Calendar No. 695

114TH CONGRESS *2d Session*	SENATE	REPORT 114–389

AMERICAN INNOVATION AND COMPETITIVENESS ACT

R E P O R T

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ON

S. 3084

DECEMBER 1, 2016.—Ordered to be printed

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED FOURTEENTH CONGRESS

SECOND SESSION

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

R E P O R T

[To accompany S. 3084]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 3084) to invest in innovation through research and development, and to improve the competitiveness of the United States, 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. 3084 is to maximize the impact of basic research by reducing administrative burdens for researchers, advancing public-private partnerships, and enhancing agency oversight, and to promote science, technology, engineering, and math (STEM) education and increase research commercialization.

BACKGROUND AND NEEDS

The United States is by far the largest investor in public and private research and development (R&D) among individual countries. Among individual countries in 2013, the United States was by far the largest investor in public and private R&D with $457 billion in purchasing power parity (27 percent of the global total), followed closely by China with $337 billion (20 percent), and Japan with

$160 billion (10 percent).[1] Of that U.S. total, 61 percent was funded by the business sector.[2]

Federal research activities represented 47 percent of the $130 billion in total government-funded R&D in 2014, while development represented 53 percent.[3] Of that Federal research total, basic and applied research each comprised 50 percent in 2014.[4] Specifically, National Science Foundation (NSF) research represented 8.6 percent of all Federal research, while the NSF's basic research total represented 15 percent of all Federal basic research.[5] U.S. businesses by far outpaced government investments in R&D, spending $323 billion on domestic R&D in 2013, 82 percent of which was paid for from companies' own funds.[6]

Despite growth in nominal measures of U.S. R&D, the U.S. share of global R&D, however, has experienced a substantial decline in recent years. Increases in Chinese R&D expenditures between 2001 and 2013 cut into the U.S. share. As China's share rose from 2.2 percent to 20 percent, the U.S. share declined from 37 percent to 27 percent of the global total during the same period.[7] So even with rising total R&D expenditures in the United States, increases in foreign countries' R&D efforts underscore the need to maximize investments to boost U.S. competitiveness.

Beyond the overall investment figures, key policy issues and challenges present barriers to capitalizing on R&D expenditures. For instance, some observers have described a "valley of death" between basic research conducted at U.S. universities and the commercialization activities typically carried out by industry, since universities generally do not have the means of production necessary to take the results of initial research and generate marketable products. Many have argued that closer cooperation among industry, government, and academia could increase technology transfer, stimulate innovation, lead to new products and processes, and expand markets.[8]

In the area of STEM education, recent surveys and studies have shown that U.S. students are lagging behind students in other countries and not keeping pace with domestic industry demand in professional STEM fields. In 2015, only 38 percent of high school graduates were prepared for college coursework in science and only 42 percent were ready for college-level math.[9] In 2012, the United States ranked 21st in science and 26th in math scores among 34 other countries.[10]

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[1] National Science Board (NSB), NSB-2016-1, Science and Engineering Indicators 2016 at O-16, January 2016, at http://www.nsf.gov/statistics/2016/nsb20161/#/report/overview/science-and-technology-in-the-world-economy.

[2] Ibid at O-18.

[3] National Science Foundation, National Center for Science and Engineering Studies, NSF-16-311, Federal Funding for Research Increases by 6% in FY2014 at 1, April 2016, at http://www.nsf.gov/statistics/2016/nsf16311/nsf16311.pdf.

[4] Ibid.

[5] Ibid at 2.

[6] National Science Foundation, National Center for Science and Engineering Studies, NSF-15-329, Business R D Performance in the United States Increases over 6% in 2013 at 1, August 2015, at http://www.nsf.gov/statistics/2015/nsf15329/nsf15329.pdf.

[7] National Science Board, NSB-2014-01, Science and Engineering Indicators 2014 at O-5, January 2014, at https://www.nsf.gov/statistics/seind14/content/etc/nsb1401.pdf.

[8] Congressional Research Service Report, RL32076, *The Bayh-Dole Act: Selected Issues in Patent Policy and the Commercialization of Technology*, at 13, December 2012.

[9] ACT, The Condition of College Career Readiness 2015, at http://www.act.org/content/dam/act/unsecured/documents/Condition-of-College-and-Career-Readiness-Report-2015-United-States.pdf.

[10] Organisation for Economic Co-operation and Development, *Programme for International Student Assessment 2012*, at http://www.oecd.org/pisa/keyfindings/PISA-2012-results-US.pdf.

Yet the need for U.S. workers with STEM skills is heightened in today's global economy, and is projected to increase in the future. Overall, employment in STEM fields is projected to grow about 13 percent between 2012 and 2022, compared to the 11 percent rate of growth projected for all occupations over the decade.[11] Certain U.S. business sectors are particularly in need of an increased supply of qualified STEM workers: more than 200,000 job openings for software developers and applications are projected between 2012 and 2022,[12] and private sector STEM worker shortages currently exist in software development, as well as mobile application, data science, and manufacturing production.[13]

Given the substantial role R&D plays in the United States and global economy, Chairman Thune and Ranking Member Nelson established an Innovation and Competitiveness Working Group (Working Group) of the Committee, led by Senators Gardner and Peters, to develop and update Federal science and technology R&D and STEM education policies last authorized in the America COMPETES Reauthorization Act of 2010 (Public Law 111–358; 124 Stat. 3982). The Working Group was tasked with developing bipartisan, consensus policy solutions that, even in times of modest growth in funding, could maximize the Federal investment in basic research, foster commercialization and tech transfer, and broaden participation in STEM fields. The Working Group convened a series of bipartisan roundtables to gather input from the U.S. science and research community. Members of the public and interested groups submitted input on the topics via email, and the Committee received over 250 emailed submissions.

Common themes that arose from the roundtables and during development of the legislation included: support for continued investment by the Federal Government in basic research, as well as encouragement of wider participation in STEM subjects; stronger partnerships among government, the private sector, and academia that can better leverage discoveries emerging from research universities to drive innovation; and minimized barriers and improved incentives for universities and the private sector to better maximize the scientific and economic return on limited Federal research resources. S. 3084 draws on the input received, related bills, and policy recommendations made by entities such as the American Academy of Arts and Sciences, the Information Technology and Innovation Foundation, and the National Academy of Sciences.

SUMMARY OF PROVISIONS

As amended, the bill would authorize appropriations for fiscal years (FYs) 2017 and 2018 for the NSF and the National Institute of Standards and Technology (NIST).

The bill would codify the NSF's efforts to improve transparency and accountability of its grants, and would update the NSF's Experimental Program to Stimulate Competitive Research (EPSCoR). The bill also would direct NIST to conduct cybersecurity research

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[11] Bureau of Labor Statistics, *Occupational Outlook Quarterly, STEM 101: Intro to Tomorrow's Jobs*, at 6, 2014, at http://www.bls.gov/careeroutlook/2014/spring/art01.pdf.

[12] Ibid.

[13] Bureau of Labor Statistics, *Monthly Labor Review, STEM Crisis or STEM Surplus? Yes and Yes,* May 2015, at http://www.bls.gov/opub/mlr/2015/article/stem-crisis-or-stem-surplus-yes-and-yes.htm#__edn8.

in certain areas, and update the interagency Networking and Information Technology Research and Development Program (NITRD Program). The bill also includes a number of sections implementing Committee oversight initiatives, including provisions which would direct the NSF to implement recommendations to improve oversight of its large scale research facilities construction, conflicts of interest policy, and management of its Antarctic research program. It would also direct NIST to implement recommendations to improve laboratory programs and campus security.

The bill would establish an interagency working group led by the Office of Management and Budget (OMB) and Office of Science and Technology Policy (OSTP) to reduce administrative burdens on federally-funded researchers, and would require OMB and Federal agencies to update their policies to encourage engagement and dissemination of research by Federal researchers within the scientific community. The bill also would repeal a number of obsolete Federal agency reports and previous authorizations for programs and funding for programs that have not been implemented.

The bill would update the NSF's Robert Noyce Teacher Scholarship Program and require the National Aeronautics and Space Administration (NASA) to cap administrative costs for its Space Grant program. The bill also includes sections that would establish a STEM Education advisory panel of outside experts to inform decision-making on Federal STEM Education programs, and update direction to the OSTP's existing Committee on STEM Education. The bill also would authorize and expand NSF grants to increase participation and expand STEM opportunities to women and underrepresented groups, as well as to research computer science education, and would establish an NSF Center of Excellence and an OSTP interagency working group to promote inclusion in STEM fields.

The bill also would update and improve existing authority for Federal agencies to conduct prize competitions, and would build on this authority to allow agencies to utilize crowdsourcing and citizen science approaches to facilitate the agencies' missions. The bill would update NIST's Hollings Manufacturing Extension Partnership (Hollings MEP) Program for small and medium-sized businesses by adjusting the Federal cost share requirement and requiring oversight improvements, and would update the Department of Commerce's Federal loan guarantee program for innovative technologies in manufacturing by implementing a Government Accountability Office (GAO) recommendation.

The bill would authorize and expand the NSF's Innovation Corp program to promote entrepreneurship and innovation, and authorize NSF commercialization grants to promote the commercialization of federally-funded research results. The bill also includes a sense of Congress regarding optics and photonics research and technologies, and would update NIST's authority to enter into transactions with the private sector and NIST's advisory committee membership requirements.

LEGISLATIVE HISTORY

On June 22, 2016, S. 3084, the American Innovation and Competitiveness Act was introduced by Senators Gardner, Peters,

Thune, and Nelson, and was referred to the Committee on Commerce, Science, and Transportation.

The Committee held a related hearing entitled "Leveraging the U.S. Science and Technology Enterprise" on May 11, 2016, and received testimony from: Dr. Kelvin Droegemeier, Former Vice Chair, National Science Board and Vice President for Research, University of Oklahoma; Dr. Jeannette Wing, Corporate Vice President for Research, Microsoft and Member, Committee on New Models for U.S. Science and Technology Policy, American Academy of Arts and Sciences; Dr. Robert Atkinson, President, Information Technology and Innovation Foundation; and Dr. David Munson, Robert J. Vlasic Dean of Engineering, College of Engineering, University of Michigan. The hearing had been informed by three Working Group meetings in Washington D.C., in addition to several meetings held by Senators Gardner and Peters in their respective States.

A related bill, H.R. 1806, the America COMPETES Reauthorization Act of 2015, passed in the House of Representatives on May 20, 2015, by a vote of 217-205. H.R. 1806 was introduced by Representatives Smith (R-TX), Lucas (R-OK), Comstock (R-VA), Weber (R-TX), Moolenaar (R-MI), Palazzo (R-MS), Hultgren (R-IL), Knight (R-CA), Babin (R-TX), and Loudermilk (R-GA) on April 15, 2015, and was reported out of the Committee on Science, Space and Technology of the House of Representatives on May 8, 2015.

On June 29, 2016, the Committee on Commerce, Science, and Transportation of the Senate met in open Executive Session to consider S. 3084 and ordered, by voice vote, that the bill be reported favorably with an amendment (in the nature of a substitute).

Senators Gardner and Peters filed a substitute amendment adding authorizations of appropriations for FY 2017 and FY 2018 for the NSF and NIST to provide a 4 percent increase from FY 2017 to FY 2018. The substitute amendment also makes other minor and technical changes to S. 3084.

The following first degree amendments also were adopted by voice vote:

- Senators Blumenthal and Klobuchar sponsored a first degree amendment, as modified, to improve the competitiveness of U.S. manufacturing by designating and supporting manufacturing communities.
- Senator Booker sponsored a first degree amendment to update goals and metrics for the National Oceanic and Atmospheric Administration's (NOAA) science education programs.
- Senator Cantwell sponsored a first degree amendment, as modified, to require the NSF to review participation in NSF activities of underrepresented groups in STEM disciplines, and to make recommendations to improve outreach and inclusion of these groups.
- Senator Daines sponsored two first degree amendments: one to provide opportunities for computer science fellowships under the Robert Noyce Teacher Scholarship Program and to provide grant opportunities for mentoring programs in computer science; and another, as modified, to require the NSF Inspector General to audit the NSF's policies and procedures governing pass-through entities with respect to grant sub-recipients.

• Senator Klobuchar sponsored three first degree amendments: to provide for an increased micro-purchase threshold for procurement solicitations by research institutions; to require the NSF to give consideration to recommendations from organizations representing underrepresented groups in STEM fields when selecting members of the STEM Education Advisory Panel; and to allow for research to be conducted under the NSF's Robert Noyce Teacher Scholarship Program to better understand factors relevant to teacher retention from underrepresented groups.

• Senator Markey sponsored a first degree amendment to authorize the NSF to award competitive, merit-reviewed grants to support a national partnership of institutions involved in informal STEM learning.

• Senator Moran sponsored a first degree amendment, as modified, to increase the authorization of appropriations in FY 2017 and FY 2018 for the Economic Development Administration's Regional Innovation Program.

• Senator Schatz sponsored a first degree amendment, as modified, to authorize the development of a STEM apprenticeship grant program at the Department of Commerce.

• Senator Wicker sponsored a first degree amendment, as modified, to authorize the NSF to award translational research grants for proof of concept and prototype development in partnership with academia to advance technologies.

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. 3084—American Innovation and Competitiveness Act

Summary: S. 3084 would amend current law and authorize the appropriation of about $17.3 billion over the 2017–2018 period for the operations of the National Science Foundation (NSF) and the National Institute of Standards and Technology (NIST).

Assuming appropriation of the specified and estimated amounts, CBO estimates that implementing the legislation would cost $16.4 billion over the 2017–2021 period and $0.9 billion after 2021.

CBO also estimates that enacting S. 3084 would increase direct spending by $25 million over the 2017–2026 period because enacting the legislation would authorize NIST to enter into enhanced-use leasing arrangements. Because enacting the bill would increase direct spending, pay-as-you-go procedures apply. Enacting S. 3084 would not affect revenues.

CBO estimates that enacting S. 3084 would not increase net direct spending or on-budget deficits by more than $5 billion in any of the four consecutive 10-year periods beginning in 2027.

S. 3084 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. 3084 are shown in the following table. The costs of this legislation fall within budget functions 250 (general science,

space, and technology), 300 (natural resources and environment), 370 (commerce and housing credit), and 800 (general government).

	By fiscal year, in millions of dollars—					
	2017	2018	2019	2020	2021	2017–2021
INCREASES IN SPENDING SUBJECT TO APPROPRIATION						
NSF Reauthorization:						
Authorization Level	7,510	7,810	0	0	0	15,320
Estimated Outlays	1,532	4,612	4,777	2,401	1,087	14,409
NIST Reauthorization:						
Authorization Level	974	1,013	0	0	0	1,987
Estimated Outlays	750	985	232	20	0	1,987
Other Provisions:						
Estimated Authorization Level	4	4	3	2	1	14
Estimated Outlays	4	4	3	2	1	14
Total Spending Under S. 3084:						
Estimated Authorization Level	8,488	8,827	3	2	1	17,321
Estimated Outlays	2,286	5,601	5,012	2,423	1,088	16,410
INCREASES IN DIRECT SPENDING [a]						
Estimated Budget Authority	0	3	3	4	4	14
Estimated Outlays	0	*	1	1	3	5

Notes: NSF = National Science Foundation; NIST = National Institute of Standards and Technology; * = less than $500,000.
[a] CBO estimates that direct spending would increase under S. 3084 by $25 million over the 2017–2026 period.

Basis of estimate: For this estimate, CBO assumes S. 3084 will be enacted near the end of calendar year 2016 and that the necessary amounts will be appropriated for each fiscal year. Estimated outlays are based on historical spending patterns for existing programs.

Spending subject to appropriation

The bill would authorize specific amounts for 2017 and 2018 for both the NSF and NIST. In addition, the bill would affect spending by other agencies.

National Science Foundation Reauthorization. S. 3084 would authorize the appropriation of $7.5 billion in 2017 and $7.8 billion in 2018 for the National Science Foundation to carry out current activities, expand grant programs, and update policies affecting project oversight, conflicts of interest, and transparency and accountability. In 2016, NSF programs received an appropriation of $7.5 billion. CBO estimates that this provision would cost $14.4 billion over the 2017–2021 period and $0.9 billion after 2021.

National Institute of Standards and Technology Reauthorization. S. 3084 would authorize the appropriation of $974 million in 2017 and $1.0 billion in 2018 to NIST for agency operations. The agency's appropriation for 2016 was $964 million. CBO estimates that implementing S. 3084 would cost $750 million in 2017 and $2.0 billion over the 2017–2021 period.

Other Provisions. CBO estimates that implementing a variety of other provisions of S. 3084 would require other agencies including the Department of Commerce (DOC), the Office of Science and Technology Policy, and the Office of Management and Budget to modestly increase spending. Those provisions would require those agencies to provide additional reports to the Congress related to federal research; codify and expand the responsibilities of some interagency working groups; and require DOC to directly manage the law enforcement and security programs for NIST. Finally, the

bill would require DOC to establish new programs to promote science, technology, engineering, and math (STEM) education, and to expand current grant programs to include awards to develop and expand STEM apprenticeships. Based on an analysis of information from the affected agencies, CBO estimates that implementing those provisions would cost $14 million over the 2017–2021 period.

Direct spending

Under current law, NIST is authorized to lease real property from nonfederal entities. Section 403 would expand that authority by authorizing the agency to lease certain federally owned property to non-federal entities. Those expanded authorities would be similar to the enhanced-use leasing authorities used by other agencies, including the Departments of Defense and Veterans Affairs.

CBO expects that NIST would use the expanded leasing authority in a manner similar to other agencies. Acting in the dual roles of lessor (of the land) and lessee (of facilities built on the land), those agencies have secured private financing to construct and renovate federal buildings and other infrastructure. Such leasing arrangements commit an agency to paying for the new facility or renovation of an existing facility at the time it enters into the leasing agreement even if the agency does not have an advance appropriation to cover the full costs of such a lease. Consequently, CBO believes that the full cost of such transactions should be recorded at the time an agency enters into such a leasing agreement.

NIST currently owns sites in Maryland and Colorado that operate as the agency's main campuses, as well as two field sites. NIST currently has a backlog of $350 million in basic repairs at its facilities and reports that the facilities needing repairs are, on average, 58 years old. In recent years, the agency has undertaken building renovations and expansions on both of its campuses with costs ranging from approximately $25 million to $322 million. According to NIST, the agency has entered into one short-term lease agreement in recent years.

Based on information from NIST about its plans to use the expanded leasing authority, CBO estimates that NIST would use that authority to finance facility upgrades valued at about $35 million—roughly 10 percent of its current maintenance backlog—resulting in $25 million in spending over the 2017–2026 period.

Pay-As-You-Go considerations: The Statutory Pay-As-You-Go Act of 2010 establishes budget reporting and enforcement procedures for legislation affecting direct spending or revenues. The net changes in outlays that are subject to those pay-as-you-go procedures are shown in the following table.

CBO ESTIMATE OF PAY-AS-YOU-GO EFFECTS FOR S. 3084, AS ORDERED REPORTED BY THE SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION ON JUNE 29, 2016

	By fiscal year, in millions of dollars—											
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2017–2021	2017–2026
NET INCREASE IN THE DEFICIT												
Statutory Pay-As-You-Go Impact	0	0	1	1	3	3	4	4	4	5	5	25

Increase in long-term direct spending and deficits: CBO estimates that enacting S. 3084 would not increase net direct spending or on-budget deficits by more than $5 billion in any of the four consecutive 10-year periods beginning in 2027.

Intergovernmental and private-sector impact: S. 3084 contains no intergovernmental or private-sector mandates as defined in UMRA. The bill would benefit state and local governments, public universities, and research and manufacturing centers by authorizing financial and technical assistance in STEM-related fields for those entities. Any costs incurred by those entities, including cost-sharing contributions, would be incurred voluntarily.

Previous CBO estimate: On September 16, 2016, CBO transmitted a cost estimate for H.R. 5636, the National Institute of Standards and Technology Campus Security Act, as passed by the House of Representatives on July 11, 2016. A provision in S. 3084 is similar to H.R. 5636 and CBO's estimate of the budgetary effects of each is the same.

Estimate prepared by: Federal costs: Tiffany Arthur (NSF), Stephen Rabent (NIST and DOC), Matthew Pickford (Office of Science and Technology Policy); Impact on state, local, and tribal governments: Jon Sperl; Impact on the private sector: Paige Piper-Bach.

Estimate approved by: H. Samuel Papenfuss, Deputy 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

The bill would cover institutions of higher education, principal investigators, and other research grant recipients that are already subject to the policies and procedures of the NSF, NIST, NASA, NOAA, and the Department of Commerce as a condition of receiving an award from one of these agencies. The bill also would cover newly eligible entities such as nonprofit organizations that apply voluntarily for expanded or new grant programs authorized under the bill.

ECONOMIC IMPACT

The bill would authorize additional spending by the Federal Government. Under the bill, authorizations of appropriations for the NSF and NIST would increase by 4 percent from FY 2017 to FY 2018. This increase in funding for R&D, manufacturing, and STEM education is intended to stimulate and incentivize U.S. innovation and economic investment by private companies in areas such as commercialization of federally-funded research results, increased manufacturing output, and STEM worker hiring. The requirements to streamline and reduce administrative burdens and to advance public-private partnerships under the bill may also result in economic efficiencies to institutions of higher education and other organizations that receive Federal research grants.

