Looking at the Chips on the Table

An Overview of the CHIPS & Science Act of 2022

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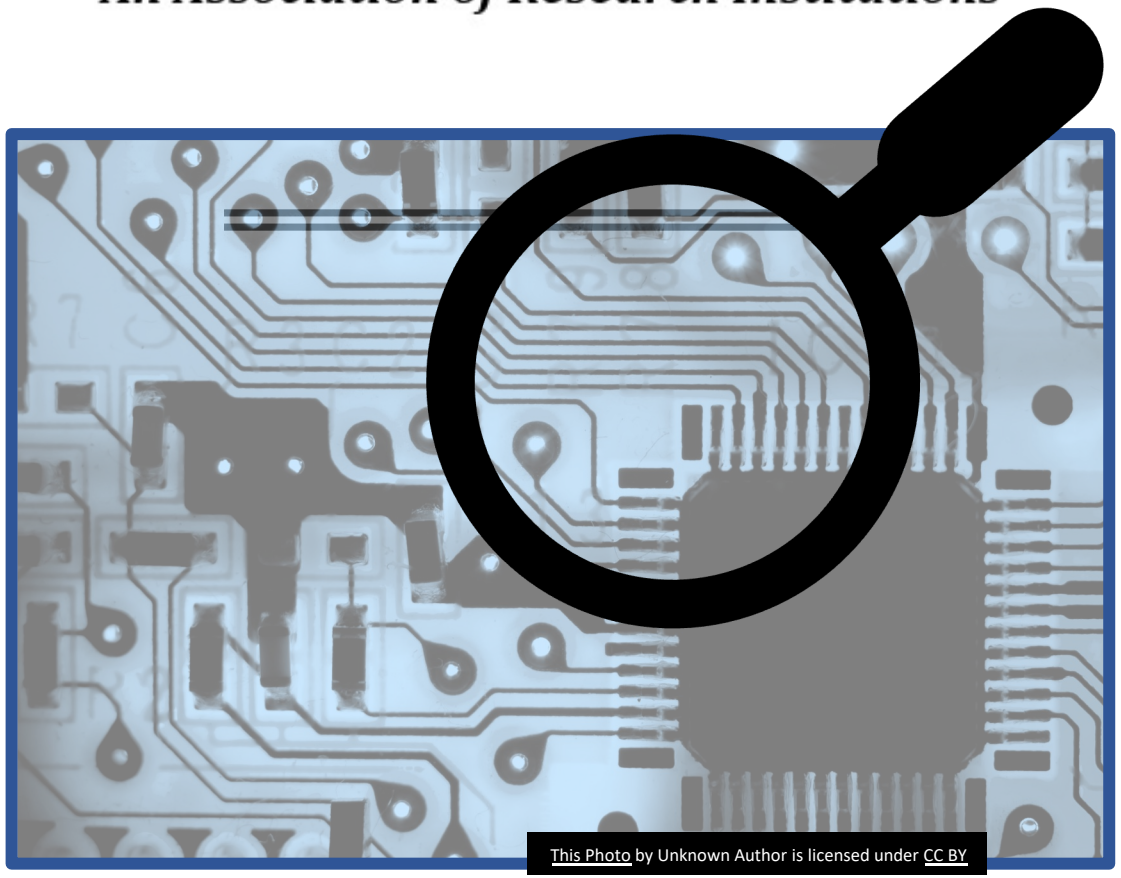

