

116TH CONGRESS
2^D SESSION

S. 529

AN ACT

To establish a national program to identify and reduce losses from landslide hazards, to establish a national 3D Elevation Program, 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,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “National Landslide
3 Preparedness Act”.

4 **SEC. 2. DEFINITIONS.**

5 In this Act:

6 (1) 3D.—The term “3D” means 3-dimensional.

7 (2) 3D ELEVATION DATA.—

8 (A) IN GENERAL.—The term “3D ele-
9 vation data” means 3D, high-resolution data
10 obtained using LiDAR, IfSAR, or other meth-
11 ods over the United States (including terri-
12 tories).

13 (B) INCLUSIONS.—The term “3D elevation
14 data” includes terrestrial and bathymetric ele-
15 vation data.

16 (3) 3D ELEVATION PROGRAM.—The term “3D
17 Elevation Program” means the 3D Elevation Pro-
18 gram established under section 5(a).

19 (4) IfSAR.—The term “IfSAR” means
20 interferometric synthetic aperture radar.

21 (5) INDIAN TRIBE.—The term “Indian tribe”
22 has the meaning given the term in section 4 of the
23 Indian Self-Determination and Education Assistance
24 Act (25 U.S.C. 5304).

25 (6) LAHAR.—The term “lahar” means a large
26 debris flow of mostly volcanic material that is—

1 (A) often fast-moving; and

2 (B) a hazard in watersheds downstream of
3 volcanic peaks.

4 (7) LIDAR.—The term “LiDAR” means light
5 detection and ranging.

6 (8) SECRETARY.—The term “Secretary” means
7 the Secretary of the Interior, acting through the Di-
8 rector of the United States Geological Survey.

9 (9) STATE.—The term “State” means—

10 (A) a State; and

11 (B) the District of Columbia.

12 (10) STATE OFFICE.—The term “State office”
13 means any unit of State government that handles
14 the identification, mapping, assessment, and re-
15 search of landslide hazards or responding to land-
16 slide events, including—

17 (A) a State geological survey office;

18 (B) a State department of emergency re-
19 sponse; and

20 (C) a State department of transportation.

21 (11) TERRITORY.—The term “territory”
22 means—

23 (A) the Commonwealth of Puerto Rico;

24 (B) Guam;

25 (C) American Samoa;

1 (D) the Commonwealth of the Northern
2 Mariana Islands;

3 (E) the Federated States of Micronesia;

4 (F) the Republic of the Marshall Islands;

5 (G) the Republic of Palau; and

6 (H) the United States Virgin Islands.

7 **SEC. 3. NATIONAL LANDSLIDE HAZARDS REDUCTION PRO-**
8 **GRAM.**

9 (a) ESTABLISHMENT.—The Secretary shall establish
10 a program, to be known as the “National Landslide Haz-
11 ards Reduction Program” (referred to in this section as
12 the “program”)—

13 (1) to identify and understand landslide haz-
14 ards and risks;

15 (2) to reduce losses from landslides;

16 (3) to protect communities at risk of landslide
17 hazards; and

18 (4) to help improve communication and emer-
19 gency preparedness, including by coordinating with
20 communities and entities responsible for infrastruc-
21 ture that are at risk of landslide hazards.

22 (b) DESCRIPTION OF PROGRAM.—

23 (1) PROGRAM ACTIVITIES.—The Secretary, in
24 coordination with the Interagency Coordinating
25 Committee on Landslide Hazards established by

1 subsection (c)(1) (referred to in this section as the
2 “Committee”) and in coordination with existing ac-
3 tivities of the United States Geological Survey and
4 other Federal agencies, shall—

5 (A) identify, map, assess, and research
6 landslide hazards;

7 (B) respond to landslide events; and

8 (C) in coordination with State offices,
9 units of local government, territories, and In-
10 dian tribes—

11 (i) establish working groups with
12 State offices, units of local government,
13 territories, and Indian tribes to identify re-
14 gional and local priorities for researching,
15 identifying, mapping, and assessing land-
16 slide hazards; and

17 (ii) develop and implement landslide
18 hazard guidelines for—

19 (I) geologists;

20 (II) geological and geotechnical
21 engineers;

22 (III) emergency management
23 personnel; and

24 (IV) land use and other decision-
25 makers.