PRIVACY

The bill would impact the personal privacy of individuals who voluntarily apply to receive certain grants from the NSF, NIST, NASA, NOAA, and the Department of Commerce. The bill could potentially lead to updated requirements reducing impacts on personal privacy based on the directive for an interagency working group to reduce administrative burdens for federally-funded researchers.

PAPERWORK

The bill would not significantly increase paperwork requirements for private individuals, institutions of higher education, or nonprofit organizations. In fact, the bill could potentially lead to a decrease in paperwork requirements for these entities based on the bill's directive for an interagency working group to reduce administrative burdens for recipients of Federal research grants. The bill would require the NSF, NIST, the OSTP, NASA, other Federal agencies, and relevant advisory committees to produce 18 reports, strategic plans, and audits, some of which are updated existing reports, and some of which are required annually or periodically based on certain circumstances. The bill also repeals six reporting requirements for certain agencies, including the NSF and NIST.

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; table of contents.

This section would provide the short title and table of contents for the legislation.

Section 2. Definitions.

This section would provide definitions for the following terms used throughout the legislation: appropriate committees of Congress; Federal science agency; Foundation; institution of higher education; NIST; STEM; and STEM education.

Section 3. Authorizations of appropriations.

This section would authorize appropriations for FY 2017 and FY 2018.

Title I – Maximizing Basic Research

Section 101. Reaffirmation of merit-based peer review.

This section would express a sense of Congress that NSF's intellectual merit and broader impacts criteria remain appropriate for evaluating grant proposals, and would require the NSF to maintain these criteria as the basis for evaluating grant proposals. This section also would require the NSF to submit a report to the appro-

priate committees of Congress if a change is made to the merit-review process.

Section 102. Transparency and accountability.

This section would find that the NSF has improved transparency and accountability within the merit review process, and would require the NSF to issue and periodically update policy guidance clarifying the importance of transparency and accountability and requiring specific elements in its published grant abstracts. This section also would require the National Science Board to conduct an examination of the NSF's efforts to improve transparency and accountability within the merit-review process and issue a report to Congress no later than 6 months after enactment.

Section 103. EPSCoR reaffirmation and update.

This section would provide a sense of Congress regarding EPSCoR, and would require award structure and congressional reporting updates based on recommendations of previous EPSCoR reviews to maximize the impact of Federal EPSCoR support on building competitive research infrastructure. Finally, this section would amend existing law to change the name of EPSCoR from the "Experimental Program to Stimulate Competitive Research" to the "Established Program to Stimulate Competitive Research or a "program similar to the Established Program to Stimulate Competitive Research at another Federal agency."

Section 104. Cybersecurity research.

This section also would amend existing law to direct the NSF to include the security of election-dedicated voting system software and hardware, and the role of the human factor in cybersecurity as specific research areas to consider when awarding grants for basic research.

Additionally, this section would instruct NIST, in coordination with the Department of Homeland Security, to continue to raise public awareness of the voluntary, industry-led cybersecurity standards and best practices for critical infrastructure, otherwise called the NIST Framework for Improving Critical Infrastructure Cybersecurity.

NIST also would be required: to research information systems for future cybersecurity needs; to coordinate a process with relevant stakeholders on standards and guidance for these future needs, including encryption responses to quantum computers; and to provide recommendations for a secure and smooth transition to these standards.

Finally, this section would amend existing law to authorize NIST to research the security of computers, computer networks, and computer data storage used in voting systems.

Section 105. Networking and information technology research and development update.

This section would amend existing law to update the NITRD Program, the multiagency effort to coordinate advanced information technology R&D. The amendment made by this section would adopt a number of recommendations from the President's Council of Advisors on Science on Technology to add a focus on research on the

human-computer interaction, cyber-physical systems, and cybersecurity.

It also would amend existing law to direct periodic reviews of the NITRD Program, require strategic plans to guide near-term and long-term research activities, and emphasize coordination of such research activities amongst agencies, industry, laboratories, universities, international partners, and others.

Amendments made by this section would update and make current a number of technical references to the NITRD Program.

Section 106. High-energy physics coordination.

This section would require the Physical Science Subcommittee of the National Science and Technology Council (NSTC) to define and continue to coordinate Federal efforts related to high-energy physics research in order to maximize the efficiency and effectiveness of U.S. investment. This section would outline the responsibilities of the subcommittee, which would include providing recommendations on planning for construction and on research coordination, establishing goals and priorities, proposing methods for engagement with agencies and Federal laboratories, and developing and updating as necessary a strategic plan to guide Federal programs and activities in support of high-energy physics research.

Section 107. Laboratory program improvements.

This section would require NIST to develop and implement a comprehensive strategic plan for laboratory programs that expands: interactions with academia, international researchers, and industry; and commercial and industrial applications. The plan would be required to include performance metrics for the dissemination of research results, and document positive benefits of research for industry.

Section 108. International activities.

This section would amend existing law to improve NIST's ability to directly support activities of international organizations that cooperate with NIST to advance measurement standards.

Section 109. Standard Reference Data Act Update.

This section would amend existing law to update the outdated definition for "standard reference data" to make it relevant and applicable to the 21st Century.

Section 110. NSF mid-scale project investments.

This section would express the sense of Congress that the addition of a competitive mid-scale funding opportunity that includes research, instrumentation, and infrastructure is essential to the NSF's portfolio and advancing scientific understanding. This section would require the NSF to evaluate the existing and future needs, across all disciplines supported by the NSF, for mid-scale project research, instrumentation, and infrastructure. Further, this section would require the NSF to develop a strategy to meet the existing and future needs for mid-scale projects and to provide a briefing on the evaluation and strategy to the appropriate committees of Congress not later than 180 days after the date of enactment.

Section 111. Oversight of NSF large-scale research facility projects.

This section would strengthen oversight and accountability over the NSF's large-scale research facility projects funded by the major research equipment and facilities construction account in order to maximize research investment. The NSF Inspector General and National Academy of Public Administration have identified recommendations to improve oversight of such projects, and this section would require oversight progress updates from the NSF on the response to and implementation of those recommendations.

This section would take several steps to establish policies, procedures, and requirements for the planning, management, and oversight of such projects. It also would require the full-life cycle cost be considered in pre-award analysis, the proposed budget and accounting systems be analyzed, an independent cost estimate be conducted and reviewed, and major issues be resolved prior to project approval. The NSF also would be directed to strengthen contingency control and require periodic external reviews on project management, reliable accounting systems, and annual incurred cost submissions. To ensure any financial issues are identified earlier in the process, the section also would require incurred cost audits at least once during construction at a time to be determined based on risk analysis and length of the award (except that the length of time between audits may not exceed 3 years) and again at the completion of the construction phase.

Section 112. Conflicts of interest.

This section would require the NSF to take steps to update its conflicts of interest policy and procedures to better document and manage known conflicts of interest of individuals on temporary assignment at the agency.

Section 113. Management of the NSF Antarctic Program.

This section would require the Director of the NSF to continue to review the agency's efforts to sustain and strengthen scientific efforts in the face of logistical challenges for the U.S. Antarctic Program and to brief Congress on the ongoing review not later than 180 days after the date of enactment.

Section 114. NIST campus security.

This section would direct the Department of Commerce Office of Security to manage the law enforcement and security programs of NIST through an assigned Director of Security for NIST. Additionally, this section would require the Director of Security for NIST to provide, quarterly at first and then annually thereafter, an activities and security report to the Under Secretary for Standards and Technology.

Section 115. Federal coordination of sustainable chemistry research and development.

This section would express the sense of Congress that the science of chemistry is vital to improving the quality of human life and would highlight the myriad of positive benefits that a coordinated national effort on sustainable chemistry would provide for both human beings and the United States Government.

This section would direct the OSTP to establish an entity under the NSTC that would be responsible for coordinating Federal programs and activities in support of sustainable chemistry.

Further, this section would require this new entity to submit a 5-year strategic plan which would include a summary of federally funded sustainable chemistry research, a summary of the financial resources allocated to sustainable chemistry activities, an evaluation of best practices and coordination among participating agencies, and a framework for advancing sustainable chemistry to certain congressional committees and the GAO.

Finally, this section would authorize the NSF to continue to carry out the Sustainable Chemistry Basic Research program.

Title II – Administrative Burden and Regulatory Reduction

Section 201. Interagency Working Group on Research Regulation.

This section would require the OMB, in conjunction with the OSTP, to establish a working group to reduce administrative burdens on federally funded researchers while protecting the public interest in the transparency and accountability for federally funded activities. The working group would be required to regularly review relevant, administration-related regulations imposed on federally funded researchers and make recommendations on regulations or processes that may be eliminated, streamlined, or otherwise improved.

This section also would require the working group to conduct a comprehensive review of Federal science agency grant proposal documents and develop, to the extent practicable, a simplified, uniform grant format to be used by all Federal science agencies. Further, this section would require the working group to establish a central repository to house assurances required for Federal research grants.

Further, the working group would be required to conduct a comprehensive review of mandated progress reports for federally funded research and develop a strategy to simplify investigator progress reports. Finally, not later than 1 year after enactment, and annually thereafter, the working group periodically would be required to submit to the appropriate committees of Congress a report on its responsibilities and its recommendations.

Section 202. Scientific and technical collaboration.

This section would: highlight that it is the policy of the United States to encourage broad dissemination of Federal research findings and engagement of Federal researchers with the scientific and technical community; and authorize laboratory, test center, field center, and other similar heads of offices to approve scientific and technical workshop attendance provided that the attendance would meet the mission of the laboratory or test center and that sufficient laboratory or test center funds are available for that purpose.

This section also would require the Director of OMB, in consultation with the Director of the OSTP and the heads of other relevant Federal science agencies, to revise current policies and streamline processes for attendance at scientific and technical workshops while ensuring appropriate oversight, accountability, and transparency.

Finally, this section would amend existing law to authorize NIST to host, participate in, and support scientific and technical workshops.

Section 203. NIST grants and cooperative agreements update.

This section would amend section 8(a) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3706(a)) to repeal the limit on the total amount of any grant or cooperative agreement under that Act.

Section 204. Repeal of certain obsolete reports.

The amendments made by this section would update or eliminate outdated NSF, NIST, and multiagency reports to Congress that are currently required by law.

Section 205. Repeal of certain provisions.

The amendments made by this section would repeal certain authorizations in current law that are no longer beneficial or relevant for the functioning of the Federal science agencies.

Section 206. Grant subrecipient transparency and oversight.

This section would require the NSF Inspector General to prepare and submit to the appropriate committees of Congress an audit of the NSF's policies and procedures governing the monitoring of pass-through entities with respect to subrecipients not later than 1 year after the date of enactment. This audit would include information regarding the NSF's process to oversee the compliance of pass-through entities, whether pass-through entities have processes and controls in place regarding financial compliance of subrecipients, and whether pass-through entities have processes and controls in place to maintain approved grant objectives for subrecipients. This audit would also include any recommendations to increase the transparency and oversight of the selection process, grant objectives, and financial oversight of the pass-through entities, while balancing administrative burdens.

Section 207. Micro-purchase threshold for procurement solicitations by research institutions.

This section would provide for an increase in the micro-purchase threshold for procurement solicitations by research institutions and would require revisions to the Uniform Guidance to conform to this new provision.

Title III – Science, Technology, Engineering and Math Education

Section 301. Robert Noyce Teacher Scholarship Program update.

This section would amend existing law to require the NSF to develop and implement practices for increasing the retention of teachers funded under the Robert Noyce Teacher Scholarship Program.

Section 302. Space grants.

This section would express the sense of Congress that the National Space Grant College and Fellowship Program has been an important program by which the Federal Government has partnered with universities, colleges, industry, and other organiza-

tions to provide hands-on STEM experiences, fostering of multidisciplinary space research, and supporting graduate fellowships in space-related fields, among other purposes.

This section would amend existing law to require NASA to maximize appropriated funds for grants and contracts made under this program and to limit program administration costs to no more than 5 percent of funds appropriated for this program. For any FY in which NASA cannot meet its cost target for this program or cannot limit program costs, the Administrator of NASA would be required to submit a report to the appropriate committees of Congress, including a description of why NASA did not meet the cost target and the measures the Administrator of NASA will take in the next FY to meet the cost target without drawing on other Federal funding.

Section 303. STEM Education Advisory Panel.

This section would direct the NSF, the Department of Education, NASA, and NOAA to establish a STEM Education Advisory Panel (Advisory Panel) consisting of at least 11 individuals to be appointed in accordance with certain criteria within 180 days of the date of enactment. The Advisory Panel would advise the Committee on STEM Education (CoSTEM) on matters relating to STEM education and would be required to periodically assess CoSTEM's progress in carrying out its responsibilities. Further, this section would require the Advisory Panel to make recommendations to improve Federal STEM education programs and activities and would be required to report, not later than 1 year after the date of enactment and every 3 years thereafter, to CoSTEM and the appropriate committees of Congress on its assessments and its recommendations.

Section 304. Committee on STEM Education.

The amendments made by this section would update previous law regarding the duties of the Committee on STEM Education and would update the responsibilities of the OSTP related to CoSTEM.

Section 305. Grant programs to expand STEM opportunities.

This section would express the sense of Congress that the United States must broaden participation in STEM fields in an effort to keep up with the growing demand for STEM-skilled workers. This section also would authorize the NSF to continue to award grants to eligible entities, on a merit-reviewed, competitive basis, under existing programs targeting broadening participation, and further would outline the authorized activities for which these grants may be used.

Further, this section would authorize specific grants to be used for research to advance the engagement of students, in grades kindergarten through eighth, particularly those who are members of groups underrepresented in STEM fields, and would outline the authorized activities for which these grants may be used. This section also would require the NSF to evaluate the grants provided under this section not later than 5 years after the date of enactment and, no later than 180 days after the completion of this evaluation, would require the NSF to submit to Congress and make widely available to the public a report that includes the results of the

evaluation and any recommendations for administrative and legislative action that could optimize the effectiveness of the program.

Section 306. Centers of excellence for inclusion in STEM.

This section would direct the NSF to carry out a program to award merit-reviewed, competitive grants to institutions of higher education and to establish not less than one Center of Excellence to collect, maintain, and disseminate information to increase participation of women and groups underrepresented in STEM fields. The purpose of this Center would be to promote faculty diversity in STEM fields by building on the success of the Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (INCLUDES) programs, providing technical assistance, maintaining best practices, and providing related training at federally-funded academic institutions.

Section 307. NIST education and outreach.

This section would amend existing law to authorize NIST to revise its procedures to expend funds appropriated for its 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 its mission.

The amendments made by this section also would authorize NIST to revise the procedures it uses when making appointments to laboratory positions and to establish a volunteer program to carry out some of its programs.

Additionally, the amendments made by this section would: authorize NIST to expend appropriated funds for research fellowship awards; and would instruct NIST to establish and conduct a postdoctoral fellowship program. The amendments made by this section also would authorize NIST: to facilitate education programs for undergraduate and graduate students and academic and industry workers; to sponsor summer internships for high school teachers as appropriate; to develop programs for graduate student internships and visiting faculty researchers; to document publications, presentations, interactions with visiting researchers and sponsoring interns as metrics for improvement and continuing interactions with those individuals; and to facilitate NIST laboratory tours and provide presentations for school, industry and community groups.

Section 308. Presidential awards for excellence in STEM mentoring.

This section would authorize the NSF to continue to administer awards on behalf of the OSTP to recognize outstanding mentoring in STEM fields. This section also would require the NSF to provide Congress with a list of award recipients and a synopsis of the impact of the mentoring efforts.

Section 309. Working group on inclusion in STEM fields.

This section would direct the OSTP, in collaboration with Federal departments and agencies, to establish an interagency working group to compile and summarize available research and best practices on how to promote diversity and inclusion in STEM fields and to examine whether barriers exist to promoting diversity and inclusion within Federal agencies employing scientists and engineers.

This section would further outline the responsibilities of the new interagency working group and the role of non-Federal stakeholders. Additionally, this section would require that the working group publish a report on its review and assessment, including any recommendations, no later than 1 year after the date of enactment. Finally, this section would require the working group's authority to terminate 10 years after the date on which the working group is established.

Section 310. Improving undergraduate STEM experiences.

This section would express a sense of Congress that each Federal science agency should invest in and expand research opportunities for undergraduate students attending institutions of higher education during the undergraduate student's first 2 academic years of postsecondary education.

Additionally, this section would require the head of each Federal agency submit recommendations to the President, not later than 1 year after enactment, regarding how the agency could best fulfill the goals described in subsection (a) of this section.

Finally, this section would amend existing law to add the concept of improved undergraduate STEM education and instruction as one of the goals the NSF should work to achieve when applying a Broader Impacts Review Criterion.

Section 311. Computer science education research.

This section would authorize the NSF to award grants to research computer science education and computational thinking. The section also would require the NSF to develop metrics to measure success of the grants, and report to Congress in its annual budget submission on such success.

Section 312. Informal STEM education.

This section would authorize the NSF to award, through a cross-Directorate process, competitive, merit-reviewed grants to support a national partnership of institutions involved in informal STEM learning.

Further, this section would include as activities supported by these grants: fostering and implementing on-going partnerships between institutions involved in informal STEM learning, institutions of higher education, and education research centers; and developing, adapting, and making available informal STEM education activities and educational materials for broad implementation.

Section 313. Developing STEM apprenticeships.

This section would amend existing law to authorize the development of a STEM apprenticeship grant program at the Department of Commerce and to allow the Department of Commerce to provide a grant to an eligible recipient to develop infrastructure to expand STEM apprenticeship programs.

Section 314. NSF report on broadening participation.

This section would require the NSF to review data on the participation in NSF activities of institutions serving groups that are underrepresented in STEM disciplines and to submit, not later than 1 year after the date of enactment, to Congress a report on

the findings of such a review. The report would include recommendations regarding how the NSF could improve outreach and inclusion of these groups in NSF activities.

Section 315. NOAA ocean and atmospheric science education programs.

This section would amend existing law to update the goals and metrics for NOAA's science education programs.

Title IV – Leveraging the Private Sector

Section 401. Prize competition authority update.

This section would make numerous changes to section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3719) to provide clarity of purpose and relevant updates.

Section 402. Crowdsourcing and citizen science.

This section would express the sense of Congress that the use of incentive prizes and challenges has yielded numerous benefits for the Nation, and that crowdsourcing and citizen science projects have a number of additional unique benefits. This section would authorize Federal agencies to utilize crowdsourcing and citizen science approaches to conduct activities designed to advance their mission. Further, this section would require the head of each Federal agency engaged in a crowdsourcing or citizen science project to make public and promote such project to encourage broad participation.

This section also would outline the consent, registration, terms of use, protections for human subjects, data, technologies, applications, liability, and other requirements for Federal agencies and consenting participants of crowd sourcing and citizen science. Additionally, this section would allow Federal agencies to use funds appropriated by Congress to carry out crowdsourcing and citizen science activities. Finally, this section would require the NSF to include, as a component of a previously authorized report, specific information about Federal agencies' use of crowdsourcing and citizen science during the most recently completed two FYs.

Section 403. NIST other transaction authority update.

This section would amend existing law to allow NIST to enter into and perform such contracts, including cooperative R&D arrangements, grants, cooperative agreements, real property leases, or other transactions as may be necessary in furtherance of the purposes of the National Institute of Standards and Technology Act.

Section 404. NIST Visiting Committee on Advanced Technology update.

This section would amend existing law to modify and provide flexibility in the membership of NIST's Visiting Committee on Advanced Technology from the current requirement of 15 members, 10 of which must be from U.S. industry, to at least 9 members, with a majority from U.S. industry.

Title V – Manufacturing

Section 501. Hollings Manufacturing Extension Partnership improvements.

This section would amend existing law to make several changes to the Hollings MEP, including permanently adjusting the Hollings MEP Federal cost share to not more than 50 percent of the capital and annual operating and maintenance funds required to establish and support a qualified manufacturing extension center (center). The amendments made by this section would require NIST to recompete the centers at least every 10 years, modify the activities and evaluations of the centers, and add new reports and assessments about the program that would need to be completed within specific timeframes. Additionally, the amendments made by this section would: add a clause on the protection of confidential client information; add a requirement that center oversight boards implement conflict of interest bylaws; expand the current competitive grants program; and add a provision on development of open access resources to address best practices to further the competitiveness and profitability of small manufacturers.

Section 502. Federal loan guarantees for innovative technologies in manufacturing.

This section would amend section 26(o) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3721(o)) to require the Secretary of Commerce, in coordination with the Small Business Administration and NIST, to identify any gaps in the access of small- or medium-sized manufacturers to capital for the use or production of innovative technologies that the program could fill, and to develop marketing materials and conduct outreach to target those gaps.

Section 503. Manufacturing communities.

This section would direct the Secretary of Commerce to establish a program to improve the competitiveness of U.S. manufacturing by designating consortiums as manufacturing communities and by supporting manufacturing communities.

Title VI – Innovation, Commercialization, and Technology Transfer

Section 601. Innovation Corps.

This section would express the sense of Congress that the NSF Innovation Corps (I-Corps) is a useful tool in promoting the commercialization of federally-funded research. This section would authorize the NSF to carry out the I-Corp program to award grants on a competitive, merit-reviewed basis for entrepreneurship and commercialization and to encourage the development and expansion of I-Corps and other training programs that focus on professional development. This section also would allow the NSF to enter into agreements with other Federal agencies to allow researchers funded by those agencies to participate in the I-Corps program.