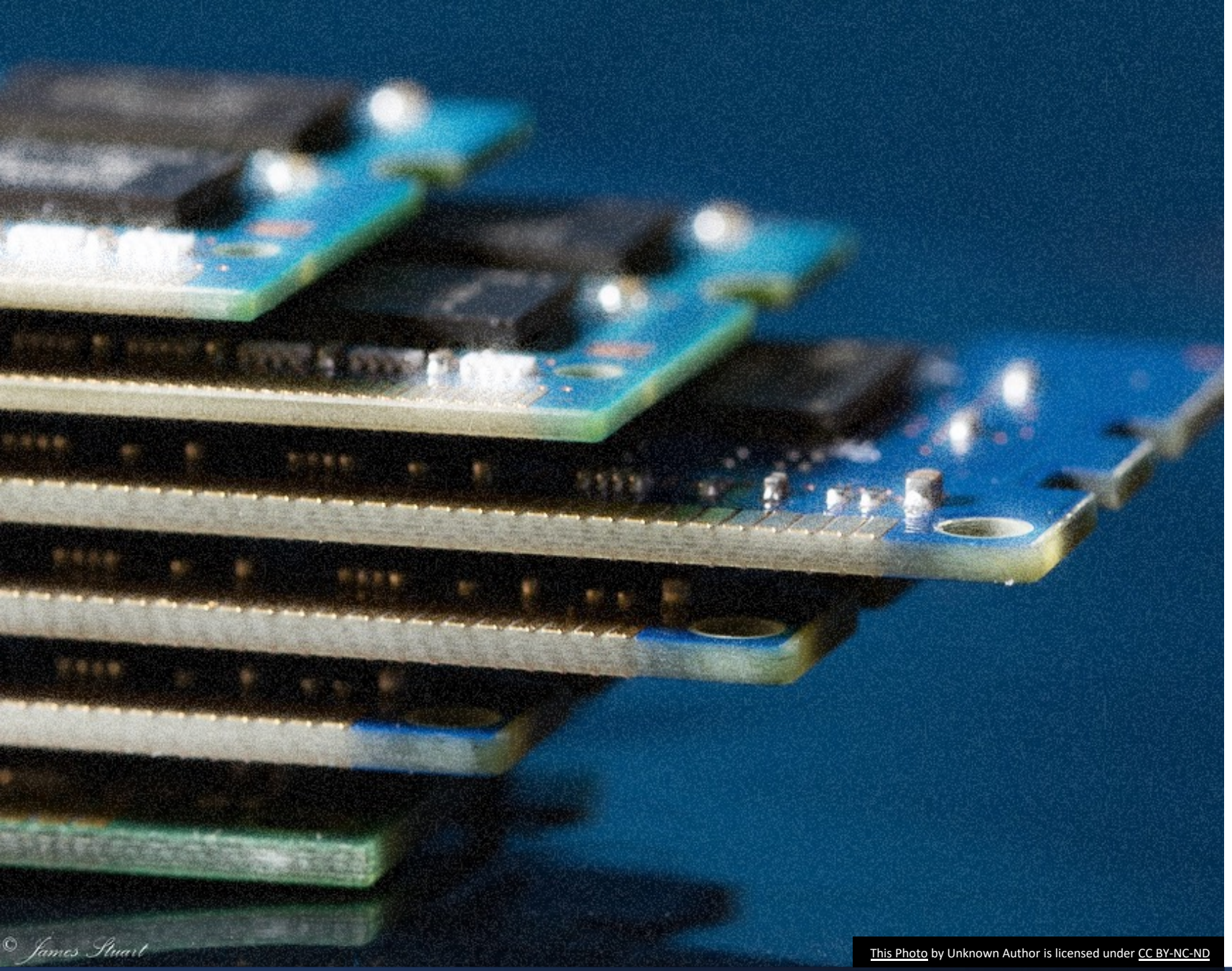

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Presenters

- **Robert Hardy**, Director, Research Security & Intellectual Property
- **Krystal Toups**, Director, Contracts & Grants Administration
- **Kris West**, Director, Research Ethics & Compliance

Presentation Overview

- **Quick Poll Questions to get Us Started**
- **High Level Overview of the Act**
  - The “Chips” in the Chips & Science Act
  - Research Innovation Provisions
  - Authorization v. Appropriations
- **Focus on:**
  - Research Security Provisions and Comparison with Current Requirements
  - “Big Tent” Provisions
  - Provisions for Promoting a Better Research Environment
- **Q&A**

Poll Question

Poll 1: How familiar are you with the CHIPS & Science Act?

