

Calendar No. 206118TH CONGRESS
1ST SESSION**S. 447**

To establish a demonstration program for the active remediation of orbital debris and to require the development of uniform orbital debris standard practices in order to support a safe and sustainable orbital environment, and for other purposes.

IN THE SENATE OF THE UNITED STATES

FEBRUARY 15, 2023

Mr. HICKENLOOPER (for himself, Ms. LUMMIS, Ms. CANTWELL, Mr. WICKER, Ms. SINEMA, and Mrs. FEINSTEIN) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

SEPTEMBER 12, 2023

Reported by Ms. CANTWELL, with an amendment

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

A BILL

To establish a demonstration program for the active remediation of orbital debris and to require the development of uniform orbital debris standard practices in order to support a safe and sustainable orbital environment, 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 “Orbital Sustainability
3 Act of 2023” or the “ORBITS Act of 2023”.

4 **SEC. 2. FINDINGS; SENSE OF CONGRESS.**

5 (a) **FINDINGS.**—Congress makes the following find-
6 ings:

7 (1) The safety and sustainability of operations
8 in low-Earth orbit and nearby orbits in outer space
9 have become increasingly endangered by a growing
10 amount of orbital debris.

11 (2) Exploration and scientific research missions
12 and commercial space services of critical importance
13 to the United States rely on continued and secure
14 access to outer space.

15 (3) Efforts by nongovernmental space entities
16 to apply lessons learned through standards and best
17 practices will benefit from government support for
18 implementation both domestically and internation-
19 ally.

20 (b) **SENSE OF CONGRESS.**—It is the sense of Con-
21 gress that to preserve the sustainability of operations in
22 space, the United States Government should—

23 (1) to the extent practicable, develop and carry
24 out programs, establish or update regulations, and
25 commence initiatives to minimize orbital debris, in-
26 cluding initiatives to demonstrate active debris reme-

1 diation of orbital debris generated by the United
2 States Government;

3 ~~(2)~~ lead international efforts to encourage other
4 spacefaring countries to mitigate and remediate or-
5 bital debris under their jurisdiction and control; and

6 ~~(3)~~ encourage space system operators to con-
7 tinue implementing best practices for space safety
8 when deploying satellites and constellations of sat-
9 ellites, such as transparent data sharing and design-
10 ing for system reliability, so as to limit the genera-
11 tion of future orbital debris.

12 **SEC. 3. DEFINITIONS.**

13 In this Act:

14 ~~(1)~~ ACTIVE DEBRIS REMEDIATION.—The term
15 “active debris remediation”—

16 ~~(A)~~ means the deliberate process of facili-
17 tating the de-orbit, repurposing, or other dis-
18 posal of orbital debris, which may include mov-
19 ing orbital debris to a safe position, using an
20 object or technique that is external or internal
21 to the orbital debris; and

22 ~~(B)~~ does not include de-orbit, repurposing,
23 or other disposal of orbital debris by passive
24 means.

1 (2) ADMINISTRATOR.—The term “Adminis-
2 trator” means the Administrator of the National
3 Aeronautics and Space Administration.

4 (3) APPROPRIATE COMMITTEES OF CON-
5 GRESS.—The term “appropriate committees of Con-
6 gress” means—

7 (A) the Committee on Appropriations, the
8 Committee on Commerce, Science, and Trans-
9 portation, and the Committee on Armed Serv-
10 ices of the Senate; and

11 (B) the Committee on Appropriations, the
12 Committee on Science, Space, and Technology,
13 and the Committee on Armed Services of the
14 House of Representatives.

15 (4) DEMONSTRATION PROGRAM.—The term
16 “demonstration program” means the active orbital
17 debris remediation demonstration program carried
18 out under section 4(b).

19 (5) ELIGIBLE ENTITY.—The term “eligible enti-
20 ty” means—

21 (A) a United States-based—

22 (i) non-Federal, commercial entity;

23 (ii) institution of higher education (as
24 defined in section 101(a) of the Higher

1 Education Act of 1965 (20 U.S.C.
2 1001(a)); or

3 (iii) nonprofit organization;

4 (B) any other United States-based entity
5 the Administrator considers appropriate; and

6 (C) a partnership of entities described in
7 subparagraphs (A) and (B).

8 (6) ORBITAL DEBRIS.—The term “orbital de-
9 bris” means any human-made space object orbiting
10 Earth that—

11 (A) no longer serves an intended purpose;
12 and

13 (B)(i) has reached the end of its mission;

14 or

15 (ii) is incapable of safe maneuver or oper-
16 ation.

17 (7) SECRETARY.—The term “Secretary” means
18 the Secretary of Commerce.

19 (8) SPACE TRAFFIC COORDINATION.—The term
20 “space traffic coordination” means the planning, co-
21 ordination, and on-orbit synchronization of activities
22 to enhance the safety and sustainability of oper-
23 ations in the space environment.