Additionally, this section would authorize the NSF, in consultation with the Small Business Innovation Research Program (SBIR Program), to make funds available for competitive grants, including I-Corps participants, to help support prototype or proof-of-concept

development, as long as those I-Corps participants are not eligible to participate in the SBIR Program or the Small Business Technology Transfer Program. Further, this section would allow the NSF to engage in partnerships with State and local governments, economic development organizations, and nonprofit organizations to provide access to the I-Corps program to support entrepreneurship and commercialization education and training for researchers, students, and institutions. Finally, this section would require the NSF to submit a biennial report on the I-Corps program efficacy to the appropriate committees of Congress. Each Federal science agency participating in the I-Corps program would be required to contribute to this report.

Section 602. Translational research grants.

This section would express the sense of Congress that commercialization of federally-funded research may benefit society and the economy and that not-for-profit organizations support the commercialization of federally-funded research by providing useful business and technical expertise to researchers. This section would authorize the NSF to continue to award grants to promote the commercialization of federally-funded research results and would provide further guidance on the proper use of these commercialization grants, which types of organizations may be eligible for these grants, and the application process.

Section 603. Optics and photonics technology innovations.

This section would express the sense of Congress that: optics and photonics research and technologies promote U.S. global competitiveness in industry sectors; and Federal science agencies, industry, and academia should seek partnerships to develop basic research in optics and photonics into more mature technologies and capabilities. Further, this section would express the sense of Congress that Federal science agencies should: survey and identify optics and photonics-related programs within their agencies and share results with each other; partner with the private sector and academia to leverage knowledge and resources to maximize opportunities for innovation in optics and photonics; and explore R&D opportunities, including Federal and private sector-sponsored internships to ensure a highly trained optics and photonics workforce in the United States.

Section 604. Authorization of appropriations for the Regional Innovation Program.

This section would amend existing law to authorize the Secretary to use $30,000,000 of amounts appropriated for economic development assistance programs for the Regional Innovation Program for each of FY 2017 and FY 2018.

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):

STANDARDS REFERENCE DATA ACT

[15 U.S.C. 290 et seq.]

[SEC. 2. INTERNATIONAL ACTIVITIES.

[15 U.S.C. 290a]

[For the purposes of this Act—

[(a) The term "standard reference data" means quantitative information, related to a measurable physical or chemical property of a substance or system of substances of known composition and structure, which is critically evaluated as to its reliability under section 3 of this Act.

[(b) The term "Secretary" means the Secretary of Commerce.]

SEC. 2. DEFINITIONS.

For the purposes of this Act:

(1) STANDARD REFERENCE DATA.—The term "standard reference data" means data that is—

(A) either—

(i) quantitative information related to a measurable physical or chemical property of a substance or system of substances of known composition and structure;

(ii) measurable characteristics of a physical artifact or artifacts;

(iii) engineering properties or performance characteristics of a system; or

(iv) 1 or more digital data objects that serve—

(I) to calibrate or characterize the performance of a detection or measurement system; or

(II) to interpolate or extrapolate, or both, data described in subparagraph (A) through (C); and

(B) that is critically evaluated as to its reliability under section 3 of this Act.

(2) SECRETARY.—The term "Secretary" means the Secretary of Commerce.

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ACT

[15 U.S.C. 271 et seq.]

SEC. 2. ESTABLISHMENT, FUNCTIONS, AND ACTIVITIES.

[15 U.S.C. 272]

(a) ESTABLISHMENT OF NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.—There is established within the Department of Commerce a science, engineering, technology, and measurement laboratory to be known as the National Institute of Standards and Technology (hereafter in this Act referred to as the "Institute").

(b) FUNCTIONS OF SECRETARY AND INSTITUTE.—The Secretary of Commerce (hereafter in this Act referred to as the "Secretary") acting through the Director of the Institute (hereafter in this Act referred to as the "Director") is authorized to take all actions necessary and appropriate to accomplish the purposes of this Act, including the following functions of the Institute—

(1) to assist industry in the development of technology and procedures needed to improve quality, to modernize manufacturing processes, to ensure product reliability, manufacturability, functionality, and cost-effectiveness, and to

facilitate the more rapid commercialization, especially by small- and medium-sized companies throughout the United States, of products based on new scientific discoveries in fields such as automation, electronics, advanced materials, biotechnology, and optical technologies;

(2) to develop, maintain, and retain custody of the national standards of measurement, and provide the means and methods for making measurements consistent with those standards;

(3) to compare standards used in scientific investigations, engineering, manufacturing, commerce, industry, and educational institutions with the standards adopted or recognized by the Federal Government and to coordinate the use by Federal agencies of private sector standards, emphasizing where possible the use of standards developed by private, consensus organizations;

[(4) to enter into contracts, including cooperative research and development arrangements, and grants and cooperative agreements, in furtherance of the purposes of this Act;]

(4) to enter into and perform such contracts, including cooperative research and development arrangements, grants, cooperative agreements, real property leases, or other transactions, as may be necessary in furtherance of the purposes of this Act and on such terms as the Director considers appropriate;

(5) to provide United States industry, Government, and educational institutions with a national clearinghouse of current information, techniques, and advice for the achievement of higher quality and productivity based on current domestic and international scientific and technical development;

(6) to assist industry in the development of measurements, measurement methods, and basic measurement technology;

(7) to determine, compile, evaluate, and disseminate physical constants and the properties and performance of conventional and advanced materials when they are important to science, engineering, manufacturing, education, commerce, and industry and are not available with sufficient accuracy elsewhere;

(8) to develop a fundamental basis and methods for testing materials, mechanisms, structures, equipment, and systems, including those used by the Federal Government;

(9) to assure the compatibility of United States national measurement standards with those of other nations;

(10) to cooperate with other departments and agencies of the Federal Government, with industry, with State and local governments, with the governments of other nations and international organizations, and with private organizations in establishing standard practices, codes, specifications, and voluntary consensus standards;

(11) to advise government and industry on scientific and technical problems;

(12) to invent, develop, and (when appropriate) promote transfer to the private sector of measurement devices to serve special national needs; and

(13) to coordinate Federal, State, and local technical standards activities and conformity assessment activities, with private sector technical standards activities and conformity assessment activities, with the goal of eliminating unnecessary

duplication and complexity in the development and promulgation of conformity assessment requirements and measures.

(c) IMPLEMENTATION ACTIVITIES.—In carrying out the functions specified in subsection (b), the Secretary, acting through the Director may, among other things—

(1) construct physical standards;

(2) test, calibrate, and certify standards and standard measuring apparatus;

(3) study and improve instruments, measurement methods, and industrial process control and quality assurance techniques;

(4) cooperate with the States in securing uniformity in weights and measures laws and methods of inspection;

(5) cooperate with foreign scientific and technical institutions to understand technological developments in other countries better;

(6) prepare, certify, and sell standard reference materials for use in ensuring the accuracy of chemical analyses and measurements of physical and other properties of materials;

(7) in furtherance of the purposes of this Act, accept research associates, cash donations, and donated equipment from industry, and also engage with industry in research to develop new basic and generic technologies for traditional and new products and for improved production and manufacturing;

(8) study and develop fundamental scientific understanding and improved measurement, analysis, synthesis, processing, and fabrication methods for chemical substances and compounds, ferrous and nonferrous metals, and all traditional and advanced materials, including processes of degradation;

(9) investigate ionizing and nonionizing radiation and radioactive substances, their uses, and ways to protect people structures, and equipment from their harmful effects;

(10) determine the atomic and molecular structure of matter, through analysis of spectra and other methods, to provide a basis for predicting chemical and physical structures and reactions and for designing new materials and chemical substances, including biologically active macromolecules;

(11) perform research on electromagnetic waves, including optical waves, and on properties and performance of electrical, electronic, and electromagnetic devices and systems and their essential materials, develop and maintain related standards, and disseminate standard signals through broadcast and other means;

(12) develop and test standard interfaces, communication protocols, and data structures for computer and related telecommunications systems;

(13) study computer systems (as that term is defined in section 20(d) of this Act) and their use to control machinery and processes;

(14) perform research to develop standards and test methods to advance the effective use of computers and related systems and to protect the information stored, processed, and transmitted by such systems and to provide advice in support of policies affecting Federal computer and related telecommunications systems;

(15) on an ongoing basis, 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 (as defined under subsection (e));

(16) perform research to support the development of voluntary, consensus-based, industry-led standards and recommendations on the security of computers, computer networks, and computer data storage used in voting systems to ensure voters can vote securely and privately.

[(16)**]***(17)* determine properties of building materials and structural elements, and encourage their standardization and most effective use, including investigation of fire-resisting properties of building materials and conditions under which they may be most efficiently used, and the standardization of types of appliances for fire prevention;

[(17)**]***(18)* undertake such research in engineering, pure and applied mathematics, statistics, computer science, materials science, and the physical sciences as may be necessary to carry out and support the functions specified in this section;

(19) host, participate in, and support scientific and technical workshops (as defined in section 202 of the American Innovation and Competitiveness Act);

(20) collect and retain any fees charged by the Secretary for hosting a scientific and technical workshop described in paragraph (19);

(21) notwithstanding title 31 of the United States Code, use the fees described in paragraph (20) to pay for any related expenses, including subsistence expenses for participants;

[(18)**]***(22)* compile, evaluate, publish, and otherwise disseminate general, specific and technical data resulting from the performance of the functions specified in this section or from other sources when such data are important to science, engineering, or industry, or to the general public, and are not available elsewhere;

[(19)**]***(23)* collect, create, analyze, and maintain specimens of scientific value;

[(20)**]***(24)* operate national user facilities;

[(21)**]***(25)* evaluate promising inventions and other novel technical concepts submitted by inventors and small companies and work with other Federal agencies, States, and localities to provide appropriate technical assistance and support for those inventions which are found in the evaluation process to have commercial promise;

[(22)**]***(26)* demonstrate the results of the Institute's activities by exhibits or other methods of technology transfer, including the use of scientific or technical personnel of the Institute for part-time or intermittent teaching and training activities at educational institutions of higher learning as part of and incidental to their official duties; and

[(23)**]***(27)* undertake such other activities similar to those specified in this subsection as the Director determines appropriate.

(d) MANAGEMENT COSTS.—In carrying out the extramural funding programs of the Institute, including the programs established

under [sections 25, 26, and 28] *sections 25 and 26* of this Act, the Secretary may retain reasonable amounts of any funds appropriated pursuant to authorizations for these programs in order to pay for the Institute's management of these programs.

(e) CYBER RISKS.—

(1) IN GENERAL.—In carrying out the activities under subsection (c)(15), the Director—

(A) shall—

(i) coordinate closely and regularly with relevant private sector personnel and entities, critical infrastructure owners and operators, and other relevant industry organizations, including Sector Coordinating Councils and Information Sharing and Analysis Centers, and incorporate industry expertise;

(ii) consult with the heads of agencies with national security responsibilities, sector-specific agencies and other appropriate agencies, State and local governments, the governments of other nations, and international organizations;

(iii) identify a prioritized, flexible, repeatable, performance-based, and cost-effective approach, including information security measures and controls, that may be voluntarily adopted by owners and operators of critical infrastructure to help them identify, assess, and manage cyber risks;

(iv) include methodologies—

(I) to identify and mitigate impacts of the cybersecurity measures or controls on business confidentiality; and

(II) to protect individual privacy and civil liberties;

(v) incorporate voluntary consensus standards and industry best practices;

(vi) align with voluntary international standards to the fullest extent possible;

(vii) prevent duplication of regulatory processes and prevent conflict with or superseding of regulatory requirements, mandatory standards, and related processes; and

(viii) include such other similar and consistent elements as the Director considers necessary; and

(B) shall not prescribe or otherwise require—

(i) the use of specific solutions;

(ii) the use of specific information or communications technology products or services; or

(iii) that information or communications technology products or services be designed, developed, or manufactured in a particular manner.

(2) LIMITATION.—Information shared with or provided to the Institute for the purpose of the activities described under subsection (c)(15) shall not be used by any Federal, State, tribal, or local department or agency to regulate the activity of any entity. Nothing in this paragraph shall be construed to modify any regulatory requirement to report or submit information to a Federal, State, tribal, or local department or agency.

(3) DEFINITIONS.—In this subsection:

(A) CRITICAL INFRASTRUCTURE.—The term "critical infrastructure" has the meaning given the term in section 1016(e) of the USA PATRIOT Act of 2001 (42 U.S.C. 5195c(e)).

(B) SECTOR-SPECIFIC AGENCY.—The term "sector-specific agency" means the Federal department or agency responsible for providing institutional knowledge and specialized expertise as well as leading, facilitating, or supporting the security and resilience programs and associated activities of its designated critical infrastructure sector in the all-hazards environment.

SEC. 10. VISITING COMMITTEE ON ADVANCED TECHNOLOGY.

[15 U.S.C. 278]

(a) ESTABLISHMENT; APPOINTMENT; MEMBERSHIP AND COMPOSITION; REVIEW AND RECOMMENDATIONS.—There is established within the Institute a Visiting Committee on Advanced Technology (hereafter in this Act referred to as the "Committee"). The Committee shall consist of [15 members appointed by the Director, at least 10 of whom] *not fewer than 9 members appointed by the Director, a majority of whom* shall be from United States industry. The Director shall appoint as original members of the Committee any final members of the [National Bureau of Standards] *National Institute of Standards and Technology* Visiting Committee who wish to serve in such capacity. In addition to any powers and functions otherwise granted to it by this Act, the Committee shall review and make recommendations regarding general policy for the Institute, its organization, its budget, and its programs within the framework of applicable national policies as set forth by the President and the Congress.

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(c) ANNUAL AND OTHER REPORTS TO SECRETARY AND CONGRESS.—

(1) The Committee shall render an annual report to the Secretary for submission to the Congress not later than 30 days after the submittal to Congress of the President's annual budget request in each year. Such report shall deal essentially, though not necessarily exclusively, with policy issues or matters which affect the Institute[, including the Program established under section 28,] or with which the Committee in its official role as the private sector policy advisor of the Institute is concerned. Each such report shall identify areas of research and research techniques of the Institute of potential importance to the long-term competitiveness of United States industry, in which the Institute possesses special competence, which could be used to assist United States enterprises and United States industrial joint research and development ventures. [Such report also shall comment on the programmatic planning document and updates thereto submitted to Congress by the Director under subsections (c) and (d) of section 23.]

(2) The Committee shall render to the Secretary and the Congress such additional reports on specific policy matters as it deems appropriate.

SEC. 17. FOSTERING UNITED STATES COMPETITIVENESS IN HIGH-PERFORMANCE COMPUTING AND RELATED ACTIVITIES.

[15 U.S.C. 278g]

[(a) FINDINGS.—The Congress finds the following:

[(1) High-performance computing and associated technologies are critical to the United States economy.

[(2) While the United States has led the development of high-performance computing, United States industry is facing increasing global competition.

[(3) Despite existing international agreements on fair competition and nondiscrimination in government procurements, there is increasing concern that such agreements are not being honored, that more aggressive enforcement of such agreements is needed, and that additional steps may be required to ensure fair global competition, particularly in high-technology fields such as high-performance computing and associated technologies.

[(4) It is appropriate for Federal agencies and departments to use the funds authorized for the Program in a manner which most effectively fosters the maintenance and development of United States leadership in high-performance computers and associated technologies in and for the benefit of the United States.

[(5) It is appropriate for Federal agencies and departments to use the funds authorized for the Program in a manner, consistent with the Trade Agreements Act of 1979 (19 U.S.C. 2501 et seq.), which most effectively fosters reciprocal competitive procurement treatment by foreign governments for United States high-performance computing and associated technology products and suppliers.]

(a) FINANCIAL ASSISTANCE TO FOREIGN NATIONALS.—The Secretary is authorized, notwithstanding any other provision of law, to expend such sums, within the limit of appropriated funds, through direct support for activities of international organizations and foreign national metrology institutes with which the Institute cooperates to advance measurement methods, standards, and related basic technologies and, as the Secretary may deem desirable, through the grant of fellowships or any other form of financial assistance, to defray the expenses of foreign nationals not in service to the Government of the United States while they are performing scientific or engineering work at the Institute or participating in the exchange of scientific or technical information at the Institute.

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[SEC. 18. RESEARCH FELLOWSHIPS AND OTHER FINANCIAL ASSISTANCE TO STUDENTS AT INSTITUTES OF HIGHER EDUCATION.

[15 U.S.C. 278g-1]

[(a) IN GENERAL.—The Director is authorized to expend funds appropriated for activities of the Institute in any fiscal year, as the Director may deem desirable, for awards of research fellowships and other forms of financial assistance to students at institutions of higher learning within the United States who show promise as present or future contributors to the mission of the Institute, and to United States citizens for research and technical activities on Institute programs. The selection of persons to receive such fellow-

ships and assistance shall be made on the basis of ability and of the relevance of the proposed work to the mission and programs of the Institute.

[(b) MANUFACTURING FELLOWSHIP PROGRAM.—

[(1) ESTABLISHMENT.—To promote the development of a robust research community working at the leading edge of manufacturing sciences, the Director shall establish a program to award—

[(A) postdoctoral research fellowships at the Institute for research activities related to manufacturing sciences; and

[(B) senior research fellowships to established researchers in industry or at institutions of higher education who wish to pursue studies related to the manufacturing sciences at the Institute.

[(2) APPLICATIONS.—To be eligible for an award under this subsection, an individual shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require.

[(3) STIPEND LEVELS.—Under this subsection, the Director shall provide stipends for postdoctoral research fellowships at a level consistent with the National Institute of Standards and Technology Postdoctoral Research Fellowship Program, and senior research fellowships at levels consistent with support for a faculty member in a sabbatical position.

[(c) UNDERREPRESENTED MINORITIES.—In evaluating applications for fellowships under this section, the Director shall give consideration to the goal of promoting the participation of underrepresented minorities in research areas supported by the Institute.]

SEC. 18. EDUCATION AND OUTREACH.

(a) IN GENERAL.—The Director is authorized to expend funds appropriated for activities of the Institute in any fiscal year, 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 the Institute. The Director may carry out activities under this subsection, including education and outreach activities to the general public, industry and academia in support of the Institute's mission.

(b) HIRING.—The Director, in coordination with the Director of the Office of Personnel Management, may revise the procedures the Director applies when making appointments to laboratory positions within the competitive service—

(1) to ensure corporate memory of and expertise in the fundamental ongoing work, and on developing new capabilities in priority areas;

(2) to maintain high overall technical competence;

(3) to improve staff diversity;

(4) to balance emphases on the noncore and core areas; or

(5) to improve the ability of the Institute to compete in the marketplace for qualified personnel.

(c) VOLUNTEERS.—

(1) IN GENERAL.—The Director may establish a program to use volunteers in carrying out the programs of the Institute.

(2) ACCEPTANCE OF PERSONNEL.—The Director may accept, subject to regulations issued by the Office of Personnel Management, voluntary service for the Institute for such purpose if the service—

(A) is to be without compensation; and

(B) will not be used to displace any current employee or act as a substitute for any future full-time employee of the Institute.

(3) FEDERAL EMPLOYEE STATUS.—Any individual who provides voluntary service under this subsection shall not be considered a Federal employee, except for purposes of chapter 81 of title 5, United States Code (relating to compensation for injury), and sections 2671 through 2680 of title 28, United States Code (relating to tort claims).

(d) RESEARCH FELLOWSHIPS.—

(1) IN GENERAL.—The Director may expend funds appropriated for activities of the Institute in any fiscal year, as the Director considers appropriate, for awards of research fellowships and other forms of financial and logistical assistance, including direct stipend awards to—

(A) students at institutions of higher learning within the United States who show promise as present or future contributors to the mission of the Institute; and

(B) United States citizens for research and technical activities of the Institute, including programs.

(2) SELECTION CRITERIA.—The selection of persons to receive such fellowships and assistance shall be made on the basis of ability and of the relevance of the proposed work to the mission and programs of the Institute.

(3) FINANCIAL AND LOGISTICAL ASSISTANCE.—Notwithstanding section 1345 of title 31, United States Code, or any other law to the contrary, the Director may include as a form of financial or logistical assistance under this subsection temporary housing and transportation to and from Institute facilities.

(e) EDUCATIONAL OUTREACH ACTIVITIES.—The Director may—

(1) facilitate education programs for undergraduate and graduate students, postdoctoral researchers, and academic and industry employees;

(2) sponsor summer internships for STEM high school teachers as appropriate;

(3) develop programs for graduate student internships and visiting faculty researchers;

(4) document publications, presentations, and interactions with visiting researchers and sponsoring interns as performance metrics for improving and continuing interactions with those individuals; and

(5) facilitate laboratory tours and provide presentations for educational, industry, and community groups.

[SEC. 19. POST-DOCTORAL FELLOWSHIP PROGRAM.

[15 U.S.C. 278g-2]

[The Institute shall establish and conduct a post-doctoral fellowship program, subject to the availability of appropriations, which shall be organized and carried out in substantially the same manner as the National Academy of Sciences/National Research Coun-

cil Post-Doctoral Research Associate Program that was in effect prior to 1986, and which shall include not less than twenty nor more than 120 new fellows per fiscal year. In evaluating applications for fellowships under this section, the Director shall give consideration to the goal of promoting the participation of underrepresented minorities in research areas supported by the Institute.]

