

Calendar No. 159

114TH CONGRESS }
1st Session }

SENATE

{ REPORT
114-88

U.S. COMMERCIAL SPACE LAUNCH
COMPETITIVENESS ACT

R E P O R T

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND
TRANSPORTATION

ON

S. 1297



JULY 22, 2015.—Ordered to be printed

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED FOURTEENTH CONGRESS

FIRST SESSION

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U.S. COMMERCIAL SPACE LAUNCH COMPETITIVENESS ACT

JULY 22, 2015.—Ordered to be printed

Mr. THUNE, from the Committee on Commerce, Science, and
Transportation, submitted the following

R E P O R T

[To accompany S. 1297]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 1297) to update the Commercial Space Launch Act by amending title 51, United States Code, to promote competitiveness of the U.S. commercial space sector, and for other purposes, having considered the same, reports favorably thereon with an amendment (in the nature of a substitute) and recommends that the bill (as amended) do pass.

PURPOSE OF THE BILL

The purpose of S. 1297, the U.S. Commercial Space Launch Competitiveness Act of 2015, as reported, is to update the Commercial Space Launch Act by amending title 51, United States Code, to promote competitiveness of the U.S. commercial space sector, and for other purposes.

BACKGROUND AND NEEDS

On January 25, 1984, President Reagan stated in his State of the Union address that the market for space transportation could surpass our capacity to develop it, and that companies interested in putting payloads into space must have access to private sector launch services. President Reagan issued Executive Order 12465, which designated the Department of Transportation (DOT) to take the lead on encouraging and facilitating commercial space activities by the private sector. Soon thereafter, Congress passed the Commercial Space Launch Act of 1984 (CSLA) (P.L. 98-575). The CSLA has been amended several times, most notably in 1988 and 2004,

with the creation of an indemnification risk sharing regime and a learning period allowing the industry time to mature before additional regulations could be imposed. In addition to laying out the licensure process to ensure the safety of launches, the CSLA provides authority to the Secretary of Transportation (Secretary) to indemnify a launch provider from third-party claims, subject to additional appropriations and after the provider's insurance is exhausted, should an accident occur.

S. 1297 would provide necessary updates to the CSLA that reflect the needs of a growing U.S. commercial human space flight industry that is continuing to develop and mature. The bill would encourage the competitiveness of the U.S. commercial space industry in the global commercial space marketplace.

The U.S. commercial human space flight industry continues to work toward a future of providing safe trips to and from space for paying customers on a regular basis. In many cases, launch vehicles that could transport humans could have other commercial applications, such as the transportation of cargo, commercial remote sensing, microgravity research, and atmospheric research. The industry has made much progress over the last decade, from flight tests to regular cargo resupply missions to the International Space Station (ISS).

The Office of Commercial Space Transportation was first established by the CSLA as part of the Office of the Secretary of Transportation. In 1995, the office was transferred to the Federal Aviation Administration (FAA), laying the groundwork for a regulatory regime for FAA-licensed commercial space launches. Now known by the acronym "AST," derived from the Associate Administrator for Commercial Space Transportation, the purpose of the office is to regulate the U.S. commercial space transportation industry, ensure compliance with applicable international obligations of the United States, and to protect the public health, safety, safety of property, and national security and foreign policy interests of the United States. In doing so, AST issues licenses and permits for commercial launch and reentry activities, as well as the operation of launch and reentry sites within the United States or as carried out by U.S. citizens. By contrast, the National Aeronautics and Space Administration (NASA) is not a regulatory agency; so, while NASA has funded some development of commercial space vehicles, the FAA (as designated by the Secretary) is the regulatory authority for licensure of commercial space launch activities.

As activity in the commercial launch industry has increased in recent years, the FAA has started to consider the potential for an expansion of its licensing and regulatory activities regarding commercial space flights. Under current law, however, the FAA is constrained from proposing or implementing new regulations governing commercial space flight that would affect the operations of the crew transportation capabilities currently under development. The moratorium on such regulations during the industry's "learning period" was first enacted under section 2(c) of the CSLA Amendments of 2004 (118 Stat. 3977), and in 2012 was extended through September 30, 2015 (51 U.S.C. 50905(c)), with the rationale that FAA regulatory burdens on the relatively new and rapidly evolving commercial space launch industry could slow innovation, particularly when it remains to be clear which areas the FAA

should regulate. Congress has indicated it wants the FAA to be in discussions with industry regarding safety, and excepted from this regulatory moratorium are potential new regulations on vehicle design or operation that stem from design issues that have contributed to a serious or fatal accident. Additionally, space flight participants participate under an informed consent risk regime. Current restrictions on FAA regulation authority apply only to those regulations intended to protect the safety of crew and spaceflight participants, and this legislation would add government astronauts. There are no such restrictions on regulations protecting the safety of the uninvolved public.

The current commercial space launch indemnification for third-party losses resulting from launch-related activities dates back to 1988. Congress has extended the indemnification authority seven times since the original enactment. To date, this indemnification risk sharing regime has never been activated. The current extension expires on December 31, 2016 (51 U.S.C. 50915(f)). Other countries with launch activities provide similar launch indemnity programs. However, according to the Government Accountability Office testimony before the Subcommittee on Space of the Committee on Science, Space, and Technology of the House of Representatives on February 4, 2014, as of July 2012, the United States provided less third party liability coverage than China, France, or Russia, the primary countries that have conducted commercial space launches in the last 5 years. These countries each had an indemnification regime in which the government states that it would assume an even greater share of the risk compared to that of the United States because each country had a two-tiered system with no limit on the amount of government indemnification.

Under the current risk mitigation regime, the operator is responsible for damage to: (1) third parties, which Congress has defined as persons not involved in the launch or reentry; and (2) damage to Government property. Operators must maintain minimum levels of financial responsibility by insurance or otherwise in an amount that would cover the maximum probable loss (MPL) from third-party claims as calculated by the FAA. The FAA's regulations define the MPL (the first tier of risk) to mean the greatest dollar amount of loss for bodily injury or property damage that is reasonably expected to result from a licensed or permitted activity. An operator's responsibility for the risk of the MPL is limited to no more than \$500 million for potential third party liability and no more than \$100 million for damage to government property. Indemnified damages above the MPL would be covered only by additional appropriations. The Government's liability for third party claims above the MPL amount is capped at \$1.5 billion in 1989 dollars, adjusted for inflation. Claims above this threshold revert back to the licensee.

