HR 4346

CHIPS and Science Act

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Sponsor

Name: Rep. Ryan, Tim [D-OH-13]
Party: Democratic • **State:** OH • **Chamber:** House

Cosponsors

No cosponsors are listed for this bill.

Committee Activity

Committee	Chamber	Activity	Date
Appropriations Committee	House	Reported Original Measure	Jul 1, 2021
Appropriations Committee	Senate	Discharged From	Jun 23, 2022

Subjects & Policy Tags

Policy Area:

Science, Technology, Communications

Related Bills

Bill	Relationship	Last Action
117 S 3290	Related bill	**Dec 7, 2022:** Placed on Senate Legislative Calendar under General Orders. Calendar No. 598.
117 HR 4819	Related bill	**Sep 14, 2022:** Placed on the Union Calendar, Calendar No. 362.
117 S 4779	Related bill	**Aug 4, 2022:** Read twice and referred to the Committee on Commerce, Science, and Transportation.
117 HRES 1289	Related bill	**Jul 28, 2022:** Motion to reconsider laid on the table Agreed to without objection.
117 HR 8545	Related bill	**Jul 27, 2022:** Referred to the House Committee on Science, Space, and Technology.
117 HR 2471	Related bill	**Mar 15, 2022:** Became Public Law No: 117-103.
117 HRES 567	Related bill	**Jul 28, 2021:** On motion to table the motion to reconsider Agreed to by the Yeas and Nays: 201 - 192 (Roll no. 234).
117 HR 4222	Related bill	**Jun 29, 2021:** Referred to the Committee on House Administration, and in addition to the Committee on Oversight and Reform, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned.

Summary (as of Aug 9, 2022)

This act provides funds to support the domestic production of semiconductors and authorizes various programs and activities of the federal science agencies.

DIVISION A--CHIPS ACT OF 2022

CHIPS Act of 2022

(Sec. 102) The act establishes and provides funding for the Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America Fund to carry out activities relating to the creation of incentives to produce semiconductors in the United States.

The act establishes and provides funding for the Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America Defense Fund to carry out the National Network for Microelectronics Research and Development.

The act establishes and provides funding for the Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America International Technology Security and Innovation Fund to (1) provide for international information and communications technology security and semiconductor supply chain activities, including to support the development and adoption of secure and trusted telecommunications technologies, secure semiconductors, secure semiconductors supply chains, and other emerging technologies; and (2) carry out the Multilateral Semiconductors Security Fund and the Multilateral Telecommunications Security Fund.

The act establishes and provides funding for the Creating Helpful Incentives to Produce Semiconductors (CHIPS) for America Workforce and Education Fund for the National Science Foundation (NSF) for microelectronics workforce development activities to accelerate the domestic development and production of microelectronics and strengthen the domestic microelectronics workforce.

(Sec. 103) This section expands the financial assistance program relating to semiconductor incentives to include production of semiconductors and equipment and material related to production of semiconductors.

The Department of Commerce shall establish within the financial assistance program an additional program that provides federal financial assistance to covered entities to incentivize investment in facilities and equipment in the United States for the fabrication, assembly, testing, or packaging of semiconductors at mature technology nodes. In awarding federal financial assistance to covered entities under such additional program, Commerce must give priority to covered entities that support the resiliency of semiconductor supply chains for critical manufacturing industries in the United States.

No funds made available under the program may be used to construct, modify, or improve a facility outside of the United States.

This section makes it an objective of the National Semiconductor Technology Center to grow the domestic semiconductor workforce. This section provides for the capitalization by the center of the investment fund to support startups and collaborations between startups, academia, established companies, and new ventures. This section revises the functions of the center to specify that its support to incentivize and expand participation in programs related to microelectronics shall be geographically diverse and include community colleges.

The National Institute of Standards and Technology (NIST) may establish not more than two more Manufacturing USA Institutes. Commerce may award financial assistance to any such institute for work related to semiconductor

manufacturing.

(Sec. 104) The Department of Commerce shall establish activities within the financial assistance program relating to inclusion of economically disadvantaged individuals, minority-owned businesses, veteran-owned businesses, and women-owned businesses.

(Sec. 105) The Government Accountability Office (GAO) shall evaluate how the federal government could take specific actions to address shortages in the semiconductor supply chain, including (1) demand-side incentives, including incentives related to the information and communications technology supply chain; and (2) additional incentives, at national and global scales, to accelerate utilization of leading edge semiconductor nodes to address shortages in mature semiconductor nodes.

Under such review, the GAO shall describe how projects are supporting the semiconductor needs of critical infrastructure industries in the United States, including those industries designated by the Cybersecurity and Infrastructure Security Agency as essential industries.

Also under such review, drawing on data made available by the Department of Labor or other sources, an analysis of

- semiconductor industry data regarding businesses that are majority owned and controlled by minority individuals or women; or
- the number and amount of contracts and subcontracts awarded by each covered entity using funds made available under the financial assistance program disaggregated by recipients of each such contract or subcontracts that are majority owned and controlled by minority individuals or women; and
- aggregated workforce data, including data by race or ethnicity, sex, and job categories.

This section includes in the annual report to Congress on the Public Wireless Supply Chain Innovation Fund, in describing how and to whom amounts in such fund have been deployed, to include whether recipients are majority owned and controlled by minority individuals and majority owned and controlled by women.

(Sec. 106) This section provides funding for the Public Wireless Supply Chain Innovation Fund.

(Sec. 107) This section establishes an advanced manufacturing investment tax credit in an amount equal to 25% of the qualified investment for a taxable year for any advanced manufacturing facility of an eligible taxpayer. The section provides for the application of such credit to partnerships or S corporations.

DIVISION B--RESEARCH AND INNOVATION

Research and Development, Competition, and Innovation Act

TITLE I--DEPARTMENT OF ENERGY SCIENCE FOR THE FUTURE

(Sec. 10101) The Office of Science of the Department of Energy (DOE) shall carry out the construction, operation, and maintenance of user facilities to support the office's mission.

(Sec. 10102) The Office of Science shall carry out a research and development program in basic energy sciences to understand, model, and control matter and energy at the electronic, atomic, and molecular levels to provide the foundations for new energy technologies, address scientific grand challenges, and support the energy, environment, and national security missions of DOE.

In carrying out chemistry-related research and development activities, the Office of Science shall prioritize research and development of sustainable chemistry to support, clean, safe, and economic alternatives and methodologies to traditional chemical products and processes.

The basic energy sciences national user facilities in operation shall include autonomous chemistry and materials synthesis and characterization facilities that leverage advances in artificial intelligence.

DOE shall provide for the upgrade to the Advanced Photon Source, including the development of a multibend achromat lattice to produce a high flux of coherent x-rays within the hard x-ray energy region and a suite of beamlines optimized for such source.

DOE shall provide for the proton power upgrade to the Spallation Neutron Source. In addition, DOE shall provide for a second target station for the Spallation Neutron Source.