1 (2) NATIONAL STRATEGY.—Not later than 1
2 year after the date of enactment of this Act, and
3 every 5 years thereafter, the Secretary, in coordina-
4 tion with the Committee, shall develop and publish
5 a national strategy for landslide hazards, risk reduc-
6 tion, and response in the United States (including
7 territories), which shall include—

8 (A) goals and priorities for the program;

9 (B) priorities for data acquisition, re-
10 search, communications, and risk management
11 on landslides and landslide hazards across rel-
12 evant Federal agencies; and

13 (C) a detailed interagency plan, which shall
14 take into consideration national disaster pre-
15 paredness, response, and recovery frameworks,
16 to carry out the national strategy, including de-
17 tails about the programs, projects, and budgets
18 that will be used to implement the national
19 strategy.

20 (3) NATIONAL LANDSLIDE HAZARDS DATA-
21 BASE.—In carrying out the program, the Secretary,
22 in coordination with State offices, units of local gov-
23 ernment, territories, and Indian tribes, shall develop
24 and maintain a publicly accessible national landslide
25 hazard and risk inventory database to compile,

1 maintain, standardize, and evaluate data regard-
2 ing—

3 (A) landslide hazards and risks;

4 (B) the impact of landslides on—

5 (i) health and safety;

6 (ii) the economy and infrastructure;

7 and

8 (iii) the environment;

9 (C) landslide hazard stabilization; and

10 (D) reduction of losses from landslides.

11 (4) LANDSLIDE HAZARD AND RISK PREPARED-
12 NESS FOR COMMUNITIES.—In carrying out the pro-
13 gram, the Secretary, in coordination with the Sec-
14 retary of the Army, the Secretary of Commerce, the
15 Secretary of Homeland Security, the Secretary of
16 Transportation, and the heads of other relevant Fed-
17 eral agencies, and in consultation with State offices,
18 units of local government, territories, and Indian
19 tribes, shall develop and disseminate—

20 (A) landslide planning and risk reduction
21 guidance, guidelines, maps, tools, and training
22 materials to help inform State, territorial, local,
23 and Tribal governments and decisionmakers
24 with respect to—

1 (i) the use and implementation of
2 landslide hazard assessments;

3 (ii) the applied use of the database
4 developed under paragraph (3);

5 (iii) reducing losses from landslides;
6 and

7 (iv) resources available for commu-
8 nities working to improve landslide hazard
9 preparedness; and

10 (B) landslide preparedness curricula and
11 training modules for—

12 (i) State, territorial, local, and Tribal
13 officials;

14 (ii) Federal, State, territorial, local,
15 and Tribal emergency managers; and

16 (iii) the National Guard.

17 (5) DEBRIS FLOW EARLY WARNING SYSTEM.—

18 In carrying out the program, the Secretary, in co-
19 ordination with the Secretary of Commerce and the
20 Secretary of Homeland Security, shall expand the
21 early warning system for debris flow by—

22 (A) expanding the early warning system
23 for post-wildfire debris flow to include recently
24 burned areas across the western United States;

1 (B) developing procedures with State, ter-
2 ritorial, local, and Tribal governments to mon-
3 itor stormwater drainage in areas with high de-
4bris flow risk; and

5 (C) identifying high-risk debris flow areas,
6 such as recently burned land and potential
7 lahar hazard areas.

8 (6) EMERGENCY RESPONSE ACTIVITIES.—In
9 carrying out the program, the Secretary, in coordi-
10 nation with the Secretary of Commerce, the Sec-
11 retary of Homeland Security, the heads of other rel-
12 evant Federal agencies, States offices, units of local
13 government, territories, and Indian tribes, shall es-
14 tablish and support emergency response procedures
15 for the rapid deployment of Federal scientists,
16 equipment, and services to areas impacted by a sig-
17 nificant landslide event—

18 (A) to support emergency response efforts
19 and improve the safety of emergency respond-
20 ers;

21 (B) to improve data collection; and

22 (C) to conduct research to advance the un-
23 derstanding of the causes, impacts, and reduc-
24 tion of landslide hazards and risks.

