportunities for the genera-*
 4 *tion of new data to address the needs of the space*
 5 *weather user community;*

6 *“(D) identify methods to increase coordina-*
 7 *tion of, with respect to space weather, research-*
 8 *to-operations and operations-to-research;*

9 *“(E) identify the most efficient and effective*
 10 *formal mechanism or mechanisms for the shar-*
 11 *ing of space weather data, operational fore-*
 12 *casting needs, research needs, findings, models,*
 13 *and capabilities between the Federal Govern-*
 14 *ment, the academic community, the commercial*
 15 *sector, and the space weather user community;*

16 *“(F) identify opportunities for new tech-*
 17 *nologies, research, and instrumentation to aid in*
 18 *research, understanding, monitoring, modeling,*
 19 *prediction, and forecasting of space weather; and*

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

23 *“(e) SPECIAL AUTHORITY.—In order to better under-*
 24 *stand space weather, the National Space Council may lever-*
 25 *age expertise from any Federal agency or partner, as*

1 *deemed appropriate by the Chair of the National Space*
 2 *Council, including through the use of—*

3 *“(1) interagency agreements;*

4 *“(2) memoranda of understanding; and*

5 *“(3) shared personnel.*

6 **“§ 60603. Space weather priorities, plan, and research**
 7 **roadmap**

8 *“(a) NATIONAL SPACE WEATHER PRIORITIES.—The*
 9 *National Space Council, in consultation with the Users’ Ad-*
 10 *visory Group of the National Space Council, the academic*
 11 *community, and the commercial sector, shall establish na-*
 12 *tional priorities for space weather, with respect to—*

13 *“(1) the protection of life and property;*

14 *“(2) the support of the leadership, economic de-*
 15 *velopment, and national security of the United States;*
 16 *and*

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

19 *“(b) NATIONAL SPACE WEATHER PLAN.—The Na-*
 20 *tional Committee shall develop a national space weather*
 21 *plan to implement the priorities established under sub-*
 22 *section (a). Such plan shall, with respect to activities car-*
 23 *ried out to meet such priorities—*

24 *“(1) delineate appropriate roles among Federal*
 25 *agencies;*

1 “(2) consider small satellite options, hosted pay-
2 loads, public-private partnerships, and commercial
3 options such as data-buys, and other acquisition ap-
4 proaches, that maximize Federal investment and min-
5 imize overall costs to the Federal Government;

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

9 “(4) describe collaborative opportunities with
10 stakeholders, including the academic community, non-
11 governmental organizations, the commercial sector,
12 and foreign governments;

13 “(5) leverage the work conducted through the Na-
14 tional Space Weather Strategy and National Space
15 Weather Action Plan of the National Science and
16 Technology Council before the date of the enactment
17 of this section;

18 “(6) include a formal mechanism to share oper-
19 ational needs of space weather forecasters with Fed-
20 eral agencies engaged in space weather research and
21 development activities, the academic community, and
22 the commercial sector; and

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

1 “(c) *NATIONAL SPACE WEATHER RESEARCH ROAD-*
 2 *MAP.—The Director of the Office of Science and Technology*
 3 *Policy shall issue a national space weather research road-*
 4 *map that—*

5 “(1) *considers the national space weather prior-*
 6 *ities established under subsection (a);*

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

9 “(3) *considers the National Academy of Sciences,*
 10 *Engineering, and Medicine’s decadal survey rec-*
 11 *ommendations;*

12 “(4) *includes a formal mechanism that provides*
 13 *for the sharing of the research needs, findings, models,*
 14 *and capabilities with space weather operational fore-*
 15 *casting centers; and*

16 “(5) *enhances coordination between research*
 17 *modeling centers, forecasting centers, and the commer-*
 18 *cial sector.*

19 **“§ 60604. *Space weather reports***

20 “(a) *SURVEY AND PRIORITIES.—Not later than 180*
 21 *days after the date of enactment of the Space Weather Co-*
 22 *ordination Act, the Chair of the National Space Council*
 23 *shall submit to the Committee on Science, Space, and Tech-*
 24 *nology of the House of Representatives and the Committee*

1 *on Commerce, Science, and Transportation of the Senate,*
2 *a report on—*

3 “(1) *the findings of the user survey under section*
4 *60602(d); and*

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

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

15 “(c) *NATIONAL SPACE WEATHER RESEARCH ROAD-*
16 *MAP.—Not later than one year after the date of enactment*
17 *of the Space Weather Coordination Act, the Director of the*
18 *Office of Science and Technology Policy shall submit to the*
19 *Committee on Science, Space, and Technology of the House*
20 *of Representatives and the Committee on Commerce,*
21 *Science, and Transportation of the Senate, the national*
22 *space weather research roadmap issued under section*
23 *60603(c).*

24 “(d) *REVALUATION OF CONTENT.—Not later than one*
25 *year after the date on which each Presidential term begins,*

1 *as well as when determined to be necessary by the Chair*
 2 *of the National Space Council during the intervening years,*
 3 *the applicable entities shall review and assess the content*
 4 *previously developed under this section and update and re-*
 5 *submit such content when appropriate.*

6 **“§ 60605. Pilot program for obtaining commercial sec-**
 7 **tor space weather data**