DOE shall provide for the upgrade to the Advanced Light Source, including the development of a multibend achromat lattice to produce a high flux of coherent x-rays within the soft x-ray energy region.

DOE shall provide for the upgrade to the Linac Coherent Light Source II facility, including the development of experimental capabilities for high energy x-rays to reveal fundamental scientific discoveries.

DOE shall provide for the construction of a cryomodule repair and maintenance facility to service the Linac Coherent Light Source II and subsequent upgrades.

DOE shall provide for the recapitalization of the Nanoscale Science Research Centers, to include the upgrade of equipment at each center supported by the office to accelerate advances in the various fields of science, including nanoscience, materials, chemistry, biology, and quantum information science.

DOE must provide for the development and construction of experimental stations to provide significant additional beamline and instrument capacity, complement the existing portfolio of beamlines, and complete the buildout of the National Synchrotron Light Source II.

The Office of Science shall support a program of research and development for the application of advanced computing practices to foundational and emerging research problems in chemistry and materials science.

The Office of Science shall support the development of a web-based platform to develop and provide access to a database of computed information on known and predicted materials properties and computational tools to accelerate breakthroughs in materials discovery and design.

This section authorizes funding for the Solar Fuels Research Initiative and the Electricity Storage Research Initiative.

The Office of Science shall support a program of research and development to bridge scientific barriers to, and expand theoretical and fundamental knowledge relevant to, understanding nuclear materials and matter for the benefit of commerce, medicine, and national security.

The Office of Science shall establish the Carbon Materials Science Initiative to expand the fundamental knowledge of coal, coal-wastes, and carbon ore chemistry useful for understanding the conversion of carbon to material products.

The Office of Science shall carry out under the initiative a program to support, and discover fundamental knowledge relevant to, carbon materials and carbon ore processing research.

DOE shall establish the Carbon Sequestration Research and Geologic Computational Science Initiative to expand the fundamental knowledge, data collection, data analysis, and modeling of subsurface geology to advance carbon sequestration in geologic formations.

DOE shall carry out under the initiative a program to support research needed for, and discover knowledge relevant to, the sequestration of carbon in geologic formations.

(Sec. 10103) As part of its duties, the office shall carry out a program of research and development in the areas of biological systems science and climate and environmental science relevant to the development of new energy technologies and to support the energy, environmental, and national security missions of DOE.

The Office of Science shall carry out research and development activities in genomic science, including fundamental research on plants and microbes to increase systems-level understanding of complex biological systems.

The Office of Science shall carry out research and development activities in biomolecular characterization and imaging science, including development of new and integrative imaging and analysis platforms and biosensors to understand the expression, structure, and function of genome information encoded within cells and for real-time measurements in ecosystems and field sites of relevance to the mission of DOE.

This section revises requirements for the Space Radiation Research Program to require research on the similarities and differences between the effects of exposure to low-dose radiation on Earth, in low Earth orbit, and in the space environment.

The section requires the Office of Science to carry out activities relating to Earth and environmental systems science research and support user facilities to enhance the collection and analysis of observational data related to complex biological, climate, and environmental systems.

The Office of Science shall carry out a research program to enhance the understanding of terrestrial-aquatic interface.

The DOE shall establish within the Biological and Environmental Research program an initiative focused on the development of engineered ecosystems through the application of artificial intelligence, novel sensing capabilities, and other emerging technologies.

(Sec. 10104) The Office of Science shall carry out a research and development program to, among other purposes, steward applied mathematics, computational science, and computer science research relevant to the missions of DOE and the competitiveness of the United States.

This section revises requirements for applied mathematics and software development for high-end computing systems.

DOE shall establish a program to develop and implement a strategy for achieving computing systems with capabilities beyond exascale computing systems.

DOE shall support a program of fundamental research and development of energy efficient computing and data center technologies relevant to advanced computing applications, including high-performance computing, artificial intelligence, and scientific machine learning.

DOE shall carry out a research and development program to accelerate innovation in quantum network infrastructure in order to, among other things (1) facilitate the advancement of distributed quantum computing systems through the

internet and intranet, and (2) develop secure national quantum communications technologies and strategies.

DOE shall establish and carry out the Quantum User Expansion for Science and Technology program, or the QUEST program, to encourage and facilitate access to U.S. quantum computing hardware and quantum computing clouds for research purposes to enhance the U.S. quantum research enterprise, among other objectives.

(Sec. 10105) The Office of Science shall establish not less than two national teams that shall (1) develop conceptual pilot plant designs and technology roadmaps for fusion reactors, and (2) create an engineering design of a pilot plant that will bring fusion to commercial viability.

DOE shall carry out a program to conduct and support collaborative research and development of fusion energy technologies through high-performance computation modeling and simulation techniques in order to (1) support fundamental research in plasmas and matter at very high temperatures, (2) inform the development of a broad range of fusion energy systems, and (3) facilitate the translation of research results in fusion energy science to industry.

DOE shall provide for the upgrade to the Matter in Extreme Conditions endstation at the Linac Coherent Light Source.

(Sec. 10106) The Office of Science shall carry out a research program in elementary particle physics and advanced technology research and development to improve the understanding of the fundamental properties of the universe, including constituents of matter and energy and the nature of space and time.

The Office of Science shall (1) continue to leverage United States participation in the Large Hadron Collider and prioritize expanding international partnerships and investments in the Long-Baseline Neutrino Facility and Deep Underground Neutrino Experiment; and (2) prioritize engagement in collaborative efforts in support of future international facilities that would provide access to the most advanced accelerator facilities in the world to U.S. researchers.

The Office of Science shall carry out research activities on the nature of the primary contents of the universe, including the nature of dark energy and dark matter.

This section supports the construction or the fabrication of specified major items of equipment, including (1) second generation dark matter experiments, and (2) upgrades to detectors and other components of the Large Hadron Collider.

DOE shall support construction of a Long-Baseline Neutrino Facility to facilitate the international Deep Underground Neutrino Experiment to examine the fundamental properties of neutrinos, explore physics beyond the Standard Model, and better clarify the existence and nature of antimatter.

DOE shall support construction of the Proton Improvement Plan II, an upgrade to the Fermilab accelerator complex, to provide the world's most intense beam of neutrinos to the international Long Baseline Neutrino Facility, and to carry out a broad range of future high energy physics experiments.

DOE, in partnership with the NSF, shall support the construction of the Cosmic Microwave Background Stage 4 project to survey the cosmic microwave background to test theories of cosmic inflation.

(Sec. 10107) DOE shall carry out a research program and support relevant facilities to discover and understand various forms of nuclear matter.

DOE shall support the construction of an Electron Ion Collider in order to measure the internal structure of the proton and the nucleus and answer fundamental questions about the nature of visible matter.

(Sec. 10108) In carrying out the science laboratories infrastructure program, the Office of Science shall use all available approaches and mechanisms as determined appropriate, including capital line items and energy savings performance contracts.