- A. Very familiar. I've got my highlighted copy right next to me!
- B. Pretty familiar. I've read lots of summaries, seen some webinars, and I and have a good idea of what it says.
- C. A little bit. Just started reviewing it.
- D. Not at all. Is it served with DIP?

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Poll Question

Poll 2: What aspects of the CHIPS & Science Act do you think your institution will be most interested in?

(Choose all that apply)

- A. Computer chip development and manufacturing incentives.
- B. Research security provisions.
- C. Broadening participation in research, science, STEM education.
- D. Ensuring a safe research environment free from bullying and harassment.
- E. Energizing technology transfer
- F. Other (let us know in the chat!)

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Act Overview: Implementing Prior Legislation

- **The Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act of 2022 – H.R. 4346**
  - House summary, bill text and related explanatory materials & resources
  - Senate summary & bill text
  - Division A of Act
- **Semiconductors:** Appropriates funds to implement "CHIPS for America" provisions of the FY 2021 NDAA
  - Dept. of Defense, Dept. of Commerce, and Dept. of State activities to promote U.S. manuf. of semiconductors.
- **Telecommunications Supply Chain**: Appropriates funds to implement "USA Telecom Act" provisions of FY 2021 NDAA.

  Develop open-architecture telecommunications model - designed to counter Huawei
- **Restrictions on expanding semiconductor manufacturing in China or other "countries of concern"**

Act Overview: New Provisions on Research & Innovation

- **Division B**: Authorizes major investment in public research and development via National Science Foundation (NSF), Dept. of Commerce (DOC), National Institute of Standards & Technology (NIST), and Dept. of Energy (DOE)
  - Title I – DOE Science for the Future
  - Title II – NIST for the Future
  - Title III – NSF for the Future
  - Title IV – Bioeconomy Research and Development
- **Building and diversifying STEM workforce – Title V**
- **Miscellaneous Science & Technology Provisions – Title VI**
- **NASA Authorization Act – Title VII**
- **Appropriations to address threats to U.S. Supreme Court -- Division C**

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Where's the Money?

Div. A Appropriations:

- Semiconductor Manufacturing
- Telecommunications Supply Chain

Div. B Authorizations:

- *5 year authorizations increase over baseline
- Total authorizations including baseline = $169.9 Billion
- NSF has the lion's share - $81 Billion

Source: 2699CE4B-51A5-4082-9CED-4B6CD912BBC8 (senate.gov), p. 5

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Research Security: Key Definitions

DOE Provisions

- "Country of Risk" – Sec. 10114(a)(1)
  - Identified by DOE secretary as presenting risk of threat of U.S. intellectual property (IP) theft or threat to U.S. national security.

- "Entity of Concern" – Sec. 10114(a)(3)
  - On specified lists or determined by DOE Secretary (in coordination with Dir. Office of Intelligence & Counterintelligence and office providing covered support) as posing unmanageable risk of theft or loss of U.S. IP or to U.S. national security.

Research Security: Key Definitions re. Foreign Talent Recruitment Programs

- "Foreign Talent Recruitment Program"(FTRP) – Sec. 10631
  - OSTP Dir. Is to define and describe characteristic of FTRP
- "Foreign Country of Concern" – Sec. 10638(2)
  - People's Republic of China (PRC), Russia Federation (RF), North Korea (NK), & Iran, or other country as determined by Sec. of State
- "Foreign Entity of Concern" – Sec. 10638(3)
  - Owned, controlled, or subject to jurisdiction or direction of government of PRC, RF, NK & Iran; or
  - On specified lists; or
  - Alleged by U.S. Attorney General to have been involved in activities for which a conviction was obtained under specified laws; or
  - Determined by Sec. of Commerce in consultation with Sec. of Defense & Dir. of National Intelligence to be engaged in unauthorized conduct that is detrimental to U.S. national security or foreign policy.
- "Malign Foreign Talent Recruitment Program" – Sec. 10638(4)
  - Any foreign country's program, position, or activity + "compensation" in exchange for individual engaging in certain activities; or
  - Sponsored by foreign country of concern or entity based in foreign country of concern; or
  - Academic institution on list developed under McCain FY2019 NDAA