SUMMARY OF PROVISIONS

S. 1297 would extend the existing liability indemnification regime for the commercial space transportation industry for a period of four years through 2020. The bill also would require the Secretary, in consultation with the commercial space sector and insurance providers, to evaluate the methodology used to calculate the MPL and, if necessary, develop a plan to update the methodology.

S. 1297 also would extend the regulatory moratorium (existing industry “learning period”) for a period of five years. The bill would provide statutory construction to clarify that the Secretary is authorized to discuss potential regulatory approaches with the commercial space sector during the learning period prior to issuance of any proposed rules when authorized. It is the intent of the Committee that the commercial space industry continue to develop voluntary consensus standards even before regulatory authority is vested to the Secretary and, as such, the bill would direct the Secretary to facilitate such voluntary consensus standards development as the commercial space sector continues to mature.

The Committee recognizes that while Congress can, from time to time, extend the learning period, there may be objective metrics that would indicate a proper level of maturity for the commercial space industry to be fit for regulation. S. 1297 would direct the Secretary, in consultation with the commercial space sector, to submit to the appropriate committees of Congress a report specifying such metrics for consideration.

The Committee also recognizes that the FAA has not been clear about which areas the agency should regulate first if it had more authority. To prevent regulatory uncertainty, and to provide Congress with foresight as to what the FAA would do with more regulatory authority, the bill would direct the Secretary to report every two years to the appropriate committees of Congress the commercial space activities most appropriate for regulatory action, if any, and a proposed transition plan for such regulations. At least two such reports would be produced within the window of the extended learning period to inform Congress as to the appropriateness of any disposition of the learning period in the future.

S. 1297 also would require the Secretary to submit a report to Congress for streamlining the licensing and permitting of hybrid rocket systems. Further, the bill would amend current law to ensure that an experimental permit for a suborbital rocket or suborbital rocket design would not be automatically invalidated when a license is issued for launch or reentry of that same design.

In addition, the bill would direct the White House Office of Science and Technology Policy (OSTP) to recommend approaches for oversight of commercial non-governmental activities conducted in space. The bill also would require the Secretary, in concurrence with the Secretary of Defense, to report on the feasibility of processing and releasing space situational awareness data.

Further, the bill would define government astronauts as a separate class of individuals that includes certain government employees or an international partner astronaut, who are carried within a launch vehicle or reentry vehicle. The bill also would require the Secretary to report to Congress on recommendations to streamline regulations for commercial launch and reentry operations. Finally, the bill would authorize NASA to extend the operation of the ISS through at least 2024.

LEGISLATIVE HISTORY

Senator Ted Cruz (R-TX), the chairman of the Space, Science, and Competitiveness Subcommittee of the Committee on Commerce, Science, and Transportation of the Senate introduced S. 1297 on May 12, 2015. The bill’s original co-sponsors included

Ranking Member Bill Nelson (D-FL) and Senators Gary Peters (D-MI), Marco Rubio (R-FL), and Cory Gardner (R-CO). The bill is also cosponsored by Senator Tom Udall (D-NM). S. 1297 was referred to the Committee on May 12, 2015.

On February 24, 2015, Senator Cruz, as chairman of the subcommittee, held a hearing entitled, “U.S. Human Exploration Goals and Commercial Space Competitiveness.” At the hearing the subcommittee examined, among other issues, the role of the commercial space industry and its contributions to U.S. global competitiveness, as well as necessary updates to the CSLA.

On May 20, 2015, the Committee met in open Executive Session and by voice vote ordered S. 1297 to be reported favorably with an amendment in the nature of a substitute. An amendment submitted by Senator Wicker was accepted by voice vote. That amendment would insert at the end of section 6 of the Act language directing that the report required by the section also include an assessment of the use of existing private and government test infrastructure, as appropriate, in future licensing activities,

The Majority Leader of the House of Representatives Kevin McCarthy (R-CA), along with Science, Space, and Technology Committee of the House of Representatives Chairman Lamar Smith (R-TX), Representatives Steven Palazzo (R-MS), and ten additional cosponsors, introduced H.R. 2262, the Spurring Private Aerospace Competitiveness and Entrepreneurship Act (SPACE Act) of 2015 on May 12, 2015, which includes some similar provisions as S. 1297. The legislation was reported favorably by the Science, Space, and Technology Committee of the House of Representatives by a vote of 18 to 13 on May 13, 2015. The introduced version of the SPACE Act would have extended the regulatory moratorium (existing industry “learning period”) through 2023; however, an amendment offered at markup by Representative Steve Knight (R-CA) was accepted by a vote of 18 to 12 that would further extend the learning period through 2025. On May 18, 2015, the Rules Committee of the House of Representative attached to the SPACE Act three other commercial space related bills (H.R. 1508, H.R. 2261, and H.R. 2263) that also passed the Science, Space and Technology Committee of the House of Representatives on May 13, 2015. On May 21, 2015, the House of Representatives approved by a vote of 284 to 133 the SPACE Act, which included the additional three bills as one combined package, and then the bill was referred to the Senate.

ESTIMATED COSTS

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

S. 1297—U.S. Commercial Space Launch Competitiveness Act

S. 1297 would authorize the National Aeronautics and Space Administration (NASA) to continue to maintain and operate the International Space Station (ISS) through 2024. Currently, NASA is authorized to engage in those activities through 2020. The legislation would require the Department of Transportation (DOT) and NASA to submit various reports to the Congress regarding commercial

space operations and services, industry practices, as well as to assess potential liabilities associated with commercial space launches. In addition, the legislation would allow greater flexibility to private firms seeking launch licenses from DOT and it would encourage advances in launch safety regulations.

CBO estimates that implementing S. 1297 would cost less than \$500,000 over the 2016–2020 period and about \$14.3 billion over the 2016–2025 period, assuming appropriation of the necessary amounts. Enacting S. 1297 would not affect direct spending or revenues; therefore, pay-as-you-go procedures do not apply.

S. 1297 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA) and would impose no costs on state, local, or tribal governments.

Estimated cost to the Federal Government: The estimated budgetary effects of S. 1297 are shown in the following table. The costs of this legislation fall within budget function 250 (general science, space, and technology).