SEC. 19. POST-DOCTORAL FELLOWSHIP PROGRAM.

(a) IN GENERAL.—The Institute and the National Academy of Sciences, jointly, shall establish and conduct a post-doctoral fellowship program, subject to the availability of appropriations.

(b) ORGANIZATION.—The post-doctoral fellowship program shall include not less than 20 nor more than 120 new fellows per fiscal year.

(c) EVALUATIONS.—In evaluating applications for post-doctoral fellowships under this section, the Director of the Institute and the President of the National Academy of Sciences shall give consideration to the goal of promoting the participation of underrepresented minorities in research areas supported by the Institute.

[SEC. 19A. TEACHER SCIENCE AND TECHNOLOGY ENHANCEMENT INSTITUTE PROGRAM.

[15 U.S.C. 278g-2a]

[(a) ESTABLISHMENT.—The Director shall establish within the Institute a teacher science and technology enhancement program to provide for professional development of mathematics and science teachers of elementary, middle, and secondary schools (as those terms are defined by the Director), including providing for the improvement of those teachers with respect to the understanding of science and the impacts of science on commerce.

[(b) AREAS OF FOCUS.—In carrying out the program under this section, the Director shall focus on the areas of—

[(1) scientific measurements;

[(2) tests and standards development;

[(3) industrial competitiveness and quality;

[(4) manufacturing;

[(5) technology transfer; and

[(6) any other area of expertise of the Institute that the Director determines to be appropriate.

[(c) PROCEDURES AND SELECTION CRITERIA.—The Director shall develop and issue procedures and selection criteria for participants in the program. The Director shall give special consideration to an application from a teacher from a high-need school, as defined in section 200 of the Higher Education Act of 1965 (20 U.S.C. 1021).

[(d) SCHEDULING.—The program under this section shall be conducted on an annual basis during the summer months, during the period of time when a majority of elementary, middle, and secondary schools have not commenced a school year.

[(e) MEANS OF ACCOMPLISHING GOALS.—The program shall provide for teachers' participation in activities at the laboratory facilities of the Institute, or shall utilize other means of accomplishing the goals of the program as determined by the Director, which may include the Internet, video conferencing and recording, and workshops and conferences.]

SEC. 23. REPORTS TO CONGRESS.

[15 U.S.C. 278i]

(a) INFORMATION TO CONGRESS ON INSTITUTE ACTIVITIES.—The Director shall keep the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives fully and currently informed with regard to all of the activities of the Institute.

(b) JUSTIFICATION FOR CHANGES IN POLICIES AND FEES.—The Director shall justify in writing all changes in policies regarding fees for standard reference materials and calibration services occurring after June 30, 1987, including a description of the anticipated impact of any proposed changes on demand for and anticipated revenues from the materials and services. Changes in policy and fees shall not be effective unless and until the Director has submitted the proposed schedule and justification to the Congress and 30 days on which both Houses of Congress are in session have elapsed since such submission, except that the requirement of this sentence shall not apply with respect to adjustments which are based solely on changes in the costs of raw materials or of producing and delivering standard reference materials or calibration services.

[(c) THREE-YEAR PROGRAMMATIC PLANNING DOCUMENT.—Concurrent with the submission to Congress of the President's annual budget request in the first year after the date of enactment of this subsection, the Director shall submit to Congress a 3-year programmatic planning document for the Institute, including programs under the Scientific and Technical Research and Services, Industrial Technology Services, and Construction of Research Facilities functions.

[(d) ANNUAL UPDATE ON THREE-YEAR PROGRAMMATIC PLANNING DOCUMENT.—Concurrent with the submission to the Congress of the President's annual budget request in each year after the date of enactment of this subsection, the Director shall submit to Congress an update to the 3-year programmatic planning document submitted under subsection (c), revised to cover the first 3 fiscal years after the date of that update.]

[SEC. 25. REGIONAL CENTERS FOR THE TRANSFER OF MANUFACTURING TECHNOLOGY.

[15 U.S.C. 278k]

[(a) CREATION AND SUPPORT OF CENTERS; AFFILIATIONS; MERIT REVIEW IN DETERMINING AWARDS; OBJECTIVES.—The Secretary, through the Director and, if appropriate, through other officials, shall provide assistance for the creation and support of regional centers for the transfer of manufacturing technology (hereafter in this Act referred to as the "Centers"). Such centers shall be affiliated with any United States-based nonprofit institution or organization, or group thereof, that applies for and is awarded financial assistance under this section in accordance with the description published by the Secretary in the Federal Register under subsection (c)(2). Individual awards shall be decided on the basis of merit review. The objective of the Centers is to enhance productivity and technological performance in United States manufacturing through—

[(1) the transfer of manufacturing technology and techniques developed at the Institute to Centers and, through them, to manufacturing companies throughout the United States;

[(2) the participation of individuals from industry, universities, State governments, other Federal agencies, and, when appropriate, the Institute in cooperative technology transfer activities;

[(3) efforts to make new manufacturing technology and processes usable by United States-based small- and medium-sized companies;

[(4) the active dissemination of scientific, engineering, technical, and management information about manufacturing to industrial firms, including small- and medium-sized manufacturing companies;

[(5) the utilization, when appropriate, of the expertise and capability that exists in Federal laboratories other than the Institute; and

[(6) providing to community colleges information about the job skills needed in small- and medium-sized manufacturing businesses in the regions they serve.

[(b) ACTIVITIES OF CENTERS.—The activities of the Centers shall include—

[(1) the establishment of automated manufacturing systems and other advanced production technologies, based on research by the Institute, for the purpose of demonstrations and technology transfer;

[(2) the active transfer and dissemination of research findings and Center expertise to a wide range of companies and enterprises, particularly small- and medium-sized manufacturers; and

[(3) loans, on a selective, short-term basis, of items of advanced manufacturing equipment to small manufacturing firms with less than 100 employees.

[(c) DURATION AND AMOUNT OF SUPPORT; PROGRAM DESCRIPTIONS; APPLICATIONS; MERIT REVIEW; EVALUATIONS OF ASSISTANCE; APPLICABILITY OF PATENT LAW.—

[(1) The Secretary may provide financial support to any Center created under subsection (a) for a period not to exceed six years. The Secretary may not provide to a Center more than 50 percent of the capital and annual operating and maintenance funds required to create and maintain such Center.

[(2) The Secretary shall publish in the Federal Register, within 90 days after the date of the enactment of this section, a draft description of a program for establishing Centers, including—

[(A) a description of the program;

[(B) procedures to be followed by applicants;

[(C) criteria for determining qualified applicants;

[(D) criteria, including those listed under paragraph (4), for choosing recipients of financial assistance under this section from among the qualified applicants; and

[(E) maximum support levels expected to be available to Centers under the program in the fourth through sixth years of assistance under this section.

[The Secretary shall publish a final description under this paragraph after the expiration of a 30-day comment period.

[(3)(A) Any nonprofit institution, or group thereof, or consortia of nonprofit institutions, including entities existing on

August 23, 1988, may submit to the Secretary an application for financial support under this subsection, in accordance with the procedures established by the Secretary and published in the Federal Register under paragraph (2).

[(B) In order to receive assistance under this section, an applicant for financial assistance under subparagraph (A) shall provide adequate assurances that non-Federal assets obtained from the applicant and the applicant's partnering organizations will be used as a funding source to meet not less than 50 percent of the costs incurred for the first 3 years and an increasing share for each of the last 3 years. For purposes of the preceding sentence, the costs incurred means the costs incurred in connection with the activities undertaken to improve the management, productivity, and technological performance of small- and medium-sized manufacturing companies.

[(C) In meeting the 50 percent requirement, it is anticipated that a Center will enter into agreements with other entities such as private industry, universities, and State governments to accomplish programmatic objectives and access new and existing resources that will further the impact of the Federal investment made on behalf of small- and medium-sized manufacturing companies. All non-Federal costs, contributed by such entities and determined by a Center as programmatically reasonable and allocable under MEP program procedures are includable as a portion of the Center's contribution.

[(D) Each applicant under subparagraph (A) shall also submit a proposal for the allocation of the legal rights associated with any invention which may result from the proposed Center's activities.

[(4) The Secretary shall subject each such application to merit review. In making a decision whether to approve such application and provide financial support under this subsection, the Secretary shall consider at a minimum (A) the merits of the application, particularly those portions of the application regarding technology transfer, training and education, and adaptation of manufacturing technologies to the needs of particular industrial sectors, (B) the quality of service to be provided, (C) geographical diversity and extent of service area, and (D) the percentage of funding and amount of in-kind commitment from other sources.

[(5) Each Center which receives financial assistance under this section shall be evaluated during its third year of operation by an evaluation panel appointed by the Secretary. Each such evaluation panel shall be composed of private experts, none of whom shall be connected with the involved Center, and Federal officials. An official of the Institute shall chair the panel. Each evaluation panel shall measure the involved Center's performance against the objectives specified in this section. The Secretary shall not provide funding for the fourth through the sixth years of such Center's operation unless the evaluation is positive. If the evaluation is positive, the Secretary may provide continued funding through the sixth year at declining levels. A Center that has not received a positive

evaluation by the evaluation panel shall be notified by the panel of the deficiencies in its performance and shall be placed on probation for one year, after which time the panel shall re-evaluate the Center. If the Center has not addressed the deficiencies identified by the panel, or shown a significant improvement in its performance, the Director shall conduct a new competition to select an operator for the Center or may close the Center. After the sixth year, a Center may receive additional financial support under this section if it has received a positive evaluation through an independent review, under procedures established by the Institute. Such an independent review shall be required at least every two years after the sixth year of operation. Funding received for a fiscal year under this section after the sixth year of operation shall not exceed one third of the capital and annual operating and maintenance costs of the Center under the program.

[(6) The provisions of chapter 18 of title 35, United States Code, shall (to the extent not inconsistent with this section) apply to the promotion of technology from research by Centers under this section except for contracts for such specific technology extension or transfer services as may be specified by statute or by the Director.

[(7) Not later than 90 days after the date of enactment of the National Institute of Standards and Technology Authorization Act of 2010, the Comptroller General shall submit to Congress a report on the cost share requirements under the program. The report shall—

[(A) discuss various cost share structures, including the cost share structure in place prior to such date of enactment, and the effect of such cost share structures on individual Centers and the overall program; and

[(B) include recommendations for how best to structure the cost share requirement to provide for the long-term sustainability of the program.″.

[(8) If consistent with the recommendations in the report transmitted to Congress under paragraph (7), the Secretary shall alter the cost structure requirements specified under paragraph (3)(B) and (5) provided that the modification does not increase the cost share structure in place before the date of enactment of the America COMPETES Reauthorization Act of 2010, or allow the Secretary to provide a Center more than 50 percent of the costs incurred by that Center.

[(d) ACCEPTANCE OF FUNDS.—

[(1) IN GENERAL.—In addition to such sums as may be appropriated to the Secretary and Director to operate the Centers program, the Secretary and Director also may accept funds from other Federal departments and agencies and under section 2(c)(7) from the private sector for the purpose of strengthening United States manufacturing.

[(2) ALLOCATION OF FUNDS.—

[(A) FUNDS ACCEPTED FROM OTHER FEDERAL DEPARTMENTS OR AGENCIES.—The Director shall determine whether funds accepted from other Federal departments or agencies shall be counted in the calculation of the Federal

share of capital and annual operating and maintenance costs under subsection (c).

[(B) FUNDS ACCEPTED FROM THE PRIVATE SECTOR.—Funds accepted from the private sector under section 2(c)(7), if allocated to a Center, shall not be considered in the calculation of the Federal share under subsection (c) of this section.

[(e) MEP ADVISORY BOARD.—

[(1) ESTABLISHMENT.—There is established within the Institute a Manufacturing Extension Partnership Advisory Board (in this subsection referred to as the "MEP Advisory Board").

[(2) MEMBERSHIP.—

[(A) IN GENERAL.—The MEP Advisory Board shall consist of 10 members broadly representative of stakeholders, to be appointed by the Director. At least 2 members shall be employed by or on an advisory board for the Centers, and at least 5 other members shall be from United States small businesses in the manufacturing sector. No member shall be an employee of the Federal Government.

[(B) TERM.—Except as provided in subparagraph (C) or (D), the term of office of each member of the MEP Advisory Board shall be 3 years.

[(C) CLASSES.—The original members of the MEP Advisory Board shall be appointed to 3 classes. One class of 3 members shall have an initial term of 1 year, one class of 3 members shall have an initial term of 2 years, and one class of 4 members shall have an initial term of 3 years.

[(D) VACANCIES.—Any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.

[(E) SERVING CONSECUTIVE TERMS.—Any person who has completed two consecutive full terms of service on the MEP Advisory Board shall thereafter be ineligible for appointment during the one-year period following the expiration of the second such term.

[(3) MEETINGS.—The MEP Advisory Board shall meet not less than 2 times annually, and provide to the Director—

[(A) advice on Manufacturing Extension Partnership programs, plans, and policies;

[(B) assessments of the soundness of Manufacturing Extension Partnership plans and strategies; and

[(C) assessments of current performance against Manufacturing Extension Partnership program plans.

[(4) FEDERAL ADVISORY COMMITTEE ACT APPLICABILITY.—

[(A) IN GENERAL.—In discharging its duties under this subsection, the MEP Advisory Board shall function solely in an advisory capacity, in accordance with the Federal Advisory Committee Act.

[(B) EXCEPTION.—Section 14 of the Federal Advisory Committee Act shall not apply to the MEP Advisory Board.

[(5) REPORT.—The MEP Advisory Board shall transmit an annual report to the Secretary for transmittal to Congress within 30 days after the submission to Congress of the Presi-

dent's annual budget request in each year. Such report shall address the status of the program established pursuant to this section and comment on the relevant sections of the programmatic planning document and updates thereto transmitted to Congress by the Director under subsections (c) and (d) of section 23.

[(f) COMPETITIVE GRANT PROGRAM.—

[(1) ESTABLISHMENT.—The Director shall establish, within the Centers program under this section and section 26 of this Act, a program of competitive awards among participants described in paragraph (2) for the purposes described in paragraph (3).

[(2) PARTICIPANTS.—Participants receiving awards under this subsection shall be the Centers, or a consortium of such Centers.

[(3) PURPOSE.—The purpose of the program under this subsection is to add capabilities to the MEP program, including the development of projects to solve new or emerging manufacturing problems as determined by the Director, in consultation with the Director of the Hollings MEP program, the Manufacturing Extension Partnership Advisory Board, and small and medium-sized manufacturers. One or more themes for the competition may be identified, which may vary from year to year, depending on the needs of manufacturers and the success of previous competitions. Centers may be reimbursed for costs incurred under the program. These themes—

[(A) shall be related to projects designed to increase the viability both of traditional manufacturing sectors and other sectors, such as construction, that increasingly rely on manufacturing through the use of manufactured components and manufacturing techniques, including supply chain integration and quality management;

[(B) shall be related to projects related to the transfer of technology based on the technological needs of manufacturers and available technologies from institutions of higher education, laboratories, and other technology producing entities; and

[(C) may extend beyond these traditional areas to include projects related to construction industry modernization.

[(4) APPLICATIONS.—Applications for awards under this subsection shall be submitted in such manner, at such time, and containing such information as the Director shall require, in consultation with the Manufacturing Extension Partnership Advisory Board.

[(5) SELECTION.—

[(A) IN GENERAL.—Awards under this section shall be peer reviewed and competitively awarded. The Director shall endeavor to select at least one proposal in each of the 9 statistical divisions of the United States (as designated by the Bureau of the Census). The Director shall select proposals to receive awards that will—

[(i) create jobs or train newly hired employees;

[(ii) promote technology transfer and commercialization of environmentally focused materials, products, and processes;

[(iii) increase energy efficiency; and

[(iv) improve the competitiveness of industries in the region in which the Center or Centers are located.

[(B) ADDITIONAL SELECTION CRITERIA.—The Director may select proposals to receive awards that will—

[(i) encourage greater cooperation and foster partnerships in the region with similar Federal, State, and locally funded programs to encourage energy efficiency and building technology; and

[(ii) collect data and analyze the increasing connection between manufactured products and manufacturing techniques, the future of construction practices, and the emerging application of products from the green energy industries.

[(6) PROGRAM CONTRIBUTION.—Recipients of awards under this subsection shall not be required to provide a matching contribution.

[(7) GLOBAL MARKETPLACE PROJECTS.—In making awards under this subsection, the Director, in consultation with the Manufacturing Extension Partnership Advisory Board and the Secretary of Commerce, may—

[(A) take into consideration whether an application has significant potential for enhancing the competitiveness of small and medium-sized United States manufacturers in the global marketplace; and

[(B) give a preference to applications for such projects to the extent the Director deems appropriate, taking into account the broader purposes of this subsection.

[(7) DURATION.—Awards under this section shall last no longer than 3 years.

[(8) ELIGIBLE PARTICIPANTS.—In addition to manufacturing firms eligible to participate in the Centers program, awards under this subsection may be used by the Centers to assist small- or medium-sized construction firms. Centers may be reimbursed under the program for working with such eligible participants.

[(9) AUTHORIZATION OF APPROPRIATIONS.—In addition to any amounts otherwise authorized or appropriated to carry out this section, there are authorized to be appropriated to the Secretary of Commerce $7,000,000 for each of the fiscal years 2011 through 2013 to carry out this subsection.

[(g) INNOVATIVE SERVICES INITIATIVE.—

[(1) ESTABLISHMENT.—The Director shall establish, within the Centers program under this section, an innovative services initiative to assist small- and medium-sized manufacturers in—

[(A) reducing their energy usage, greenhouse gas emissions, and environmental waste to improve profitability;

[(B) accelerating the domestic commercialization of new product technologies, including components for renewable energy and energy efficiency systems; and

[(C) identification of and diversification to new markets, including support for transitioning to the production of components for renewable energy and energy efficiency systems.

[(2) MARKET DEMAND.—The Director may not undertake any activity to accelerate the domestic commercialization of a new product technology under this subsection unless an analysis of market demand for the new product technology has been conducted.

[(h) REPORTS.—

[(1) IN GENERAL.—In submitting the 3-year programmatic planning document and annual updates under section 23, the Director shall include an assessment of the Director's governance of the program established under this section.

[(2) CRITERIA.—In conducting the assessment, the Director shall use the criteria established pursuant to the Malcolm Baldrige National Quality Award under section 17(d)(1)(C) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3711a(d)(1)(C)).

[(i) DESIGNATION.—

[(1) HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP.—The program under this section shall be known as the "Hollings Manufacturing Extension Partnership".

[(2) HOLLINGS MANUFACTURING EXTENSION CENTERS.—The Regional Centers for the Transfer of Manufacturing Technology created and supported under subsection (a) shall be known as the "Hollings Manufacturing Extension Centers" (in this Act referred to as the "Centers").

[(j) COMMUNITY COLLEGE DEFINED.—In this section, the term "community college" means an institution of higher education (as defined under section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a))) at which the highest degree that is predominately awarded to students is an associate's degree.

[(k) EVALUATION OF OBSTACLES UNIQUE TO SMALL MANUFACTURERS.—The Director shall—

[(1) evaluate obstacles that are unique to small manufacturers that prevent such manufacturers from effectively competing in the global market;

[(2) implement a comprehensive plan to train the Centers to address such obstacles; and

[(3) facilitate improved communication between the Centers to assist such manufacturers in implementing appropriate, targeted solutions to such obstacles.]

SEC. 25. HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP.

(a) DEFINITIONS.—In this section:

(1) APPROPRIATE COMMITTEES OF CONGRESS.—The term "appropriate committees of Congress" means—

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

(B) the Committee on Science, Space, and Technology of the House of Representatives.

(2) AREA CAREER AND TECHNICAL EDUCATION SCHOOL.—The term "area career and technical education school" has the meaning given the term in section 3 of the Vocational Education Act of 1963 (20 U.S.C. 2302).

(3) CENTER.—The term "Center" means a manufacturing extension center that—

(A) is created under subsection (b); and

(B) is affiliated with an eligible entity that applies for and is awarded financial support under subsection (e).

(4) COMMUNITY COLLEGE.—The term "community college" means an institution of higher education (as defined under section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a))) at which the highest degree that is predominately awarded to students is an associate's degree.

(5) ELIGIBLE ENTITY.—The term "eligible entity" means a United States-based nonprofit institution, or consortium thereof, an institution of higher education, or a State, United States territory, local, or tribal government.

(6) HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP OR PROGRAM.—The term "Hollings Manufacturing Extension Partnership" or "Program" means the program established under subsection (b).

(7) MEP ADVISORY BOARD.—The term "MEP Advisory Board" means the Manufacturing Extension Partnership Advisory Board established under subsection (n).

(b) ESTABLISHMENT AND PURPOSE.—The Secretary, acting through the Director and, if appropriate, through other Federal officials, shall establish a program to provide assistance for the creation and support of manufacturing extension centers for the transfer of manufacturing technology and best business practices.