(Sec. 10109) The Office of Science shall carry out a research program to

- advance accelerator science and technology relevant to DOE, other federal agencies, and U.S. industry;
- foster partnerships to develop, demonstrate, and enable the commercial application of accelerator technologies;
- support the development of a skilled, diverse, and inclusive accelerator workforce; and
- provide access to accelerator design and engineering resources.

(Sec. 10110) The Office of Science shall carry out a program for purposes such as

- the production of critical radioactive and stable isotopes, including the development of techniques to produce isotopes that are needed and of sufficient quality and quantity for research, medical, industrial, or related purposes;
- the production of critical radioactive and stable isotopes that are in short supply or projected to be in short supply in the future, including byproducts, surplus materials, and related isotope services; and
- the reduction of domestic dependency on the foreign supply of critical radioactive and stable isotopes to ensure national preparedness.

DOE shall establish an advisory committee in alignment with such program to carry out the activities previously executed as part of the Isotope Subcommittee of the Nuclear Science Advisory Committee and provide expert advice and assistance to the Office of Science in carrying out that program.

DOE shall evaluate the technical and economic feasibility of the establishment of an isotope demonstration subprogram of such program to support the development and commercial demonstration of critical radioactive and stable isotope production in existing commercial nuclear power plants.

(Sec. 10111) The Office of Science shall support the development of a scientific workforce through programs that facilitate collaboration between and among teachers at elementary schools and secondary schools served by local educational agencies, students at institutions of higher education, early-career researchers, faculty at institutions of higher education, and the National Laboratories, including through the use of proven techniques to expand the number of individuals from underrepresented groups pursuing and attaining skills or undergraduate degrees relevant to the mission of the Office of Science.

DOE shall

- expand opportunities to increase the number of highly skilled science, technology, engineering, and mathematics (STEM) professionals working in disciplines relevant to the mission of DOE; and
- broaden the recruitment pool to increase participation from Historically Black Colleges or Universities, Hispanic-serving institutions, Tribal Colleges or Universities, minority-serving institutions, institutions in eligible jurisdictions, emerging research institutions, community colleges, and scientific societies in those disciplines.

DOE shall develop programs that strengthen the research capacity relevant to Office of Science disciplines at emerging research institutions.

DOE shall establish a university-led Traineeship Program to address workforce development needs in STEM fields relevant to DOE.

(Sec. 10112) The Office of Science shall establish a high intensity laser research initiative. The initiative should include research and development of petawatt-scale and of high average power laser technologies necessary for future facility needs in discovery science and to advance energy technologies, as well as support for a user network of academic and National Laboratory high intensity laser facilities.

DOE shall establish a grant program to reduce the consumption of helium for DOE grant recipients and facilities and encourage helium recycling and reuse.

DOE shall establish within the Office of Science the Biological Threat Preparedness Research Initiative to leverage the innovative analytical resources and tools, user facilities, and advanced computational and networking capabilities of DOE in order to support efforts that prevent, prepare for, predict, and respond to biological threats to national security, including infectious diseases.

DOE shall establish and operate an Emerging Infectious Diseases High Performance Computing Research Consortium to support such initiative.

The Office of Science shall establish a midscale instrumentation and research equipment program to develop, acquire, and commercialize research instrumentation and equipment needed to meet the missions of DOE and to provide platform technologies for the broader scientific community.

(Sec. 10113) This section revises the Established Program to Stimulate Competitive Research (EPSCoR), including to award grants under EPSCoR to carry out nuclear energy research, support undergraduate scholarships, develop research clusters for particular areas of expertise, and diversify the future workforce.

(Sec. 10114) DOE shall develop and maintain tools and processes to manage and mitigate research security risks, such as a science and technology risk matrix, informed by threats identified by the Office of Intelligence and Counterintelligence, to facilitate determinations of the risk of loss of U.S. intellectual property or threat to the national security of the United States posed by activities supported by this division or the CHIPS Act of 2022.

No entity of concern, or an individual that owns or controls, is owned or controlled by, or is under common ownership or control with an entity of concern, may receive or perform work under any covered support. DOE may waive such prohibition if it is in the national interest.

TITLE II--NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY FOR THE FUTURE

Subtitle A--Authorization of Appropriations

(Sec. 10211) This section reauthorizes the National Institutes of Standards and Technology (NIST) through FY2027.

Subtitle B--Measurement Research

(Sec. 10221) NIST shall, among other activities

- support basic measurement science and technology research for engineering biology, biomanufacturing, and biometrology;
- convene industry, institutions of higher education, nonprofit organizations, federal laboratories, and other federal agencies engaged in engineering biology research and development to develop coordinated technical roadmaps for authoritative measurement of the molecular components of the cell; and

support graduate and postgraduate research and training in biometrology, biomanufacturing, and engineering biology.

(Sec. 10222) NIST shall carry out a measurement research program to inform the development or improvement of best practices, benchmarks, methodologies, procedures, and technical standards for the measurement of greenhouse gas emissions and to assess and improve the performance of greenhouse gas emissions measurement systems in situ and on space-based platforms.

NIST shall establish a Center for Greenhouse Gas Measurements, Standards, and Information.

(Sec. 10223) In carrying out its functions, NIST may, among other things

- support information security measures for the development and lifecycle of software and the software supply chain,
- support information security measures;
- support research, development, and practical application to improve the usability of cybersecurity processes and technologies; and
- support privacy measures.

(Sec. 10224) NIST shall assign severity metrics to identified vulnerabilities with open source software and produce voluntary guidance to assist the entities that maintain open source software repositories to discover and mitigate vulnerabilities.

NIST shall carry out research and testing to improve the effectiveness of artificial intelligence-enabled cybersecurity.

NIST shall develop a set of security outcomes and practices, including security controls, to enable software developers and operators to identify, assess, and manage cybersecurity risks over the full lifecycle of software products.

(Sec. 10225) This section modifies requirements for identity management research and development, including the development of voluntary, consensus-based technical standards, best practices, benchmarks, and methodologies.

NIST shall develop and maintain a technical roadmap for digital identity management research and development focused on enabling the voluntary use and adoption of modern digital identity solutions that meeting certain criteria.

NIST shall develop common definitions and voluntary guidance for digital identity management systems, including identity attribute validation services provided by federal, state, and local governments.

(Sec. 10226) NIST shall establish a program to support measurement research to inform the development of best practices, benchmarks, methodologies, procedures, and voluntary, consensus-based technical standards for biometric identification systems, including facial recognition systems, to assess and improve the performance of such systems.

NIST shall carry out a test program to provide biometrics vendors the opportunity to test biometric identification technologies across a range of modalities.

The Government Accountability Office (GAO) shall report to Congress on the impact of biometric identification technologies on historically marginalized communities, including low-income communities and minority religious, racial, and ethnic groups. Such report should be made available to the public on an internet website.

(Sec. 10227) The NIST Computer Standards Program shall include performance standards and guidelines for high risk biometric identification systems, including facial recognition systems, accounting for various use cases, types of biometric

identification systems, and relevant operational conditions.