Research Security: DOE

Div. B, Title I, Section 10114

- **Risks:** Threats of IP theft and threats to national security posed by "country of risk" and/or "entity of concern" as identified by Sec. of DOE.
- **Prohibition**: Unless a waiver is granted by Sec. of DOE, no entity of concern (or individual under its ownership/control) can receive (or perform work under) DOE "covered support."
- **DOE Secretary Responsibilities**:
  - Identifies threats and who poses them (with references to entity lists).
  - Develops/maintains "tools and processes to manage and mitigate research security risks," e.g., "science and technology risk matrix."
    - Review and update annually
    - Provide tool, matrix, risk mitigation plan, and "critical research areas" to Congress 240 days after the Act is adopted.
  - Designate officer at DOE to track and notify recipients of financial assistance of "unmanageable threats" to national security or of theft/loss of IP posed by entity of concern.
  - Support development research security training.

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Research Security: NIST

Div. B, Title II, Sections 10223-29 & 10247 (Cybersecurity & Foreign Influence)

- NIST charged with evaluating and developing "voluntary, consensus-based" technical standards, best practices, methodologies, procedures for various areas of cybersecurity and privacy, including:
  - Software and software supply chain
  - Privacy protections for systems and other information security measures, including software authentication
  - ID management
  - Biometrics
- NIST instructed to provide tools/resources to research institutions to "identify, assess, manage, and reduce their cybersecurity risks related to conducting research. Tools should consider size/type of institution and risk posed by research.
- GAO will complete a review and report on NIST policies and processes to protect funded research against inappropriate foreign influence.
  - Encompasses NIST employees and funded researchers
  - Will include disclosures, COI, risk assessment, training, and persons in FTRPs.

Research Security: NSF

Div. B, Title III, Sections 10331-339C

- **NSF to estb. Research Security & Policy Office** – Office will coordinate research security activities for NSF and provides annual report to Congress on activities.
  - Appoint Chief of Research Security
- **NSF to estb. Online Resource** – Resource for research institutions and researchers re. research security, including NSF policies, risk assessment/mitigation, best practices, distinguishing beneficial collaborations.
- **Authority**: Delegates authority to NSF to conduct risk assessment activities, including use of analytical tools on information provided in association with awards/applications.
- **Expands Required RCR Training.:**
  - Audience: Undergrads, grads, post-docs, faculty & sr. personnel
  - New Topics: Mentor trg., mentorship, awareness of potential research security threats, export controls (disclosure and reporting)

Research Security: NSF

Div. B, Title III, Sec. 10331-339C Research Security

- **CI/CUI**: NSF to identify areas of research that involve access to classified information (CI) and/or controlled unclassified information (CUI) and exercise due diligence as to those granted access to this information.
- **RSI-ISAO** – NSF will enter into agreement with qualified independent organization to estb. research security and integrity information sharing and analysis organization.
  - Clearinghouse to ID threats, gather and analyze data, develop risk assessment/best practices.
- **Confucius Institutes** – No NSF funding under the Act to IHEs that have an agreement with a Confucius Institute unless NSF grants a waiver.
  - Confucius Institute broadly defined
- **Reporting of Foreign Financial Support to NSF** – NSF recipients must provide annual summary to NSF of foreign gifts/contracts ≥ $50K from a "foreign source" (as defined in Dept. of Ed. Sec. 117) associated with a "foreign country of concern."
  - Institutions must maintain "true" copies of agreements and provide to NSF on request.

Research Security: Provisions re. Foreign Talent Recruitment Programs

Title VI, Sec. 10631-638

- **OSTP Tasks**:
  - **Uniform Guidelines re. FTRP/MFTRP Prohibitions -- 180 days after enactment**
    - Issue uniform guidelines for federal research agency re. FTRP prohibitions for federal employees (including contractors) and MFTRP prohibitions for covered individuals
    - Require disclosure of FTRP contract or arrangement
    - No R&D award for proposal in which covered individual is in MFTRP.
    - Awardee institution must prohibit covered individuals from participating in MFTRP
  - **Contract for Development of Security Training -- 90 days after enactment**
    - Enter into contract for development of online security training modules re. int'l collaborations, cybersecurity, int'l travel, research integrity, proper use of funds, disclosure, COI, & COC.
  - **Define characteristics of FTRP**
  - **Ensure consistency of required federal agency policies in this area to the greatest extent possible**.