24 **SEC. 4. ACTIVE DEBRIS REMEDIATION.**

25 (a) **PRIORITIZATION OF ORBITAL DEBRIS.—**

1 (1) LIST.—Not later than 90 days after the
2 date of the enactment of this Act, the Administrator,
3 in consultation with the Secretary, the Secretary of
4 Defense, the National Space Council, and represent-
5 atives of the commercial space industry, academia,
6 and nonprofit organizations, shall publish a list of
7 identified orbital debris that pose the greatest imme-
8 diate risk to the safety and sustainability of orbiting
9 satellites and on-orbit activities.

10 (2) CONTENTS.—The list required under para-
11 graph (1)—

12 (A) shall be developed using appropriate
13 sources of data and information derived from
14 governmental and nongovernmental sources, in-
15 cluding space situational awareness data ob-
16 tained by the Office of Space Commerce, to the
17 extent practicable;

18 (B) shall include, to the extent prac-
19 ticable—

20 (i) a description of the approximate
21 age, location in orbit, size, tumbling state,
22 post-mission passivation actions taken, and
23 national jurisdiction of each orbital debris
24 identified; and

1 (ii) data required to inform decisions
 2 regarding potential risk and feasibility of
 3 safe remediation; and

4 (C) may include orbital debris that poses a
 5 significant risk to terrestrial people and assets,
 6 including risk resulting from potential environ-
 7 mental impacts from the uncontrolled reentry of
 8 the orbital debris identified.

9 ~~(3) PUBLIC AVAILABILITY; PERIODIC UP-~~
 10 ~~DATES.—~~

11 (A) IN GENERAL.—Subject to subpara-
 12 graph (B), the list required under paragraph
 13 (1) shall be published in unclassified form on a
 14 publicly accessible internet website of the Na-
 15 tional Aeronautics and Space Administration.

16 (B) EXCLUSION.—The Administration may
 17 not include on the list published under subpara-
 18 graph (A) data acquired from nonpublic
 19 sources.

20 (C) PERIODIC UPDATES.—Such list shall
 21 be updated periodically.

22 (4) RESEARCH AND DEVELOPMENT.—With re-
 23 spect to orbital debris identified under paragraph
 24 (1), the Administrator shall, to the extent prac-
 25 ticable and subject to the availability of appropria-

1 tions, carry out the additional research and develop-
2 ment activities necessary, in consultation with the
3 commercial space industry, to mature technologies
4 that close commercial capability gaps and enable po-
5 tential future remediation missions for such orbital
6 debris.

7 (5) ACQUISITION, ACCESS, USE, AND HANDLING
8 OF DATA OR INFORMATION.—In carrying out the ac-
9 tivities under this subsection, the Administrator—

10 (A) shall acquire, access, use, and handle
11 data or information in a manner consistent with
12 applicable provisions of law and policy, includ-
13 ing laws and policies providing for the protec-
14 tion of privacy and civil liberties, and subject to
15 any restrictions required by the source of the
16 information;

17 (B) shall have access, upon written re-
18 quest, to all information, data, or reports of any
19 executive agency that the Administrator deter-
20 mines necessary to carry out the activities
21 under this subsection, provided that such access
22 is—

23 (i) conducted in a manner consistent
24 with applicable provisions of law and policy
25 of the originating agency, including laws

1 and policies providing for the protection of
2 privacy and civil liberties; and

3 (ii) consistent with due regard for the
4 protection from unauthorized disclosure of
5 classified information relating to sensitive
6 intelligence sources and methods or other
7 exceptionally sensitive matters; and

8 (C) may obtain commercially available in-
9 formation that may not be publicly available.

10 (b) ACTIVE ORBITAL DEBRIS REMEDIATION DEM-
11 ONSTRATION PROGRAM.—

12 (1) ESTABLISHMENT.—Not later than 180 days
13 after the date of the enactment of this Act, subject
14 to the availability of appropriations, the Adminis-
15 trator, in consultation with the head of each relevant
16 Federal department or agency, shall establish a dem-
17 onstration program to make competitive awards for
18 the development of technologies leading to the reme-
19 diation of selected orbital debris identified under
20 subsection (a)(1).

21 (2) PURPOSE.—The purpose of the demonstra-
22 tion program shall be to enable eligible entities to
23 pursue the phased development and demonstration
24 of technologies and processes required for active de-
25bris remediation.

1 (3) PROCEDURES AND CRITERIA.—In estab-
2 lishing the demonstration program, the Adminis-
3 trator shall—

4 (A) establish—

5 (i) eligibility criteria for participation;

6 (ii) a process for soliciting proposals
7 from eligible entities;

8 (iii) criteria for the contents of such
9 proposals;

10 (iv) program compliance and evalua-
11 tion metrics; and

12 (v) program phases and milestones;

13 (B) identify government-furnished data or
14 equipment; and

15 (C) develop a plan for National Aero-
16 nautics and Space Administration participation
17 in technology development, as appropriate, and
18 intellectual property rights.