1 (c) INTERAGENCY COORDINATING COMMITTEE ON
2 LANDSLIDE HAZARDS.—

3 (1) IN GENERAL.—There is established a com-
4 mittee, to be known as the “Interagency Coordi-
5 nating Committee on Landslide Hazards”.

6 (2) MEMBERSHIP.—The Committee shall be
7 composed of the following members (or their des-
8 ignees):

9 (A) The Secretary, who shall serve as
10 Chairperson of the Committee.

11 (B) The Secretary of Agriculture.

12 (C) The Secretary of the Army.

13 (D) The Secretary of Commerce.

14 (E) The Secretary of Homeland Security.

15 (F) The Secretary of Transportation.

16 (G) The Director of the National Science
17 Foundation.

18 (H) The Director of the Office of Science
19 and Technology Policy.

20 (I) The Director of the Office of Manage-
21 ment and Budget.

22 (3) MEETINGS.—The Committee shall meet at
23 the call of the Chairperson.

24 (4) PURPOSE AND DUTIES.—The Committee
25 shall—

1 (A) advise and oversee the program;

2 (B) facilitate communication and coordina-
3 tion across Federal agencies in the planning,
4 management, budgeting, and execution of land-
5 slide activities; and

6 (C) support the development and execution
7 of the national strategy under subsection (b)(2),
8 including by—

9 (i) supporting the development of na-
10 tional goals and priorities for the national
11 strategy;

12 (ii) articulating Federal agency roles,
13 responsibilities, and resources for carrying
14 out the national strategy; and

15 (iii) overseeing the implementation of
16 the national strategy.

17 (d) ADVISORY COMMITTEE.—

18 (1) IN GENERAL.—The Secretary shall establish
19 an advisory committee, to be known as the “Advi-
20 sory Committee on Landslides” (referred to in this
21 subsection as the “Advisory Committee”).

22 (2) MEMBERSHIP.—The Advisory Committee
23 shall be composed of not fewer than 11 members—

24 (A) of whom none may be an individual de-
25 scribed in any of subparagraphs (A) through

1 (F) of section 7342(a)(1) of title 5, United
2 States Code; and

3 (B) who shall be representatives of—

4 (i) States, including State geological
5 organizations;

6 (ii) territories, including territorial ge-
7 ological organizations;

8 (iii) Indian tribes, including Tribal ge-
9 ological organizations;

10 (iv) research institutions and institu-
11 tions of higher education that are quali-
12 fied—

13 (I) to provide advice regarding
14 landslide hazard and risk reduction;
15 and

16 (II) to represent related sci-
17 entific, architectural, engineering, and
18 planning disciplines;

19 (v) industry standards development
20 organizations; and

21 (vi) State, territorial, local, and Tribal
22 emergency management agencies.

23 (3) RECOMMENDATIONS.—

24 (A) IN GENERAL.—The Advisory Com-
25 mittee shall submit to the Committee rec-

1 ommendations for the implementation of the
2 program, including recommendations regard-
3 ing—

4 (i) landslide hazard and risk reduction
5 and planning;

6 (ii) tools for communities;

7 (iii) research; and

8 (iv) such other topics as the Advisory
9 Committee determines appropriate.

10 (B) CONSIDERATION.—The Secretary and
11 the agency heads described in subparagraphs
12 (B) through (I) of subsection (c)(2) shall take
13 into consideration any recommendation of the
14 Advisory Committee submitted under subpara-
15 graph (A).

16 (e) GRANT PROGRAMS.—

17 (1) COOPERATIVE LANDSLIDE HAZARD MAP-
18 PING AND ASSESSMENT PROGRAM.—

19 (A) IN GENERAL.—Subject to appropria-
20 tions, the Secretary may—

21 (i) provide grants, on a competitive
22 basis, to State, territorial, local, and Tribal
23 governments to research, map, assess, and
24 collect data on landslide hazards within the
25 jurisdictions of those governments; and

1 (ii) accept and use funds received
2 from other Federal and non-Federal part-
3 ners to advance the purposes of the pro-
4 gram.

5 (B) PRIORITY.—

6 (i) IN GENERAL.—The Secretary shall
7 consult annually with the Committee,
8 States, units of local government, terri-
9 tories, and Indian tribes to establish prior-
10 ities for the grant program under this
11 paragraph.

