

AMENDMENT IN THE NATURE OF A SUBSTITUTE
TO S.141
OFFERED BY MR. ~~PERLMUTER~~

Strike all after the enacting clause and insert the following:

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Space Weather Coordi-
3 nation Act”.

4 **SEC. 2. SPACE WEATHER.**

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

8 **“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.

9 **“§ 60601. Space weather findings; policy**

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

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

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

8 “(3) Earth and space observations provide cru-
9 cial data necessary to predict and warn about space
10 weather events.

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

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

19 “(6) Coordination and collaboration between
20 Federal departments and agencies, international
21 partners, the academic community, and the commer-
22 cial sector is necessary to improve the Nation’s abil-
23 ity to understand, prepare for, avoid, mitigate, and
24 respond to severe space weather events.

1 “(7) The commercial sector should be solicited
2 to support and enable Federal space weather activi-
3 ties and encouraged to provide and separately invest
4 in innovative space weather data and services.

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

7 “(1) the United States should establish and
8 maintain baseline capabilities for space weather ob-
9 servation and forecasting to protect civil aviation,
10 space transportation, national security, human life,
11 critical infrastructure, commercial enterprise, and
12 economic vitality in the United States;

13 “(2) the establishment and maintenance of such
14 baseline capabilities for space weather should, to the
15 extent practicable, leverage the space weather obser-
16 vation capabilities, data, and services of the aca-
17 demic community and commercial sector;

18 “(3) space weather observation and forecasting
19 are not exclusive functions of the Federal Govern-
20 ment; and

21 “(4) the Federal Government should, as prac-
22 ticable, obtain space weather data and services
23 through contracts with the commercial sector, when
24 the data and services are available, cost-effective,
25 and add value.

1 **“§ 60602. Space weather coordination**

2 “(a) SENSE OF CONGRESS.—

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

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

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

14 “(C) the National Space Council is the ap-
15 propriate Federal entity to review, establish,
16 and coordinate the Nation’s space weather pri-
17 orities.

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

21 “(A) efficiently and effectively identifies
22 opportunities and avenues to advance the lead-
23 ership of the United States in science and tech-
24 nology; and

25 “(B) is well positioned to identify opportu-
26 nities for advancement in coordination of space

1 weather research-to-operations and operations-
2 to-research.

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

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

8 “(2) to prepare for, avoid, mitigate, and re-
9 spond to space weather events.

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

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

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

24 “(B) establish one advisory committee for
25 the purpose specified in paragraph (3)(B), the

1 composition of which shall be determined by the
2 Co-Chairs of the National Committee and shall
3 include equal representation from the academic
4 community, commercial sector, and space
5 weather end users.

6 “(2) NATIONAL COMMITTEE COMPOSITION.—

7 The National Committee shall—

8 “(A) be co-chaired by the Administrator of
9 the National Aeronautics and Space Adminis-
10 tration, the Secretary of Defense, and the Sec-
11 retary of Commerce, or their designated rep-
12 resentatives, provided that such designated rep-
13 resentatives are of the Under Secretary or As-
14 sistant Secretary level or higher;

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

22 “(C) be empowered, with the approval of
23 the Chair of the National Space Council, to
24 allow a relevant, non-member Federal depart-
25 ment or agency to participate in meetings of

1 the National Committee as either a non-perma-
2 nent observer or semi-permanent liaison to the
3 National Committee.

4 “(3) DUTIES.—

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

7 “(i) To effectively and efficiently pro-
8 mote coordination between Federal agen-
9 cies, the academic community, and the
10 commercial sector to advance the Nation’s
11 space enterprise.

12 “(ii) To coordinate the implementa-
13 tion of the national space weather plan de-
14 veloped under section 60603(b) across the
15 Federal Government, in partnership with
16 the academic community, international
17 partners, and the commercial sector.

18 “(iii) To collaborate with the Director
19 of the Office of Science and Technology
20 Policy to identify opportunities for the aca-
21 demic community and commercial sectors
22 to advance the understanding of space
23 weather.