19 (4) PROPOSAL EVALUATION.—In evaluating
20 proposals for the demonstration program, the Ad-
21 ministrators shall—

22 (A) consider the safety, feasibility, cost,
23 benefit, and maturity of the proposed tech-
24 nology;

1 (B) consider the potential for the proposed
2 demonstration to successfully remediate orbital
3 debris and to advance the commercial state of
4 the art with respect to active debris remedi-
5 ation;

6 (C) carry out a risk analysis of the pro-
7 posed technology that takes into consideration
8 the potential casualty risk to humans in space
9 or on the Earth's surface;

10 (D) in an appropriate setting, conduct
11 thorough testing and evaluation of the proposed
12 technology and each component of such tech-
13 nology or system of technologies; and

14 (E) consider the technical and financial
15 feasibility of using the proposed technology to
16 conduct multiple remediation missions.

17 (5) DEMONSTRATION MISSION.—

18 (A) IN GENERAL.—The Administrator
19 shall consult with the head of each relevant
20 Federal department or agency in advance of
21 each demonstration mission.

22 (B) ACTIVE DEBRIS REMEDIATION DEM-
23 ONSTRATION MISSION.—It is the sense of Con-
24 gress that the Administrator should consider
25 maximizing competition for, and use best prac-

1 ties to engage commercial entities in, an active
2 debris remediation demonstration mission.

3 (C) SPECTRUM CONSIDERATIONS.—The
4 Administrator shall convey any potential spec-
5 trum allocations and licensing needs for active
6 debris remediation demonstration missions to
7 the Federal Communications Commission
8 through the National Telecommunications and
9 Information Administration as soon as prac-
10 ticable after any such spectrum allocation or li-
11 censing need has been identified.

12 (6) REPORTS.—

13 (A) RECOMMENDATIONS.—Not later than
14 ½ year after the date on which the first dem-
15 onstration mission is carried out under this
16 subsection, the Administrator, in consultation
17 with the head of each relevant Federal depart-
18 ment or agency, shall submit to Congress a re-
19 port that provides legislative, regulatory, and
20 policy recommendations to improve active debris
21 remediation missions, as applicable.

22 (B) TECHNICAL ANALYSIS.—

23 (i) IN GENERAL.—To inform decisions
24 regarding the acquisition of active debris
25 remediation services by the Federal Gov-

1 ernment, not later than 180 days after the
2 completion of the demonstration program;
3 the Administrator shall submit to Congress
4 a report that—

5 (I) summarizes a technical anal-
6 ysis of technologies developed under
7 the demonstration program;

8 (II) identifies any technology
9 gaps addressed by the demonstration
10 program and any remaining tech-
11 nology gaps; and

12 (III) provides, as applicable, any
13 further legislative, regulatory, and
14 policy recommendations to enable ac-
15 tive debris remediation missions.

16 (ii) AVAILABILITY.—The Administra-
17 tion shall make the report submitted under
18 clause (i) available to the Secretary, the
19 Secretary of Defense, and other relevant
20 Federal departments and agencies, as de-
21 termined by the Administrator.

22 (7) INTERNATIONAL COOPERATION.—

23 (A) IN GENERAL.—In carrying out the
24 demonstration program, the Administrator, in
25 consultation with the National Space Council

1 and in collaboration with the Secretary of
2 State, may pursue a cooperative relationship
3 with one or more partner countries to enable
4 the remediation of orbital debris that is under
5 the jurisdiction of such partner countries.

6 ~~(B) ARRANGEMENT OR AGREEMENT WITH~~
7 ~~PARTNER COUNTRY.—Any arrangement or~~
8 ~~agreement entered into with a partner country~~
9 ~~under subparagraph (A) shall be—~~

10 (i) concluded—

11 (I) in the interests of the United
12 States Government; and

13 (II) without prejudice to any con-
14 tractual arrangement among commer-
15 cial parties that may be required to
16 complete the active debris remediation
17 mission concerned; and

18 (ii) consistent with the international
19 obligations of the United States under the
20 international legal framework governing
21 outer space activities.

22 ~~(c) AUTHORIZATION OF APPROPRIATIONS.—There is~~
23 ~~authorized to be appropriated to the Administrator to~~
24 ~~carry out this section \$150,000,000 for the period of fiscal~~
25 ~~years 2024 through 2028.~~

1 **SEC. 5. ACTIVE DEBRIS REMEDIATION SERVICES.**

2 (a) **IN GENERAL.**—To foster the competitive develop-
3 ment, operation, improvement, and commercial availability
4 of active debris remediation services, and in consideration
5 of the economic analysis required by subsection (b) and
6 the reports under section 4(b)(6), the Administrator and
7 the head of each relevant Federal department or agency
8 may acquire services for the remediation of orbital debris,
9 whenever practicable, through fair and open competition
10 for contracts that are well-defined, milestone-based, and
11 in accordance with the Federal Acquisition Regulation.

12 (b) **ECONOMIC ANALYSIS.**—Based on the results of
13 the demonstration program, the Secretary, acting through
14 the Office of Space Commerce, shall publish an assess-
15 ment of the estimated Federal Government and private
16 sector demand for orbital debris remediation services for
17 the 10-year period beginning in 2025.

