

and shall emphasize the participation of undergraduate and graduate students and post-doctoral researchers when formulating announcements of opportunity.

**(d) Report**

The Administrator shall report to the appropriate committees of Congress on the number and type of suborbital missions conducted in each fiscal year and the number of undergraduate and graduate students participating in the missions. The report shall be made annually for each fiscal year under this section.

**(e) Authorization**

There are authorized to be appropriated to the Administrator such sums as may be necessary to carry out this section.

(Pub. L. 111–267, title VIII, § 802, Oct. 11, 2010, 124 Stat. 2832.)

**§ 18383. In-space servicing**

The Administrator shall continue to take all necessary steps to ensure that provisions are made for in-space or human servicing and repair of all future observatory-class scientific spacecraft intended to be deployed in Earth-orbit or at a Lagrangian point to the extent practicable and appropriate. The Administrator should ensure that agency investments and future capabilities for space technology, robotics, and human space flight take the ability to service and repair these spacecraft into account, where appropriate, and incorporate such capabilities into design and operational plans.

(Pub. L. 111–267, title VIII, § 804, Oct. 11, 2010, 124 Stat. 2833.)

**§ 18384. Decadal results**

NASA shall take into account the current decadal surveys from the National Academies' Space Studies Board when submitting the President's budget request to the Congress.

(Pub. L. 111–267, title VIII, § 805, Oct. 11, 2010, 124 Stat. 2833.)

**§ 18385. On-going restoration of radioisotope thermoelectric generator material production**

**(a) Findings**

The Congress finds the following:

(1) The United States has led the world in the scientific exploration of space for nearly 50 years.

(2) Missions such as Viking, Voyager, Cassini, and New Horizons have greatly expanded knowledge of our solar system and planetary characteristics and evolution.

(3) Radioisotope power systems are the only available power sources for deep space missions making it possible to travel to such distant destinations as Mars, Jupiter, Saturn, Pluto, and beyond and maintain operational control and systems viability for extended mission durations.

(4) Current radioisotope power systems supplies and production will not fully support NASA missions planned even in the next decade and, without a new domestic production

capability, the United States will no longer have the means to explore the majority of the solar system by the end of this decade.

(5) Continuing to rely on Russia or other foreign sources for radioisotope power system fuel production is not a secure option.

(6) Reestablishing domestic production will require a long lead-time. Thus, meeting future space exploration mission needs requires that a restart project begin at the earliest opportunity.

**(b) In general**

The Administrator shall, in coordination with the Secretary of Energy, pursue a joint approach beginning in fiscal year 2011 towards restarting and sustaining the domestic production of radioisotope thermoelectric generator material for deep space and other science and exploration missions. Funds authorized by this chapter for NASA shall be made available under a reimbursable agreement with the Department of Energy for the purpose of reestablishing facilities to produce fuel required for radioisotope thermoelectric generators to enable future missions.

**(c) Report**

Within 120 days after October 11, 2010, the Administrator and the Secretary of Energy shall submit a joint report to the appropriate committees of Congress on coordinated agreements, planned implementation, and anticipated schedule, production quantities, and mission applications under this section.

(Pub. L. 111–267, title VIII, § 806, Oct. 11, 2010, 124 Stat. 2833.)

**§ 18386. Collaboration with ESMD and SOMD on robotic missions**

The Administrator shall ensure that the Exploration Systems Mission Directorate and the Space Operations Mission Directorate coordinate with the Science Mission Directorate on an overall approach and plan for interagency and international collaboration on robotic missions that are NASA or internationally developed, including lunar, Lagrangian, near-Earth orbit, and Mars spacecraft, such as the International Lunar Network. Within 90 days after October 11, 2010, the Administrator shall provide a plan to the appropriate committees of Congress for implementation of the collaborative approach required by this section. The Administrator may not cancel or initiate any Exploration Systems Mission Directorate or Science Mission Directorate robotic project before the plan is submitted to the appropriate committees of Congress.

(Pub. L. 111–267, title VIII, § 807, Oct. 11, 2010, 124 Stat. 2834.)

**§ 18387. Near-Earth object survey and policy with respect to threats posed**

**(a) Policy reaffirmation**

Congress reaffirms the policy set forth in section 20102(g) of title 51 relating to surveying near-Earth asteroids and comets.