	By fiscal year, in millions of dollars—											
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016–2020	2016–2025
NET CHANGES IN SPENDING SUBJECT TO APPROPRIATION												
Estimated Authorization Level	*	0	0	0	0	3,470	3,549	3,627	3,710	0	0	14,356
Estimated Outlays	*	0	0	0	0	2,568	3,459	3,605	3,687	963	0	14,282

Note: * = Less than \$500,000.

Basis of estimate: S. 1297 would authorize NASA to continue the ISS program during the 2020–2024 period. In 2014, NASA spent about \$3 billion on ISS operations. CBO’s estimate of the cost to continue ISS operations are based on historical funding and spending patterns, including an adjustment for anticipated inflation. Currently, NASA is authorized to fund the ISS through FY 2020; therefore additional spending by the federal government for that program would begin in FY 2021, assuming appropriation of necessary amounts. CBO estimates that preparing the additional reports to the Congress would cost less than \$500,000 in 2016. Enacting S. 1297 would not affect direct spending or revenues; therefore, pay-as-you-go procedures do not apply.

Pay-As-You-Go considerations: None.

Estimated intergovernmental and private-sector impact: S. 1297 contains no intergovernmental or private-sector mandates as defined in UMRA and would impose no costs on state, local, or tribal governments.

Estimate prepared by: Federal costs: Marin Burnett; Impact on state, local, and tribal governments: Jon Sperl; Impact on the private sector: Amy Petz.

Estimate approved by: Theresa Gullo, Assistant Director for Budget Analysis.

REGULATORY IMPACT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported:

NUMBER OF PERSONS COVERED

S. 1297 would update, extend, and streamline existing activities of the FAA AST. Accordingly, the number of persons covered should be largely consistent with the current levels of individuals and businesses covered by the provisions of law addressed in the bill.

ECONOMIC IMPACT

S. 1297 would not authorize any new direct spending and is therefore not expected to have an inflationary or adverse economic impact on the Nation. It is anticipated that there would be a positive economic impact from the bill since the language would promote competitiveness of a growing U.S. commercial space sector and prevent unnecessary regulatory burdens.

PRIVACY

S. 1297 would not have an adverse impact on the personal privacy of individuals affected.

PAPERWORK

The reporting requirements in S. 1297 are not expected to significantly increase the paperwork requirements for private individuals or businesses since the bill would only impact businesses already subject to FAA's permitting and licensing requirements. Indeed, it is anticipated that the streamlining provisions of the bill may reduce paperwork requirements for regulated businesses. The bill would require the Federal Government to produce six reports within one year. In addition, there are two Government reports that would be due beginning on December 31, 2016, and biennially thereafter.

CONGRESSIONALLY DIRECTED SPENDING

In compliance with paragraph 4(b) of rule XLIV of the Standing Rules of the Senate, the Committee provides that no provisions contained in the bill, as reported, meet the definition of congressionally directed spending items under the rule.

SECTION-BY-SECTION ANALYSIS

Section 1. Short title.

This section would designate the short title of this bill as the "U.S. Commercial Space Launch Competitiveness Act."

Section 2. References to title 51, United States Code.

This section would clarify that any amendments to or repeals of a section or provision are to title 51 of the United States Code, unless otherwise stated.

Section 3. Liability insurance and financial responsibility requirements.

This section would require the Secretary, in consultation with the commercial space sector and insurance providers, to evaluate and, if necessary, develop a plan to update the methodology used

to calculate the MPL from third party claims. The Secretary would be required to submit the evaluation, and any plan, to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives by September 30, 2015. It is the intent of the Committee to prevent the Government from requiring launch companies to purchase more insurance coverage than is necessary.

Section 4. Launch liability extension.

This section would extend liability insurance and financial responsibility requirements under section 50915 of title 51 of the United States Code, for licensed commercial launch and reentry activities, subject to MPL insurance requirements, from December 31, 2016, through December 31, 2020. The Committee has received compelling testimony that a stable, long-term, third party liability risk-sharing regime between the Government and licensees is important to the international competitiveness of the U.S. commercial space transportation industry.

Section 5. Commercial space launch licensing and experimental permits.

This section would amend current law to ensure that an experimental permit for a suborbital rocket or suborbital rocket design would not be automatically invalidated when a license is issued for launch or reentry of that same design. Allowable testing under an experimental permit would be broadened to include research and development for existing – rather than solely for new – design concepts, equipment, or operating techniques. This section is based upon S. 592, a bill sponsored by Senator Rubio (R-FL) with Senators Martin Heinrich (D-NM) and Tom Udall (D-NM) that was introduced on February 26, 2015. A similar bill was approved by the Committee in the 113th Congress but had no further action in the Senate.

Section 6. Licensing report.

This section would require the Secretary to submit a report to Congress, no later than 120 days after the date of enactment, on approaches for streamlining the licensing and permitting process for hybrid rocket systems that use a carrier aircraft (non-launch) to carry the suborbital vehicle (for launch) to a certain altitude where it will be released. It is the intent of the Committee that any proposed approaches for streamlining for the licensing and permitting processes would not authorize substitution of space launch certification for the regulatory requirements for space flight participants that would otherwise assure safety for regulated airspace passengers under the certification under part 121 of title 14 of the Code of Federal Regulations.

Additionally, this section also would require the report to include an assessment of existing private and Federal Government test infrastructure. It is the intent of the Committee that the commercial space sector should have the option to choose between utilizing private or Federal Government test infrastructure to collect data that may inform future launch licensing or permitting activities.

Section 7. Space authority.

This section would require the OSTP to consult with the DOT, State Department, NASA, and other relevant Federal agencies, as necessary, to submit an assessment and recommended approaches for oversight of commercial non-governmental activities conducted in space that would prioritize safety, utilize existing authorities, minimize burdens, promote the U.S. commercial space sector, and meet U.S. obligations under international treaties. The report to Congress would be required no later than 120 days after the date of enactment. It is the intent of the Committee that the assessment conducted by OSTP of current and proposed near-term, commercial non-governmental activities conducted in space also would include activities on, or making use of, other celestial bodies, such as asteroids or the moon. The report should examine and provide recommendations to address issues related to resource utilization, property rights, and non-interference that might arise from such activities.

Section 8. Space surveillance and situational awareness data.