18 **SEC. 6. UNIFORM ORBITAL DEBRIS STANDARD PRACTICES**
19 **FOR UNITED STATES SPACE ACTIVITIES.**

20 (a) **IN GENERAL.**—Not later than 90 days after the
21 date of the enactment of this Act, and every 5 years there-
22 after, the National Space Council, in coordination with the
23 Secretary, the Administrator of the Federal Aviation Ad-
24 ministration, the Secretary of Defense, the Federal Com-
25 munications Commission, and the Administrator, shall ini-

1 tiate an update to the Orbital Debris Mitigation Standard

2 Practices that—

3 (1) considers planned space systems, including

4 satellite constellations; and

5 (2) addresses—

6 (A) collision risk;

7 (B) casualty probability;

8 (C) post-mission disposal of space systems;

9 (D) time to disposal or de-orbit;

10 (E) spacecraft collision avoidance and

11 automated identification capability; and

12 (F) the ability to track orbital debris of de-

13 creasing size.

14 (b) CONSULTATION.—In developing the update under

15 subsection (a), the National Space Council, or a designee

16 of the National Space Council, shall seek advice and input

17 on commercial standards and best practices from rep-

18 resentatives of the commercial space industry, academia,

19 and nonprofit organizations, including through workshops

20 and, as appropriate, advance public notice and comment

21 processes under chapter 5 of title 5, United States Code.

22 (c) PUBLICATION.—Not later than 1 year after the

23 date of the enactment of this Act, such update shall be

24 published in the Federal Register and posted to the rel-

25 evant Federal Government websites.

1 (d) REGULATIONS.—To promote uniformity and
2 avoid duplication in the regulation of space activity, in-
3 cluding licensing by the Federal Aviation Administration,
4 the National Oceanic and Atmospheric Administration,
5 and the Federal Communications Commission, such up-
6 date, after publication, shall be used to inform the further
7 development and promulgation of Federal regulations re-
8 lating to orbital debris.

9 (e) INTERNATIONAL PROMOTION.—To encourage ef-
10 fective and nondiscriminatory standards, best practices,
11 rules, and regulations implemented by other countries,
12 such update shall inform bilateral and multilateral discus-
13 sions focused on the authorization and continuing super-
14 vision of nongovernmental space activities.

15 **SEC. 7. STANDARD PRACTICES FOR SPACE TRAFFIC CO-**
16 **ORDINATION.**

17 (a) IN GENERAL.—The Secretary, in coordination
18 with members of the National Space Council and the Fed-
19 eral Communications Commission, shall facilitate the de-
20 velopment of standard practices for on-orbit space traffic
21 coordination based on existing guidelines and best prac-
22 tices used by Government and commercial space industry
23 operators.

24 (b) CONSULTATION.—In facilitating the development
25 of standard practices under subsection (a), the Secretary,

1 through the Office of Space Commerce, in consultation
2 with the National Institute of Standards and Technology,
3 shall engage in frequent and routine consultation with rep-
4 resentatives of the commercial space industry, academia,
5 and nonprofit organizations.

6 (c) PROMOTION OF STANDARD PRACTICES.—On
7 completion of such standard practices, the Secretary, the
8 Secretary of State, the Secretary of Transportation, the
9 Administrator, and the Secretary of Defense shall promote
10 the adoption and use of the standard practices for domes-
11 tic and international space missions.

12 **SECTION 1. SHORT TITLE.**

13 *This Act may be cited as the “Orbital Sustainability*
14 *Act of 2023” or the “ORBITS Act of 2023”.*

15 **SEC. 2. FINDINGS; SENSE OF CONGRESS.**

16 (a) FINDINGS.—Congress makes the following findings:

17 (1) *The safety and sustainability of operations*
18 *in low-Earth orbit and nearby orbits in outer space*
19 *have become increasingly endangered by a growing*
20 *amount of orbital debris.*

21 (2) *Exploration and scientific research missions*
22 *and commercial space services of critical importance*
23 *to the United States rely on continued and secure ac-*
24 *cess to outer space.*

1 (3) *Efforts by nongovernmental space entities to*
2 *apply lessons learned through standards and best*
3 *practices will benefit from government support for*
4 *implementation both domestically and internation-*
5 *ally.*

6 (b) *SENSE OF CONGRESS.—It is the sense of Congress*
7 *that to preserve the sustainability of operations in space,*
8 *the United States Government should—*

9 (1) *to the extent practicable, develop and carry*
10 *out programs, establish or update regulations, and*
11 *commence initiatives to minimize orbital debris, in-*
12 *cluding initiatives to demonstrate active debris reme-*
13 *diation of orbital debris generated by the United*
14 *States Government or other entities under the juris-*
15 *isdiction of the United States;*

16 (2) *lead international efforts to encourage other*
17 *spacefaring countries to mitigate and remediate or-*
18 *bital debris under their jurisdiction and control; and*

19 (3) *encourage space system operators to continue*
20 *implementing best practices for space safety when de-*
21 *ploying satellites and constellations of satellites, such*
22 *as transparent data sharing and designing for system*
23 *reliability, so as to limit the generation of future or-*
24 *bital debris.*

