

115TH CONGRESS  
1ST SESSION

# S. 1410

To further the development of unmanned aircraft system technology through investing in additional research, building a trained workforce, and establishing working groups to address near-term and long-term challenges, and for other purposes.

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## IN THE SENATE OF THE UNITED STATES

JUNE 22, 2017

Mr. WARNER (for himself, Mr. HOEVEN, Ms. CORTEZ MASTO, and Mr. HELLER) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

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## A BILL

To further the development of unmanned aircraft system technology through investing in additional research, building a trained workforce, and establishing working groups to address near-term and long-term challenges, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Safe Development, Re-  
5 search, and Opportunities Needed for Entrepreneurship  
6 Act of 2017” or the “Safe DRONE Act of 2017”.

1 **SEC. 2. DEFINITIONS.**

2 Except as otherwise specifically provided, in this Act,  
3 the terms “unmanned aircraft”, “unmanned aircraft sys-  
4 tem”, and “small unmanned aircraft” have the meanings  
5 given those terms in section 331 of the FAA Moderniza-  
6 tion and Reform Act of 2012 (Public Law 112–95; 49  
7 U.S.C. 40101 note).

8 **SEC. 3. SENSE OF CONGRESS ON EMERGENCY EXEMPTION**  
9 **PROCESS.**

10 It is the sense of Congress that the Administrator  
11 of the Federal Aviation Administration should comply as  
12 soon as possible, and not later than 60 days after the date  
13 of the enactment of this Act, with the requirement under  
14 section 2207 of the FAA Extension, Safety, and Security  
15 Act of 2016 (Public Law 114–190; 49 U.S.C. 40101 note)  
16 to publish guidance for applications for, and procedures  
17 for the processing of, on an emergency basis, exemptions  
18 or certificates of authorization or waiver for the use of  
19 unmanned aircraft systems by or on behalf of civil or pub-  
20 lic operators in response to a catastrophe, disaster, or  
21 other emergency to facilitate emergency response oper-  
22 ations, such as firefighting, search and rescue, post-cata-  
23 strophic response operations, such as utility and infra-  
24 structure restoration efforts, and the safe and prompt  
25 processing, adjustment, and payment of insurance claims.

1 **SEC. 4. PLAN FOR FULL OPERATIONAL CAPABILITY OF UN-**  
2 **MANNED AIRCRAFT SYSTEMS TRAFFIC MAN-**  
3 **AGEMENT.**

4 (a) **IN GENERAL.**—The Secretary of Transportation,  
5 in coordination with the Administrator of the National  
6 Aeronautics and Space Administration and industry stake-  
7 holders, shall develop an implementation plan to achieve  
8 full operational capability of unmanned aircraft systems  
9 traffic management (in this section referred to as  
10 “UTM”) and ensure the safety and security of all aircraft.

11 (b) **REQUIREMENTS.**—In developing the plan re-  
12 quired by subsection (a), the Secretary shall—

13 (1) establish a timeline for certifying an oper-  
14 ational capability of UTM as safe and approved for  
15 use;

16 (2) establish criteria to be used to certify a  
17 UTM system under paragraph (1), including the  
18 demonstration and validation of such a system at  
19 the test ranges designated under section 332(c) of  
20 the FAA Modernization and Reform Act of 2012  
21 (Public Law 112–95; 49 U.S.C. 40101 note); and

22 (3) outline the roles of industry and govern-  
23 ment in establishing an operational UTM.

24 (c) **ASSESSMENTS.**—The plan required by subsection  
25 (a) shall include an assessment of various components nec-

1 essary for and possible with the full operational capability  
2 of UTM, including—

3 (1) identification of unmanned aircraft systems  
4 in the national airspace system;

5 (2) deconfliction of unmanned aircraft systems  
6 in the national airspace system;

7 (3) mitigation of effects of unmanned aircraft  
8 systems in the national airspace system;

9 (4) the extent that UTM may rely on or use re-  
10 sources of the Federal Government;

11 (5) the need for additional detect-and-avoid  
12 technologies to detect cooperative and noncoopera-  
13 tive aircraft;

14 (6) interoperability with traditional air traffic  
15 management services and technology;

16 (7) the potential for UTM to manage higher al-  
17 titude operations of unmanned aircraft systems and  
18 unmanned aircraft systems weighing more than 55  
19 pounds; and

20 (8) cybersecurity protections and national secu-  
21 rity benefits.