This section would require the Secretary, in concurrence with the Secretary of Defense, to consult with other relevant Federal agencies as necessary to submit a report to Congress, no later than 120 days after the date of enactment, on the feasibility of processing and releasing safety-related space situational awareness data to any entity (consistent with national security interests and public safety obligations of the United States) on the position and trajectories of objects in space.

Section 9. Extension of certain safety regulation requirements.

This section would extend the time that the Secretary has to issue a final rule for certain regulations on the commercial space flight industry, also known as the learning period, from October 1, 2015, to October 1, 2020. This section also would codify a construction clarifying that the DOT may discuss potential regulatory approaches with the commercial space sector prior to the issuance of a notice of proposed rulemaking. This section also would direct the DOT to report to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives, no later than 270 days after the date of enactment, on the identification of key industry metrics that may indicate readiness of the commercial space sector and the DOT to transition to a regulatory approach. Further, this section would require that the Secretary to submit a report to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives beginning on December 31, 2016, and biennially thereafter, identifying the activities most appropriate for regulatory action, if any, and a proposed transition plan for such regulations.

Section 10. Industry voluntary consensus standards.

This section would require the Secretary to continue work with the commercial space sector, including the Commercial Space Transportation Advisory Committee, to facilitate the development of voluntary consensus standards based on recommended best prac-

tices as the commercial space sector continues to mature. Further, this section would require that the Secretary, in consultation with the commercial space sector, report to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives beginning on December 31, 2016, and biennially thereafter, detailing the progress the commercial space sector has made with the development of industry voluntary consensus standards.

Section 11. Government astronauts.

This section would establish “government astronaut” as a separate class of individuals from crew and space flight participants to reflect the status of certain government employees or an international partner astronaut carried within a launch vehicle or reentry vehicle. The addition of government astronaut as a distinct category would allow the DOT and NASA to exclude government astronauts from commercial license requirements that should not be applicable to certain government employees.

Section 12. Streamline commercial space launch activities.

This section would require the Secretary, in overseeing and coordinating commercial launch and reentry operations, to consult with the Secretary of Defense, NASA Administrator, and other Federal agencies, as appropriate, to work together to reduce the regulatory burden on the commercial space industry launching from federally-owned installations. The section also would require the Secretary to report on unnecessary requirements and approvals, any existing efforts for working across Federal agencies to resolve such issues, and recommendations for further streamlining commercial launch and reentry operations among multiple Federal agencies.

Section 13. Operation and utilization of the ISS.

This section would extend the operation and utilization of the ISS through at least 2024 by directing the NASA Administrator to take all the necessary steps to ensure the ISS remains a viable and productive facility capable of utilization, including its use for scientific research and commercial applications. This section would not authorize appropriations for such activities.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new material is printed in italic, existing law in which no change is proposed is shown in roman):

TITLE 51. NATIONAL AND COMMERCIAL SPACE PROGRAMS

SUBTITLE V. PROGRAMS TARGETING COMMERCIAL OPPORTUNITIES

CHAPTER 509. COMMERCIAL SPACE LAUNCH ACTIVITIES

§ 50901. Findings and purposes

(a) FINDINGS.—Congress finds that—

(1) the peaceful uses of outer space continue to be of great value and to offer benefits to all mankind;

(2) private applications of space technology have achieved a significant level of commercial and economic activity and offer the potential for growth in the future, particularly in the United States;

(3) new and innovative equipment and services are being sought, produced, and offered by entrepreneurs in telecommunications, information services, microgravity research, human space flight, and remote sensing technologies;

(4) the private sector in the United States has the capability of developing and providing private launching, reentry, and associated services that would complement the launching, reentry, and associated capabilities of the United States Government;

(5) the development of commercial launch vehicles, reentry vehicles, and associated services would enable the United States to retain its competitive position internationally, contributing to the national interest and economic well-being of the United States;

(6) providing launch services and reentry services by the private sector is consistent with the national security and foreign policy interests of the United States and would be facilitated by stable, minimal, and appropriate regulatory guidelines that are fairly and expeditiously applied;

(7) the United States should encourage private sector launches, reentries, and associated services and, only to the extent necessary, regulate those launches, reentries, and services to ensure compliance with international obligations of the United States and to protect the public health and safety, safety of property, and national security and foreign policy interests of the United States;

(8) space transportation, including the establishment and operation of launch sites, reentry sites, and complementary facilities, the providing of launch services and reentry services, the establishment of support facilities, and the providing of support services, is an important element of the transportation system of the United States, and in connection with the commerce of the United States there is a need to develop a strong space transportation infrastructure with significant private sector involvement;

(9) the participation of State governments in encouraging and facilitating private sector involvement in space-related activity, particularly through the establishment of a space transportation-related infrastructure, including launch sites, reentry sites, complementary facilities, and launch site and reentry site support facilities, is in the national interest and is of significant public benefit;

(10) the goal of safely opening space to the American people and their private commercial, scientific, and cultural enterprises should guide Federal space investments, policies, and regulations;

(11) private industry has begun to develop commercial launch vehicles capable of carrying human beings into space and greater private investment in these efforts will stimulate

the Nation’s commercial space transportation industry as a whole;

(12) space transportation is inherently risky, and the future of the commercial human space flight industry will depend on its ability to continually improve its safety performance;

(13) a critical area of responsibility for the Department of Transportation is to regulate the operations and safety of the emerging commercial human space flight industry;

(14) the public interest is served by creating a clear legal, regulatory, and safety regime for commercial human space flight; and

(15) the regulatory standards governing human space flight must evolve as the industry matures so that regulations neither stifle technology development nor expose crew, *government astronauts*, or space flight participants to avoidable risks as the public comes to expect greater safety for crew, *government astronauts*, and space flight participants from the industry.

* * * * *

§ 50902. Definitions

In this chapter—

(1) “citizen of the United States” means—

(A) an individual who is a citizen of the United States;

(B) an entity organized or existing under the laws of the United States or a State; or

(C) an entity organized or existing under the laws of a foreign country if the controlling interest (as defined by the Secretary of Transportation) is held by an individual or entity described in subclause (A) or (B) of this clause.

(2) “crew” means any employee of a licensee or transferee, or of a contractor or subcontractor of a licensee or transferee, who performs activities in the course of that employment directly relating to the launch, reentry, or other operation of or in a launch vehicle or reentry vehicle that carries human beings.