24 “(B) ADVISORY COMMITTEES.—The duty
25 of the advisory committee established pursuant

1 to paragraph (1)(B) shall be to advise the Na-
2 tional Committee with respect to—

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

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

10 “(d) USER SURVEY.—

11 “(1) IN GENERAL.—The Chair of the National
12 Space Council, in consultation with the heads of
13 other relevant Federal agencies, the academic com-
14 munity, and the commercial sector, shall direct the
15 Users’ Advisory Group of the Council to conduct a
16 comprehensive survey to identify the space weather
17 observation, research, modeling, forecasting, and
18 prediction needs of the space weather user commu-
19 nity.

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

22 “(A) assess the adequacy of current Fed-
23 eral Government goals for lead time, accuracy,
24 coverage, timeliness, data rate, and data quality
25 for space weather observations and forecasting;

1 “(B) identify options and methods to, in
2 consultation with the academic community and
3 the commercial sector, improve the goals speci-
4 fied in subparagraph (A);

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

8 “(D) identify methods to increase coordi-
9 nation of, with respect to space weather, re-
10 search-to-operations and operations-to-research;

11 “(E) identify the most efficient and effec-
12 tive formal mechanism or mechanisms for the
13 sharing of space weather data, operational fore-
14 casting needs, research needs, findings, models,
15 and capabilities between the Federal Govern-
16 ment, the academic community, the commercial
17 sector, and the space weather user community;

18 “(F) identify opportunities for new tech-
19 nologies, research, and instrumentation to aid
20 in research, understanding, monitoring, mod-
21 eling, prediction, and forecasting of space
22 weather; and

23 “(G) identify methods and technologies to
24 improve preparedness for potential space weath-
25 er events.

1 “(e) SPECIAL AUTHORITY.—In order to better under-
2 stand space weather, the National Space Council may le-
3 verage expertise from any Federal agency or partner, as
4 deemed appropriate by the Chair of the National Space
5 Council, including through the use of—

6 “(1) interagency agreements;

7 “(2) memoranda of understanding; and

8 “(3) shared personnel.

9 **“§ 60603. Space weather priorities, plan, and research**
10 **roadmap**

11 “(a) NATIONAL SPACE WEATHER PRIORITIES.—The
12 National Space Council, in consultation with the Users’
13 Advisory Group of the National Space Council, the aca-
14 demic community, and the commercial sector, shall estab-
15 lish national priorities for space weather, with respect to—

16 “(1) the protection of life and property;

17 “(2) the support of the leadership, economic de-
18 velopment, and national security of the United
19 States; and

20 “(3) the space weather prediction and fore-
21 casting needs of end-users.

22 “(b) NATIONAL SPACE WEATHER PLAN.—The Na-
23 tional Committee shall develop a national space weather
24 plan to implement the priorities established under sub-

1 section (a). Such plan shall, with respect to activities car-
2 ried out to meet such priorities—

3 “(1) delineate appropriate roles among Federal
4 agencies;

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

10 “(3) identify specific research and development
11 activities and performance metrics needed to im-
12 prove operational space weather forecasting;

13 “(4) describe collaborative opportunities with
14 stakeholders, including the academic community,
15 nongovernmental organizations, the commercial sec-
16 tor, and foreign governments;

17 “(5) leverage the work conducted through the
18 National Space Weather Strategy and National
19 Space Weather Action Plan of the National Science
20 and Technology Council before the date of the enact-
21 ment of this section;

22 “(6) include a formal mechanism to share oper-
23 ational needs of space weather forecasters to the
24 academic community and commercial sector; and

1 “(7) appropriately prioritize the critical land-
2 based, sea-based, air-based, or space-based observa-
3 tion capabilities.

4 “(c) NATIONAL SPACE WEATHER RESEARCH ROAD-
5 MAP.—The Director of the Office of Science and Tech-
6 nology Policy shall issue a national space weather research
7 roadmap that—

8 “(1) considers the national space weather prior-
9 ities established under subsection (a);

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

12 “(3) considers the National Academy of
13 Sciences’ decadal survey recommendations;

14 “(4) includes a formal mechanism that provides
15 for the sharing of the research needs, findings, mod-
16 els, and capabilities with space weather operational
17 forecasting centers; and

18 “(5) enhances coordination between research
19 modeling centers, forecasting centers, and the com-
20 mercial sector.