22 (d) DEADLINE.—Not later than one year after the  
23 date of the enactment of this Act, the Secretary shall—

24 (1) complete the plan required by subsection

25 (a);

1 (2) submit the plan to—

2 (A) the Committee on Commerce, Science,  
3 and Transportation of the Senate; and

4 (B) the Committee on Science, Space, and  
5 Technology and the Committee on Transpor-  
6 tation and Infrastructure of the House of Rep-  
7 resentatives; and

8 (3) publish the plan on a publicly accessible  
9 Internet website of the Federal Aviation Administra-  
10 tion.

11 **SEC. 5. COMMUNITY AND TECHNICAL COLLEGE CENTERS**  
12 **OF EXCELLENCE IN SMALL UNMANNED AIR-**  
13 **CRAFT SYSTEM TECHNOLOGY TRAINING.**

14 (a) DESIGNATION.—Not later than 120 days after  
15 the date of the enactment of this Act, the Secretary of  
16 Transportation, in consultation with the Secretary of Edu-  
17 cation and the Secretary of Labor, shall, subject to para-  
18 graph (2), designate consortia of public, 2-year institu-  
19 tions of higher education as Community and Technical  
20 College Centers of Excellence in Small Unmanned Aircraft  
21 System Technology Training (in this section referred to  
22 as the “Centers of Excellence”).

23 (b) FUNCTIONS.—The Centers of Excellence shall  
24 seek to expand their capacity to train students for career  
25 opportunities in industry and government service related

1 to the use of small unmanned aircraft systems, including  
2 by—

3 (1) admitting more students;

4 (2) training faculty;

5 (3) expanding facilities;

6 (4) establishing new career pathways from sec-  
7 ondary school to associate degree and baccalaureate  
8 degree programs; and

9 (5) awarding credit for prior learning experi-  
10 ence, including military service.

11 (c) EDUCATION AND TRAINING REQUIREMENTS.—

12 The Centers of Excellence shall address education and  
13 training requirements associated with various types of  
14 small unmanned aircraft systems, components, and related  
15 equipment, including with respect to—

16 (1) multi-rotor and fixed-wing small unmanned  
17 aircraft;

18 (2) flight systems, radio controllers, compo-  
19 nents, and characteristics of such aircraft;

20 (3) routine maintenance, uses and applications,  
21 privacy concerns, safety, and insurance for such air-  
22 craft;

23 (4) hands-on flight practice using small model  
24 quadcopters and computer simulator training;

1           (5) use of small unmanned aircraft in various  
2 industry applications and local, State, and Federal  
3 Government programs and services, including in ag-  
4 riculture, law enforcement, monitoring oil and gas  
5 pipelines, natural disaster response and recovery,  
6 fire and emergency services, and other emerging  
7 areas;

8           (6) Federal policies concerning small unmanned  
9 aircraft;

10          (7) dual credit programs to deliver small un-  
11 manned aircraft training opportunities to secondary  
12 school students; and

13          (8) training with respect to sensors and the  
14 processing, analyzing, and visualizing of data col-  
15 lected by small unmanned aircraft.

16          (d) COLLABORATION.—The Centers of Excellence  
17 shall seek to collaborate with institutions participating in  
18 the Alliance for System Safety of UAS through Research  
19 Excellence of the Federal Aviation Administration and  
20 with the test ranges designated under section 332(e) of  
21 the FAA Modernization and Reform Act of 2012 (Public  
22 Law 112–95; 49 U.S.C. 40101 note).

23          (e) AUTHORIZATION OF APPROPRIATIONS.—There  
24 are authorized to be appropriated to the Secretary of

1 Transportation \$5,000,000 for each of the fiscal years  
2 2018 through 2023 to carry out this section.

3 (f) INSTITUTION OF HIGHER EDUCATION.—In this  
4 section, the term “institution of higher education” has the  
5 meaning given the term in section 101 of the Higher Edu-  
6 cation Act of 1965 (20 U.S.C. 1001).