(3) “executive agency” has the same meaning given that term in section 105 of title 5.

(4) “government astronaut” means an individual who—

(A) is either—

(i) an employee of the United States Government, including the uniformed services, engaged in the performance of a Federal function under authority of law or an Executive act; or

(ii) an international partner astronaut;

(B) is identified by the Administrator of the National Aeronautics and Space Administration;

(C) is carried within a launch vehicle or reentry vehicle;

and

(D) may perform or may not perform activities directly relating to the launch, reentry, or other operation of the launch vehicle or reentry vehicle.

(5) “international partner astronaut” means an individual designated under Article 11 of the International Space Station Intergovernmental Agreement, by a partner to that agreement

other than the United States, as qualified to serve as an International Space Station crew member.

(6) “International Space Station Intergovernmental Agreement” means the Agreement Concerning Cooperation on the International Space Station, signed at Washington January 29, 1998 (TIAS 12927).

[(4)] (7) “launch” means to place or try to place a launch vehicle or reentry vehicle [and any payload, crew, or space flight participant] and any payload or human being from Earth—

- (A) in a suborbital trajectory;
- (B) in Earth orbit in outer space; or
- (C) otherwise in outer space,

including activities involved in the preparation of a launch vehicle or payload for launch, when those activities take place at a launch site in the United States.

[(5)] (8) “launch property” means an item built for, or used in, the launch preparation or launch of a launch vehicle.

[(6)] (9) “launch services” means—

- (A) activities involved in the preparation of a launch vehicle, [payload, crew (including crew training), or space flight participant] *payload, crew (including crew training), government astronaut, or space flight participant* for launch; and
- (B) the conduct of a launch.

[(7)] (10) “launch site” means the location on Earth from which a launch takes place (as defined in a license the Secretary issues or transfers under this chapter) and necessary facilities at that location.

[(8)] (11) “launch vehicle” means—

- (A) a vehicle built to operate in, or place a payload or human beings in, outer space; and
- (B) a suborbital rocket.

[(9)] (12) “obtrusive space advertising” means advertising in outer space that is capable of being recognized by a human being on the surface of the Earth without the aid of a telescope or other technological device.

[(10)] (13) “payload” means an object that a person undertakes to place in outer space by means of a launch vehicle or reentry vehicle, including components of the vehicle specifically designed or adapted for that object.

[(11)] (14) except in section 50904(c), “permit” means an experimental permit issued under section 50906.

[(12)] (15) “person” means an individual and an entity organized or existing under the laws of a State or country.

[(13)] (16) “reenter” and “reentry” mean to return or attempt to return, purposefully, a reentry vehicle [and its payload, crew, or space flight participants, if any,] and its payload or human beings, if any, from Earth orbit or from outer space to Earth.

[(14)] (17) “reentry services” means—

- (A) activities involved in the preparation of a reentry vehicle and [payload, crew (including crew training), or space flight participant, if any,] *payload, crew (including crew training), government astronaut, or space flight participant, if any,* for reentry; and

(B) the conduct of a reentry.

[(15)](18) “reentry site” means the location on Earth to which a reentry vehicle is intended to return (as defined in a license the Secretary issues or transfers under this chapter).

[(16)](19) “reentry vehicle” means a vehicle designed to return from Earth orbit or outer space to Earth, or a reusable launch vehicle designed to return from Earth orbit or outer space to Earth, substantially intact.

[(17)](20) [“space flight participant” means an individual, who is not crew, carried within a launch vehicle or reentry vehicle.]

(20) “space flight participant” means an individual, who is not crew or a government astronaut, carried within a launch vehicle or reentry vehicle.

[(18)](21) “State” means a State of the United States, the District of Columbia, and a territory or possession of the United States.

[(19)](22) unless and until regulations take effect under section 50922(c)(2), “suborbital rocket” means a vehicle, rocket-propelled in whole or in part, intended for flight on a suborbital trajectory, and the thrust of which is greater than its lift for the majority of the rocket-powered portion of its ascent.

[(20)](23) “suborbital trajectory” means the intentional flight path of a launch vehicle, reentry vehicle, or any portion thereof, whose vacuum instantaneous impact point does not leave the surface of the Earth.

[(21)](24) “third party” means a person except—

(A) the United States Government or the Government’s contractors or subcontractors involved in launch services or reentry services;

(B) a licensee or transferee under this chapter;

(C) a licensee’s or transferee’s contractors, subcontractors, or customers involved in launch services or reentry services;

(D) the customer’s contractors or subcontractors involved in launch services or reentry services; or

(E) crew, *government astronauts*, or space flight participants.

[(22)](25) “United States” means the States of the United States, the District of Columbia, and the territories and possessions of the United States.

§ 50904. Restrictions on launches, operations, and reentries

(d) SINGLE LICENSE OR PERMIT.—The Secretary of Transportation shall ensure that only 1 license or permit is required from the Department of Transportation to conduct [activities involving crew or space flight participants] *activities involving crew, government astronauts, or space flight participants*, including launch and reentry, for which a license or permit is required under this chapter. The Secretary shall ensure that all Department of Transportation regulations relevant to the licensed or permitted activity are satisfied.

§ 50905. License applications and requirements

(a) APPLICATIONS.—

(1) A person may apply to the Secretary of Transportation for a license or transfer of a license under this chapter in the form and way the Secretary prescribes. Consistent with the public health and safety, safety of property, and national security and foreign policy interests of the United States, the Secretary, not later than 180 days after accepting an application in accordance with criteria established pursuant to subsection (b)(2)(D), shall issue or transfer a license if the Secretary decides in writing that the applicant complies, and will continue to comply, with this chapter and regulations prescribed under this chapter. The Secretary shall inform the applicant of any pending issue and action required to resolve the issue if the Secretary has not made a decision not later than 120 days after accepting an application in accordance with criteria established pursuant to subsection (b)(2)(D). The Secretary shall transmit to the Committee on Science of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a written notice not later than 30 days after any occurrence when the Secretary has not taken action on a license application within the deadline established by this subsection.

(2) In carrying out paragraph (1), the Secretary may establish procedures for safety approvals of launch vehicles, reentry vehicles, safety systems, processes, services, or personnel (including approval procedures for the purpose of protecting the health and safety of **crews and space flight participants** *crew, government astronauts, and space flight participants*, to the extent permitted by subsections (b) and (c)) that may be used in conducting licensed commercial space launch or reentry activities.