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Research Security: FTP Participation Prohibitions Title VI, Sec. 10631-638

- **Agency Tasks:**
  - **Guidelines to Agencies for FTRP/MFTRP Participation – One year after Enactment**
  - **Policy Prohibiting MFTRP Participation -- 24 months after Enactment**
    - Issue policy that requires (a) covered individual to certify individual is not in MFTRP at submission of proposal and annually and (b) applicant institution to certify its employee-applicant is aware of requirement and complies.
    - Publish in Fed. Reg. and allow 60 days for comment
    - Policy shall not prohibit scholarly presentations, publications, participation in conferences, exchanges, or research projects that involve open and reciprocal exchange of scientific information unless funded, organized or managed by certain academic institutions or FTPs.
  - **Security Training Requirement -- 12 months after Enactment**
    - Agencies must have requirement that as part of research funding application, individual must certify completion of research security trg. w/in one year of application and institution must certify trg. completion too.
  - **Supporting Documentation** -- Agencies have authority to request copies of agreements related to foreign appts., employment, FTRPs, and current and pending support and to require institutions to review these agreements for compliance with agency requirements.
  - **"Due Process"** -- Agencies must provide justification for requesting supporting documentation; prove allegations of non-compliance by preponderance of evidence; and provide opportunity to provide information, rebuttal, and appeal.

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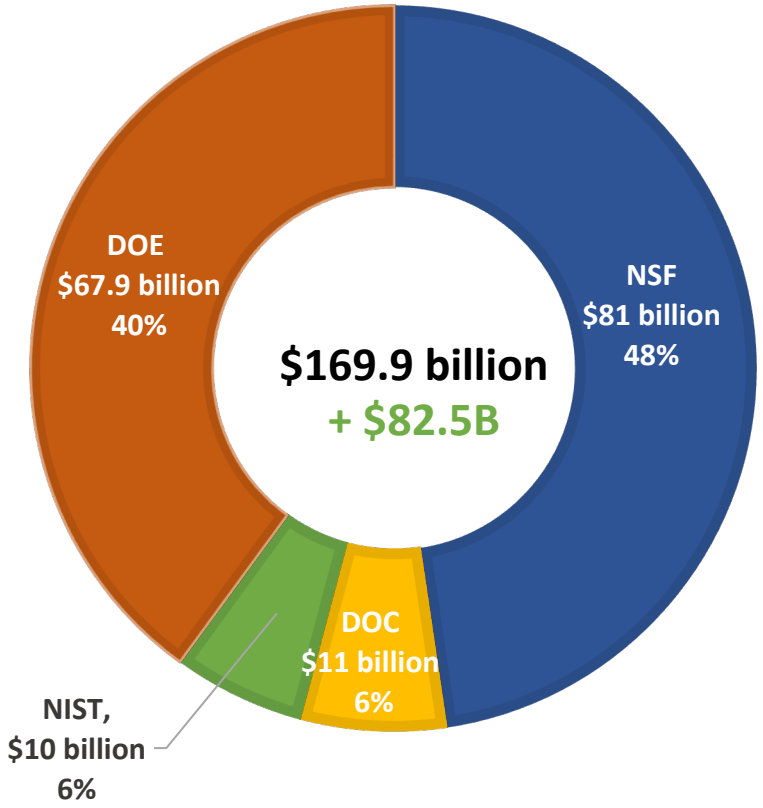
CHIPS & Science Wins

5-YEAR AUTHORIZATIONS (2023-2027)



- ✓Revitalizing American Science and Innovation for the 21st Century
- ✓Building A Strong and Diverse STEM Workforce
- ✓Improving the research environment

Appropriations…Appropriations…Appropriations

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Revitalizing American Science and Innovation:

Research Programs

NSF *($81 billion total over 5 years; +36 billion over baseline)*

- NSF Directorate for Technology, Innovation, and Partnerships ("TIPS")
- Grow Basic Research: Food-energy-water research, Sustainable Chemistry, Risk and resilience research, clean water systems, technology and behavioral health, critical minerals, precision agriculture, etc.
- Expand research accessibility and accountability
- Waives mandatory cost-sharing requirements for Major Research Instrumentation and Robert Noyce Teacher Scholarship programs for 5 years.