7 **SEC. 6. INTERAGENCY WORKING GROUP ON COORDINATED**  
8 **FEDERAL POLICY FOR COMMUNICATIONS**  
9 **AMONG UNMANNED AIRCRAFT SYSTEMS.**

10 (a) SENSE OF CONGRESS.—It is the sense of Con-  
11 gress that—

12 (1) a Federal policy for communications among  
13 unmanned aircraft systems, which may include com-  
14 munications through spectrum, wireless, or broad-  
15 cast networks, or other means, requires coordination  
16 among Federal agencies in order to facilitate the  
17 safe integration of unmanned aircraft systems into  
18 the national airspace system; and

19 (2) a policy described in paragraph (1) should  
20 ensure safety, promote investment, and foster inno-  
21 vation to benefit all unmanned aircraft systems  
22 stakeholders, including manufacturers, operators,  
23 and consumers.

24 (b) ESTABLISHMENT OF WORKING GROUP.—Not  
25 later than 60 days after the date of the enactment of this



1 Act, the Assistant Secretary and the Chairman shall es-  
2 tablish a working group to make recommendations with  
3 respect to the coordination of Federal policy for commu-  
4 nications among unmanned aircraft systems to facilitate  
5 the safe integration of unmanned aircraft systems into the  
6 national airspace system.

7 (c) MEMBERSHIP.—

8 (1) IN GENERAL.—The working group estab-  
9 lished under subsection (b) shall be composed of  
10 Federal stakeholders described in paragraph (2) and  
11 non-Federal stakeholders described in paragraph  
12 (3).

13 (2) FEDERAL STAKEHOLDERS.—The Federal  
14 stakeholders described in this paragraph are rep-  
15 resentatives of—

16 (A) the National Telecommunications and  
17 Information Administration;

18 (B) the Federal Communications Commis-  
19 sion;

20 (C) the Federal Aviation Administration;

21 (D) the National Aeronautics and Space  
22 Administration;

23 (E) the Department of Defense;

24 (F) the Department of Homeland Security;

25 (G) the Department of Justice; and

1 (H) any other Federal agency the Assist-  
2 ant Secretary considers appropriate.

3 (3) NON-FEDERAL STAKEHOLDERS.—The non-  
4 Federal stakeholders described in this paragraph are  
5 representatives of—

6 (A) unmanned aircraft systems manufac-  
7 turers;

8 (B) unmanned aircraft systems operators;

9 (C) customers or end users of data col-  
10 lected by unmanned aircraft systems operators;

11 (D) unmanned aircraft systems technology  
12 providers;

13 (E) commercial radio spectrum license  
14 holders;

15 (F) operators of commercial services in un-  
16 licensed spectrum allocations;

17 (G) commercial radio equipment manufac-  
18 turers;

19 (H) appropriate standards-setting organi-  
20 zations; and

21 (I) the test ranges designated under sec-  
22 tion 332(c) of the FAA Modernization and Re-  
23 form Act of 2012 (Public Law 112–95; 49  
24 U.S.C. 40101 note).

1 (d) CONSIDERATIONS.—In making recommendations  
2 under subsection (b), the working group established under  
3 that subsection shall consider current and anticipated  
4 communications needs for unmanned aircraft systems, in-  
5 cluding the development of—

6 (1) sense-and-avoid and detect-and-avoid tech-  
7 nology;

8 (2) payload data transmissions;

9 (3) communications link integration in un-  
10 manned aircraft systems;

11 (4) appropriate standards for communications  
12 links for various altitudes, aircraft, and operations;

13 (5) traditional and unmanned aircraft system  
14 air traffic management technology;

15 (6) command and control at high altitudes;

16 (7) shared spectrum access and management  
17 technologies, including dynamic spectrum-sharing  
18 schemes, contention-based protocols, and cognitive  
19 radio capabilities;

20 (8) internationally harmonized communications  
21 standards; and

22 (9) radio-frequency communications security  
23 standards.

24 (e) REPORT TO CONGRESS.—Not later than one year  
25 after the date of the enactment of this Act, and annually

1 thereafter through January 1, 2023, the Assistant Sec-  
2 retary shall submit to Congress a report on the status of  
3 the development of a Federal policy for communications  
4 among unmanned aircraft systems, including—

5 (1) a summary of considerations under sub-  
6 section (d); and

7 (2) recommendations for legislative or regu-  
8 latory action related to that policy that is necessary  
9 to facilitate the safe integration of unmanned air-  
10 craft systems into the national airspace system.