(c) OBJECTIVE.—The objective of the Program shall be to enhance competitiveness, productivity, and technological performance in United States manufacturing through—

(1) the transfer of manufacturing technology and techniques developed at the Institute to Centers and, through them, to manufacturing companies throughout the United States;

(2) the participation of individuals from industry, institutions of higher education, State governments, other Federal agencies, and, when appropriate, the Institute in cooperative technology transfer activities;

(3) efforts to make new manufacturing technology and processes usable by United States-based small and medium-sized companies;

(4) the active dissemination of scientific, engineering, technical, and management information about manufacturing to industrial firms, including small and medium-sized manufacturing companies;

(5) the utilization, when appropriate, of the expertise and capability that exists in Federal agencies, other than the Institute, and federally-sponsored laboratories;

(6) the provision to community colleges and area career and technical education schools of information about the job skills needed in manufacturing companies, including small and medium-sized manufacturing businesses in the regions they serve;

(7) the promotion and expansion of certification systems, including efforts to assist small- and medium-sized manufacturing businesses in creating new apprenticeships or utilizing existing apprenticeships, such as facilitating training and pro-

viding access to information and experts, to address workforce needs and skills gaps; and

(8) the growth in employment and wages at United States-based small and medium-sized companies.

(d) ACTIVITIES.—The activities of a Center shall include—

(1) the establishment of automated manufacturing systems and other advanced production technologies, based on Institute-supported research, for the purpose of demonstrations and technology transfer;

(2) the active transfer and dissemination of research findings and Center expertise to a wide range of companies and enterprises, particularly small and medium-sized manufacturers; and

(3) the facilitation of collaborations and partnerships between small and medium-sized manufacturing companies , community colleges, and area career and technical education schools, to help those entities better understand the specific needs of manufacturers and to help manufacturers better understand the skill sets that students learn in the programs offered by such colleges and schools.

(e) FINANCIAL ASSISTANCE.—

(1) AUTHORIZATION.—Except as provided in paragraph (2), the Secretary may provide financial assistance for the creation and support of a Center through a cooperative agreement with an eligible entity.

(2) COST SHARING.—The Secretary may not provide more than 50 percent of the capital and annual operating and maintenance funds required to establish and support a Center.

(3) RULE OF CONSTRUCTION.—For purposes of paragraph (2), any amount received by an eligible entity for a Center under a provision of law other than paragraph (1) shall not be considered an amount provided under paragraph (1).

(f) APPLICATIONS.—

(1) IN GENERAL.—An eligible entity shall submit an application to the Secretary at such time, in such manner, and containing such information as the Secretary may require.

(2) PROGRAM DESCRIPTION.—The Secretary shall establish and update, as necessary—

(A) a description of the Program;

(B) the application procedures;

(C) performance metrics;

(D) criteria for determining qualified applicants; and

(E) criteria for choosing recipients of financial assistance from among the qualified applicants.

(F) procedures for determining allowable cost share contributions; and

(G) such other program policy objectives and operational procedures as the Secretary considers necessary.

(3) COST SHARING.—

(A) IN GENERAL.—To be considered for financial assistance under this section, an applicant shall provide adequate assurances that the applicant and if applicable, the applicant's partnering organizations, will obtain funding for not less than 50 percent of the capital and annual operating and maintenance funds required to establish and

support the Center from sources other than the financial assistance provided under subsection (e).

(B) AGREEMENTS WITH OTHER ENTITIES.—In meeting the cost-sharing requirement under subparagraph (A), an eligible entity may enter into an agreement with 1 or more other entities, such as a private industry, an institution of higher education, or a State, United States territory, local, or tribal government for the contribution by that other entity of funding if the Secretary determines the agreement—

(i) is programmatically reasonable;

(ii) will help accomplish programmatic objectives; and

(iii) is allocable under Program procedures under subsection (f)(2).

(4) LEGAL RIGHTS.—Each applicant shall include in the application a proposal for the allocation of the legal rights associated with any intellectual property which may result from the activities of the Center.

(5) MERIT REVIEW OF APPLICATIONS.—

(A) IN GENERAL.—The Secretary shall subject each application to merit review.

(B) CONSIDERATIONS.—In making a decision whether to approve an application and provide financial assistance under subsection (e), the Secretary shall consider, at a minimum—

(i) the merits of the application, particularly those portions of the application regarding technology transfer, training and education, and adaptation of manufacturing technologies to the needs of particular industrial sectors;

(ii) the quality of service to be provided;

(iii) the geographical diversity and extent of the service area; and

(iv) the type and percentage of funding from other sources under paragraph (3).

(g) EVALUATIONS.—

(1) THIRD AND EIGHTH YEAR EVALUATIONS BY PANEL.—

(A) IN GENERAL.—The Secretary shall ensure that each Center is evaluated during its third and eighth years of operation by an evaluation panel appointed by the Secretary.

(B) COMPOSITION.—The Secretary shall ensure that each evaluation panel appointed under subparagraph (A) is composed of—

(i) private experts, none of whom are connected with the Center evaluated by the panel; and

(ii) Federal officials.

(C) CHAIRPERSON.—For each evaluation panel appointed under subparagraph (B), the Secretary shall appoint a chairperson who is an official of the Institute.

(2) FIFTH YEAR EVALUATIONS BY SECRETARY.—In the fifth year of operation of a Center, the Secretary shall conduct a review of the Center.

(3) PERFORMANCE MEASUREMENT.—In evaluating a Center an evaluation panel or the Secretary, as applicable, shall measure the performance of the Center against—

(A) the objective specified in subsection (c);

(B) the performance metrics under subsection (f)(2)(C); and

(C) such other criterion as considered appropriate by the Secretary.

(4) POSITIVE EVALUATIONS.—If an evaluation of a Center is positive, the Secretary may continue to provide financial assistance for the Center—

(A) in the case of an evaluation occurring in the third year of a Center, through the fifth year of the Center;

(B) in the case of an evaluation occurring in the fifth year of a Center, through the eighth year of the Center; and

(C) in the case of an evaluation occurring in the eighth year of a Center, through the tenth year of the Center.

(5) OTHER THAN POSITIVE EVALUATIONS.—

(A) PROBATION.—If an evaluation of a Center is other than positive, the Secretary shall put the Center on probation during the period beginning on the date that the Center receives notice under subparagraph (B)(i) and ending on the date that the reevaluation is complete under subparagraph (B)(iii).

(B) NOTICE AND REEVALUATION.—If a Center receives an evaluation that is other than positive, the evaluation panel or Secretary, as applicable, shall—

(i) notify the Center of the reason, including any deficiencies in the performance of the Center identified during the evaluation;

(ii) assist the Center in remedying the deficiencies by providing the Center, not less frequently than once every 3 months, an analysis of the Center, if considered appropriate by the panel or Secretary, as applicable; and

(iii) reevaluate the Center not later than 1 year after the date of the notice under clause (i).

(C) CONTINUED SUPPORT DURING PERIOD OF PROBATION.—The Secretary may continue to provide financial assistance under subsection (e) for a Center during the probation period.

(6) FAILURE TO REMEDY.—

(A) IN GENERAL.—If a Center fails to remedy a deficiency or to show significant improvement in performance before the end of the probation period under paragraph (5), the Secretary shall conduct a competition to select an operator for the Center under subsection (h).

(B) TREATMENT OF CENTERS SUBJECT TO NEW COMPETITION.—Upon the selection of an operator for a Center under subsection (h), the Center shall be considered a new Center and the calculation of the years of operation of that Center for purposes of paragraphs (1) through (5) of this subsection and subsection (h)(1) shall start anew.

(h) REAPPLICATION COMPETITION FOR FINANCIAL ASSISTANCE AFTER 10 YEARS.—

(1) IN GENERAL.—If an eligible entity has operated a Center under this section for a period of 10 consecutive years, the Secretary shall conduct a competition to select an eligible entity to

operate the Center in accordance with the process plan under subsection (i).

(2) INCUMBENT ELIGIBLE ENTITIES.—An eligible entity that has received financial assistance under this section for a period of 10 consecutive years and that the Secretary determines is in good standing shall be eligible to compete in the competition under paragraph (1).

(3) TREATMENT OF CENTERS SUBJECT TO REAPPLICATION COMPETITION.—Upon the selection of an operator for a Center under paragraph (1), the Center shall be considered a new Center and the calculation of the years of operation of that Center for purposes of paragraphs (1) through (5) of subsection (g) shall start anew.

(i) PROCESS PLAN.—Not later than 180 days after the date of the enactment of the American Innovation and Competitiveness Act, the Secretary shall implement and submit to Congress a plan for how the Institute will conduct an evaluation, competition, and reapplication competition under this section.

(j) OPERATIONAL REQUIREMENTS.—

(1) PROTECTION OF CONFIDENTIAL INFORMATION OF CENTER CLIENTS.—The following information, if obtained by the Federal Government in connection with an activity of a Center or the Program, shall be exempt from public disclosure under section 552 of title 5, United States Code:

(A) Information on the business operation of any participant in the Program or of a client of a Center.

(B) Trade secrets of any client of a Center.

(k) OVERSIGHT BOARDS.—

(1) IN GENERAL.—As a condition on receipt of financial assistance for a Center under subsection (e), an eligible entity shall establish a board to oversee the operations of the Center.

(2) STANDARDS.—

(A) IN GENERAL.—The Director shall establish appropriate standards for each board described under paragraph (1).

(B) CONSIDERATIONS.—In establishing the standards, the Director shall take into account the type and organizational structure of an eligible entity.

(C) REQUIREMENTS.—The standards shall address, at a minimum—

(i) membership;

(ii) composition;

(iii) term limits;

(iv) conflicts of interest; and

(v) whether to limit board members serving on multiple boards under this section.

(3) MEMBERSHIP.—

(A) IN GENERAL.—Each board established under paragraph (1) shall be composed of members as follows:

(i) The membership of each board shall be representative of stakeholders in the region in which the Center is located.

(ii) A majority of the members of the board shall be selected from among individuals who own or are employed by small or medium-sized manufacturers.

(B) LIMITATION.—A member of a board established under paragraph (1) may not serve on more than 1 board established under that paragraph.

(4) BYLAWS.—

(A) IN GENERAL.—Each board established under paragraph (1) shall adopt and submit to the Director bylaws to govern the operation of the board.

(B) CONFLICTS OF INTEREST.—Bylaws adopted under subparagraph (A) shall include policies to minimize conflicts of interest, including such policies relating to disclosure of relationships and recusal as may be necessary to minimize conflicts of interest.

(l) ACCEPTANCE OF FUNDS.—In addition to such sums as may be appropriated to the Secretary and Director to operate the Program, the Secretary and Director may also accept funds from other Federal departments and agencies and from the private sector under section 2(c)(7) of this Act (15 U.S.C. 272(c)(7)), to be available to the extent provided by appropriations Acts, for the purpose of strengthening United States manufacturing.

(m) MEP ADVISORY BOARD.—

(1) ESTABLISHMENT.—There is established within the Institute a Manufacturing Extension Partnership Advisory Board.

(2) MEMBERSHIP.—

(A) COMPOSITION.—

(i) IN GENERAL.—The MEP Advisory Board shall consist of not fewer than 10 members appointed by the Director and broadly representative of stakeholders.

(ii) REQUIREMENTS.—Of the members appointed under clause (i)—

(I) at least 2 members shall be employed by or on an advisory board for a Center; and

(II) at least 5 other members shall be from United States small businesses in the manufacturing sector.

(iii) LIMITATION.—No member of the MEP Advisory Board shall be an employee of the Federal Government.

(B) TERM.—Except as provided in subparagraph (C), the term of office of each member of the MEP Advisory Board shall be 3 years.

(C) VACANCIES.—Any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.

(D) SERVING CONSECUTIVE TERMS.—Any person who has completed 2 consecutive full terms of service on the MEP Advisory Board shall thereafter be ineligible for appointment during the 1-year period following the expiration of the second such term.

(3) MEETINGS.—The MEP Advisory Board shall—

(A) meet not less than biannually; and

(B) provide to the Director—

(i) advice on the activities, plans, and policies of the Program;

(ii) assessments of the soundness of the plans and strategies of the Program; and

(iii) assessments of current performance against the plans of the Program.

(4) FACA APPLICABILITY.—

(A) IN GENERAL.—In discharging its duties under this subsection, the MEP Advisory Board shall function solely in an advisory capacity, in accordance with the Federal Advisory Committee Act (5 U.S.C. App.).

(B) EXCEPTION.—Section 14 of the Federal Advisory Committee Act shall not apply to the MEP Advisory Board.

(5) ANNUAL REPORT.—

(A) IN GENERAL.—At a minimum, the MEP Advisory Board shall transmit an annual report to the Secretary for transmittal to Congress not later than 30 days after the submission to Congress of the President's annual budget request in each year.

(B) CONTENTS.—The report shall address the status of the Program and describe the relevant sections of the programmatic planning document and updates thereto transmitted to Congress by the Director under subsections (c) and (d) of section 23 (15 U.S.C. 278i).

(n) SMALL MANUFACTURERS.—

(1) EVALUATION OF OBSTACLES.—As part of the Program, the Director shall—

(A) identify obstacles that prevent small manufacturers from effectively competing in the global market;

(B) implement a comprehensive plan to train the Centers to address the obstacles identified in paragraph (2); and

(C) facilitate improved communication between the Centers to assist such manufacturers in implementing appropriate, targeted solutions to the obstacles identified in paragraph (2).

(2) DEVELOPMENT OF OPEN ACCESS RESOURCES.—As part of the Program, the Secretary shall develop open access resources that address best practices related to inventory sourcing, supply chain management, manufacturing techniques, available Federal resources, and other topics to further the competitiveness and profitability of small manufacturers.

SEC. 25A. COMPETITIVE AWARDS PROGRAM.

(a) ESTABLISHMENT.—The Director shall establish within the Hollings Manufacturing Extension Partnership under section 25 (15 U.S.C. 278k) and section 26 (15 U.S.C. 278l) a program of competitive awards among participants described in subsection (b) of this section for the purposes described in subsection (c).

(b) PARTICIPANTS.—Participants receiving awards under this section shall be Centers, or a consortium of Centers.

(c) PURPOSE, THEMES, AND REIMBURSEMENT.—

(1) PURPOSE.—The purpose of the program established under subsection (a) is to add capabilities to the Hollings Manufacturing Extension Partnership, including the development of projects to solve new or emerging manufacturing problems as determined by the Director, in consultation with the Director of the Hollings Manufacturing Extension Partnership, the MEP Advisory Board, other Federal agencies, and small and medium-sized manufacturers.

(2) THEMES.—The Director may identify 1 or more themes for a competition carried out under this section, which may vary from year to year, as the Director considers appropriate after assessing the needs of manufacturers and the success of previous competitions.

(3) REIMBURSEMENT.—Centers may be reimbursed for costs incurred by the Centers under this section.

(d) APPLICATIONS.—Applications for awards under this section shall be submitted in such manner, at such time, and containing such information as the Director shall require in consultation with the MEP Advisory Board.

(e) SELECTION.—

(1) PEER REVIEW AND COMPETITIVELY AWARDED.—The Director shall ensure that awards under this section are peer reviewed and competitively awarded.

(2) GEOGRAPHIC DIVERSITY.—The Director shall endeavor to have broad geographic diversity among selected proposals.

(3) CRITERIA.—The Director shall select applications to receive awards that the Director determines will achieve 1 or more of the following:

(A) Improve the competitiveness of industries in the region in which the Center or Centers are located.

(B) Create jobs or train newly hired employees.

(C) Promote the transfer and commercialization of research and technology from institutions of higher education, national laboratories or other Federally-funded research programs, and nonprofit research institutes.

(D) Recruit a diverse manufacturing workforce, including through outreach to women and minorities.

(E) Such other result as the Director determines will advance the objective set forth in section 25(c) (15 U.S.C. 278k) or in section 26 (15 U.S.C. 278l).

(f) PROGRAM CONTRIBUTION.—Recipients of awards under this section shall not be required to provide a matching contribution.

(g) GLOBAL MARKETPLACE PROJECTS.—In making an award under this section, the Director, in consultation with the MEP Advisory Board and the Secretary, may take into consideration whether an application has significant potential for enhancing the competitiveness of small and medium-sized United States manufacturers in the global marketplace.

(h) DURATION.—The duration of an award under this section shall be for not more than 3 years.

(i) DEFINITIONS.—The terms used in this section have the meanings given the terms in section 25 (15 U.S.C. 278k).

SEC. 26. ASSISTANCE TO STATE TECHNOLOGY PROGRAMS.

[15 U.S.C. 278l]

(a) In addition to the **[**Centers program created**]** *Hollings Manufacturing Extension Partnership* under section 25, the Secretary, through the Director and, if appropriate, through other officials, shall provide technical assistance to State technology programs throughout the United States, in order to help those programs help businesses, particularly small- and medium-sized businesses, to enhance their competitiveness through the application of science and technology.

(b) Such assistance from the Institute to State technology programs shall include, but not be limited to—

(1) technical information and advice from Institute personnel;

(2) workshops and seminars for State officials interested in transferring Federal technology to businesses; and

(3) entering into cooperative agreements when authorized to do so under this or any other Act.

[SEC. 28. TECHNOLOGY INNOVATION PROGRAM.

[15 U.S.C. 278n]

[(a) ESTABLISHMENT.—There is established within the Institute a program linked to the purpose and functions of the Institute, to be known as the "Technology Innovation Program" for the purpose of assisting United States businesses and institutions of higher education or other organizations, such as national laboratories and nonprofit research institutions, to support, promote, and accelerate innovation in the United States through high-risk, high-reward research in areas of critical national need.

[(b) EXTERNAL FUNDING.—

[(1) IN GENERAL.—The Director shall award competitive, merit-reviewed grants, cooperative agreements, or contracts to—

[(A) eligible companies that are small-sized businesses or medium-sized businesses; or

[(B) joint ventures.

[(2) SINGLE COMPANY AWARDS.—No award given to a single company shall exceed $3,000,000 over 3 years.

[(3) JOINT VENTURE AWARDS.—No award given to a joint venture shall exceed $9,000,000 over 5 years.

[(4) FEDERAL COST SHARE.—The Federal share of a project funded by an award under the program shall not be more than 50 percent of total project costs.

[(5) PROHIBITIONS.—Federal funds awarded under this program may be used only for direct costs and not for indirect costs, profits, or management fees of a contractor. Any business that is not a small-sized or medium-sized business may not receive any funding under this program.

[(c) AWARD CRITERIA.—The Director shall only provide assistance under this section to an entity—

[(1) whose proposal has scientific and technical merit and may result in intellectual property vesting in a United States entity that can commercialize the technology in a timely manner;

[(2) whose application establishes that the proposed technology has strong potential to address critical national needs through transforming the Nation's capacity to deal with major societal challenges that are not currently being addressed, and generate substantial benefits to the Nation that extend significantly beyond the direct return to the applicant;

[(3) whose application establishes that the research has strong potential for advancing the state-of-the-art and contributing significantly to the United States science and technology knowledge base;

[(4) whose proposal explains why Technology Innovation Program support is necessary, including evidence that the re-

search will not be conducted within a reasonable time period in the absence of financial assistance under this section;

[(5) whose application demonstrates that reasonable efforts have been made to secure funding from alternative funding sources and no other alternative funding sources are reasonably available to support the proposal; and

[(6) whose application explains the novelty of the technology and demonstrates that other entities have not already developed, commercialized, marketed, distributed, or sold similar technologies.

[(d) COMPETITIONS.—The Director shall solicit proposals at least annually to address areas of critical national need for high-risk, high-reward projects.

[(e) INTELLECTUAL PROPERTY RIGHTS OWNERSHIP.—

[(1) IN GENERAL.—Title to any intellectual property developed by a joint venture from assistance provided under this section may vest in any participant in the joint venture, as agreed by the members of the joint venture, notwithstanding section 202 (a) and (b) of title 35, United States Code. The United States may reserve a nonexclusive, nontransferable, irrevocable paid-up license, to have practice for or on behalf of the United States in connection with any such intellectual property, but shall not in the exercise of such license publicly disclose proprietary information related to the license. Title to any such intellectual property shall not be transferred or passed, except to a participant in the joint venture, until the expiration of the first patent obtained in connection with such intellectual property.

[(2) LICENSING.—Nothing in this subsection shall be construed to prohibit the licensing to any company of intellectual property rights arising from assistance provided under this section.

[(3) DEFINITION.—For purposes of this subsection, the term "intellectual property" means an invention patentable under title 35, United States Code, or any patent on such an invention, or any work for which copyright protection is available under title 17, United States Code.

[(f) PROGRAM OPERATION.—Not later than 9 months after the date of the enactment of this section, the Director shall promulgate regulations—

[(1) establishing criteria for the selection of recipients of assistance under this section;

[(2) establishing procedures regarding financial reporting and auditing to ensure that awards are used for the purposes specified in this section, are in accordance with sound accounting practices, and are not funding existing or planned research programs that would be conducted within a reasonable time period in the absence of financial assistance under this section; and

[(3) providing for appropriate dissemination of Technology Innovation Program research results.

[(g) CONTINUATION OF ATP GRANTS.—The Director shall, through the Technology Innovation Program, continue to provide support originally awarded under the Advanced Technology Pro-

gram, in accordance with the terms of the original award and consistent with the goals of the Technology Innovation Program.

[(h) COORDINATION WITH OTHER STATE AND FEDERAL TECHNOLOGY PROGRAMS.—In carrying out this section, the Director shall, as appropriate, coordinate with other senior State and Federal officials to ensure cooperation and coordination in State and Federal technology programs and to avoid unnecessary duplication of efforts.