12 (ii) FUNDING PRIORITIZATION.—In
13 providing grants under this paragraph, the
14 Secretary shall give priority to projects—

15 (I) that will achieve the greatest
16 landslide hazard and risk reduction;

17 (II) that reflect the goals and
18 priorities of the national strategy es-
19 tablished under subsection (b)(2)(A);

20 (III) not less than 50 percent of
21 the total cost of which is matched by
22 non-Federal sources; and

23 (IV) that include acquisition of
24 enhanced elevation data consistent
25 with the 3D Elevation Program.

1 (C) REQUIREMENT.—If the Secretary
 2 elects to provide grants under subparagraph
 3 (A)(i), the Secretary shall publish on a publicly
 4 available website a description of—

5 (i) the grants; and

6 (ii) the findings made from those
 7 grants.

8 (2) NATIONAL LANDSLIDE RESEARCH
 9 GRANTS.—

10 (A) IN GENERAL.—To advance the goals
 11 and priorities of the national strategy estab-
 12 lished under subsection (b)(2)(A), subject to ap-
 13 propriations, the Director of the National
 14 Science Foundation (referred to in this para-
 15 graph as the “Director”) may provide grants to
 16 eligible entities for landslide research, including
 17 research on—

18 (i) the causes, mechanisms, triggers,
 19 hydrology, and geology of landslides;

20 (ii) ways to reduce landslide hazards
 21 and risks to minimize loss of life and prop-
 22 erty, including landslide hazard and risk
 23 communication, perception, decision-
 24 making, tools, and technologies; and

1 (iii) other goals and priorities of the
2 national strategy established under sub-
3 section (b)(2)(A).

4 (B) ELIGIBLE ENTITIES.—The Director
5 shall determine whether an entity is eligible to
6 receive a grant under this paragraph.

7 (C) REQUIREMENTS.—In providing grants
8 under this paragraph, the Director shall—

9 (i) ensure that the grants are pro-
10 vided on a competitive basis;

11 (ii) consider grant applications sub-
12 mitted by eligible entities that have devel-
13 oped the application in partnership with 1
14 or more State geological surveys; and

15 (iii) publish on a publicly available
16 website a description of—

17 (I) the grants; and

18 (II) the findings made from those
19 grants.

20 (f) BIENNIAL REPORT.—Through calendar year
21 2030, the Secretary shall submit to Congress a biennial
22 report, including a description of, with respect to the 2-
23 calendar-year period preceding the date of the report—

1 (1) the goals and accomplishments of the Com-
2 mittee in carrying out the national strategy devel-
3 oped under subsection (b)(2);

4 (2) the results of the activities of the Com-
5 mittee under this section; and

6 (3) the extent to which any recommendations of
7 the Advisory Committee under subsection (d)(3)(A)
8 have been implemented.

9 (g) SIGNIFICANT EVENTS.—Not later than 1 year
10 after a significant landslide event in the United States (in-
11 cluding territories) occurs, the Secretary shall publish on
12 a publicly available website—

13 (1) a description of the landslide event and the
14 implications of the event on communities, including
15 life and property;

16 (2) recommendations on how the identification
17 of the landslide risk could have been improved prior
18 to the event;

19 (3) a description of the effectiveness of any
20 warning and risk communication, including the dis-
21 semination of warnings by State, territorial, local,
22 and Tribal partners in the affected area;

23 (4) recommendations to improve risk identifica-
24 tion, reduction, and communication to landowners
25 and units of local government;

1 (5) recommendations to improve landslide haz-
2 ard preparedness and emergency response activities
3 under this section; and

4 (6) such other findings as the Secretary deter-
5 mines appropriate.

6 (h) FUNDING.—For each of fiscal years 2021 and
7 2024—

8 (1) there is authorized out of funds appro-
9 priated to the United States Geological Survey,
10 \$25,000,000 to carry out this section;

11 (2) there is authorized out of funds appro-
12 priated to the National Science Foundation,
13 \$11,000,000 to carry out this section; and

14 (3) there is authorized out of funds appro-
15 priated to the National Oceanic and Atmospheric
16 Administration, \$1,000,000 to carry out this section.