(Sec. 10228) In carrying out activities to facilitate and support the development of a voluntary, consensus-based, industry-led set of standards, guidelines, best practices, methodologies, procedures, and processes to cost-effectively reduce cyber risks to critical infrastructure, NIST shall consider institutions of higher education.

(Sec. 10229) In carrying out such activities, NIST must disseminate and make available to the public tailored resources to help qualifying institutions (those that are awarded in excess of $50 million per year in total federal research funding) identify, assess, manage, and reduce their cybersecurity risk related to conducting research.

(Sec. 10230) NIST shall carry out a program of measurement research for advanced communications technologies.

In carrying out the activities under this section, NIST shall convene industry, institutions of higher education, nonprofit organizations, federal laboratories, and other federal agencies engaged in advanced communications research and development to develop coordinated technical roadmaps for advanced communications research in priority areas.

NIST shall operate a national network of government, academic, and commercial test capabilities and facilities to be known as the National Advanced Spectrum and Communications Test Network.

(Sec. 10231) NIST shall develop a strategic plan for the future of the NIST Center for Neutron Research after the current reactor is decommissioned.

(Sec. 10232) NIST shall continue to support the development of artificial intelligence and data science, and carry out the activities of the National Artificial Intelligence Initiative Act of 2020.

(Sec. 10233) NIST shall carry out activities in support of sustainable chemistry, including coordinating and partnering with academia, industry, nonprofit organizations, and other entities in activities to support clean, safe, and economic alternatives, technologies, and methodologies to traditional chemical products and processes.

(Sec. 10234) NIST shall create a program for premise plumbing research. The bill defines *premise plumbing* as the water distribution system located within the property lines of a property, including all buildings and permanent structures on such property. Such term includes building supply and distribution pipes, fixtures, fittings, water heaters, water-treating and water-using equipment, and all respective joints, connections, devices, and appurtenances.

(Sec. 10235) NIST shall carry out the Dr. David Satcher Cybersecurity Education Grant Program to provide grants for cybersecurity programs at minority-serving institutions of higher education and institutions that have an enrollment of needy students.

Subtitle C--General Activities

(Sec. 10241) NIST shall (currently, may) carry out activities to support, promote, and coordinate activities and efforts to enhance public awareness and understanding of measurement sciences, standards, and technology at the national measurement laboratories and otherwise in fulfillment of the mission of NIST, including education and outreach activities to the general public, industry, and diverse types of institutions of higher education, including historically Black colleges and universities, Tribal Colleges and Universities, and minority-serving institutions, and community colleges (currently, academia).

NIST may conduct outreach to and develop research collaborations with historically Black colleges and universities,

Tribal Colleges or Universities, and minority serving institutions, including through the recruitment of students and faculty at such institutions to participate in the programs developed for graduate student internships and visiting faculty researchers.

NIST may conduct outreach to and develop collaborations with community colleges, including through the recruitment of students and faculty at such institutions to participate in the programs developed for graduate student internships and visiting faculty researchers.

NIST may carry out other activities to increase the participation of persons historically underrepresented in STEM in NIST's programs.

NIST may conduct outreach to and develop collaborations with nontraditional educational organizations, including those that offer training through nonprofit associations and professional associations or professional societies, to engage persons historically underrepresented in STEM through the programs developed under educational outreach activities.

(Sec. 10242) This section revises the other transactions authority for NIST and requires reporting on transactions carried out under such authority.

(Sec. 10243) NIST shall report to Congress on NIST's challenges in collaboration with other federal agencies.

(Sec. 10244) The Department of Commerce shall have the authority to make appointments of scientific, engineering, and professional personnel. NIST shall appoint no more than 15 personnel under such authority.

(Sec. 10245) NIST shall lead information exchange and coordination among federal agencies and communication from federal agencies to the private sector to ensure effective federal engagement in the development and use of international technical standards.

NIST shall support education and workforce development efforts to promote U.S. participation in international standards organizations.

NIST shall establish or enter into cooperative agreements with appropriate nongovernmental organizations to establish a five-year pilot program to award merit-reviewed, competitive grants to private sector entities, institutions of higher education, or nonprofit institutions based in the United States to support increased participation and leadership by small business and academic interests in international standards organizations.

(Sec. 10246) This section revises the authority for Commerce to provide support to foreign nationals to authorize direct support for activities of international organizations and foreign national metrology institutes with which NIST cooperates.

NIST must submit the standards, guidelines, and recommendations it develops under the computer standards program to Commerce for promulgation instead of the Office of Management and Budget (OMB).

The recommendations of the Information Security and Privacy Advisory Board shall likewise be submitted to Commerce instead of OMB.

The list of categories under which the Malcolm Baldridge National Quality Award shall be awarded is expanded to include community.

This section repeals the requirement for the GAO to conduct a biennial review of Commerce's program to provide federal loan guarantees to small- or medium-sized manufacturers for the use or production of innovative technologies in

manufacturing.

This section repeals certain requirements related to the Director of Security for NIST.

This section grants the authority to the Consumer Product Safety Commission over the marking of imitation firearms.

The section rewrites provisions relating to federal information system standards.

Where practicable, a national construction safety team shall cooperate with civil litigants without compromising a team's investigation or the evidence preservation activities where a building failure has occurred. A team investigation shall have priority over any investigation of a civil suit or civil action.

(Sec. 10247) The GAO shall study NIST's policies and protocols to protect its research and combat undue foreign influence. The GAO shall brief Congress on its findings.

(Sec. 10248) NIST shall establish a competitive grant program for nongovernmental standards development organizations to be used for the development, approval, dissemination, maintenance, and review of forensic science voluntary consensus standards and best practices that shall be available to the public free of charge.

Subtitle D--Hollings Manufacturing Extension Partnership

(Sec. 10251) NIST shall establish, as a part of the Hollings Manufacturing Extension Partnership, a pilot program of expansion awards among manufacturing extension centers or a consortium of centers, for various purposes, including to expand advanced technology services to U.S. based small- and medium-sized manufacturers.

Of the amounts authorized for the Hollings Manufacturing Extension Partnership program, Commerce shall optimize funding across the Partnership, the awards program, and the pilot program in order to maximize center participation as well as competitiveness, productivity, and technological performance in U.S. manufacturing.

(Sec. 10252) This section allows other federal departments and agencies to transfer amounts to NIST and Commerce and NIST to accept and make available cash donations from the private sector to be used to strengthen U.S. manufacturing.

This section provides that Hollings Manufacturing Extension Partnership program support shall be for entities based in the United States.

(Sec. 10253) NIST shall establish a voluntary National Supply Chain Database. The purpose of such database shall be to assist the federal government and industry sectors in minimizing disruptions to the U.S. supply chain by having an assessment of U.S. manufacturer's capabilities.

This section specifies that businesses in the Hollings Manufacturing Extension Partnership program shall be automatically enrolled in the GSA Advantage! program only if they so desire.