[(i) ACCEPTANCE OF FUNDS FROM OTHER FEDERAL AGENCIES.—In addition to amounts appropriated to carry out this section, the Secretary and the Director may accept funds from other Federal agencies to support awards under the Technology Innovation Program. Any award under this section which is supported with funds from other Federal agencies shall be selected and carried out according to the provisions of this section. Funds accepted from other Federal agencies shall be included as part of the Federal cost share of any project funded under this section.

[(j) TIP ADVISORY BOARD.—

[(1) ESTABLISHMENT.—There is established within the Institute a TIP Advisory Board.

[(2) MEMBERSHIP.—

[(A) IN GENERAL.—The TIP Advisory Board shall consist of 10 members appointed by the Director, at least 7 of whom shall be from United States industry, chosen to reflect the wide diversity of technical disciplines and industrial sectors represented in Technology Innovation Program projects. No member shall be an employee of the Federal Government.

[(B) TERM.—Except as provided in subparagraph (C) or (D), the term of office of each member of the TIP Advisory Board shall be 3 years.

[(C) CLASSES.—The original members of the TIP Advisory Board shall be appointed to 3 classes. One class of 3 members shall have an initial term of 1 year, one class of 3 members shall have an initial term of 2 years, and one class of 4 members shall have an initial term of 3 years.

[(D) VACANCIES.—Any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.

[(E) SERVING CONSECUTIVE TERMS.—Any person who has completed 2 consecutive full terms of service on the TIP Advisory Board shall thereafter be ineligible for appointment during the 1-year period following the expiration of the second such term.

[(3) PURPOSE.—The TIP Advisory Board shall meet not less than 2 times annually, and provide the Director—

[(A) advice on programs, plans, and policies of the Technology Innovation Program;

[(B) reviews of the Technology Innovation Program's efforts to accelerate the research and development of challenging, high-risk, high-reward technologies in areas of critical national need;

[(C) reports on the general health of the program and its effectiveness in achieving its legislatively mandated mission; and

[(D) guidance on investment areas that are appropriate for Technology Innovation Program funding;

[(4) ADVISORY CAPACITY.—In discharging its duties under this subsection, the TIP Advisory Board shall function solely in an advisory capacity, in accordance with the Federal Advisory Committee Act.

[(k) DEFINITIONS.—In this section—

[(1) the term "eligible company" means a small-sized or medium-sized business that is incorporated in the United States and does a majority of its business in the United States, and that either—

[(A) is majority owned by citizens of the United States; or

[(B) is owned by a parent company incorporated in another country and the Director finds that—

[(i) the company's participation in the Technology Innovation Program would be in the economic interest of the United States, as evidenced by—

[(I) investments in the United States in research and manufacturing;

[(II) significant contributions to employment in the United States; and

[(III) agreement with respect to any technology arising from assistance provided under this section to promote the manufacture within the United States of products resulting from that technology; and

[(ii) the company is incorporated in a country which—

[(I) affords to United States-owned companies opportunities, comparable to those afforded to any other company, to participate in any joint venture similar to those receiving funding under this section;

[(II) affords to United States-owned companies local investment opportunities comparable to those afforded any other company; and

[(III) affords adequate and effective protection for intellectual property rights of United States-owned companies;

[(2) the term "high-risk, high-reward research" means research that—

[(A) has the potential for yielding transformational results with far-ranging or wide-ranging implications;

[(B) addresses critical national needs within the National Institute of Standards and Technology's areas of technical competence; and

[(C) is too novel or spans too diverse a range of disciplines to fare well in the traditional peer-review process;

[(3) the term "institution of higher education" has the meaning given that term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001);

[(4) the term "joint venture" means a joint venture that—

[(A) includes either—

[(i) at least 2 separately owned for-profit companies that are both substantially involved in the project and both of which are contributing to the cost-sharing required under this section, with the lead entity of the joint venture being one of those companies that is a small-sized or medium-sized business; or

[(ii) at least 1 small-sized or medium-sized business and 1 institution of higher education or other organization, such as a national laboratory or nonprofit research institute, that are both substantially involved in the project and both of which are contributing to the cost-sharing required under this section, with the lead entity of the joint venture being either that small-sized or medium-sized business or that institution of higher education; and

[(B) may include additional for-profit companies, institutions of higher education, and other organizations, such as national laboratories and nonprofit research institutes, that may or may not contribute non-Federal funds to the project; and

[(5) the term "TIP Advisory Board" means the advisory board established under subsection (j).]

SMALL BUSINESS JOBS ACT OF 2010

[Public Law 111–240; 124 Stat. 2504]

SEC. 4226. HOLLINGS MANUFACTURING PARTNERSHIP PROGRAM; TECHNOLOGY INNOVATION PROGRAM.

[15 U.S.C. 278n note]

* * * * * * *

[(b) TECHNOLOGY INNOVATION PROGRAM.—In awarding grants, cooperative agreements, or contracts under section 28 of the National Institute of Standards and Technology Act (15 U.S.C. 278n), in addition to the award criteria set forth in subsection (c) of that section, the Director of the National Institute of Standards and Technology may take into consideration whether an application has significant potential for enhancing the competitiveness of small- and medium-sized businesses in the United States in the global marketplace. The Director shall consult with the Technology Innovation Program Advisory Board and the Secretary of Commerce in implementing this subsection.]

STEVENSON-WYDLER TECHNOLOGY INNOVATION ACT OF 1980

[15 U.S.C. 3701 et seq.]

SEC. 8. GRANTS AND COOPERATIVE AGREEMENTS.

[15 U.S.C. 3706]

(a) IN GENERAL.—The Secretary may make grants and enter into cooperative agreements according to the provisions of this section in order to assist any activity consistent with this Act, including activities performed by individuals. [The total amount of any such

grant or cooperative agreement may not exceed 75 percent of the total cost of the program.]

(b) ELIGIBILITY AND PROCEDURE.—Any person or institution may apply to the Secretary for a grant or cooperative agreement available under this section. Application shall be made in such form and manner, and with such content and other submissions, as the Assistant Secretary shall prescribe. The Secretary shall act upon each such application within 90 days after the date on which all required information is received.

(c) TERMS AND CONDITIONS.—

(1) Any grant made, or cooperative agreement entered into, under this section shall be subject to the limitations and provisions set forth in paragraph (2) of this subsection, and to such other terms, conditions, and requirements as the Secretary deems necessary or appropriate.

(2) Any person who receives or utilizes any proceeds of any grant made or cooperative agreement entered into under this section shall keep such records as the Secretary shall by regulation prescribe as being necessary and appropriate to facilitate effective audit and evaluation, including records which fully disclose the amount and disposition by such recipient of such proceeds, the total cost of the program or project in connection with which such proceeds were used, and the amount, if any, of such costs which was provided through other sources.

SEC. 24. PRIZE COMPETITIONS.

[15 U.S.C. 3719]

(a) DEFINITIONS.—In this section:

(1) AGENCY.—The term "agency" means a Federal agency.

(2) DIRECTOR.—The term "Director" means the Director of the Office of Science and Technology Policy.

(3) FEDERAL AGENCY.—The term "Federal agency" has the meaning given under section 4, except that term shall not include any agency of the legislative branch of the Federal Government.

(4) HEAD OF AN AGENCY.—The term "head of an agency" means the head of a Federal agency.

(b) IN GENERAL.—Each head of an agency, or the heads of multiple agencies in cooperation, may carry out a program to award prizes competitively to stimulate innovation that has the potential to advance the mission of the respective agency.

(c) [PRIZES] *PRIZE COMPETITIONS*.—For purposes of this section, a [prize may be one or more of the following] *prize competition may be 1 or more of the following types of activities*:

(1) A point solution prize that rewards and spurs the development of solutions for a particular, well-defined problem.

(2) An exposition prize *competition* that helps identify and promote a broad range of ideas and practices that may not otherwise attract attention, facilitating further development of the idea or practice by third parties.

(3) Participation [prizes] *prize competitions* that create value during and after the competition by encouraging contestants to change their behavior or develop new skills that may have beneficial effects during and after the competition.

(4) Such other types of [prizes] *prize competitions* as each head of an agency considers appropriate to stimulate innova-

tion that has the potential to advance the mission of the respective agency.

(d) TOPICS.—In selecting topics for prize competitions, the head of an agency shall consult widely both within and outside the Federal Government, and may empanel advisory committees.

(e) ADVERTISING.—The head of an agency shall widely advertise each prize competition to encourage broad participation.

(f) REQUIREMENTS AND REGISTRATION.—For each prize competition, the head of an agency shall publish a notice [in the Federal Register] *on a publicly accessible Government website, such as www.challenge.gov,* announcing—

(1) the subject of the *prize* competition;

(2) the rules for being eligible to participate in the *prize* competition;

(3) the process for participants to register for the *prize* competition;

(4) the amount of the [prize] *cash prize purse or non-cash prize award*; and

(5) the basis on which a winner will be selected.

(g) ELIGIBILITY.—To be eligible to win a [prize] *cash prize purse* under this section, an individual or entity—

(1) shall have registered to participate in the *prize* competition under any rules promulgated by the head of an agency under subsection (f);

(2) shall have complied with all the requirements under this section;

(3) in the case of a private entity, shall be incorporated in and maintain a primary place of business in the United States, and in the case of an individual, whether participating singly or in a group, shall be a citizen or permanent resident of the United States; and

(4) may not be a Federal entity or Federal employee acting within the scope of their employment.

(h) CONSULTATION WITH FEDERAL EMPLOYEES.—An individual or entity shall not be deemed ineligible under subsection (g) because the individual or entity used Federal facilities or consulted with Federal employees during a *prize* competition if the facilities and employees are made available to all individuals and entities participating in the *prize* competition on an equitable basis.

(i) LIABILITY.—

(1) IN GENERAL.—

(A) DEFINITION.—In this paragraph, the term "related entity" means a contractor or subcontractor at any tier, and a supplier, user, customer, cooperating party, grantee, investigator, or detailee.

(B) LIABILITY.—Registered participants shall be required to agree to assume any and all risks and waive claims against the Federal Government and its related entities, except in the case of willful misconduct, for any injury, death, damage, or loss of property, revenue, or profits, whether direct, indirect, or consequential, arising from their participation in a *prize* competition, whether the injury, death, damage, or loss arises through negligence or otherwise.

(2) INSURANCE.—Participants shall be required to obtain liability insurance or demonstrate financial responsibility, in amounts determined by the head of an agency, for claims by—

(A) a third party for death, bodily injury, or property damage, or loss resulting from an activity carried out in connection with participation in a *prize* competition, with the Federal Government named as an additional insured under the registered participant's insurance policy and registered participants agreeing to indemnify the Federal Government against third party claims for damages arising from or related to *prize* competition activities; and

(B) the Federal Government for damage or loss to Government property resulting from such an activity.

(3) WAIVERS.—

(A) IN GENERAL.—An agency may waive the requirement under paragraph (2).

(B) LIST.—The Director shall include a list of all of the waivers granted under this paragraph during the preceding fiscal year, including a detailed explanation of the reason for granting the waiver.

[(3)**]***(4)* EXCEPTION.—The head of an agency may not require a participant to waive claims against the administering entity arising out of the unauthorized use or disclosure by the agency of the intellectual property, trade secrets, or confidential business information of the participant.

(j) INTELLECTUAL PROPERTY.—

(1) PROHIBITION ON THE GOVERNMENT ACQUIRING INTELLECTUAL PROPERTY RIGHTS.—The Federal Government may not gain an interest in intellectual property developed by a participant in a *prize* competition without the written consent of the participant.

[(2) LICENSES.—The Federal Government may negotiate a license for the use of intellectual property developed by a participant for a competition.**]**

(2) LICENSES.—As appropriate and to further the goals of a prize competition, the Federal Government may—

(A) negotiate a license for the use of intellectual property developed by a registered participant in a prize competition; or

(B) require a registered participant in a prize competition to provide an open license to the public for the use of the intellectual property if that requirement is disclosed prior to registration.

(3) ELECTRONIC CONSENT.—The Federal Government may obtain consent to the intellectual property and licensing terms of a prize competition from participants during the online registration for the prize competition.

(k) JUDGES.—

(1) IN GENERAL.—For **[**each competition**]** *each prize competition*, the head of an agency, either directly or through an agreement under subsection (l), shall appoint one or more qualified judges to select the winner or winners of the prize competition on the basis described under subsection (f). Judges for **[**each competition**]** *each prize competition* may include indi-

viduals from outside the agency, including from the private sector.

(2) RESTRICTIONS.—A judge may not—

(A) have personal or financial interests in, or be an employee, officer, director, or agent of any entity that is a registered participant in a *prize* competition; or

(B) have a familial or financial relationship with an individual who is a registered participant.

(3) GUIDELINES.—The heads of agencies who carry out *prize* competitions under this section shall develop guidelines to ensure that the judges appointed for such *prize* competitions are fairly balanced and operate in a transparent manner.

(4) EXEMPTION FROM FACA.—The Federal Advisory Committee Act (5 U.S.C. App.) shall not apply to any committee, board, commission, panel, task force, or similar entity, created solely for the purpose of judging prize competitions under this section.

(l) ADMINISTERING THE COMPETITION.—The head of an agency may enter into [an agreement with a private, nonprofit entity to administer a prize competition, subject to the provisions of this section.] *a grant, contract, cooperative agreement, or other agreement with a private sector for-profit or nonprofit entity or State or local government agency to administer the prize competition, subject to the provisions of this section.*

(m) FUNDING.—

[(1) IN GENERAL.—Support for a prize competition under this section, including financial support for the design and administration of a prize or funds for a monetary prize purse, may consist of Federal appropriated funds and funds provided by the private sector for such cash prizes. The head of an agency may accept funds from other Federal agencies to support such competitions. The head of an agency may not give any special consideration to any private sector entity in return for a donation.]

(1) IN GENERAL.—Support for a prize competition under this section, including financial support for the design and administration of a prize competition or funds for a cash prize purse, may consist of Federal appropriated funds and funds provided by private sector for-profit and nonprofit entities. The head of an agency may request and accept funds from other Federal agencies, State, United States territory, local, or tribal government agencies, private sector for-profit entities, and nonprofit entities, to be available to the extent provided by appropriations Acts, to support such prize competitions. The head of an agency may not give any special consideration to any agency or entity in return for a donation.

(2) AVAILABILITY OF FUNDS.—Notwithstanding any other provision of law, funds appropriated for [prize awards] *cash prize purses or non-cash prize awards* under this section shall remain available until expended. No provision in this section permits obligation or payment of funds in violation of section 1341 of title 31, United States Code.

(3) AMOUNT OF PRIZE.—

[(A) ANNOUNCEMENT.—No prize may be announced under subsection (f) until all the funds needed to pay out

the announced amount of the prize have been appropriated or committed in writing by a private source.]

(A) ANNOUNCEMENT.—No prize competition may be announced under subsection (f) until all the funds needed to pay out the announced amount of the cash prize purse have been appropriated or committed in writing by a private or State, United States territory, local, or tribal government source.

(B) INCREASE IN AMOUNT.—The head of an agency may increase the amount of [a prize] *a cash prize purse or non-cash prize award* after an initial announcement is made under subsection (f) only if—

(i) notice of the increase is provided in the same manner as the initial notice of the prize *competition*; and

(ii) the funds needed to pay out the announced amount of the increase have been appropriated or committed in writing by a private *o r State, United States territory, local, or tribal government* source.

(4) LIMITATION ON AMOUNT.—

(A) NOTICE TO CONGRESS.—No prize competition under this section may offer [a prize] *a cash prize purse or a non-cash prize award* in an amount greater than $50,000,000 unless 30 days have elapsed after written notice has been transmitted to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on [Science and Technology] *Science, Space, and Technology* of the House of Representatives.

(B) APPROVAL OF HEAD OF AGENCY.—No prize competition under this section may result in the award of more than $1,000,000 in [cash prizes] *cash prize purses or non-cash prize awards* without the approval of the head of an agency.

(n) GENERAL [SERVICE] *SERVICES* ADMINISTRATION ASSISTANCE.—Not later than 180 days after the date of [the enactment of the America COMPETES Reauthorization Act of 2010,] *the date of enactment of the American Innovation and Competitiveness Act,* the General Services Administration shall provide government wide services to share best practices and assist agencies in developing guidelines for issuing prize competitions. The General Services Administration shall develop a contract vehicle *for both for-profit and nonprofit entities and State, United States territory, local, and tribal government entities,* to provide agencies access to relevant products and services, including technical assistance in structuring and conducting prize competitions to take maximum benefit of the marketplace as they identify and pursue prize competitions to further the policy objectives of the Federal Government.

(o) COMPLIANCE WITH EXISTING LAW.—

(1) IN GENERAL.—The Federal Government shall not, by virtue of offering [or providing a prize] *a prize competition or providing a cash prize purse or non-cash prize award* under this section, be responsible for compliance by registered participants in a prize competition with Federal law, including licens-

ing, export control, and nonproliferation laws, and related regulations.

(2) OTHER PRIZE AUTHORITY.—Nothing in this section affects the prize authority authorized by any other provision of law.

(p) [ANNUAL] *BIENNIAL* REPORT.—

(1) IN GENERAL.—Not later than March 1 of [each year] *every other year*, the Director shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on [Science and Technology] *Science, Space, and Technology* of the House of Representatives a report on the activities carried out during the preceding [fiscal year] *2 fiscal years* under the authority in subsection (b).

(2) INFORMATION INCLUDED.—[The report for a fiscal year] *A report* under this subsection shall include, for each prize competition under subsection (b), the following:

(A) PROPOSED GOALS.—A description of the proposed goals of each prize competition.

(B) PREFERABLE METHOD.—An analysis of why the utilization of the authority in subsection (b) was the preferable method of achieving the goals described in subparagraph (A) as opposed to other authorities available to the agency, such as contracts, grants, and cooperative agreements.

(C) AMOUNT OF CASH [PRIZES] *PRIZE PURSES OR NON-CASH PRIZE AWARDS*.—The total amount of [cash prizes] *cash prize purses or non-cash prize awards* awarded for each prize competition, including a description of amount of private funds contributed to the program, the sources of such funds, and the manner in which the amounts of [cash prizes] *cash prize purses or non-cash prize awards* awarded and claimed were allocated among the accounts of the agency for recording as obligations and expenditures.

(D) SOLICITATIONS AND EVALUATION OF SUBMISSIONS.—The methods used for the solicitation and evaluation of submissions under each prize competition, together with an assessment of the effectiveness of such methods and lessons learned for future prize competitions.

(E) RESOURCES.—A description of the resources, including personnel and funding, used in the execution of each prize competition together with a detailed description of the activities for which such resources were used and an accounting of how funding for execution was allocated among the accounts of the agency for recording as obligations and expenditures.

(F) RESULTS.—A description of how each prize competition advanced the mission of the agency concerned.

(G) PLAN.—A description of crosscutting topical areas and agency-specific mission needs that may be the strongest opportunities for prize competitions during the upcoming 2 fiscal years.

SEC. 26. FEDERAL LOAN GUARANTEES FOR INNOVATIVE TECHNOLOGIES IN MANUFACTURING.

[15 U.S.C. 3721]

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(o) COORDINATION AND NONDUPLICATION.—

(1) IN GENERAL.—To the maximum extent practicable, the Secretary shall ensure that the activities carried out under this section are coordinated with, and do not duplicate the efforts of, other loan guarantee programs within the Federal Government.

(2) ACCESS TO CAPITAL.—The Secretary, in coordination with the Small Business Administration and the National Institute of Standards and Technology, shall identify any gaps in the access of small- or medium-sized manufacturers to capital for the use or production of innovative technologies that the program could fill, and develop marketing materials and conduct outreach to target those gaps.

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SEC. 27. REGIONAL INNOVATION PROGRAM.

[15 U.S.C. 3722]

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(g) FUNDING.—

(1) GENERAL RULE.—Except as provided in paragraph (2), no funds are authorized to be appropriated by the Revitalize American Manufacturing and Innovation Act of 2014 for carrying out this section.

[(2) AUTHORITY.—To the extent provided for in advance by appropriations Acts, the Secretary may use not to exceed $10,000,000 for each of the fiscal years 2015 through 2019 to carry out this section from amounts appropriated for economic development assistance programs.**]**

(2) AUTHORIZATION LEVELS.—From amounts appropriated for economic development assistance programs, the Secretary may use $30,000,000 for each of the fiscal years 2017 and 2018 for grants under this section.

SEC. 28. STEM APPRENTICESHIP PROGRAMS.

(a) IN GENERAL.—The Secretary of Commerce may carry out a grant program to identify the need for skilled science, technology, engineering, and mathematics (referred to in this section as "STEM") workers and to expand STEM apprenticeship programs.

(b) ELIGIBLE RECIPIENT DEFINED.—In this section, the term "eligible recipient" means—

(1) a State;

(2) an Indian tribe;

(3) a city or other political subdivision of a State;

(4) an entity that—

(A) is a nonprofit organization, an institution of higher education, a public-private partnership, a science or research park, a Federal laboratory, or an economic development organization or similar entity; and

(B) has an application that is supported by a State, a political subdivision of a State, or a native organization; or

(5) a consortium of any of the entities described in paragraphs (1) through (5).

(c) NEEDS ASSESSMENT GRANTS.—The Secretary of Commerce may provide a grant to an eligible recipient to conduct a needs assessment to identify—

(1) the unmet need of a region's employer base for skilled STEM workers;

(2) the potential of STEM apprenticeships to address the unmet need described in paragraph (1); and

(3) any barriers to addressing the unmet need described in paragraph (1).