1 **SEC. 3. DEFINITIONS.**

2 *In this Act:*

3 (1) *ACTIVE DEBRIS REMEDIATION.*—*The term*
4 *“active debris remediation”*—

5 (A) *means the deliberate process of facili-*
6 *tating the de-orbit, repurposing, or other disposal*
7 *of orbital debris, which may include moving or-*
8 *bitaI debris to a safe position, using an object or*
9 *technique that is external or internal to the or-*
10 *bitaI debris; and*

11 (B) *does not include de-orbit, repurposing,*
12 *or other disposal of orbital debris by passive*
13 *means.*

14 (2) *ADMINISTRATOR.*—*The term “Adminis-*
15 *trator” means the Administrator of the National Aer-*
16 *onautics and Space Administration.*

17 (3) *APPROPRIATE COMMITTEES OF CONGRESS.*—
18 *The term “appropriate committees of Congress”*
19 *means—*

20 (A) *the Committee on Appropriations, the*
21 *Committee on Commerce, Science, and Transpor-*
22 *tation, and the Committee on Armed Services of*
23 *the Senate; and*

24 (B) *the Committee on Appropriations, the*
25 *Committee on Science, Space, and Technology,*

1 *and the Committee on Armed Services of the*
2 *House of Representatives.*

3 (4) *DEMONSTRATION PROJECT.*—*The term “dem-*
4 *onstration project” means the active orbital debris re-*
5 *mediation demonstration project carried out under*
6 *section 4(b).*

7 (5) *ELIGIBLE ENTITY.*—*The term “eligible enti-*
8 *ty” means—*

9 (A) *a United States-based—*

10 (i) *non-Federal, commercial entity;*

11 (ii) *institution of higher education (as*
12 *defined in section 101(a) of the Higher*
13 *Education Act of 1965 (20 U.S.C.*
14 *1001(a)); or*

15 (iii) *nonprofit organization;*

16 (B) *any other United States-based entity*
17 *the Administrator considers appropriate; and*

18 (C) *a partnership of entities described in*
19 *subparagraphs (A) and (B).*

20 (6) *ORBITAL DEBRIS.*—*The term “orbital debris”*
21 *means any human-made space object orbiting Earth*
22 *that—*

23 (A) *no longer serves an intended purpose;*

24 *and*

25 (B)(i) *has reached the end of its mission; or*

1 (ii) is incapable of safe maneuver or
2 operation.

3 (7) *PROJECT*.—The term “project” means a spe-
4 cific investment with defined requirements, a life-
5 cycle cost, a period of duration with a beginning and
6 an end, and a management structure that may inter-
7 face with other projects, agencies, and international
8 partners to yield new or revised technologies address-
9 ing strategic goals.

10 (8) *SECRETARY*.—The term “Secretary” means
11 the Secretary of Commerce.

12 (9) *SPACE TRAFFIC COORDINATION*.—The term
13 “space traffic coordination” means the planning, co-
14 ordination, and on-orbit synchronization of activities
15 to enhance the safety and sustainability of operations
16 in the space environment.

17 **SEC. 4. ACTIVE DEBRIS REMEDIATION.**

18 (a) *PRIORITIZATION OF ORBITAL DEBRIS*.—

19 (1) *LIST*.—Not later than 90 days after the date
20 of the enactment of this Act, the Secretary, in con-
21 sultation with the Administrator, the Secretary of De-
22 fense, the Secretary of State, the National Space
23 Council, and representatives of the commercial space
24 industry, academia, and nonprofit organizations,
25 shall publish a list of select identified orbital debris

1 *that may be remediated to improve the safety and*
2 *sustainability of orbiting satellites and on-orbit ac-*
3 *tivities.*

4 (2) *CONTENTS.—The list required under para-*
5 *graph (1)—*

6 (A) *shall be developed using appropriate*
7 *sources of data and information derived from*
8 *governmental and nongovernmental sources, in-*
9 *cluding space situational awareness data ob-*
10 *tained by the Office of Space Commerce, to the*
11 *extent practicable;*

12 (B) *shall include, to the extent prac-*
13 *ticable—*

14 (i) *a description of the approximate*
15 *age, location in orbit, size, mass, tumbling*
16 *state, post-mission passivation actions*
17 *taken, and national jurisdiction of each or-*
18 *bitral debris identified; and*

19 (ii) *data required to inform decisions*
20 *regarding potential risk and feasibility of*
21 *safe remediation;*

22 (C) *may include orbital debris that poses a*
23 *significant risk to terrestrial people and assets,*
24 *including risk resulting from potential environ-*

1 *mental impacts from the uncontrolled reentry of*
2 *the orbital debris identified; and*

3 *(D) may include collections of small debris*
4 *that, as of the date of the enactment of this Act,*
5 *are untracked.*

6 (3) *PUBLIC AVAILABILITY; PERIODIC UPDATES.—*

7 *(A) IN GENERAL.—Subject to subparagraph*
8 *(B), the list required under paragraph (1) shall*
9 *be published in unclassified form on a publicly*
10 *accessible internet website of the Department of*
11 *Commerce.*