Subtitle E--Manufacturing USA Program

(Sec. 10261) In awarding financial assistance for planning or establishing a Manufacturing USA Institute, an agency shall give special consideration to such institutes that

- contribute to the geographic diversity of the Manufacturing USA program,

are located in an area with a low per capita income,
- are located in an area with a high proportion of socially disadvantaged residents, or
- are located in small and rural communities.

(Sec. 10262) Commerce shall coordinate with existing and new Manufacturing USA Institutes to integrate certain entities, such as minority serving institutions, as active members of the institutes, including through the development of preferences in selection criteria for proposals to create new institutes or renew existing institutes that include one or more of such entities.

(Sec. 10263) Federal agencies must establish policies to promote the domestic production of technologies developed by the Manufacturing USA Network.

This section bars the participation of Chinese companies in the Manufacturing USA Program without a waiver as specified in this act.

The program shall establish or designate a council of heads of any institute receiving federal funding at any time to foster collaboration between the institutes.

The strategic plan to guide the program shall include a strategy for retaining domestic public benefits from the institutes once federal funding has been discontinued.

In providing support services to promote workforce development activities, the program must include the development of industry credentials.

Commerce must seek advice from the U.S. Manufacturing Council of the International Trade Administration of the Department of Commerce on matters concerning investment in and support of the manufacturing workforce within the program.

TITLE III--NATIONAL SCIENCE FOUNDATION FOR THE FUTURE

Subtitle A--Preliminary Matters

(Sec. 10303) This section reauthorizes the NSF through FY2027.

Subtitle B--STEM Education

(Sec. 10311) The NSF shall enter into an agreement with the National Academies to conduct a study to review the research literature and identify research gaps regarding the interconnected factors that foster and hinder successful implementation of promising, evidence-based PreK-12 STEM education innovations at the local, regional, and national level.

The NSF shall make awards on a merit-reviewed, competitive basis for research on effective approaches to engaging students in PreK-12, including students from groups historically underrepresented in STEM and rural students.

This section authorizes the NSF to establish a National STEM Teacher Corps 10-year pilot program. The NSF may use existing NSF programs to establish and execute this program.

(Sec. 10312) The NSF shall make competitive awards to support research and development activities related to STEM education and workforce matters, including activities to encourage greater collaboration and coordination between

institutions of higher education and industry to enhance education, foster hands-on learning experiences, and improve alignment with workforce needs.

This section modifies requirements for national centers of scientific and technical education.

The NSF shall make awards to advance research on the nature of learning and teaching at community colleges and to improve outcomes for students who enter the workforce upon completion of their STEM degree or credential or transfer to four-year institutions.

The NSF shall make awards to support career and technical education in STEM and computer science related fields. In making such awards, the NSF must give priority to institutions that demonstrate effective strategies to recruit and provide career and technical education to veterans and members of the Armed Forces transitioning to the private sector workforce.

The NSF shall carry out a four-year pilot program under which the NSF shall make awards to establish a total of not fewer than five centers to develop and scale up successful models for providing undergraduate students with hands-on course-based experiences.

This section revises the National Advanced Scientific and Technical Education Program. It also renames the program as the National Advanced STEM Education Program.

(Sec. 10313) This section requires grant applications for support for graduate students include a description of the mentoring activities that will be provided for such individuals.

The NSF shall make awards for the development of innovative approaches for facilitating career exploration of academic and nonacademic career options and for providing opportunity-broadening experiences, including work-integrated opportunities, for graduate students and postdoctoral scholars that can then be considered, adopted, or adapted by other institutions and to carry out research on the impact and outcome of those activities.

The NSF shall require that annual project reports for awards that support graduate students and postdoctoral scholars include certification by the principal investigator that each graduate student and postdoctoral scholar receiving substantial support from such award has developed and annually updated an individual development plan to map educational goals, career exploration, and professional development.

The NSF shall carry out a five-year pilot initiative to award up to 2,500 administrative supplements of up to $2,000 to existing research awards annually to support professional development experiences for graduate students and postdoctoral researchers who receive a substantial portion of their support under such award. Not more than 10% of supplements awarded may be used to support professional development experiences for postdoctoral researchers.

The NSF shall make awards to support research on the graduate education system and outcomes of various interventions and policies.

The awards under the Graduate Research Fellowship Program for scholarships and graduate fellowships for study and research in the sciences or in engineering will also address national workforce demand in critical STEM fields. This section increases the amount of the cost of education allowance from $12,000 to at least $16,000.

The NSF shall ensure that students pursuing master's degrees and doctoral degrees in fields related to cybersecurity are eligible to apply for scholarships and graduate fellowships under such program.

The NSF must report to Congress on the need for and feasibility of a program to recruit and train the next generation of artificial intelligence professionals to meet the needs of federal, state, local, and tribal governments.

Upon submitting such report, the NSF is authorized to establish a federal artificial intelligence scholarship-for-service program to recruit and train artificial intelligence professionals to lead and support the application of artificial intelligence to the missions of federal, state, local, and tribal governments.

(Sec. 10314) The NSF shall conduct a full portfolio analysis of the NSF's skilled technical workforce investments across all directorates in the areas of education research, infrastructure, data collection, and analysis.

To meet evolving needs for data on the state of the science and engineering workforce, the NSF shall assess the feasibility and benefits of incorporating questions or topic modules into existing National Center for Science and Engineering Statistics surveys that vary from cycle to cycle.

The NSF shall submit to Congress and the National Science Board the results of an assessment of the feasibility and benefits of incorporating new questions or topic modules into existing National Center for Science and Engineering Statistics surveys on

- the skilled technical workforce,
- working conditions and work life balance,
- harassment and discrimination, and
- immigration and emigration.

The GAO shall submit a report to Congress that (1) evaluates NSF processes for ensuring the data and analysis produced by the National Center for Science and Engineering Statistics meets current and future needs, and (2) includes such recommendations that are appropriate to improve such processes.

(Sec. 10315) The NSF shall make awards for the carrying out of research on the cyber workforce.

(Sec. 10316) This section expands the fields of study eligible for support under the Federal Cyber Scholarship-for-Service Program to include fields such as artificial intelligence, quantum computing, and aerospace.

(Sec. 10317) The National Center for Science and Engineering shall establish a specified cybersecurity workforce data initiative.

(Sec. 10318) The NSF shall make awards for research, development, and related activities to advance innovative approaches to developing, improving, and expanding evidence-based education and workforce development activities and learning experiences at all levels of education in fields and disciplines related to microelectronics.

The NSF shall establish traineeship programs for graduate students pursuing microelectronics research to provide assistance that includes funding and opportunities for research experiences in government or industry.

The NSF shall make awards under the Scientific and Advanced Technology Act of 1992 to support programs for skilled technical workers in STEM disciplines that are aligned with skilled workforce needs of the microelectronics industry and lead to an associate's degree, or equivalent certification, by providing funding and other assistance, including opportunities for internships and other hands-on experiences in industry.

The NSF shall seek to increase opportunities for microelectronics research for students and trainees at all levels through

existing programs.

The NSF shall make awards to establish partnerships to enhance and broaden participation in microelectronics education.