17 **SEC. 4. GROUND SUBSIDENCE.**

18 As the Secretary determines to be appropriate and
19 subject to appropriations, the Secretary, through existing
20 programs, shall advance the identification, mapping, re-
21 search, and monitoring of subsidence and groundwater re-
22 source accounting, particularly in areas affected by
23 drought.

1 **SEC. 5. 3D ELEVATION PROGRAM.**

2 (a) ESTABLISHMENT OF 3D ELEVATION PRO-
3 GRAM.—

4 (1) IN GENERAL.—The Secretary shall establish
5 a program, to be known as the “3D Elevation Pro-
6 gram”—

7 (A) to provide 3D elevation data coverage
8 for the United States;

9 (B) to coordinate and facilitate the collec-
10 tion, dissemination, and use of 3D elevation
11 data among Federal departments and agencies
12 and non-Federal entities;

13 (C) to produce standard, publicly acces-
14 sible 3D elevation data products for the United
15 States; and

16 (D) to promote the collection, dissemina-
17 tion, and use of 3D elevation data among Fed-
18 eral, State, local, and Tribal governments, com-
19 munities, institutions of higher education, and
20 the private sector through—

21 (i) cooperative agreements;

22 (ii) the development and maintenance
23 of spatial data infrastructure to provide
24 quality control and deliver to the public 3D
25 elevation data products;

1 (iii) in coordination with the 3D Ele-
2 vation Federal Interagency Coordinating
3 Committee established under subsection
4 (b), States, and industry and standards
5 bodies, the development of standards and
6 guidelines for 3D elevation data acquisition
7 to increase accessibility to 3D elevation
8 data in a standard, easy-to-use format; and

9 (iv) the identification, assessment, and
10 adoption of emerging technologies to im-
11 prove the accuracy and efficiency of the
12 3D Elevation Program.

13 (2) MANAGEMENT.—

14 (A) IN GENERAL.—The Secretary shall
15 manage the 3D Elevation Program—

16 (i) to ensure efficiency with respect to
17 related activities of the Department of the
18 Interior and other participating Federal
19 departments and agencies; and

20 (ii) to meet the needs of Department
21 of the Interior programs, stakeholders, and
22 the public.

23 (B) OTHER FEDERAL DEPARTMENTS AND
24 AGENCIES.—The head of each Federal depart-
25 ment and agency involved in the acquisition,

1 production, distribution, or application of 3D
2 elevation data shall—

3 (i) coordinate with the 3D Elevation
4 Federal Interagency Coordinating Com-
5 mittee established under subsection (b) to
6 acquire additional, enhanced 3D elevation
7 data;

8 (ii) submit to the Secretary a descrip-
9 tion of priority areas of interest for 3D ele-
10 vation data collection for use in providing
11 grants and cooperative agreements under
12 subsection (d);

13 (iii) implement policies and procedures
14 for data acquisition and sharing that are
15 consistent with standards and guidelines
16 developed under the 3D Elevation Pro-
17 gram;

18 (iv) participate in, and share the re-
19 sults and benefits of, the 3D Elevation
20 Program, in accordance with standards
21 and guidelines developed under the 3D
22 Elevation Program; and

23 (v) ensure that any 3D elevation data
24 acquired with Federal grant funding—

1 (I) meets 3D Elevation Program
2 standards; and

3 (II) is included in the national
4 holdings of those data.

5 (b) 3D ELEVATION FEDERAL INTERAGENCY CO-
6 ORDINATING COMMITTEE.—

7 (1) ESTABLISHMENT.—The Secretary, in co-
8 ordination with the Secretary of Commerce and the
9 Secretary of Homeland Security, shall establish an
10 interagency coordinating committee, to be known as
11 the “3D Elevation Federal Interagency Coordinating
12 Committee” (referred to in this subsection as the
13 “Committee”), to better coordinate 3D elevation
14 data management across the Federal Government.

15 (2) MEMBERSHIP.—The Committee shall be
16 composed of the following members (or their des-
17 ignees):

18 (A) The Secretary, who shall serve as
19 Chairperson of the Committee.

20 (B) The Secretary of Agriculture.

21 (C) The Secretary of Commerce.

22 (D) The Secretary of Homeland Security.

23 (E) The Director of the National Science
24 Foundation.

1 (F) The Director of the Office of Science
2 and Technology Policy.