12 *(B) EXCLUSION.—The Secretary may not*
13 *include on the list published under subparagraph*
14 *(A) data acquired from nonpublic sources.*

15 *(C) PERIODIC UPDATES.—Such list shall be*
16 *updated periodically.*

17 (4) *ACQUISITION, ACCESS, USE, AND HANDLING*
18 *OF DATA OR INFORMATION.—In carrying out the ac-*
19 *tivities under this subsection, the Secretary—*

20 *(A) shall acquire, access, use, and handle*
21 *data or information in a manner consistent with*
22 *applicable provisions of law and policy, includ-*
23 *ing laws and policies providing for the protec-*
24 *tion of privacy and civil liberties, and subject to*

1 *any restrictions required by the source of the in-*
 2 *formation;*

3 *(B) shall have access, upon written request,*
 4 *to all information, data, or reports of any execu-*
 5 *tive agency that the Secretary determines nec-*
 6 *essary to carry out the activities under this sub-*
 7 *section, provided that such access is—*

8 *(i) conducted in a manner consistent*
 9 *with applicable provisions of law and pol-*
 10 *icy of the originating agency, including*
 11 *laws and policies providing for the protec-*
 12 *tion of privacy and civil liberties; and*

13 *(ii) consistent with due regard for the*
 14 *protection from unauthorized disclosure of*
 15 *classified information relating to sensitive*
 16 *intelligence sources and methods or other ex-*
 17 *ceptionally sensitive matters; and*

18 *(C) may obtain commercially available in-*
 19 *formation that may not be publicly available.*

20 ***(b) ACTIVE ORBITAL DEBRIS REMEDIATION DEM-***
 21 ***ONSTRATION PROJECT.—***

22 ***(1) ESTABLISHMENT.—****Not later than 180 days*
 23 *after the date of the enactment of this Act, subject to*
 24 *the availability of appropriations, the Administrator,*
 25 *in consultation with the head of each relevant Federal*

1 *department or agency, shall establish a demonstration*
2 *project to make competitive awards for the research,*
3 *development, and demonstration of technologies lead-*
4 *ing to the remediation of selected orbital debris iden-*
5 *tified under subsection (a)(1).*

6 (2) *PURPOSE.—The purpose of the demonstra-*
7 *tion project shall be to enable eligible entities to pur-*
8 *sue the phased development and demonstration of*
9 *technologies and processes required for active debris*
10 *remediation.*

11 (3) *PROCEDURES AND CRITERIA.—In estab-*
12 *lishing the demonstration project, the Administrator*
13 *shall—*

14 (A) *establish—*

15 (i) *eligibility criteria for participation;*

16 (ii) *a process for soliciting proposals*
17 *from eligible entities;*

18 (iii) *criteria for the contents of such*
19 *proposals;*

20 (iv) *project compliance and evaluation*
21 *metrics; and*

22 (v) *project phases and milestones;*

23 (B) *identify government-furnished data or*
24 *equipment;*

1 (C) develop a plan for National Aeronautics
2 and Space Administration participation, as ap-
3 propriate, in technology development and intel-
4 lectual property rights that—

5 (i) leverages National Aeronautics and
6 Space Administration Centers that have
7 demonstrated expertise and historical
8 knowledge in measuring, modeling, charac-
9 terizing, and describing the current and fu-
10 ture orbital debris environment; and

11 (ii) develops the technical consensus for
12 adopting mitigation measures for such par-
13 ticipation;

14 (D)(i) assign a project manager to oversee
15 the demonstration project and carry out project
16 activities under this subsection; and

17 (ii) in assigning such project manager,
18 leverage National Aeronautics and Space
19 Administration Centers and the personnel
20 of National Aeronautics and Space Admin-
21 istration Centers, as practicable.

22 (4) RESEARCH AND DEVELOPMENT PHASE.—

23 With respect to orbital debris identified under para-
24 graph (1) of subsection (a), the Administrator shall,
25 to the extent practicable and subject to the avail-

1 *ability of appropriations, carry out the additional re-*
2 *search and development activities necessary to mature*
3 *technologies, in partnership with eligible entities,*
4 *with the intent to close commercial capability gaps*
5 *and enable potential future remediation missions for*
6 *such orbital debris, with a preference for technologies*
7 *that are capable of remediating orbital debris that*
8 *have a broad range of characteristics described in*
9 *paragraph (2)(B)(i) of that subsection.*

10 (5) *DEMONSTRATION MISSION PHASE.—*

11 (A) *IN GENERAL.—The Administrator shall*
12 *evaluate proposals for a demonstration mission,*
13 *and select and enter into a partnership with an*
14 *eligible entity, subject to the availability of ap-*
15 *propriations, with the intent to demonstrate*
16 *technologies determined by the Administrator to*
17 *meet a level of technology readiness sufficient to*
18 *carry out on-orbit remediation of select orbital*
19 *debris.*