21 **“§ 60604. Space weather reports**

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

1 Technology of the House of Representatives and the Com-
2 mittee on Commerce, Science, and Transportation of the
3 Senate, a report on—

4 “(1) the findings of the user survey under sec-
5 tion 60602(d); and

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

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

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

1 **“§ 60605. Pilot program for obtaining commercial sec-**
2 **tor space weather data**

3 “(a) PILOT PROGRAM.—

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

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

22 “(3) CONTRACTS.—

23 “(A) IN GENERAL.—Not later than 18
24 months after the date of enactment of the
25 Space Weather Coordination Act, the Secretary
26 shall offer to enter, through an open competi-

1 tion, into at least one contract with one or more
2 commercial sector entities capable of providing
3 space weather data that—

4 “(i) meets the standards and speci-
5 fications established by the Secretary for
6 providing such data; and

7 “(ii) is provided in a manner that al-
8 lows the Secretary to calibrate and evalu-
9 ate the data for use in space weather re-
10 search and forecasting models of the Na-
11 tional Oceanic and Atmospheric Adminis-
12 tration.

13 “(B) ASSESSMENT.—Not later than the
14 date that is 3 years after the date on which the
15 Secretary enters into a contract under subpara-
16 graph (A), the Secretary shall assess, and sub-
17 mit to the Committee on Science, Space, and
18 Technology of the House of Representatives
19 and the Committee on Commerce, Science, and
20 Transportation of the Senate a report on, the
21 extent to which data provided under such con-
22 tract meet the standards and specifications es-
23 tablished under paragraph (1) and the extent to
24 which the pilot program has demonstrated—

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

6 “(ii) whether, and by how much, the
7 data so provided add value to space weath-
8 er forecasts of the National Oceanic and
9 Atmospheric Administration; and

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

15 “(4) AUTHORIZATION OF APPROPRIATIONS.—
16 There are authorized to be appropriated to carry out
17 this subsection \$6,000,000 for each of fiscal years
18 2019 through 2022, to remain available until ex-
19 pended.

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

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

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

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

9 “(1) where appropriate, cost-effective, and fea-
10 sible, obtain space weather data from commercial
11 sector providers;

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

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

24 “(4) submit to the Committee on Science,
25 Space, and Technology of the House of Representa-

1 tives and the Committee on Commerce, Science, and
2 Transportation of the Senate a report detailing any
3 determination made under paragraph (2) or (3).

4 “(d) DATA SHARING PRACTICES.—

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

15 “(2) NASA AND NSF DATA.—The Adminis-
16 trator of the National Aeronautics and Space Ad-
17 ministration and the Director of the National
18 Science Foundation shall each make space weather
19 related data obtained for scientific research purposes
20 available to space weather forecasters, operations
21 centers, and the commercial sector and support
22 model development and model applications for space
23 weather forecasting.

1 “(3) NOAA DATA.—The Secretary shall make
2 space weather related data obtained from oper-
3 ational forecasting available for scientific research.

4 “(e) RESEARCH FOR IMPROVED SPACE WEATHER
5 FORECASTING.—The Secretary, the Director of the Na-
6 tional Science Foundation, and the Administrator of the
7 National Aeronautics and Space Administration shall sup-
8 port research on observation, technologies, and instrumen-
9 tation which could improve space weather forecasting lead
10 time and accuracy.

11 **“§ 60606. Definitions**

12 “In this chapter:

13 “(1) NATIONAL SPACE COUNCIL.—The term
14 ‘National Space Council’ means the National Space
15 Council established under Executive Order 13803,
16 (82 Fed. Reg. 31429, relating to establishment of
17 National Space Council) or any successor entities as
18 determined 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 chap-
2 ters of title 51, United States Code, is amended by
3 adding after the item relating to chapter 605 the fol-
4 lowing:

“606. Space weather60601”.

 Amend the title so as to read: “An Act to improve
understanding and forecasting of space weather and pro-
mote coordination between stakeholders, and for other
purposes.”.