(d) APPRENTICESHIP EXPANSION GRANTS.—The Secretary of Commerce may provide a grant to an eligible recipient that has conducted a needs assessment as described in subsection (c)(1) to develop infrastructure to expand STEM apprenticeship programs.

TECHNOLOGY ADMINISTRATION ACT OF 1998

[Public Law 105–309; 112 Stat. 2935]

SEC. 6. ENHANCEMENT OF SCIENCE AND MATHEMATICS PROGRAMS.

[15 U.S.C. 272 note]

(a) DEFINITIONS.—In this section—

(1) EDUCATIONALLY USEFUL FEDERAL EQUIPMENT.—The term "educationally useful Federal equipment" means computers and related peripheral tools and research equipment that is appropriate for use in schools.

(2) SCHOOL.—The term "school" means a public or private educational institution that serves any of the grades of kindergarten through grade 12.

(b) SENSE OF THE CONGRESS.—

[(1) IN GENERAL].—It is the sense of the Congress that the Director of the National Institute of Standards and Technology should, to the greatest extent practicable and in a manner consistent with applicable Federal law (including Executive Order No. 12999), donate educationally useful Federal equipment to schools in order to enhance the science and mathematics programs of those schools.

[(2) REPORTS.—

[(A) IN GENERAL.—Not later than 1 year after the date of the enactment of this Act, and annually thereafter, the Director of the National Institute of Standards and Technology shall prepare and submit to the President a report. The President shall submit the report to Congress at the same time as the President submits a budget request to Congress under section 1105(a) of title 31, United States Code.

[(B) CONTENTS OF REPORT.—The report prepared by the Director under this paragraph shall describe any donations of educationally useful Federal equipment to schools made during the period covered by the report.]

HIGH-PERFORMANCE COMPUTING ACT OF 1991

[15 U.S.C. 5501 et seq.]

SEC. 2. FINDINGS.

[15 U.S.C. 5501]

The Congress finds the following:

(1) Advances in computer science and technology are vital to the Nation's prosperity, national and economic security, industrial production, engineering, and scientific advancement.

(2) The United States currently leads the world in the development and use of [high-performance computing] *networking and information technology, including high-performance computing,* for national security, industrial productivity, science, and engineering, but that lead is being challenged by foreign competitors.

(3) Further research and development, expanded educational programs, improved computer research networks, and more effective technology transfer from government to industry are necessary for the United States to reap fully the benefits of [high-performance computing] *networking and information technology, including high-performance computing*.

(4) A high-capacity, flexible, high-speed national research and education computer network is needed to provide researchers and educators with access to computational and information resources, act as a test bed for further research and development for high-capacity and high-speed computer networks, and provide researchers the necessary vehicle for continued network technology improvement through research.

(5) Several Federal agencies have ongoing [high-performance computing] *networking and information technology, including high-performance computing,* programs, but improved long-term interagency coordination, cooperation, and planning would enhance the effectiveness of these programs.

(6) A 1991 report entitled "Grand Challenges: High-Performance Computing and Communications" by the Office of Science and Technology Policy, outlining a research and development strategy for high-performance computing, provides a framework for a multiagency high-performance computing program. Such a program would provide American researchers and educators with the computer and information resources they need, and demonstrate how advanced computers, high-capacity and high-speed networks, and electronic data bases can improve the national information infrastructure for use by all Americans.

(7) Additional research must be undertaken to lay the foundation for the development of new applications that can result in economic growth, improved health care, and improved educational opportunities.

(8) Research in new networking technologies holds the promise of easing the economic burdens of information access disproportionately borne by rural users of the Internet.

(9) Information security is an important part of computing, information, and communications systems and applications, and research into security architectures is a critical aspect of computing, information, and communications research programs.

SEC. 3. PURPOSES.

[15 U.S.C. 5502]

The purposes of this Act are to help ensure the continued leadership of the United States in [high-performance computing] *networking and information technology* and its applications by—

(1) expanding Federal support for research, development, and application of [high-performance computing] *networking and information technology* in order to—

(A) expand the number of researchers, educators, and students with training in [high-performance computing] *networking and information technology* and access to [high-performance computing] *networking and information technology* resources;

(B) promote the further development of an information infrastructure of data bases, services, access mechanisms, and research facilities available for use through the Internet;

(C) stimulate research on software technology;

(D) promote the more rapid development and wider distribution of computing software tools and applications software;

(E) accelerate the development of computing systems and subsystems;

(F) provide for the application of [high-performance computing] *networking and information technology* to Grand Challenges;

(G) invest in basic research and education, and promote the inclusion of [high-performance computing] *netw orking and information technology* into educational institutions at all levels; and

(H) promote greater collaboration among government, Federal laboratories, industry, high-performance computing centers, and universities;

(2) improving the interagency planning and coordination of Federal research and development on [high-performance computing and] *networking and information technology and* maximizing the effectiveness of the Federal Government's [high-performance computing network] *networking and information technology* research and development programs;

(3) promoting the more rapid development and wider distribution of networking management and development tools; and

(4) promoting the rapid adoption of open network standards.

SEC. 4. DEFINITIONS.

[15 U.S.C. 5503]

As used in this Act, the term—

(1) "Director" means the Director of the Office of Science and Technology Policy;

(2) "Grand Challenge" means a fundamental problem in science or engineering, with broad economic and scientific impact, whose solution will require the application of [high-performance computing] *networking and information technology* resources and multidisciplinary teams of researchers;

[(4)] *(3)* "Internet" means the international computer network of both Federal and non-Federal interoperable data networks;

[(3)] *(4)* "[high-performance computing] *networking and information technology*" means advanced computing, communications, and information technologies, including supercomputer systems, high-capacity and high-speed networks, special purpose and experimental systems, applications and systems software, and the management of large data sets;

[(5) "Network" means a computer network referred to as the National Research and Education Network established under section 102;]

[(6)]*(5)* "Program" means the [National High-Performance Computing] *Networking and Information Technology Research and Development* Program described in section 101; and

[(7)]*(6)* "Program Component Areas" means the major subject areas under which related individual projects and activities carried out under the Program are grouped.

SEC. 101. [NATIONAL HIGH-PERFORMANCE COMPUTING] *NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT* PROGRAM.

[15 U.S.C. 5511]

(a) [NATIONAL HIGH-PERFORMANCE COMPUTING] *NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT* PROGRAM.—

(1) *IN GENERAL*.—The President shall implement a [National High-Performance Computing] *Networking and Information Technology and Development* Program, which shall—

(A) provide for long-term basic and applied research on [high-performance computing, including networking] *networking and information technology*;

(B) provide for research and development on, and demonstration of, technologies to advance the capacity and capabilities of [high-performance computing] *high-end computing, including high-performance computing,* and networking systems, and related software;

(C) provide for sustained access by the research community throughout the United States to [high-performance computing] *high-end computing, including high-performance computing,* and networking systems that are among the most advanced in the world in terms of performance in solving scientific and engineering problems, including provision for technical support for users of such systems;

(D) provide for widely dispersed efforts to increase software availability, productivity, capability, security, portability, and reliability;

(E) provide for high-performance networks, including experimental testbed networks, to enable research and development on, and demonstration of, advanced applications enabled by such networks;

(F) provide for computational science and engineering research on mathematical modeling and algorithms for applications in all fields of science and engineering;

(G) provide for the technical support of, and research and development on, [high-performance computing] *networking and information technology, including high-performance computing,* systems and software required to address Grand Challenges;

(H) provide for educating and training additional undergraduate and graduate students in software engineering, computer science, computer and network security, applied mathematics, library and information science, and computational science; [and]

(I) provide for improving the security of computing and networking systems, including Federal systems, including providing for research required to establish security standards and practices for these systems[.]*;*

(J) provide for research on the interplay of computing and people, including social computing and human-robot interaction;

(K) provide for research on cyber-physical systems and improving the methods available for the design, development, and operation of those systems that are characterized by high reliability, safety, and security;

(L) provide for the understanding of the science, engineering, policy, and privacy protection related to networking and information technology;

(M) provide for the understanding of the human facets of cyber threats and secure cyber systems;

(N) provide for the transition of high-performance computing in hardware, system software, development tools, and applications into development and operations; and

(O) foster public-private collaboration with government, industry research laboratories, academia, and nonprofit organizations to maximize research and development efforts and the benefits of networking and information technology, including high-performance computing.

(2) *REQUIREMENTS*.—The Director shall—

(A) establish the goals and priorities for Federal [high-performance computing research, development, networking] *networking and information technology research and development*, and other activities;

(B) establish Program Component Areas that implement the goals established under subparagraph (A), and identify the Grand Challenges that the Program should address;

[(C) provide for interagency coordination of Federal high-performance computing research, development, networking, and other activities undertaken pursuant to the Program;]

(C) provide for the coordination of Federal networking and information technology research, development, networking, and other activities—

(i) among the applicable agencies and departments under the Program; and

(ii) to the extent practicable, with other Federal agencies not identified in subsection (a)(3)(B), other Federal and private research laboratories, industry, research entities, universities, institutions of higher education, relevant nonprofit organizations, and international partners of the United States;

(D) submit to the Congress an annual report, along with the President's annual budget request, describing the implementation of the Program;

(E) develop and maintain a research, development, and deployment roadmap covering all States and regions for the provision of [high-performance computing and networking systems] *high-end computing and networking systems* under paragraph (1)(C); and

(F) consult with academic, State, industry, and other appropriate groups conducting research on and using [high-performance computing] *high-end, including high-performance, computing*.

(3) *CONTENTS OF ANNUAL REPORTS*.—The annual report submitted under paragraph (2)(D) shall—

(A) provide a detailed description of the Program Component Areas, including a description of any changes in the definition of or activities under the Program Component Areas from the preceding report, and the reasons for such changes, and a description of Grand Challenges addressed under the Program;

(B) set forth the relevant programs and activities, for the fiscal year with respect to which the budget submission applies, of each Federal agency and department, including—

[(i) the Department of Agriculture;

[(ii) the Department of Commerce;

[(iii) the Department of Defense;

[(iv) the Department of Education;

[(v) the Department of Energy;

[(vi) the Department of Health and Human Services;

[(vii) the Department of the Interior;

[(viii) the Environmental Protection Agency;

[(ix) the National Aeronautics and Space Administration;

[(x) the National Science Foundation; and

[(xi) such other agencies and departments as the President or the Director considers appropriate;]

(i) the Department of Commerce;

(ii) the Department of Defense;

(iii) the Department of Education;

(iv) the Department of Energy;

(v) the Department of Health and Human Services;

(vi) the Department of Homeland Security;

(vii) the Department of Justice;

(viii) the Environmental Protection Agency;

(ix) the National Aeronautics and Space Administration;

(x) the National Archives and Records Administration;

(xi) the National Science Foundation; and

(xii) such other agencies and departments as the President or the Director considers appropriate;

(C) describe the levels of Federal funding for the fiscal year during which such report [is submitted,] *is submitted, the levels for the previous fiscal year,* and the levels proposed for the fiscal year with respect to which the budget submission applies, for each Program Component Area;

(D) describe the levels of Federal funding for each agency and department participating in the Program, and for each Program Component Area, for the fiscal year during which such report [is submitted,] *is submitted, the levels for the previous fiscal year,* and the levels proposed for the

fiscal year with respect to which the budget submission applies; [and]

(E) include a description of how the objectives for each Program Component Area, and the objectives for activities that involve multiple Program Component Areas, relate to the objectives of the Program identified in the strategic plan under subsection (e);

[(E)]*(F)* include an analysis of the progress made toward achieving the goals and priorities established for the Program and the extent to which the Program incorporates the recommendations of the advisory committee established under subsection (b).

(b) ADVISORY COMMITTEE.—

(1) *ADVISORY COMMITTEE*.—The President shall establish an advisory committee on [high-performance computing] *networking and information technology*, consisting of geographically dispersed non-Federal members, including representatives of the research, education, and library communities, network and related software providers, and industry representatives in the Program Component Areas, who are specially qualified to provide the Director with advice and information on [high-performance computing] *networking and information technology*. The recommendations of the advisory committee shall be considered in reviewing and revising the Program. The advisory committee shall provide the Director with an independent assessment of—

(A) progress made in implementing the Program;

(B) the need to revise the Program;

(C) the balance between the components of the Program, including funding levels for the Program Component Areas;

(D) whether the research and development undertaken pursuant to the Program is helping to maintain United States leadership in high-performance computing, networking technology, and related software; and

(E) other issues identified by the Director.

(2) *ADDITIONAL DUTIES*.—In addition to the duties outlined in paragraph (1), the advisory committee shall conduct periodic evaluations of the funding, management, coordination, implementation, and activities of the Program. The advisory committee shall report not less frequently than once every 2 fiscal years to the [Committee on Science and Technology] *Committee on Science, Space, and Technology* of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on its findings and recommendations. The first report shall be due within 1 year after the date of enactment of the America COMPETES Act.

(3) *FACA*.—Section 14 of the Federal Advisory Committee Act shall not apply to the advisory committee established under this subsection.

(c) OFFICE OF MANAGEMENT AND BUDGET.—

(1) *REPORTS*.—Each Federal agency and department participating in the Program shall, as part of its annual request for appropriations to the Office of Management and Budget, submit a report to the Office of Management and Budget which—

(A) identifies each element of its [high-performance computing] *networking and information technology* activities which contributes directly to the Program Component Areas or benefits from the Program; and

(B) states the portion of its request for appropriations that is allocated to each such element.

(2) *OMB REVIEW.*—The Office of Management and Budget shall review each such report in light of the goals, priorities, and agency and departmental responsibilities set forth in the annual report submitted under subsection (a)(2)(D), and shall include, in the President's annual budget estimate, a statement of the portion of each appropriate agency's or department's annual budget estimate relating to its activities undertaken pursuant to the Program.

(d) PERIODIC REVIEWS.—The heads of the applicable agencies and departments working through the National Science and Technology Council and the Networking and Information Technology Research and Development Program shall—

(1) not later than 1 year after the date the advisory committee submits a report under subsection (b)(2), assess the structure of the Program, including the Program Component Areas and associated contents and funding levels, taking into consideration any relevant recommendations of the advisory committee; and

(2) ensure that the Program includes foundational and interdisciplinary information technology research and development activities.

(e) STRATEGIC PLANS.—

(1) IN GENERAL.—The heads of the applicable agencies and departments, working through the National Science and Technology Council and the Networking and Information Technology Research and Development Program shall develop and implement strategic plans to guide emerging activities in specific Program Component Areas, as the advisory committee determines relevant under subsection (b), of Federal networking and information technology research and development, and to guide the activities described in subsection (a)(1).

(2) UPDATES.—The heads of the applicable agencies and departments shall update the strategic plans as appropriate.

(3) CONTENTS.—Each strategic plan shall—

(A) specify near-term and long-term objectives for the Program, the anticipated schedule for achieving the near-term and long-term objectives, and the metrics to be used for assessing progress toward the near-term and long-term objectives;

(B) specify how the near-term and long-term objectives complement research and development areas in which academia and the private sector is actively engaged;

(C) describe how the heads of the applicable agencies and departments will support mechanisms for foundational and interdisciplinary research and development in networking and information technology, including through collaborations—

(i) across Federal agencies and departments;

(ii) across Program Component Areas; and

(iii) with industry, Federal and private research laboratories, research entities, universities, institutions of higher education, relevant nonprofit organizations, and international partners of the United States;

(D) describe how the heads of the applicable agencies and departments will foster the rapid transfer of research and development results into new technologies and applications;

(E) describe how the Program will address long-term challenges for which solutions require large-scale, long-term, foundational and interdisciplinary research and development; and

(F) place emphasis on innovative and high-risk projects having the potential for substantial societal returns on the research investment.

(4) PRIVATE SECTOR EFFORTS.—In developing, implementing, and updating strategic plans, the heads of the applicable agencies and departments, working through the National Science and Technology Council and Networking and Information Technology Research and Development Program, shall coordinate with industry, academia, and other interested stakeholders to ensure, to the extent practicable, that the Federal networking and information technology research and development activities carried out under this section do not duplicate the efforts of the private sector.

(5) RECOMMENDATIONS.—In developing and updating strategic plans, the heads of the applicable agencies and departments shall solicit recommendations and advice from—

(A) the advisory committee under subsection (b); and

(B) a wide range of stakeholders, including industry, academia, including representatives of minority serving institutions and community colleges, National Laboratories, and other relevant organizations and institutions.

(f) REPORTS.—The heads of the applicable agencies and departments, working through the National Science and Technology Council and the Networking and Information Technology Research and Development Program, shall submit to the advisory committee, the Committee on Commerce, Science, and Transportation of the Senate, and the Committee on Science, Space, and Technology of the House of Representatives—

(1) the strategic plans developed under subsection (e)(1); and

(2) each update under subsection (e)(2).

(g) DEFINITION OF APPLICABLE AGENCIES AND DEPARTMENTS.—In this section, the term "applicable agencies and departments" means the Federal agencies and departments identified in subsection (a)(3)(B) or designated under clause (xii) of that subsection.

[SEC. 102. NATIONAL RESEARCH AND EDUCATION NETWORK.

[15 U.S.C. 5512]

[(a) ESTABLISHMENT.—As part of the Program, the National Science Foundation, the Department of Defense, the Department of Energy, the Department of Commerce, the National Aeronautics and Space Administration, and other agencies participating in the Program shall support the establishment of the National Research and Education Network, portions of which shall, to the extent technically feasible, be capable of transmitting data at one gigabit per second or greater by 1996. The Network shall provide for the link-

age of research institutions and educational institutions, government, and industry in every State.

[(b) ACCESS.—Federal agencies and departments shall work with private network service providers, State and local agencies, libraries, educational institutions and organizations, and others, as appropriate, in order to ensure that the researchers, educators, and students have access, as appropriate, to the Network. The Network is to provide users with appropriate access to high-performance computing systems, electronic information resources, other research facilities, and libraries. The Network shall provide access, to the extent practicable, to electronic information resources maintained by libraries, research facilities, publishers, and affiliated organizations.

[(c) NETWORK CHARACTERISTICS.—The Network shall—

[(1) be developed and deployed with the computer, telecommunications, and information industries;

[(2) be designed, developed, and operated in collaboration with potential users in government, industry, and research institutions and educational institutions;

[(3) be designed, developed, and operated in a manner which fosters and maintains competition and private sector investment in high-speed data networking within the telecommunications industry;

[(4) be designed, developed, and operated in a manner which promotes research and development leading to development of commercial data communications and telecommunications standards, whose development will encourage the establishment of privately operated high-speed commercial networks;

[(5) be designed and operated so as to ensure the continued application of laws that provide network and information resources security measures, including those that protect copyright and other intellectual property rights, and those that control access to data bases and protect national security;

[(6) have accounting mechanisms which allow users or groups of users to be charged for their usage of copyrighted materials available over the Network and, where appropriate and technically feasible, for their usage of the Network;

[(7) ensure the interoperability of Federal and non-Federal computer networks, to the extent appropriate, in a way that allows autonomy for each component network;

[(8) be developed by purchasing standard commercial transmission and network services from vendors whenever feasible, and by contracting for customized services when not feasible, in order to minimize Federal investment in network hardware;

[(9) support research and development of networking software and hardware; and

[(10) serve as a test bed for further research and development of high-capacity and high-speed computing networks and demonstrate how advanced computers, high-capacity and high-speed computing networks, and data bases can improve the national information infrastructure.

[(d) DEFENSE ADVANCED RESEARCH PROJECTS AGENCY RESPONSIBILITY.—As part of the Program, the Department of Defense, through the Defense Advanced Research Projects Agency, shall

support research and development of advanced fiber optics technology, switches, and protocols needed to develop the Network.

[(e) INFORMATION SERVICES.—The Director shall assist the President in coordinating the activities of appropriate agencies and departments to promote the development of information services that could be provided over the Network. These services may include the provision of directories of the users and services on computer networks, data bases of unclassified Federal scientific data, training of users of data bases and computer networks, access to commercial information services for users of the Network, and technology to support computer-based collaboration that allows researchers and educators around the Nation to share information and instrumentation.

[(f) USE OF GRANT FUNDS.—All Federal agencies and departments are authorized to allow recipients of Federal research grants to use grant moneys to pay for computer networking expenses.

[(g) REPORT TO CONGRESS.—Within one year after the date of enactment of this Act, the Director shall report to the Congress on—

[(1) effective mechanisms for providing operating funds for the maintenance and use of the Network, including user fees, industry support, and continued Federal investment;

[(2) the future operation and evolution of the Network;

[(3) how commercial information service providers could be charged for access to the Network, and how Network users could be charged for such commercial information services;

[(4) the technological feasibility of allowing commercial information service providers to use the Network and other Federally funded research networks;

[(5) how to protect the copyrights of material distributed over the Network; and

[(6) appropriate policies to ensure the security of resources available on the Network and to protect the privacy of users of networks.]

[SEC. 103. NEXT GENERATION INTERNET.

[15 U.S.C. 5513]

[(a) ESTABLISHMENT.—The National Science Foundation, the Department of Energy, the National Institutes of Health, the National Aeronautics and Space Administration, and the National Institute of Standards and Technology may support the Next Generation Internet program. The objectives of the Next Generation Internet program shall be to—

[(1) support research, development, and demonstration of advanced networking technologies to increase the capabilities and improve the performance of the Internet;

[(2) develop an advanced testbed network connecting a significant number of research sites, including universities, Federal research institutions, and other appropriate research partner institutions, to support networking research and to demonstrate new networking technologies; and

[(3) develop and demonstrate advanced Internet applications that meet important national goals or agency mission needs, and that are supported by the activities described in paragraphs (1) and (2).