(b) REQUIREMENTS.—

(1) Except as provided in this subsection, all requirements of the laws of the United States applicable to the launch of a launch vehicle or the operation of a launch site or a reentry site, or the reentry of a reentry vehicle, are requirements for a license or permit under this chapter.

(2) The Secretary may prescribe—

(A) any term necessary to ensure compliance with this chapter, including on-site verification that a launch, operation, or reentry complies with representations stated in the application;

(B) any additional requirement necessary to protect the public health and safety, safety of property, national security interests, and foreign policy interests of the United States;

(C) by regulation that a requirement of a law of the United States not be a requirement for a license or permit if the Secretary, after consulting with the head of the appropriate executive agency, decides that the requirement is not necessary to protect the public health and safety, safety of property, and national security and foreign policy interests of the United States;

(D) additional license requirements, for a launch vehicle carrying a human being for compensation or hire, necessary to protect the health and safety of **crew or space**

flight participants] *crew, government astronauts, or space flight participants*, only if such requirements are imposed pursuant to final regulations issued in accordance with subsection (c); and

(E) regulations establishing criteria for accepting or rejecting an application for a license or permit under this chapter within 60 days after receipt of such application.

(3) The Secretary may waive a requirement, including the requirement to obtain a license, for an individual applicant if the Secretary decides that the waiver is in the public interest and will not jeopardize the public health and safety, safety of property, and national security and foreign policy interests of the United States. The Secretary may not grant a waiver under this paragraph that would permit the launch or reentry of a launch vehicle or a reentry vehicle without a license or permit if a human being will be on board.

(4) The holder of a license or a permit under this chapter may launch or reenter crew only if—

(A) the crew has received training and has satisfied medical or other standards specified in the license or permit in accordance with regulations promulgated by the Secretary;

(B) the holder of the license or permit has informed any individual serving as crew in writing, prior to executing any contract or other arrangement to employ that individual (or, in the case of an individual already employed as of the date of enactment of the Commercial Space Launch Amendments Act of 2004, as early as possible, but in any event prior to any launch in which the individual will participate as crew), that the United States Government has not certified the launch vehicle as safe for carrying crew or space flight participants; and

(C) the holder of the license or permit and crew have complied with all requirements of the laws of the United States that apply to crew.

(5) The holder of a license or a permit under this chapter may launch or reenter a space flight participant only if—

(A) in accordance with regulations promulgated by the Secretary, the holder of the license or permit has informed the space flight participant in writing about the risks of the launch and reentry, including the safety record of the launch or reentry vehicle type, and the Secretary has informed the space flight participant in writing of any relevant information related to risk or probable loss during each phase of flight gathered by the Secretary in making the determination required by section 50914(a)(2) and (c);

(B) the holder of the license or permit has informed any space flight participant in writing, prior to receiving any compensation from that space flight participant or (in the case of a space flight participant not providing compensation) otherwise concluding any agreement to fly that space flight participant, that the United States Government has not certified the launch vehicle as safe for carrying crew or space flight participants;

(C) in accordance with regulations promulgated by the Secretary, the space flight participant has provided written informed consent to participate in the launch and reentry and written certification of compliance with any regulations promulgated under paragraph (6)(A); and

(D) the holder of the license or permit has complied with any regulations promulgated by the Secretary pursuant to paragraph (6).

(6)(A) The Secretary may issue regulations requiring space flight participants to undergo an appropriate physical examination prior to a launch or reentry under this chapter. This subparagraph shall cease to be in effect three years after the date of enactment of the Commercial Space Launch Amendments Act of 2004.

(B) The Secretary may issue additional regulations setting reasonable requirements for space flight participants, including medical and training requirements. Such regulations shall not be effective before the expiration of 3 years after the date of enactment of the Commercial Space Launch Amendments Act of 2004.

(c) SAFETY REGULATIONS.—

(1) The Secretary may issue regulations governing the design or operation of a launch vehicle to protect the health and safety of **crew and space flight participants** *crew, government astronauts, and space flight participants*.

(2) Regulations issued under this subsection shall—

(A) describe how such regulations would be applied when the Secretary is determining whether to issue a license under this chapter;

(B) apply only to launches in which a vehicle will be carrying a human being for compensation or hire;

(C) be limited to restricting or prohibiting design features or operating practices that—

(i) have resulted in a serious or fatal injury (as defined in 49 CFR 830, as in effect on November 10, 2004) **to crew or space flight participants** *to crew, government astronauts, or space flight participants* during a licensed or permitted commercial human space flight; or

(ii) contributed to an unplanned event or series of events during a licensed or permitted commercial human space flight that posed a high risk of causing a serious or fatal injury (as defined in 49 CFR 830, as in effect on November 10, 2004) **to crew or space flight participants** *to crew, government astronauts, or space flight participants*; and

(D) be issued with a description of the instance or instances when the design feature or operating practice being restricted or prohibited contributed to a result or event described in subparagraph (C).

(3) **Beginning on October 1, 2015** *Beginning on October 1, 2020*, the Secretary may propose regulations under this subsection without regard to paragraph (2)(C) and (D). Any such regulations shall take into consideration the evolving standards of safety in the commercial space flight industry.

(4) Nothing in this subsection shall be construed to limit the authority of the Secretary to issue requirements or regulations to protect the public health and safety, safety of property, national security interests, and foreign policy interests of the United States.

(5) *Nothing in this subsection shall be construed to limit the authority of the Secretary to discuss potential regulatory approaches with the commercial space sector, including observations, findings, and recommendations from the Commercial Space Transportation Advisory Committee, prior to the issuance of a notice of proposed rulemaking.*

(6) *The Secretary shall continue to work with the commercial space sector, including the Commercial Space Transportation Advisory Committee, to facilitate the development of voluntary consensus standards based on recommended best practices to improve the safety of crew, government astronauts, and space flight participants as the commercial space sector continues to mature.*

(d) PROCEDURES AND TIMETABLES.—The Secretary shall establish procedures and timetables that expedite review of a license or permit application and reduce the regulatory burden for an applicant.