11 (f) DEFINITIONS.—In this section:

12 (1) ASSISTANT SECRETARY.—The term “Assist-  
13 ant Secretary” means the Assistant Secretary of  
14 Commerce for Communications and Information.

15 (2) CHAIRMAN.—The term “Chairman” means  
16 the Chairman of the Federal Communications Com-  
17 mission.

18 **SEC. 7. INTERAGENCY WORKING GROUP ON ENHANCED**  
19 **SAFETY AND SECURITY FOR SMALL UN-**  
20 **MANNED AIRCRAFT SYSTEMS.**

21 (a) IN GENERAL.—Not later than 90 days after the  
22 date of the enactment of this Act, the Administrator of  
23 the Federal Aviation Administration, in coordination with  
24 the Secretary of Homeland Security, shall establish an  
25 interagency working group—

1           (1) to examine methods and structures to en-  
2           hance the safety and security of expanded operations  
3           by small unmanned aircraft that involve operations  
4           beyond the visual line of sight of the operator and  
5           over people; and

6           (2) to clearly delineate roles and responsibilities  
7           among agencies participating in the working group  
8           in determining proper safety and security-related ob-  
9           ligations and oversight.

10          (b) MEMBERSHIP.—The interagency working group  
11          established under subsection (a) shall, in addition to the  
12          Administrator of the Federal Aviation Administration and  
13          the Secretary of Homeland Security, be composed of the  
14          following:

15                 (1) The Secretary of Defense.

16                 (2) The Attorney General.

17                 (3) The Director of the Federal Bureau of In-  
18          vestigation.

19                 (4) The heads of such other Federal agencies as  
20          the Administrator of the Federal Aviation Adminis-  
21          tration considers appropriate.

22          (c) CONSULTATIONS.—The interagency working  
23          group established under subsection (a) shall regularly con-  
24          sult with representatives of—

1           (1) unmanned aircraft systems industry organi-  
2           zations and stakeholders; and

3           (2) the test ranges designated under section  
4           332(c) of the FAA Modernization and Reform Act  
5           of 2012 (Public Law 112–95; 49 U.S.C. 40101  
6           note).

7           (d) REPORT.—Not later than 180 days after the date  
8           of the enactment of this Act, the interagency working  
9           group established under subsection (a) shall—

10           (1) develop conclusions and recommendations  
11           with respect to the matters specified in that sub-  
12           section; and

13           (2) submit to Congress a report on such conclu-  
14           sions and recommendations.

15           (e) RULEMAKING.—Not later than 270 days after the  
16           date of the enactment of this Act, the Administrator of  
17           the Federal Aviation Administration shall release for pub-  
18           lic comment a notice of proposed rulemaking to modify  
19           part 107 of title 14, Code of Federal Regulations, to allow  
20           for operations by small unmanned aircraft, including oper-  
21           ations over people, operations beyond the visual line of  
22           sight of the operator, operations at night, and operations  
23           of multiple unmanned aircraft systems by a single remote  
24           pilot.

1 **SEC. 8. EXTENSION OF PILOT PROGRAM FOR INTEGRATION**  
2 **UNMANNED AIRCRAFT SYSTEMS INTO THE**  
3 **NATIONAL AIRSPACE SYSTEM.**

4 (a) IN GENERAL.—Section 332(c)(1) of the FAA  
5 Modernization and Reform Act of 2012 (Public Law 112–  
6 95; 49 U.S.C. 40101 note) is amended by striking “Sep-  
7 tember 30, 2019” and inserting “September 30, 2024”.

8 (b) AUTHORIZATION OF APPROPRIATIONS.—There  
9 are authorized to be appropriated to the Administrator of  
10 the Federal Aviation Administration \$14,000,000 for each  
11 of fiscal years 2018 through 2024 to carry out the pilot  
12 program under section 332(c) of the FAA Modernization  
13 and Reform Act of 2012 (Public Law 112–95; 49 U.S.C.  
14 40101 note), to be distributed among the test ranges des-  
15 ignated under that section for further research and devel-  
16 opment on the safe integration of unmanned aircraft sys-  
17 tems into the national airspace system.