**(b) Implementation**

The Director of the OSTP shall implement, before September 30, 2012, a policy for notifying

Federal agencies and relevant emergency response institutions of an impending near-Earth object threat if near-term public safety is at risk, and assign a Federal agency or agencies to be responsible for protecting the United States and working with the international community on such threats.

(Pub. L. 111–267, title VIII, § 808, Oct. 11, 2010, 124 Stat. 2834.)

#### CODIFICATION

In subsec. (a), “section 20102(g) of title 51” substituted for “section 102(g) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2451(g))” on authority of Pub. L. 111–314, § 5(e), Dec. 18, 2010, 124 Stat. 3443, which Act enacted Title 51, National and Commercial Space Programs.

### § 18388. 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 October 11, 2010, 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.

(Pub. L. 111–267, title VIII, § 809, Oct. 11, 2010, 124 Stat. 2834.)

#### EX. ORD. NO. 13744. COORDINATING EFFORTS TO PREPARE THE NATION FOR SPACE WEATHER EVENTS

Ex. Ord. No. 13744, Oct. 13, 2016, 81 F.R. 71573, provided:

By the authority vested in me as President by the Constitution and the laws of the United States of America, and to prepare the Nation for space weather events, it is hereby ordered as follows:

SECTION 1. *Policy.* Space weather events, in the form of solar flares, solar energetic particles, and geomagnetic disturbances, occur regularly, some with measurable effects on critical infrastructure systems and technologies, such as the Global Positioning System (GPS), satellite operations and communication, aviation, and the electrical power grid. Extreme space weather events—those that could significantly degrade critical infrastructure—could disable large portions of the electrical power grid, resulting in cascading failures that would affect key services such as water supply, healthcare, and transportation. Space weather has the potential to simultaneously affect and disrupt health and safety across entire continents. Successfully preparing for space weather events is an all-of-nation endeavor that requires partnerships across governments, emergency managers, academia, the media, the insurance industry, non-profits, and the private sector.

It is the policy of the United States to prepare for space weather events to minimize the extent of economic loss and human hardship. The Federal Government must have (1) the capability to predict and detect a space weather event, (2) the plans and programs necessary to alert the public and private sectors to enable mitigating actions for an impending space weather event, (3) the protection and mitigation plans, protocols, and standards required to reduce risks to critical infrastructure prior to and during a credible threat, and (4) the ability to respond to and recover from the effects of space weather. Executive departments and agencies (agencies) must coordinate their efforts to prepare for the effects of space weather events.

SEC. 2. *Objectives.* This order defines agency roles and responsibilities and directs agencies to take specific actions to prepare the Nation for the hazardous effects of space weather. These activities are to be implemented in conjunction with those identified in the 2015 National Space Weather Action Plan (Action Plan) and any subsequent updates. Implementing this order and the Action Plan will require the Federal Government to work across agencies and to develop, as appropriate, enhanced and innovative partnerships with State, tribal, and local governments; academia; non-profits; the private sector; and international partners. These efforts will enhance national preparedness and speed the creation of a space-weather-ready Nation.

SEC. 3. *Coordination.* (a) The Director of the Office of Science and Technology Policy (OSTP), in consultation with the Assistant to the President for Homeland Security and Counterterrorism and the Director of the Office of Management and Budget (OMB), shall coordinate the development and implementation of Federal Government activities to prepare the Nation for space weather events, including the activities established in section 5 of this order and the recommendations of the National Science and Technology Council (NSTC), established by Executive Order 12881 of November 23, 1993 (Establishment of the National Science and Technology Council).

(b) To ensure accountability for and coordination of research, development, and implementation of activities identified in this order and in the Action Plan, the NSTC shall establish a Space Weather Operations, Research, and Mitigation Subcommittee (Subcommittee). The Subcommittee member agencies shall conduct activities to advance the implementation of this order, to achieve the goals identified in the 2015 National Space Weather Strategy and any subsequent updates, and to coordinate and monitor the implementation of the activities specified in the Action Plan and provide subsequent updates.

SEC. 4. *Roles and Responsibilities.* To the extent permitted by law, the agencies below shall adopt the following roles and responsibilities, which are key to ensuring enhanced space weather forecasting, situational awareness, space weather preparedness, and continuous Federal Government operations during and after space weather events.

(a) The Secretary of Defense shall ensure the timely provision of operational space weather observations,