20 (B) *EVALUATION.—In evaluating proposals*
21 *for the demonstration project, the Administrator*
22 *shall—*

23 (i) *consider the safety, feasibility, cost,*
24 *benefit, and maturity of the proposed tech-*
25 *nology;*

1 (ii) consider the potential for the pro-
2 posed demonstration to successfully reme-
3 diate orbital debris and to advance the com-
4 mercial state of the art with respect to ac-
5 tive debris remediation;

6 (iii) carry out a risk analysis of the
7 proposed technology that takes into consid-
8 eration the potential casualty risk to hu-
9 mans in space or on the Earth's surface;

10 (iv) in an appropriate setting, conduct
11 thorough testing and evaluation of the pro-
12 posed technology and each component of
13 such technology or system of technologies;
14 and

15 (v) consider the technical and financial
16 feasibility of using the proposed technology
17 to conduct multiple remediation missions.

18 (C) CONSULTATION.—The Administrator
19 shall consult with the head of each relevant Fed-
20 eral department or agency before carrying out
21 any demonstration mission under this para-
22 graph.

23 (D) ACTIVE DEBRIS REMEDIATION DEM-
24 ONSTRATION MISSION.—It is the sense of Con-
25 gress that the Administrator should consider

1 *maximizing competition for, and use best prac-*
2 *tices to engage commercial entities in, an active*
3 *debris remediation demonstration mission.*

4 (6) *BRIEFING AND REPORTS.*—

5 (A) *INITIAL BRIEFING.*—*Not later than 30*
6 *days after the establishment of the demonstration*
7 *project under paragraph (1), the Administrator*
8 *shall provide to the appropriate committees of*
9 *Congress a briefing on the details of the dem-*
10 *onstration project.*

11 (B) *ANNUAL REPORT.*—*Not later than 1*
12 *year after the initial briefing under subpara-*
13 *graph (A), and annually thereafter until the con-*
14 *clusion of the 1 or more demonstration missions,*
15 *the Administrator shall submit to the appro-*
16 *priate committees of Congress a status report on*
17 *the technology developed under the demonstration*
18 *project and progress towards accomplishment of*
19 *one or more demonstration missions.*

20 (C) *RECOMMENDATIONS.*—*Not later than 1*
21 *year after the date on which the first demonstra-*
22 *tion mission is carried out under this subsection,*
23 *the Administrator, in consultation with the head*
24 *of each relevant Federal department or agency,*
25 *shall submit to Congress a report that provides*

1 *legislative, regulatory, and policy recommenda-*
2 *tions to improve active debris remediation mis-*
3 *sions, as applicable.*

4 (D) *TECHNICAL ANALYSIS.—*

5 (i) *IN GENERAL.—To inform decisions*
6 *regarding the acquisition of active debris re-*
7 *mediation services by the Federal Govern-*
8 *ment, not later than 1 year after the date*
9 *on which an award is made under para-*
10 *graph (1), the Administrator shall submit*
11 *to Congress a report that—*

12 (I) *summarizes the cost-effective-*
13 *ness, and provides a technical analysis*
14 *of, technologies developed under the*
15 *demonstration project;*

16 (II) *identifies any technology gaps*
17 *addressed by the demonstration project*
18 *and any remaining technology gaps;*
19 *and*

20 (III) *provides, as applicable, any*
21 *further legislative, regulatory, and pol-*
22 *icy recommendations to enable active*
23 *debris remediation missions.*

24 (ii) *AVAILABILITY.—The Administra-*
25 *tion shall make the report submitted under*

1 *clause (i) available to the Secretary, the*
2 *Secretary of Defense, and other relevant*
3 *Federal departments and agencies, as deter-*
4 *mined by the Administrator.*

5 (7) *INTERNATIONAL COOPERATION.—*

6 (A) *IN GENERAL.—In carrying out the dem-*
7 *onstration project, the Administrator, in con-*
8 *sultation with the National Space Council and*
9 *in collaboration with the Secretary of State, may*
10 *pursue a cooperative relationship with one or*
11 *more partner countries to enable the remediation*
12 *of orbital debris that is under the jurisdiction of*
13 *such partner countries.*

14 (B) *ARRANGEMENT OR AGREEMENT WITH*
15 *PARTNER COUNTRY.—Any arrangement or agree-*
16 *ment entered into with a partner country under*
17 *subparagraph (A) shall be—*

18 (i) *concluded—*

19 (I) *in the interests of the United*
20 *States Government; and*

21 (II) *without prejudice to any con-*
22 *tractual arrangement among commer-*
23 *cial parties that may be required to*
24 *complete the active debris remediation*
25 *mission concerned; and*

1 (ii) consistent with the international
2 obligations of the United States under the
3 international legal framework governing
4 outer space activities.

5 (c) *AUTHORIZATION OF APPROPRIATIONS.*—There is
6 authorized to be appropriated to the Administrator to carry
7 out this section \$150,000,000 for the period of fiscal years
8 2024 through 2028.