18 **SEC. 9. EXCEPTION FOR HOBBYIST-OPERATED SMALL UN-**  
19 **MANNED AIRCRAFT.**

20 (a) IN GENERAL.—Notwithstanding any other provi-  
21 sion of law, a person may operate an unmanned aircraft  
22 without specific operating authority from the Federal  
23 Aviation Administration if—

24 (1) the aircraft is flown strictly for hobby or  
25 recreational use;

1           (2) the aircraft is operated in accordance with  
2 the safety guidelines of a community-based organiza-  
3 tion that have been published in a publically acces-  
4 sible format by the Federal Aviation Administration;

5           (3) the aircraft is not flown beyond visual line  
6 of sight of the person operating the aircraft or per-  
7 sons colocated with and in direct communication  
8 with the person operating the aircraft;

9           (4) the aircraft is operated in a manner that  
10 does not interfere with and gives way to any manned  
11 aircraft and does not pose undue hazard to any  
12 other aircraft, obstacle, or person;

13           (5)(A) the operator—

14                   (i) obtains prior authorization from  
15 air traffic control before operating in Class  
16 B, Class C, or Class D airspace or within  
17 the lateral boundaries of the surface area  
18 of Class E airspace designated for an air-  
19 port; and

20                   (ii) complies with all temporary and  
21 permanent airspace restrictions in place  
22 for the furtherance of security and law en-  
23 forcement interests; or

24           (B) in the case of an operator conducting  
25 operations from a permanent location within



1           such airspace or a community-based organiza-  
2           tion conducting a sanctioned event at a fixed  
3           site within such airspace, establishes a mutually  
4           agreed upon operating procedure with the air-  
5           port operator and the airport air traffic control  
6           tower (when an air traffic facility is located at  
7           the airport);

8           (6) the aircraft is flown from the surface to not  
9           more than 400 feet above ground level, except under  
10          special conditions and programs established by a  
11          community-based organization;

12          (7) the aircraft is registered and marked in ac-  
13          cordance with chapter 441 of title 49, United States  
14          Code, and proof of registration is made available to  
15          the Administrator or a law enforcement agency upon  
16          request; and

17          (8) the operator has completed an online safety  
18          course administered by the Federal Aviation Admin-  
19          istration for the operation of unmanned aircraft sys-  
20          tems under this section, and proof of completion of  
21          the safety course is made available to the Adminis-  
22          trator or a law enforcement agency upon request.

23          (b) UPDATES.—

24          (1) IN GENERAL.—The Administrator, in col-  
25          laboration with government and industry stake-

1 holders, including community-based organizations,  
2 shall initiate a process to periodically update the  
3 operational parameters under subsection (a), as ap-  
4 propriate.

5 (2) CONSIDERATIONS.—In updating an oper-  
6 ational parameter under paragraph (1), the Admin-  
7 istrator shall consider—

8 (A) appropriate operational limitations to  
9 mitigate aviation safety risk and risk to the un-  
10 involved public;

11 (B) operations outside the membership,  
12 guidelines, and programming of a community-  
13 based organization;

14 (C) physical characteristics, technical  
15 standards, and classes of aircraft operating  
16 under this section;

17 (D) trends in use, enforcement, or inci-  
18 dents involving unmanned aircraft systems;

19 (E) ensuring, to the greatest extent prac-  
20 ticable, that updates to the operational param-  
21 eters correspond to, and leverage, advances in  
22 technology; and

23 (F) equipage requirements that facilitate  
24 operations and further integrate all unmanned  
25 aircraft systems into the national airspace sys-

1           tem, such as through unmanned aircraft system  
2           traffic management and remote identification  
3           and tracking.

4           (3) RULEMAKING.—The Administrator may  
5           prescribe regulations for hobbyist-operated small un-  
6           manned aircraft based on the process established  
7           under paragraph (1).

8           (c) RULES OF CONSTRUCTION.—Nothing in this sec-  
9           tion shall be construed—

10           (1) to expand the authority of the Adminis-  
11           trator to require operators of small unmanned air-  
12           craft operating under an exemption under subsection  
13           (a) to be required to seek authorization from the Ad-  
14           ministrator before conducting an operation in the  
15           national airspace system other than as required by  
16           subsection (a); or

17           (2) to limit the authority of the Administrator  
18           to pursue an enforcement action against persons op-  
19           erating small unmanned aircraft in violation of this  
20           section or any other provision of law.