The NSF shall make an award to establish a national network of partnerships (the National Network for Microelectronics Education) to coordinate activities, best practice sharing, and access to facilities across the partnerships to enhance and broaden participation in microelectronics education.

(Sec. 10319) Grants awarded by the NSF to establish mathematics and science education partnership programs to improve elementary and secondary mathematics and science instruction may be used for developing a science, technology, engineering and mathematics educational curriculum that incorporates art and design to promote creativity and innovation.

The bill revises requirements for NSF informal STEM education grants to require support for the integration of art and design in STEM educational programs and design and testing of programming that integrates art and design in STEM education to promote creativity and innovation.

(Sec. 10320) Cost-sharing requirements for the Major Research Instrumentation Program and for teaching fellowships administered within the Robert Noyce Teacher Scholarship Program are waived for five years.

The NSF shall submit to Congress an assessment that includes feedback from the research community of the impacts of such waivers.

(Sec. 10321) The NSF shall issue undergraduate scholarships, postdoctoral awards, and other awards to address STEM workforce gaps, including for programs that recruit, retain, and advance students to a bachelor's degree in a STEM discipline concurrent with a secondary school diploma.

Subtitle C--Broadening Participation

(Sec. 10321) This section increases from 108 to 110 the number of Presidential Awards for Excellence in Mathematics and Science Teaching the President is authorized to make to kindergarten through grade 12 school teachers who have demonstrated outstanding teaching ability in the field of teaching mathematics or science.

In selecting teachers for such an award, the President shall select at least one teacher from

- the Northern Mariana Islands,
- American Samoa,
- the U.S. Virgin Islands, and
- Guam.

(Sec. 10322) To increase the diversity of participants in the Robert Noyce Teacher Scholarship program, the NSF must support symposia, forums, conferences, and other activities to expand and enhance outreach to

- historically Black colleges and universities;
- Tribal Colleges or Universities;
- minority-serving institutions;
- institutions of higher education that are near to or serve rural communities, including EPSCoR institutions;

labor organizations;
- emerging research institutions; and
- higher education programs that serve or support veterans.

(Sec. 10323) The NSF shall make awards to carry out a comprehensive national initiative to facilitate the development of networks and partnerships to build on and scale up effective practices in broadening participation in STEM studies and careers of groups historically underrepresented in such studies and careers. This initiative shall be known as the Eddie Bernice Johnson Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science Initiative or the Eddie Bernice Johnson INCLUDES Initiative.

(Sec. 10324) The NSF shall require organizations seeking a cooperative agreement for the management of the operations and maintenance of an NSF project to have the capacity for employing best practices in broadening participation in science and engineering and ensure implementation of such practices is considered in oversight of the award.

(Sec. 10325) Each agency that administers an EPSCoR Program shall consider modifications to EPSCoR award structures to increase the capacity of rural communities to provide quality STEM education and STEM workforce development programming to students and teachers.

The NSF shall make awards to eligible institutions to implement and study innovative approaches for building research capacity in order to engage and retain students from a range of institutions and diverse backgrounds in STEM.

The NSF shall establish a five-year pilot program for awards to research partnerships that involve emerging research institutions and may involve institutions classified as very high research activity by the Carnegie Classification of Institutions of Higher Education at the time of application.

(Sec. 10326) The NSF shall make awards to support basic, applied, and use-inspired research that yields a scientific evidence base for improving the design and emergence, development and deployment, and management and ultimate effectiveness of entities involved in technology research, including research related to diversity and inclusion in the technology sector.

(Sec. 10327) The NSF shall appoint a Chief Diversity Officer to provide advice on policy, oversight, guidance, and coordination on matters of the NSF related to diversity and inclusion, including ensuring geographic diversity of NSF programs.

(Sec. 10328) The NSF shall make awards to enable institutions of higher education or nonprofit organizations (or consortia of them) to increase the participation of women and underrepresented minorities in STEM studies and careers.

(Sec. 10329) The NSF shall make awards for the development and assessment of innovative reform efforts designed to increase the recruitment, retention, and advancement of individuals from underrepresented minority groups in academic STEM careers.

The NSF shall make awards to institutions of higher education (or a consortium of such institutions) to implement or expand research-based reforms in undergraduate STEM education to recruit and retain students from minority groups who are underrepresented in STEM fields.

This section states that all awards made pursuant to this section must include an education research component that will support the design and implementation of a system for data collection and evaluation of proposed reform efforts in order

to build the knowledge base on promising models for increasing recruitment and retention of students from underrepresented minority groups in STEM education at the undergraduate level across a diverse set of institutions.

(Sec. 10330) This section authorizes the NSF to conduct multiple pilot programs within the NSF to expand the number of institutions of higher education (including community colleges), and other eligible entities that the NSF determines are appropriate, that are able to successfully compete for NSF awards.

Subtitle D--NSF Research Security

(Sec. 10331) The NSF shall maintain a Research Security and Policy office within the Office of the Director of the NSF with not fewer than four full-time equivalent positions, in addition to the Chief of Research Security established pursuant to the following section. The function of the Research Security and Policy office shall be to coordinate all research security policy issues across the NSF.

(Sec. 10332) The Director of the NSF shall appoint a senior agency official within the Office of the Director of the NSF as a Chief of Research Security, whose primary responsibility shall be to manage the Research Security and Policy office.

(Sec. 10333) The NSF must provide a report to Congress on the resources and the number of full-time employees needed to carry out the functions of the Research Security and Policy office.

(Sec. 10334) The NSF shall develop an online resource hosted on the NSF's website that shall contain up-to-date information, tailored for institutions and individual researchers, including, among other things

- an explanation of NSF research security policies, and
- unclassified guidance on potential security risks that threaten research integrity and other risks to the research enterprise.

(Sec. 10335) The NSF shall continue to make awards to support research on the conduct of research and the research environment, including research on research misconduct or breaches of research integrity and detrimental research practices.

(Sec. 10336) The Research Security and Policy office, in coordination with the NSF's Office of Inspector General, shall have the authority to conduct risk assessments of research and development award applications and disclosures to the NSF.

(Sec. 10337) This section expands requirements for NSF grant applicants to plan to provide training and oversight in the responsible and ethical conduct of research. The section requires such training and oversight to be provided to postdoctoral researchers, faculty, and other senior personnel and requires the training and oversight to include (1) mentor training and mentorship; (2) training to raise awareness of potential research security threats; and (3) federal export control, disclosure, and reporting requirements.

(Sec. 10338) The NSF shall enter into an agreement with a qualified independent organization to establish a research security and integrity information sharing analysis organization (RSI-ISAO).

(Sec. 10339) The NSF shall develop a plan to

- identify research areas supported by the NSF, including key technology focus areas, that may involve access to controlled unclassified or classified information; and

exercise due diligence in granting access, as appropriate, to the controlled unclassified information or classified information identified to individuals working on such research who are employees of the NSF or covered individuals on research and development awards funded by the NSF.