9 **SEC. 5. ACTIVE DEBRIS REMEDIATION SERVICES.**

10 (a) *IN GENERAL.*—To foster the competitive develop-
11 ment, operation, improvement, and commercial availability
12 of active debris remediation services, and in consideration
13 of the economic analysis required by subsection (b) and the
14 briefing and reports under section 4(b)(6), the Adminis-
15 trator and the head of each relevant Federal department
16 or agency may acquire services for the remediation of or-
17 bital debris, whenever practicable, through fair and open
18 competition for contracts that are well-defined, milestone-
19 based, and in accordance with the Federal Acquisition Reg-
20 ulation.

21 (b) *ECONOMIC ANALYSIS.*—Based on the results of the
22 demonstration project, the Secretary, acting through the Of-
23 fice of Space Commerce, shall publish an assessment of the
24 estimated Federal Government and private sector demand

1 *for orbital debris remediation services for the 10-year period*
2 *beginning in 2025.*

3 **SEC. 6. UNIFORM ORBITAL DEBRIS STANDARD PRACTICES**
4 **FOR UNITED STATES SPACE ACTIVITIES.**

5 (a) *IN GENERAL.*—*Not later than 90 days after the*
6 *date of the enactment of this Act, the National Space Coun-*
7 *cil, in coordination with the Secretary, the Administrator*
8 *of the Federal Aviation Administration, the Secretary of*
9 *Defense, the Federal Communications Commission, and the*
10 *Administrator, shall initiate an update to the Orbital De-*
11 *bris Mitigation Standard Practices that—*

12 (1) *considers planned space systems, including*
13 *satellite constellations; and*

14 (2) *addresses—*

15 (A) *collision risk;*

16 (B) *explosion risk;*

17 (C) *casualty probability;*

18 (D) *post-mission disposal of space systems;*

19 (E) *time to disposal or de-orbit;*

20 (F) *spacecraft collision avoidance and auto-*
21 *mated identification capability; and*

22 (G) *the ability to track orbital debris of de-*
23 *creasing size.*

24 (b) *CONSULTATION.*—*In developing the update under*
25 *subsection (a), the National Space Council, or a designee*

1 *of the National Space Council, shall seek advice and input*
2 *on commercial standards and best practices from represent-*
3 *atives of the commercial space industry, academia, and*
4 *nonprofit organizations, including through workshops and,*
5 *as appropriate, advance public notice and comment proc-*
6 *esses under chapter 5 of title 5, United States Code.*

7 *(c) PUBLICATION.—Not later than 1 year after the date*
8 *of the enactment of this Act, such update shall be published*
9 *in the Federal Register and posted to the relevant Federal*
10 *Government internet websites.*

11 *(d) REGULATIONS.—To promote uniformity and avoid*
12 *duplication in the regulation of space activity, including*
13 *licensing by the Federal Aviation Administration, the Na-*
14 *tional Oceanic and Atmospheric Administration, and the*
15 *Federal Communications Commission, such update, after*
16 *publication, shall be used to inform the further development*
17 *and promulgation of Federal regulations relating to orbital*
18 *debris.*

19 *(e) INTERNATIONAL PROMOTION.—To encourage effec-*
20 *tive and nondiscriminatory standards, best practices, rules,*
21 *and regulations implemented by other countries, such up-*
22 *date shall inform bilateral and multilateral discussions fo-*
23 *cused on the authorization and continuing supervision of*
24 *nongovernmental space activities.*

1 (f) *PERIODIC REVIEW.*—Not less frequently than every
2 5 years, the *Orbital Debris Mitigation Standard Practices*
3 referred to in subsection (a) shall be assessed and, if nec-
4 essary, updated, used, and promulgated in a manner con-
5 sistent with this section.

6 **SEC. 7. STANDARD PRACTICES FOR SPACE TRAFFIC CO-**
7 **ORDINATION.**

8 (a) *IN GENERAL.*—The Secretary, in coordination
9 with the Secretary of Defense and members of the National
10 Space Council and the Federal Communications Commis-
11 sion, shall facilitate the development of standard practices
12 for on-orbit space traffic coordination based on existing
13 guidelines and best practices used by Government and com-
14 mercial space industry operators.

15 (b) *CONSULTATION.*—In facilitating the development
16 of standard practices under subsection (a), the Secretary,
17 through the Office of Space Commerce, in consultation with
18 the National Institute of Standards and Technology, shall
19 engage in frequent and routine consultation with represent-
20 atives of the commercial space industry, academia, and
21 nonprofit organizations.

22 (c) *PROMOTION OF STANDARD PRACTICES.*—On com-
23 pletion of such standard practices, the Secretary, the Sec-
24 retary of State, the Secretary of Transportation, the Ad-
25 ministrator, and the Secretary of Defense shall promote the

- 1 *adoption and use of the standard practices for domestic and*
- 2 *international space missions.*

Calendar No. 206

118TH CONGRESS
1ST Session
S. 447

A BILL

To establish a demonstration program for the active remediation of orbital debris and to require the development of uniform orbital debris standard practices in order to support a safe and sustainable orbital environment, and for other purposes.

SEPTEMBER 12, 2023

Reported with an amendment