21           (d) LIST OF COMMUNITY-BASED ORGANIZATIONS.—

22           (1) IN GENERAL.—The Administrator shall  
23           maintain on a publicly available Internet website of  
24           the Federal Aviation Administration a list of com-  
25           munity-based organizations under which small un-

1       manned aircraft may be operated in accordance with  
2       subsection (a).

3               (2) INCLUSION OF ORGANIZATIONS.—The Ad-  
4       ministrator may include a community-based organi-  
5       zation on the list required by paragraph (1) if the  
6       organization submits to the Federal Aviation Admin-  
7       istration—

8                       (A) a statement that the organization  
9                       meets the definition of “community-based orga-  
10                      nization” under subsection (e); and

11                     (B) the safety guidelines of the organiza-  
12                     tion.

13               (3) REMOVAL.—The Administrator may remove  
14       a community-based organization from the list re-  
15       quired by paragraph (1).

16               (4) GUIDANCE.—The Administrator shall pub-  
17       lish guidance on the process for including commu-  
18       nity-based organizations on, and removing such or-  
19       ganizations, from the list required by paragraph (1).

20       (e) DEFINITIONS.—In this section:

21                     (1) COMMUNITY-BASED ORGANIZATION.—The  
22       term “community-based organization” means an or-  
23       ganization that—

1 (A) represents the aeromodeling and hobby  
2 and recreational unmanned aircraft community  
3 within the United States;

4 (B) provides its members a comprehensive  
5 set of safety guidelines that underscore safe op-  
6 erations of unmanned aircraft within the na-  
7 tional airspace system and the protection and  
8 safety of the general public on the ground;

9 (C) develops and maintains mutually sup-  
10 portive programming with educational institu-  
11 tions, government entities, and other aviation  
12 associations; and

13 (D) acts as a liaison with government  
14 agencies as an advocate for its members.

15 (2) SMALL UNMANNED AIRCRAFT.—The term  
16 “small unmanned aircraft” means an unmanned air-  
17 craft that—

18 (A) is capable of sustained flight in the at-  
19 mosphere; and

20 (B) weighs less than 55 pounds, including  
21 the weight of anything attached to or carried by  
22 the aircraft, unless otherwise approved through  
23 a design, construction, inspection, flight test,  
24 and operational safety program administered by  
25 a community-based organization.

1 (f) CONFORMING REPEAL.—Section 336 of the FAA  
2 Modernization and Reform Act of 2012 (Public Law 112–  
3 95; 49 U.S.C. 40101 note) and the item relating to that  
4 section in the table of contents for that Act are repealed.

5 **SEC. 10. ENSURING CONTINUED DEVELOPMENT OF UN-**  
6 **MANNED AIRCRAFT SYSTEM INDUSTRY.**

7 Not later than 30 days after the date of the enact-  
8 ment of this Act, the Director of the Office of Manage-  
9 ment and Budget, consistent with section 4(c) of Execu-  
10 tive Order 13771 (82 Fed. Reg. 9339; relating to reducing  
11 regulation and controlling regulatory costs), shall exempt  
12 from the definitions of “regulation” and “rule” for the  
13 purposes of that Executive order any final action taken  
14 by the Secretary of Transportation or the Administrator  
15 of the Federal Aviation Administration on or after Janu-  
16 ary 30, 2017, primarily related to unmanned aircraft sys-  
17 tems.

18 **SEC. 11. GOVERNMENT ACCOUNTABILITY OFFICE REPORT**  
19 **ON CYBERSECURITY AND OPERATIONAL**  
20 **CONCERNS.**

21 Not later than one year after the date of the enact-  
22 ment of this Act, the Comptroller General of the United  
23 States shall submit to Congress a report—

1           (1) describing developments and protections re-  
2 relating to cybersecurity and operational control con-  
3 cerns with respect to unmanned aircraft systems;

4           (2) making recommendations for developments  
5 and protections described in paragraph (1) that  
6 could better address such concerns; and

7           (3) making recommendations for clearly defin-  
8 ing Federal jurisdiction and oversight of unmanned  
9 aircraft system security matters.

○