(Sec. 10339A) This section prohibits any of the funds made available to the NSF under this division or Division A, or an amendment made by this division or Division A, from being obligated or expended to an institution of higher education that maintains a contract or agreement between the institution and a Confucius Institute, unless the NSF determines a waiver in accordance with this section is appropriate.

The NSF may issue a waiver for an institution of higher education that maintains such a contract or agreement if the contract or agreement includes specified, clear provisions, including the protection of academic freedom at the institution.

This section shall not apply to an institution of higher education if that institution has fulfilled the requirements for a waiver from the Department of Defense as described under the National Defense Authorization Act for Fiscal Year 2021.

The prohibition shall not apply to amounts provided to students as educational assistance.

(Sec. 10339B) The NSF must request annually from a recipient institution of higher education a disclosure of any current financial support that is $50,000 or more, including gifts and contracts, received directly or indirectly from a foreign source associated with a foreign country of concern.

Subtitle E--Fundamental Research

(Sec. 10341) The NSF shall enter into an agreement with a qualified independent organization to assess how the Broader Impacts review criterion is applied across the NSF and make recommendations improving the effectiveness of the criterion.

(Sec. 10343) The NSF must revise proposal instructions to require that ethical and societal considerations are included as part of a proposal for funding.

(Sec. 10344) The NSF shall facilitate public access to research products, including data, software, and code, developed as part of NSF projects. The NSF shall require that every proposal for funding for research include a data management plan that includes a description of how the awardee will archive and preserve public access to data, software, and code developed as part of the proposed project.

The NSF shall develop and disseminate a set of criteria for trusted open repositories to be used by NSF-funded researchers and make awards for the development and maintenance of such repositories.

The NSF shall support research and development of tools and infrastructure that support reproducibility and support the education and training of researchers on computational methods, tools, and techniques to improve the quality and sharing of data, code, and supporting metadata to produce reproducible research.

(Sec. 10345) The NSF shall make awards to support research to improve our understanding of the climate system and related human and environmental systems.

(Sec. 10346) The NSF shall

- communicate opportunities and solicit proposals for social, behavioral, and economic science researchers to participate in cross-cutting and interdisciplinary programs; and

ensure social, behavioral, and economic science researchers are represented on relevant merit review panels for such activities.

(Sec. 10347) The NSF shall make awards to improve our understanding of the impacts of federally funded research on society, the economy, and the workforce, including domestic job creation.

(Sec. 10348) The NSF shall make awards to, among other things

- support research to significantly advance our understanding of the food-energy-water system through quantitative and computational modeling, and
- support research that will lead to innovative solutions to critical food-energy-water system problems.

(Sec. 10349) The NSF shall continue to support enhancing, repairing, and maintaining research instrumentation, laboratories, telecommunications, and housing at biological field stations and marine laboratories.

(Sec. 10350) The NSF shall carry out activities in support of sustainable chemistry.

(Sec. 10351) The NSF shall make awards to advance knowledge of risk assessment and predictability and to support the creation of tools and technologies, including advancing data analytics and utilization of artificial intelligence.

(Sec. 10352) The NSF shall carry out a program of research and related activities related to unmanned aircraft system technologies.

(Sec. 10353) The NSF shall issue awards to support research that will accelerate innovation to advance unmanned maritime systems to provide greater maritime domain awareness to the nation.

(Sec. 10354) The NSF shall explore and advance opportunities for leveraging international capabilities and resources that align with the NSF and U.S. research community priorities and have the potential to benefit U.S. prosperity, security, health, and well-being, including binational research and development organizations.

(Sec. 10355) The NSF shall continue to (1) support databases, tools, methods, and other activities that secure and improve existing physical and digital biological research collections; (2) improve the accessibility of collections and collection-related data for research and educational purposes; (3) develop capacity for curation and collection management; and (4) transfer ownership of collections that are significant to the biological research community, including to museums and universities.

The NSF shall make awards to facilitate coordination and data sharing among communities of practice for research, education, workforce training, evaluation, and business model development, including by establishing an Action Center for Biological Collections.

(Sec. 10356) The NSF shall make awards to address water availability, quality, and security, including to support transdisciplinary research to significantly advance our understanding of water availability, quality, and dynamics and the impact of human activity and a changing climate on urban and rural water and wastewater systems, including in low-income, underserved, and disadvantaged communities.

(Sec. 10357) The NSF shall make awards for research and development to

- increase understanding of social media and consumer technology access and use patterns and related mental health, behavioral, and substance use disorder issues, particularly for children and adolescents; and

explore the role of social media and consumer technology in rising rates of mental health and substance use disorder issues, including within communities experiencing long-term economic distress.

(Sec. 10358) Research areas under the grant program to support fundamental research leading to transformative advances in manufacturing technologies, processes, and enterprises that support U.S. manufacturing may include artificial intelligence and machine learning and additive manufacturing, including new material design and rapid printing techniques.

(Sec. 10359) The NSF shall make awards to support basic research that will accelerate innovation to advance critical minerals mining strategies and technologies to make better use of domestic resources and eliminating national reliance on minerals and mineral materials that are subject to supply disruptions.

(Sec. 10360) The NSF shall study or support a study on artificial intelligence research capacity at U.S. institutions of higher education.

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(Sec. 10361) In making awards under the sensor systems and networked systems programs of the NSF, the NSF must include in considering portfolio balance research and development on sensor connectivity in environments of intermittent connectivity and intermittent computation.

In considering applications for grants for junior or community colleges to develop or improve associate degree or certificate programs in STEM fields with an in-demand workforce, the NSF must prioritize applications that incorporate distance learning tools and approaches.

In considering applications for the awarding of grants to institutions of higher education partner