§ 50906. Experimental permits

(a) A person may apply to the Secretary of Transportation for an experimental permit under this section in the form and manner the Secretary prescribes. Consistent with the protection of the public health and safety, safety of property, and national security and foreign policy interests of the United States, the Secretary, not later than 120 days after receiving an application pursuant to this section, shall issue a permit if the Secretary decides in writing that the applicant complies, and will continue to comply, with this chapter and regulations prescribed under this chapter. The Secretary shall inform the applicant of any pending issue and action required to resolve the issue if the Secretary has not made a decision not later than 90 days after receiving an application. The Secretary shall transmit to the Committee on Science of the House of Representatives and Committee on Commerce, Science, and Transportation of the Senate a written notice not later than 15 days after any occurrence when the Secretary has failed to act on a permit within the deadline established by this section.

(b) In carrying out subsection (a), the Secretary may establish procedures for safety approvals of launch vehicles, reentry vehicles, safety systems, processes, services, or personnel that may be used in conducting commercial space launch or reentry activities pursuant to a permit.

(c) In order to encourage the development of a commercial space flight industry, the Secretary may when issuing permits use the authority granted under section 50905(b)(2)(C).

(d) The Secretary may issue a permit only for reusable suborbital rockets that will be **launched or reentered** *launched or reentered under that permit solely for—*

[(1) research and development to test new design concepts, new equipment, or new operating techniques;]

(1) research and development to test design concepts, equipment, or operating techniques;

(2) showing compliance with requirements as part of the process for obtaining a license under this chapter; or

(3) crew training **【prior to obtaining a license】** for a launch or reentry using the design of the rocket for which the permit would be issued.

(e) Permits issued under this section shall—

(1) authorize an unlimited number of launches and reentries for a particular **【suborbital rocket design】** *suborbital rocket or suborbital rocket design* for the uses described in subsection (d); and

(2) specify the type of modifications that may be made to the suborbital rocket without changing the design to an extent that would invalidate the permit.

(f) Permits shall not be transferable.

【(g) A permit may not be issued for, and a permit that has already been issued shall cease to be valid for, a particular design for a reusable suborbital rocket after a license has been issued for the launch or reentry of a rocket of that design.】

(g) The Secretary may issue a permit under this section notwithstanding any license issued under this chapter. The issuance of a license under this chapter may not invalidate a permit issued under this section.

(h) No person may operate a reusable suborbital rocket under a permit for carrying any property or human being for compensation or hire.

(i) For the purposes of sections 50907, 50908, 50909, 50910, 50912, 50914, 50917, 50918, 50919, and 50923 of this chapter—

(1) a permit shall be considered a license;

(2) the holder of a permit shall be considered a licensee;

(3) a vehicle operating under a permit shall be considered to be licensed; and

(4) the issuance of a permit shall be considered licensing.

This subsection shall not be construed to allow the transfer of a permit.

§ 50907. Monitoring activities

(a) GENERAL REQUIREMENTS.—A licensee under this chapter must allow the Secretary of Transportation to place an officer or employee of the United States Government or another individual as an observer at a launch site or reentry site the licensee uses, at a production facility or assembly site a contractor of the licensee uses to produce or assemble a launch vehicle or reentry vehicle, at a site used for **【crew or space flight participant training】** *crew, government astronaut, or space flight participant training*, or at a site at which a payload is integrated with a launch vehicle or reentry vehicle. The observer will monitor the activity of the licensee or contractor at the time and to the extent the Secretary considers reasonable to ensure compliance with the license or to carry out the duties of the Secretary under sections 50904(c), 50905, and 50906 of this title. A licensee must cooperate with an observer carrying out this subsection.

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§ 50908. Effective periods, and modifications, suspensions, and revocations, of licenses

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(d) ADDITIONAL SUSPENSIONS.—

(1) The Secretary may suspend a license when a previous launch or reentry under the license has resulted in a serious or fatal injury (as defined in 49 CFR 830, as in effect on November 10, 2004) [to crew or space flight participants] *to any human being* and the Secretary has determined that continued operations under the license are likely to cause additional serious or fatal injury (as defined in 49 CFR 830, as in effect on November 10, 2004) [to crew or space flight participants] *to any human being*.

(2) Any suspension imposed under this subsection shall be for as brief a period as possible and, in any event, shall cease when the Secretary—

(A) has determined that the licensee has taken sufficient steps to reduce the likelihood of a recurrence of the serious or fatal injury; or

(B) has modified the license pursuant to subsection (b) to sufficiently reduce the likelihood of a recurrence of the serious or fatal injury.

(3) This subsection shall not apply to permits.

(e) EFFECTIVE PERIODS OF MODIFICATIONS, SUSPENSIONS, AND REVOCATIONS.—Unless the Secretary specifies otherwise, a modification, suspension, or revocation under this section takes effect immediately and remains in effect during a review under section 50912 of this title.

(f) NOTIFICATION.—The Secretary shall notify the licensee in writing of the decision of the Secretary under this section and any action the Secretary takes or proposes to take based on the decision.

§ 50915. Paying claims exceeding liability insurance and financial responsibility requirements

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(f) APPLICATION.—This section applies to a license issued or transferred under this chapter for which the Secretary receives a complete and valid application not later than [December 31, 2016] *December 31, 2020*. This section does not apply to permits.

§ 50917. Enforcement and penalty

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(b) GENERAL AUTHORITY.—

(1) In carrying out this chapter, the Secretary of Transportation may—

- (A) conduct investigations and inquiries;
- (B) administer oaths;
- (C) take affidavits; and
- (D) under lawful process—

(i) enter at a reasonable time a launch site, reentry site, production facility, assembly site of a launch vehicle or reentry vehicle, [crew or space flight participant training site,] *crew, government astronaut, or*

space flight participant training site, or site at which a payload is integrated with a launch vehicle or reentry vehicle to inspect an object to which this chapter applies or a record or report the Secretary requires be made or kept under this chapter; and

(ii) seize the object, record, or report when there is probable cause to believe the object, record, or report was used, is being used, or likely will be used in violation of this chapter.

(2) The Secretary may delegate a duty or power under this chapter related to enforcement to an officer or employee of another executive agency with the consent of the head of the agency.

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§ 50919. Relationship to other executive agencies, laws, and international obligations

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[(g) NONAPPLICATION.—This chapter does not apply to—

[(1) a launch, reentry, operation of a launch vehicle or reentry vehicle, operation of a launch site or reentry site, or other space activity the Government carries out for the Government; or

[(2) planning or policies related to the launch, reentry, operation, or activity.]