3 (G) The Director of the Office of Manage-
4 ment and Budget.

5 (H) The head of any other Federal depart-
6 ment or agency, at the request of the Secretary.

7 (3) COORDINATION.—The Committee shall co-
8 ordinate, as appropriate, with the existing activities
9 of—

10 (A) the 3D Elevation Program Executive
11 Forum;

12 (B) the Alaska Mapping Executive Com-
13 mittee;

14 (C) the 3D Elevation Working Group;

15 (D) the 3D National Elevation Sub-
16 committee; and

17 (E) State offices.

18 (4) MEETINGS.—The Committee shall meet at
19 the call of the Chairperson.

20 (5) DUTIES.—The Committee shall—

21 (A) oversee the planning, management,
22 and coordination of the 3D Elevation Program;
23 and

1 (B) develop, by not later than 1 year after
 2 the date of enactment of this Act, and update
 3 periodically thereafter—

4 (i) a strategic plan that establishes
 5 goals and priorities for activities carried
 6 out under the 3D Elevation Program; and

7 (ii) a detailed management plan to
 8 implement the strategic plan.

9 (c) SUBCOMMITTEE OF NATIONAL GEOSPATIAL AD-
 10 VISORY COMMITTEE.—

11 (1) ESTABLISHMENT.—

12 (A) IN GENERAL.—The Secretary shall es-
 13 tablish, within the National Geospatial Advisory
 14 Committee, a subcommittee (referred to in this
 15 subsection as the “Subcommittee”).

16 (B) MEMBERSHIP.—The Subcommittee
 17 shall—

18 (i) consist of not fewer than 11 mem-
 19 bers, of whom none may be a Federal offi-
 20 cer or employee; and

21 (ii) include representatives of—

22 (I) research and academic insti-
 23 tutions;

24 (II) industry standards develop-
 25 ment organizations;

- 1 (III) units of State and local gov-
2 ernment; and
3 (IV) the private sector.

4 (2) DUTIES.—

5 (A) ASSESSMENT.—The Subcommittee
6 shall conduct an assessment of—

7 (i) trends and developments in—

8 (I) the collection, dissemination,
9 and use of 3D elevation data; and

10 (II) science and technology relat-
11 ing to 3D elevation data;

12 (ii) the effectiveness of the 3D Ele-
13 vation Program in carrying out the activi-
14 ties described in subsection (a)(1);

15 (iii) the need to revise or reorganize
16 the 3D Elevation Program; and

17 (iv) the management, coordination,
18 implementation, and activities of the 3D
19 Elevation Program.

20 (B) REPORT.—Not later than 1 year after
21 the date of enactment of this Act, and every 2
22 years thereafter, the Subcommittee shall submit
23 to the Secretary and the 3D Elevation Federal
24 Interagency Coordinating Committee estab-

1 lished under subsection (b) a report that in-
2 cludes—

3 (i) the findings of the assessment
4 under subparagraph (A); and

5 (ii) recommendations of the Sub-
6 committee based on those findings, if any.

7 (d) GRANTS AND COOPERATIVE AGREEMENTS.—

8 (1) IN GENERAL.—The Secretary may make
9 grants and enter into cooperative agreements with
10 other Federal departments and agencies, units of
11 State, local, or Tribal government, institutions of
12 higher education, nonprofit research institutions, or
13 other organizations to facilitate the improvement of
14 nationwide coverage of 3D elevation data.

15 (2) APPLICATIONS.—To be eligible to receive a
16 grant or enter into a cooperative agreement under
17 this subsection, an entity described in paragraph (1)
18 shall submit to the Secretary an application at such
19 time, in such manner, and containing such informa-
20 tion as the Secretary may require.

21 (3) TERMS AND CONDITIONS.—A grant or coop-
22 erative agreement under this subsection shall be sub-
23 ject to such terms and conditions as the Secretary
24 determines to be appropriate, including making data

1 publically available and interoperable with other
2 Federal datasets.

3 (e) FUNDING.—For each of the fiscal years 2021
4 through 2024, there is authorized out of funds appro-
5 priated to the Secretary \$20,000,000 to carry out this sec-
6 tion.

Passed the Senate July 30, 2020.

Attest:

Secretary.

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