Actions Timeline

- **Aug 9, 2022:** Signed by President.
- **Aug 9, 2022:** Became Public Law No: 117-167.
- **Aug 2, 2022:** Presented to President.
- **Jul 28, 2022:** Ms. Johnson (TX) moved that the House agree to the Senate amendment to the House amendment to the Senate amendment.
- **Jul 28, 2022:** Pursuant to the provisions of H.Res. 1289, Ms. Johnson (TX) moved that the House concur in the Senate amendment to the House amendment to the Senate amendment to H.R. 4346. (consideration: CR H7273-7387)
- **Jul 28, 2022:** DEBATE - The House proceeded with one hour of debate on the Johnson (TX) motion to concur in the Senate amendment to the House amendment to the Senate amendment to H.R. 4346.
- **Jul 28, 2022:** The previous question was ordered pursuant to the rule.
- **Jul 28, 2022:** Resolving differences -- House actions: On motion that the House agree to the Senate amendment to the House amendment to the Senate amendment Agreed to by the Yeas and Nays: 243 - 187, 1 Present (Roll no. 404).
- **Jul 28, 2022:** On motion that the House agree to the Senate amendment to the House amendment to the Senate amendment Agreed to by the Yeas and Nays: 243 - 187, 1 Present (Roll no. 404). (text: CR H7273-7374)
- **Jul 28, 2022:** Motion to reconsider laid on the table Agreed to without objection.
- **Jul 27, 2022:** Considered by Senate (Message from the House considered). (consideration: S3707¿3715)
- **Jul 27, 2022:** Resolving differences -- Senate actions: Senate concurred in the House amendment to the Senate amendment to H.R. 4346 with an amendment (SA 5135) by Yea-Nay Vote. 64 - 33. Record Vote Number: 271.
- **Jul 27, 2022:** Senate concurred in the House amendment to the Senate amendment to H.R. 4346 with an amendment (SA 5135) by Yea-Nay Vote. 64 - 33. Record Vote Number: 271.
- **Jul 27, 2022:** Message on Senate action sent to the House.
- **Jul 26, 2022:** Cloture on the motion to concur in the House amendment to the Senate amendment to H.R. 4346 with an amendment (SA 5135) invoked in Senate by Yea-Nay Vote. 64 - 32. Record Vote Number: 268. (CR S3665)
- **Jul 26, 2022:** Considered by Senate (Message from the House considered).
- **Jul 26, 2022:** Motion by Senator Schumer to refer to Senate Committee on Commerce, Science, and Transportation with instructions to report back forthwith with the following amendment (SA 5137) fell when cloture was invoked on the motion to concur in the House amendment to the Senate amendment to H.R. 4346 with an amendment (SA 5135) in Senate.
- **Jul 21, 2022:** Considered by Senate (Message from the House considered). (consideration: CR S3582)
- **Jul 20, 2022:** Considered by Senate (Message from the House considered). (consideration: CR S3527)
- **Jul 20, 2022:** Cloture motion on the motion to concur in the House amendment to the Senate amendment to H.R. 4346 with an amendment (SA 5135) presented in Senate. (CR S3527)
- **Jul 19, 2022:** Motion to proceed to consideration of the House message to accompany H.R. 4346 agreed to in Senate by Yea-Nay Vote. 64 - 34. Record Vote Number: 261.
- **Jul 19, 2022:** Measure laid before Senate by motion. (consideration: CR S3362)
- **Jul 19, 2022:** Motion by Senator Schumer to concur in the House amendment to the Senate amendment to H.R. 4346 with an amendment (SA 5135) made in Senate. (CR S3362)
- **Jul 19, 2022:** Motion by Senator Schumer to refer to Senate Committee on Commerce, Science, and Transportation the House message to accompany H.R. 4346 with instructions to report back forthwith with the following amendment (SA 5137) made in Senate. (CR S3362)
- **Jul 11, 2022:** Message on House action received in Senate and at desk: House amendment to Senate amendment.
- **Jun 24, 2022:** Pursuant to the provisions of H.Res. 1204, the House agreed to the Senate amendment with amendment. (consideration: CR H5891; text: CR H5891-5892)
- **Jun 22, 2022:** Senate Committee on Appropriations discharged by Unanimous Consent.
- **Jun 22, 2022:** Measure laid before Senate by unanimous consent. (consideration: CR S3096-3097)
- **Jun 22, 2022:** Passed/agreed to in Senate: Passed Senate with an amendment by Unanimous Consent.
- **Jun 22, 2022:** Passed Senate with an amendment by Unanimous Consent. (text of amendment in the nature of a substitute: CR S3096-3097)
- **Jun 22, 2022:** Message on Senate action sent to the House.
- **Jul 29, 2021:** Received in the Senate and Read twice and referred to the Committee on Appropriations.
- **Jul 28, 2021:** Rules Committee Resolution H. Res. 567 Reported to House. Rule provides for consideration of H.R. 4346, H.R. 4373 and H.R. 4505. Provides for consideration of H.R. 4346, H.R. 4373, and H.R. 4505 under a structured

rule with one hour of general debate for each bill.

- **Jul 28, 2021:** Considered under the provisions of rule H. Res. 567. (consideration: CR H4151-4172; text: CR H4152-4158)
- **Jul 28, 2021:** Rule provides for consideration of H.R. 4346, H.R. 4373 and H.R. 4505. Provides for consideration of H.R. 4346, H.R. 4373, and H.R. 4505 under a structured rule with one hour of general debate for each bill.
- **Jul 28, 2021:** DEBATE - The House proceeded with one hour of debate on H.R. 4346.
- **Jul 28, 2021:** DEBATE - Pursuant to the provisions of H. Res 567, the House proceeded with 20 minutes of debate on the Ryan amendment en bloc No. 1.
- **Jul 28, 2021:** POSTPONED PROCEEDINGS - At the conclusion of debate on the Ryan amendment en bloc No. 1, the Chair put the question on adoption of the amendment and by voice vote, announced that the ayes had prevailed. Ms. Herrera Beutler demanded the yeas and nays and the Chair postponed further proceedings until a time to be announced.
- **Jul 28, 2021:** DEBATE - Pursuant to the provisions of H. Res 567, the House proceeded with 20 minutes of debate on the Ryan amendment en bloc No. 2.
- **Jul 28, 2021:** The previous question was ordered on the amendment (A003) pursuant to the rule.
- **Jul 28, 2021:** DEBATE - Pursuant to the provisions of H. Res 567, the House proceeded with 20 minutes of debate on the Ryan amendment en bloc No. 3.
- **Jul 28, 2021:** POSTPONED PROCEEDINGS - At the conclusion of debate on the Ryan amendment en bloc No. 3, the Chair put the question on adoption of the amendment and by voice vote, announced that the ayes had prevailed. Mr. Ryan demanded the yeas and nays and the Chair postponed further proceedings until a time to be announced.
- **Jul 28, 2021:** UNFINISHED BUSINESS - The Chair announced that the unfinished business was on agreeing to amendments which had been debated earlier and on which further proceedings had been postponed.
- **Jul 28, 2021:** Motion to reconsider laid on the table. Agreed to without objection.
- **Jul 28, 2021:** The previous question was ordered pursuant to the rule.
- **Jul 28, 2021:** Mr. Womack moved to recommit to the Committee on Appropriations. (text: CR H4169-4171)
- **Jul 28, 2021:** The previous question on the motion to recommit was ordered pursuant to clause 2(b) of rule XIX.
- **Jul 28, 2021:** On motion to recommit Failed by the Yeas and Nays: 202 - 218 (Roll no. 238).
- **Jul 28, 2021:** Passed/agreed to in House: On passage Passed by the Yeas and Nays: 215 - 207 (Roll no. 239).
- **Jul 28, 2021:** On passage Passed by the Yeas and Nays: 215 - 207 (Roll no. 239).
- **Jul 28, 2021:** Motion to reconsider laid on the table Agreed to without objection.
- **Jul 28, 2021:** The Clerk was authorized to correct section numbers, punctuation, and cross references, and to make other necessary technical and conforming corrections in the engrossment of H.R. 4346.
- **Jul 1, 2021:** Introduced in House
- **Jul 1, 2021:** The House Committee on Appropriations reported an original measure, H. Rept. 117-80, by Mr. Ryan.
- **Jul 1, 2021:** Placed on the Union Calendar, Calendar No. 55.