(g) NONAPPLICATION.—

(1) *IN GENERAL.*—*This chapter does not apply to—*

(A) *a launch, reentry, operation of a launch vehicle or reentry vehicle, operation of a launch site or reentry site, or other space activity the Government carries out for the Government; or*

(B) *planning or policies related to the launch, reentry, operation, or activity under subparagraph (A).*

(2) *RULE OF CONSTRUCTION.*—*The following activities are not space activities the Government carries out for the Government under paragraph (1):*

(A) *A government astronaut being carried within a launch vehicle or reentry vehicle under this chapter.*

(B) *A government astronaut performing activities directly relating to the launch, reentry, or other operation of the launch vehicle or reentry vehicle under this chapter.*

SUBTITLE VII. ACCESS TO SPACE

CHAPTER 709. INTERNATIONAL SPACE STATION

[§ 70907. Maintaining use through at least 2020

[The Administrator shall take all necessary steps to ensure that the International Space Station remains a viable and productive facility capable of potential United States utilization through at least 2020 and shall take no steps that would preclude its continued operation and utilization by the United States after 2015.]

§ 70907. Maintaining use through at least 2024

(a) *POLICY.*—*The Administrator shall take all necessary steps to ensure that the International Space Station remains a viable and productive facility capable of potential United States utilization through at least September 30, 2024.*

(b) *NASA ACTIONS.*—*In furtherance of the policy under subsection (a), the Administrator shall ensure, to the extent practicable, that the International Space Station, as a designated national laboratory—*

(1) remains viable as an element of overall exploration and partnership strategies and approaches;

(2) is considered for use by all NASA mission directorates, as appropriate, for technically appropriate scientific data gathering or technology risk reduction demonstrations; and

(3) remains an effective, functional vehicle providing research and test bed capabilities for the United States through at least September 30, 2024.

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AUTHORIZATION ACT OF 2010**

[42 U.S.C. 18301 et seq.]

**SEC. 501. CONTINUATION OF THE INTERNATIONAL SPACE STATION
[THROUGH 2020].**

[42 U.S.C. 18351]

(a) *POLICY OF THE UNITED STATES.*—*It shall be the policy of the United States, in consultation with its international partners in the ISS program, to support full and complete utilization of the ISS [through at least 2020] through at least 2024.*

(b) *NASA ACTIONS.*—*In furtherance of the policy set forth in subsection (a), NASA shall pursue international, commercial, and intragovernmental means to maximize ISS logistics supply, maintenance, and operational capabilities, reduce risks to ISS systems sustainability, and offset and minimize United States operations costs relating to the ISS.*

SEC. 503. MAINTENANCE OF THE UNITED STATES SEGMENT AND ASSURANCE OF CONTINUED OPERATIONS OF THE INTERNATIONAL SPACE STATION.

[42 U.S.C. 18353]

(a) *IN GENERAL.*—*The Administrator shall take all actions necessary to ensure the safe and effective operation, maintenance, and maximum utilization of the United States segment of the ISS [through at least September 30, 2020] through at least September 30, 2024.*

(b) *VEHICLE AND COMPONENT REVIEW.*—

(1) IN GENERAL.—*[In carrying out subsection (a), the Administrator] The Administrator shall, as soon as is practicable after the date of the enactment of this Act, carry out a comprehensive assessment of the essential modules, operational systems and components, structural elements, and permanent scientific equipment on board or planned for delivery and installation aboard the ISS, including both United States and international partner elements, for purposes of identifying the spare or replacement modules, systems and components, elements, and equipment that are required to ensure complete, ef-*

fective, and safe functioning and full scientific utilization of the ISS through September 30, 2020.

(2) DATA.—In carrying out the assessment, the Administrator shall assemble any existing data, and provide for the development of any data or analysis not currently available, that is necessary for purposes of the assessment.

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SEC. 504. MANAGEMENT OF THE ISS NATIONAL LABORATORY.

[42 U.S.C. 18354]

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(d) RESEARCH CAPACITY ALLOCATION AND INTEGRATION OF RESEARCH PAYLOADS.—

(1) ALLOCATION OF ISS RESEARCH CAPACITY.—As soon as practicable after the date of the enactment of this Act, but not later than October 1, 2011, ISS national laboratory managed experiments shall be guaranteed access to, and utilization of, not less than 50 percent of the United States research capacity allocation, including power, cold stowage, and requisite crew time onboard the ISS through **September 30, 2020** *September 30, 2024*. Access to the ISS research capacity includes provision for the adequate upmass and downmass capabilities to utilize the ISS research capacity, as available. The Administrator may allocate additional capacity to the ISS national laboratory should such capacity be in excess of NASA research requirements.

(2) ADDITIONAL RESEARCH CAPABILITIES.—If any NASA research plan is determined to require research capacity onboard the ISS beyond the percentage allocated under paragraph (1), such research plan shall be prepared in the form of a requested research opportunity to be submitted to the process established under this section for the consideration of proposed research within the capacity allocated to the ISS national laboratory. A proposal for such a research plan may include the establishment of partnerships with non-NASA institutions eligible to propose research to be conducted within the ISS national laboratory capacity. Until **September 30, 2020** *September 30, 2024*, the official or employee designated under subsection (b) may grant an exception to this requirement in the case of a proposed experiment considered essential for purposes of preparing for exploration beyond low-Earth orbit, as determined by joint agreement between the organization with which the Administrator enters into a cooperative agreement under subsection (a) and the official or employee designated under subsection (b).

(3) RESEARCH PRIORITIES AND ENHANCED CAPACITY.—The organization with which the Administrator enters into the cooperative agreement shall consider recommendations of the National Academies Decadal Survey on Biological and Physical Sciences in Space in establishing research priorities and in developing proposed enhancements of research capacity and opportunities for the ISS national laboratory.

(4) RESPONSIBILITY FOR RESEARCH PAYLOAD.—NASA shall retain its roles and responsibilities in providing research payload

physical, analytical, and operations integration during pre-flight, post-flight, transportation, and orbital phases essential to ensure safe and effective flight readiness and vehicle integration of research activities approved and prioritized by the organization with which the Administrator enters into the cooperative agreement and the official or employee designated under subsection (b).