8 “(a) *PILOT PROGRAM.*—

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

20 “(2) *DATA STANDARDS AND SPECIFICATIONS.*—

21 *Not later than one year after the date of the enact-*
 22 *ment of the Space Weather Coordination Act, the Sec-*
 23 *retary shall publish standards and specifications for*
 24 *ground-based, ocean-based, air-based, and space-based*
 25 *commercial space weather data and metadata.*

1 “(3) *CONTRACTS.*—

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

9 “(i) *meets the standards and specifica-*
 10 *tions established by the Secretary for pro-*
 11 *viding such data; and*

12 “(ii) *is provided in a manner that al-*
 13 *lows the Secretary to calibrate and evaluate*
 14 *the data for use in space weather research*
 15 *and forecasting models of the National Oce-*
 16 *anic and Atmospheric Administration.*

17 “(B) *ASSESSMENT.*—*Not later than the date*
 18 *that is 3 years after the date on which the Sec-*
 19 *retary enters into a contract under subpara-*
 20 *graph (A), the Secretary shall assess, and submit*
 21 *to the Committee on Science, Space, and Tech-*
 22 *nology of the House of Representatives and the*
 23 *Committee on Commerce, Science, and Transpor-*
 24 *tation of the Senate a report on, the extent to*
 25 *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 “(1) the purchase of space weather data through
2 contracts with commercial providers; and

3 “(2) the placement of space weather satellite in-
4 struments on payloads co-hosted by the Federal Gov-
5 ernment and the commercial sector.

6 “(c) *OBTAINING FUTURE DATA.*—If an assessment
7 under subsection (a)(3)(B) demonstrates the ability of com-
8 mercial space weather data to meet data and metadata
9 standards and specifications published under subsection
10 (a)(2), the Secretary shall—

11 “(1) where appropriate, cost-effective, and fea-
12 sible, obtain space weather data from commercial sec-
13 tor providers;

14 “(2) as early as possible in the acquisition proc-
15 ess for any future National Oceanic and Atmospheric
16 Administration space weather observational capa-
17 bility, consider whether a suitable, cost-effective, com-
18 mercial capability is or will be available to meet the
19 observational requirements by the planned oper-
20 ational date of the system;

21 “(3) if a suitable, cost-effective, commercial capa-
22 bility is or will be available as described in para-
23 graph (2), determine whether it is in the national in-
24 terest to develop a governmental observational capa-
25 bility; and

1 “(4) *submit to the Committee on Science, Space,*
 2 *and Technology of the House of Representatives and*
 3 *the Committee on Commerce, Science, and Transpor-*
 4 *tation of the Senate a report detailing any deter-*
 5 *mination made under paragraph (2) or (3).*

6 “(d) *DATA SHARING PRACTICES.—*

7 “(1) *IN GENERAL.—The Secretary shall, to the*
 8 *extent practicable, leverage United States leadership*
 9 *in space weather observation and forecasting to*
 10 *incentivize international partners to increase their*
 11 *space weather observational and forecasting capabili-*
 12 *ties and contribute additional space weather observa-*
 13 *tions, data, models, predictions, and forecasts. The*
 14 *Under Secretary shall continue to meet international*
 15 *data sharing agreements entered into prior to the date*
 16 *of enactment of this Act.*

17 “(2) *NASA AND NSF DATA.—The Administrator*
 18 *of the National Aeronautics and Space Administra-*
 19 *tion and the Director of the National Science Foun-*
 20 *dation shall each make space weather related data ob-*
 21 *tained for scientific research purposes available to*
 22 *space weather forecasters, operations centers, and the*
 23 *commercial sector and support model development*
 24 *and model applications for space weather forecasting.*

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

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

11 **“§ 60606. Definitions**

12 *“In this chapter:*

13 “(1) *NATIONAL SPACE COUNCIL.*—*The term ‘Na-*
 14 *tional Space Council’ means the National Space*
 15 *Council established under Executive Order 13803, (82*
 16 *Fed. Reg. 31429, relating to establishment of National*
 17 *Space Council) or any successor entities as deter-*
 18 *mined by the President.’.”.*

19 (b) *TECHNICAL AND CONFORMING AMENDMENTS.*—

20 (1) *CONFORMING REPEAL.*—*Section 809 of the*
 21 *National Aeronautics and Space Administration Au-*
 22 *thorization Act of 2010 (42 U.S.C. 18388) and the*
 23 *item relating to that section in the table of contents*
 24 *under section 1(b) of that Act (124 Stat. 2806) are*
 25 *repealed.*

- 1 (2) *TABLE OF CHAPTERS.*—*The table of chapters*
 2 *of title 51, United States Code, is amended by adding*
 3 *after the item relating to chapter 605 the following:*
 “606. Space Weather60601”.

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.”.

Union Calendar No. 896

115TH CONGRESS
2^D Session

S. 141

[Report No. 115-1128, Part I]

AN ACT

To improve understanding and forecasting of space weather events, and for other purposes.

JANUARY 3, 2019

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Committees on Armed Services, Transportation and Infrastructure, Foreign Affairs, and the Permanent Select Committee on Intelligence discharged; committed to the Committee of the Whole House on the State of the Union and ordered to be printed