DOE *($67.9 billion total over 5 years; +30.5 billion over baseline)*

- **Office of Science** – *($50.3 billion total, +$ 12.9 billion over baseline)*
  - Support research activity for climate change, next-generation energy storage, solar, hydrogen, critical materials, fusion energy, manufacturing, carbon removal, and bioenergy technology etc.
  - Upgrade major scientific user facilities
- **Additional Science & Innovation Provisions** – (*$17.6 billion total, +17.6 billion over baseline)*
  - Foundation for energy security
  - Energizing technology transfer

NIST *($10 billion total; +5 billion over baseline)*

- Support critical technology research standards
- Other Transaction Authority (OTA)

DOC *($11 billion total over 5 years; +11 billion over baseline)*

- Regional Technology Hubs
- RECOMPETE Pilot

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Building A Strong and Diverse STEM Workforce: DOE

Div. B, Title I, Section 10111

Increased Collaboration with Teachers and Scientists

- Authorizes programs to foster collaboration between teachers (elementary and secondary schools, students and faculty at IHE, early-career researchers, and National Laboratories)
- Expand opportunities to increase the number of highly skilled STEM professionals, including broadening the recruitment pool to increase participation of underrepresented groups
- Within 1-year present a plan that would broaden participation of underrepresented groups in STEM, including:
  - Support relevant federal research award grantees and leverage NSF (i.e., National Network)
  - Metrics for assessment
  - Identify potential barriers and identify solutions

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Building A Strong and Diverse STEM Workforce: NIST

Div. B, Title II, Subtitle C
Section 10241

- **Educational Outreach and Support for Underrepresented Communities**– Expand NIST's educational activities to conduct outreach and develop research collaborations with underrepresented communities (i.e., HBCU, Tribal Colleges/Universities, MSIs, community colleges, nontraditional educational organizations such as nonprofit and professional organizations).

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Building A Strong and Diverse STEM Workforce: NSF

Div. B, Title III, Subtitle A, B, C, and G

- **"Sense of Congress"**: Federal government must encourage *broader participation of populations underrepresented in STEM*
- **STEM Education :**
  - Scaling Innovations in Pre-K12 through multidisciplinary research and translation centers
  - Programs to Address STEM Workforce
  - Mentoring of grad students and postdocs
  - Capacity-building programs for "emerging institutions" (< $50M in federal expenditures)
  - STEM Workforce data
- **Broaden Participation:**
  - Presidential awards, Scholarships for STEM education
  - Support research and education capacity building – EPSCoR
- **Establish NSF Chief Diversity Officer**

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Building A Strong and Diverse STEM Workforce: Title V, Subtitle A, B & C

- **Comprehensive Demographic Data Collection:** Requires NSF to carry out a survey of STEM demographics at institutions of higher education
- **Rural STEM Education:** provides research and development to increase access to STEM education opportunities
- **MSI STEM Achievement:**
  - Inventory of Federal research agency competitive funding programs targeted to MSIs
  - Capacity-Building program for developing universities
  - Requires OSTP to issue policy guidance for federal agencies to improve engagement with MSIs

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Research Environment:

All Relevant Agencies
Title V

- **Policy Reforms:**
  - To lower barriers to recruitment, retention, and advancement of underrepresented groups in STEM
- **Combating Sexual Harassment in Science**:
  - NAS to update 2009 report *On Being a Scientist: A Guide to Responsible Conduct in Research* **-- 180 days after enactment**
  - OSTP interagency working group
  - National Academies assessment

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