[(b) DUTIES OF ADVISORY COMMITTEE.—The President's Information Technology Advisory Committee (established pursuant to sec-

tion 101(b) by Executive Order No. 13035 of February 11, 1997 (62 F.R. 7131), as amended by Executive Order No. 13092 of July 24, 1998), in addition to its functions under section 101(b), shall—

[(1) assess the extent to which the Next Generation Internet program—

[(A) carries out the purposes of this Act; and

[(B) addresses concerns relating to, among other matters—

[(i) geographic penalties (as defined in section 7(1) of the Next Generation Internet Research Act of 1998);

[(ii) the adequacy of access to the Internet by Historically Black Colleges and Universities, Hispanic Serving Institutions, and small colleges and universities (whose enrollment is less than 5,000) and the degree of participation of those institutions in activities described in subsection (a); and

[(iii) technology transfer to and from the private sector;

[(2) review the extent to which the role of each Federal agency and department involved in implementing the Next Generation Internet program is clear and complementary to, and non-duplicative of, the roles of other participating agencies and departments;

[(3) assess the extent to which Federal support of fundamental research in computing is sufficient to maintain the Nation's critical leadership in this field; and

[(4) make recommendations relating to its findings under paragraphs (1), (2), and (3).

[(c) REPORTS.—The Advisory Committee shall review implementation of the Next Generation Internet program and shall report, not less frequently than annually, to the President, the Committee on Commerce, Science, and Transportation, the Committee on Appropriations, and the Committee on Armed Services of the Senate, and the Committee on Science, the Committee on Appropriations, and the Committee on Armed Services of the House of Representatives on its findings and recommendations for the preceding fiscal year. The first such report shall be submitted 6 months after the date of the enactment of the Next Generation Internet Research Act of 1998 and the last report shall be submitted by September 30, 2000.

[(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated for the purposes of this section—

[(1) for the Department of Energy, $22,000,000 for fiscal year 1999 and $25,000,000 for fiscal year 2000;

[(2) for the National Science Foundation, $25,000,000 for fiscal year 1999 and $25,000,000 for fiscal year 2000, as authorized in the National Science Foundation Authorization Act of 1998;

[(3) for the National Institutes of Health, $5,000,000 for fiscal year 1999 and $7,500,000 for fiscal year 2000;

[(4) for the National Aeronautics and Space Administration, $10,000,000 for fiscal year 1999 and $10,000,000 for fiscal year 2000; and

[(5) for the National Institute of Standards and Technology, $5,000,000 for fiscal year 1999 and $7,500,000 for fiscal year 2000.

[Such funds may not be used for routine upgrades to existing Federally funded communication networks.]

SEC. 201. NATIONAL SCIENCE FOUNDATION ACTIVITIES.

[15 U.S.C. 5521]

(a) GENERAL RESPONSIBILITIES.—As part of the Program described in title I—

(1) the National Science Foundation shall provide computing and networking infrastructure support for all science and engineering disciplines, and support basic research and human resource development in all aspects of [high-performance computing and advanced high-speed computer networking] *networking and information technology*;

(2) to the extent that colleges, universities, and libraries cannot connect to the Network with the assistance of the private sector, the National Science Foundation shall have primary responsibility for assisting colleges, universities, and libraries to connect to the Network;

(3) the National Science Foundation shall serve as the primary source of information on access to and use of the Network; and

(4) the National Science Foundation shall upgrade the National Science Foundation funded network, assist regional networks to upgrade their capabilities, and provide other Federal departments and agencies the opportunity to connect to the National Science Foundation funded network.

(b) AUTHORIZATION OF APPROPRIATIONS.—From sums otherwise authorized to be appropriated, there are authorized to be appropriated to the National Science Foundation for the purposes of the Program $213,000,000 for fiscal year 1992; $262,000,000 for fiscal year 1993; $305,000,000 for fiscal year 1994; $354,000,000 for fiscal year 1995; and $413,000,000 for fiscal year 1996.

SEC. 202. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ACTIVITIES.

[15 U.S.C. 5522]

(a) GENERAL RESPONSIBILITIES.—As part of the Program described in title I, the National Aeronautics and Space Administration shall conduct basic and applied research in [high-performance computing] *networking and information technology*, particularly in the field of computational science, with emphasis on aerospace sciences, earth and space sciences, and remote exploration and experimentation.

(b) AUTHORIZATION OF APPROPRIATIONS.—From sums otherwise authorized to be appropriated, there are authorized to be appropriated to the National Aeronautics and Space Administration for the purposes of the Program $72,000,000 for fiscal year 1992; $107,000,000 for fiscal year 1993; $134,000,000 for fiscal year 1994; $151,000,000 for fiscal year 1995; and $145,000,000 for fiscal year 1996.

SEC. 203. DEPARTMENT OF ENERGY ACTIVITIES.

[15 U.S.C. 5523]

(a) GENERAL RESPONSIBILITIES.—As part of the Program described in title I, the Secretary of Energy shall—

(1) conduct and support basic and applied research in [high-performance computing and networking] *networking and information technology* to support fundamental research in science and engineering disciplines related to energy applications; and

(2) provide computing and networking infrastructure support, including—

(A) the provision of [high-performance computing systems] *high end, including high performance, computing systems* that are among the most advanced in the world in terms of performance in solving scientific and engineering problems; and

(B) support for advanced software and applications development for science and engineering disciplines related to energy applications.

(b) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary of Energy such sums as are necessary to carry out this section.

SEC. 204. DEPARTMENT OF COMMERCE ACTIVITIES.

[15 U.S.C. 5524]

(a) GENERAL RESPONSIBILITIES.—As part of the Program described in title I—

(1) the National Institute of Standards and Technology shall—

(A) conduct basic and applied measurement research needed to support various [high-performance computing systems and networks] *networking and information technology systems*;

(B) develop and propose standards and guidelines, and develop measurement techniques and test methods, for the interoperability of [high-performance computing systems in networks] *networking and information technology systems* and for common user interfaces to systems; and

(C) be responsible for developing benchmark tests and standards for [high-performance computing systems] *networking and information technology* and software; and

(2) the National Oceanic and Atmospheric Administration shall conduct basic and applied research in weather prediction and ocean sciences, particularly in development of new forecast models, in computational fluid dynamics, and in the incorporation of evolving computer architectures and networks into the systems that carry out agency missions.

(b) [HIGH-PERFORMANCE COMPUTING AND NETWORK] *NETWORK AND INFORMATION TECHNOLOGY* SECURITY.—Pursuant to the Computer Security Act of 1987 (Public Law 100–235; 101 Stat. 1724), the National Institute of Standards and Technology shall be responsible for developing and proposing standards and guidelines needed to assure the cost-effective security and privacy of [sensitive information in Federal computer systems] *agency information and information systems*.

(c) STUDY OF IMPACT OF FEDERAL PROCUREMENT REGULATIONS.—

(1) The Secretary of Commerce shall conduct a study to—

(A) evaluate the impact of Federal procurement regulations that require that contractors providing software to the Federal Government share the rights to proprietary software development tools that the contractors use to develop the software; and

(B) determine whether such regulations discourage development of improved software development tools and techniques.

(2) The Secretary of Commerce shall, within one year after the date of enactment of this Act, report to the Congress regarding the results of the study conducted under paragraph (1).

(d) AUTHORIZATION OF APPROPRIATIONS.—From sums otherwise authorized to be appropriated, there are authorized to be appropriated—

(1) to the National Institute of Standards and Technology for the purposes of the Program $3,000,000 for fiscal year 1992; $4,000,000 for fiscal year 1993; $5,000,000 for fiscal year 1994; $6,000,000 for fiscal year 1995; and $7,000,000 for fiscal year 1996; and

(2) to the National Oceanic and Atmospheric Administration for the purposes of the Program $2,500,000 for fiscal year 1992; $3,000,000 for fiscal year 1993; $3,500,000 for fiscal year 1994; $4,000,000 for fiscal year 1995; and $4,500,000 for fiscal year 1996.

SEC. 207. MISCELLANEOUS PROVISIONS.

[15 U.S.C. 5527]

(a) NONAPPLICABILITY.—Except to the extent the appropriate Federal agency or department head determines, the provisions of this Act shall not apply to—

(1) programs or activities regarding computer systems that process classified information; or

(2) computer systems the function, operation, or use of which are those delineated in paragraphs (1) through (5) of [section 2315(a) of title 10] *section 3552(b)(6)(A) of title 44*, United States Code.

(b) ACQUISITION OF PROTOTYPE AND EARLY PRODUCTION MODELS.—In accordance with Federal contracting law, Federal agencies and departments participating in the Program may acquire prototype or early production models of new [high-performance computing systems] *networking and information technology* and subsystems to stimulate hardware and software development. Items of computing equipment acquired under this subsection shall be considered research computers for purposes of applicable acquisition regulations.

[SEC. 208. FOSTERING UNITED STATES COMPETITIVENESS IN HIGH-PERFORMANCE COMPUTING AND RELATED ACTIVITIES.

[15 U.S.C. 5528]

[(a) FINDINGS.—The Congress finds the following:

[(1) High-performance computing and associated technologies are critical to the United States economy.

[(2) While the United States has led the development of high-performance computing, United States industry is facing increasing global competition.

[(3) Despite existing international agreements on fair competition and nondiscrimination in government procurements, there is increasing concern that such agreements are not being honored, that more aggressive enforcement of such agreements is needed, and that additional steps may be required to ensure fair global competition, particularly in high-technology fields such as high-performance computing and associated technologies.

[(4) It is appropriate for Federal agencies and departments to use the funds authorized for the Program in a manner which most effectively fosters the maintenance and development of United States leadership in high-performance computers and associated technologies in and for the benefit of the United States.

[(5) It is appropriate for Federal agencies and departments to use the funds authorized for the Program in a manner, consistent with the Trade Agreements Act of 1979 (19 U.S.C. 2501 et seq.), which most effectively fosters reciprocal competitive procurement treatment by foreign governments for United States high-performance computing and associated technology products and suppliers.

[(b) ANNUAL REPORT.—

[(1) REPORT.—The Director shall submit an annual report to Congress that identifies—

[(A) any grant, contract, cooperative agreement, or cooperative research and development agreement (as defined under section 12(d)(1) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710a(d)(1)) made or entered into by any Federal agency or department for research and development under the Program with—

[(i) any company other than a company that is either incorporated or located in the United States, and that has majority ownership by individuals who are citizens of the United States; or

[(ii) any educational institution or nonprofit institution located outside the United States; and

[(B) any procurement exceeding $1,000,000 by any Federal agency or department under the Program for—

[(i) unmanufactured articles, materials, or supplies mined or produced outside the United States; or

[(ii) manufactured articles, materials, or supplies other than those manufactured in the United States substantially all from articles, materials, or supplies mined, produced, or manufactured in the United States,

[under the meaning of title III of the Act of March 3, 1933 (41 U.S.C. 10a-10d; popularly known as the Buy American Act) as amended by the Buy American Act of 1988.

[(2) CONSOLIDATION OF REPORTS.—The report required by this subsection may be included with the report required by section 101(a)(3)(A).

[(c) APPLICATION OF BUY AMERICAN ACT.—This Act does not affect the applicability of title III of the Act of March 3, 1933 (41 U.S.C. 10a-10d; popularly known as the Buy American Act), as amended by the Buy American Act of 1988, to procurements by

Federal agencies and departments undertaken as a part of the Program.]

CYBER SECURITY RESEARCH AND DEVELOPMENT ACT

[15 U.S.C. 7401 et seq.]

SEC. 4. NATIONAL SCIENCE FOUNDATION RESEARCH.

[15 U.S.C. 7403]

(a) COMPUTER AND NETWORK SECURITY RESEARCH GRANTS.—

(1) IN GENERAL.—The Director shall award grants for basic research on innovative approaches to the structure of computer and network hardware and software that are aimed at enhancing computer security. Research areas may include—

(A) authentication, cryptography, and other secure data communications technology;

(B) computer forensics and intrusion detection;

(C) reliability of computer and network applications, middleware, operating systems, control systems, and communications infrastructure;

(D) privacy and confidentiality;

(E) network security architecture, including tools for security administration and analysis;

(F) emerging threats;

(G) vulnerability assessments and techniques for quantifying risk;

(H) remote access and wireless security;

(I) enhancement of law enforcement ability to detect, investigate, and prosecute cyber-crimes, including those that involve piracy of intellectual property;

(J) secure fundamental protocols that are integral to inter-network communications and data exchange;

(K) secure software engineering and software assurance, including—

(i) programming languages and systems that include fundamental security features;

(ii) portable or reusable code that remains secure when deployed in various environments;

(iii) verification and validation technologies to ensure that requirements and specifications have been implemented; and

(iv) models for comparison and metrics to assure that required standards have been met;

(L) holistic system security that—

(i) addresses the building of secure systems from trusted and untrusted components;

(ii) proactively reduces vulnerabilities;

(iii) addresses insider threats; and

(iv) supports privacy in conjunction with improved security;

(M) monitoring and detection;

(N) mitigation and rapid recovery methods;

(O) security of wireless networks and mobile devices; [and]

(P) security of cloud infrastructure and services[.]*;*

(Q) security of election-dedicated voting system software and hardware; and

(R) role of the human factor in cybersecurity and the interplay of computers and humans and the physical world.

(2) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this section on a merit-reviewed competitive basis.

(3) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Science Foundation to carry out this subsection—

(A) $35,000,000 for fiscal year 2003;

(B) $40,000,000 for fiscal year 2004;

(C) $46,000,000 for fiscal year 2005;

(D) $52,000,000 for fiscal year 2006; and

(E) $60,000,000 for fiscal year 2007.

(b) COMPUTER AND NETWORK SECURITY RESEARCH CENTERS.—

(1) IN GENERAL.—The Director shall award multiyear grants, subject to the availability of appropriations, to institutions of higher education, nonprofit research institutions, or consortia thereof to establish multidisciplinary Centers for Computer and Network Security Research. Institutions of higher education, nonprofit research institutions, or consortia thereof receiving such grants may partner with 1 or more government laboratories or for-profit institutions, or other institutions of higher education or nonprofit research institutions.

(2) MERIT REVIEW; COMPETITION.—Grants shall be awarded under this subsection on a merit-reviewed competitive basis.

(3) PURPOSE.—The purpose of the Centers shall be to generate innovative approaches to computer and network security by conducting cutting-edge, multidisciplinary research in computer and network security, including improving the security and resiliency of information technology, reducing cyber vulnerabilities, and anticipating and mitigating consequences of cyber attacks on critical infrastructure, by conducting research in the areas described in subsection (a)(1).

(4) APPLICATIONS.—An institution of higher education, nonprofit research institution, or consortia thereof seeking funding under this subsection shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require. The application shall include, at a minimum, a description of—

(A) the research projects that will be undertaken by the Center and the contributions of each of the participating entities;

(B) how the Center will promote active collaboration among scientists and engineers from different disciplines, such as computer scientists, engineers, mathematicians, and social science researchers;

(C) how the Center will contribute to increasing the number and quality of computer and network security researchers and other professionals, including individuals from groups historically underrepresented in these fields; and

(D) how the Center will disseminate research results quickly and widely to improve cyber security in information technology networks, products, and services.

(5) Criteria. In evaluating the applications submitted under paragraph (4), the Director shall consider, at a minimum—

(A) the ability of the applicant to generate innovative approaches to computer and network security and effectively carry out the research program;

(B) the experience of the applicant in conducting research on computer and network security and the capacity of the applicant to foster new multidisciplinary collaborations;

(C) the capacity of the applicant to attract and provide adequate support for a diverse group of undergraduate and graduate students and postdoctoral fellows to pursue computer and network security research;

(D) the extent to which the applicant will partner with government laboratories, for-profit entities, other institutions of higher education, or nonprofit research institutions, and the role the partners will play in the research undertaken by the Center;

(E) the demonstrated capability of the applicant to conduct high performance computation integral to complex computer and network security research, through on-site or off-site computing;

(F) the applicant's affiliation with private sector entities involved with industrial research described in subsection (a)(1);

(G) the capability of the applicant to conduct research in a secure environment;

(H) the applicant's affiliation with existing research programs of the Federal Government;

(I) the applicant's experience managing public-private partnerships to transition new technologies into a commercial setting or the government user community;

(J) the capability of the applicant to conduct interdisciplinary cybersecurity research, basic and applied, such as in law, economics, or behavioral sciences; and

(K) the capability of the applicant to conduct research in areas such as systems security, wireless security, networking and protocols, formal methods and [high-performance computing] *networking and information technology*, nanotechnology, or industrial control systems.

(6) ANNUAL MEETING.—The Director shall convene an annual meeting of the Centers in order to foster collaboration and communication between Center participants.

(7) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated for the National Science Foundation to carry out this subsection—

(A) $12,000,000 for fiscal year 2003;

(B) $24,000,000 for fiscal year 2004;

(C) $36,000,000 for fiscal year 2005;

(D) $36,000,000 for fiscal year 2006; and

(E) $36,000,000 for fiscal year 2007.

[15 U.S.C. 7421 et seq.]

SEC. 7431. FEDERAL CYBERSECURITY RESEARCH AND DEVELOPMENT.

[15 U.S.C. 7431]

(a) FUNDAMENTAL CYBERSECURITY RESEARCH.—

(1) FEDERAL CYBERSECURITY RESEARCH AND DEVELOPMENT STRATEGIC PLAN.—The heads of the applicable agencies and departments, working through the National Science and Technology Council and the Networking and Information Technology Research and Development Program, shall develop and update every 4 years a Federal cybersecurity research and development strategic plan (referred to in this subsection as the "strategic plan") based on an assessment of cybersecurity risk to guide the overall direction of Federal cybersecurity and information assurance research and development for information technology and networking systems. The heads of the applicable agencies and departments shall build upon existing programs and plans to develop the strategic plan to meet objectives in cybersecurity, such as—

(A) how to design and build complex software-intensive systems that are secure and reliable when first deployed;

(B) how to test and verify that software and hardware, whether developed locally or obtained from a third party, is free of significant known security flaws;

(C) how to test and verify that software and hardware obtained from a third party correctly implements stated functionality, and only that functionality;

(D) how to guarantee the privacy of an individual, including that individual's identity, information, and lawful transactions when stored in distributed systems or transmitted over networks;

(E) how to build new protocols to enable the Internet to have robust security as one of the key capabilities of the Internet;

(F) how to determine the origin of a message transmitted over the Internet;

(G) how to support privacy in conjunction with improved security;

(H) how to address the problem of insider threats;

(I) how improved consumer education and digital literacy initiatives can address human factors that contribute to cybersecurity;

(J) how to protect information processed, transmitted, or stored using cloud computing or transmitted through wireless services; and

(K) any additional objectives the heads of the applicable agencies and departments, in coordination with the head of any relevant Federal agency and with input from stakeholders, including appropriate national laboratories, industry, and academia, determine appropriate.

(2) REQUIREMENTS.—

(A) CONTENTS OF PLAN.—The strategic plan shall—

(i) specify and prioritize near-term, mid-term, and long-term research objectives, including objectives as-

sociated with the research identified in section 4(a)(1) of the Cyber Security Research and Development Act (15 U.S.C. 7403(a)(1));

(ii) specify how the near-term objectives described in clause (i) complement research and development areas in which the private sector is actively engaged;

(iii) describe how the heads of the applicable agencies and departments will focus on innovative, transformational technologies with the potential to enhance the security, reliability, resilience, and trustworthiness of the digital infrastructure, and to protect consumer privacy;

(iv) describe how the heads of the applicable agencies and departments will foster the rapid transfer of research and development results into new cybersecurity technologies and applications for the timely benefit of society and the national interest, including through the dissemination of best practices and other outreach activities;

(v) describe how the heads of the applicable agencies and departments will establish and maintain a national research infrastructure for creating, testing, and evaluating the next generation of secure networking and information technology systems; and

(vi) describe how the heads of the applicable agencies and departments will facilitate access by academic researchers to the infrastructure described in clause (v), as well as to relevant data, including event data.

(B) PRIVATE SECTOR EFFORTS.—In developing, implementing, and updating the strategic plan, the heads of the applicable agencies and departments, working through the National Science and Technology Council and Networking and Information Technology Research and Development Program, shall work in close cooperation with industry, academia, and other interested stakeholders to ensure, to the extent possible, that Federal cybersecurity research and development is not duplicative of private sector efforts.

(C) RECOMMENDATIONS.—In developing and updating the strategic plan the heads of the applicable agencies and departments shall solicit recommendations and advice from—

(i) the advisory committee established under section 101(b)(1) of the High-Performance Computing Act of 1991 (15 U.S.C. 5511(b)(1)); and

(ii) a wide range of stakeholders, including industry, academia, including representatives of minority serving institutions and community colleges, National Laboratories, and other relevant organizations and institutions.

(D) IMPLEMENTATION ROADMAP.—The heads of the applicable agencies and departments, working through the National Science and Technology Council and Networking and Information Technology Research and Development Program, shall develop and annually update an implemen-

tation roadmap for the strategic plan. The implementation roadmap shall—

(i) specify the role of each Federal agency in carrying out or sponsoring research and development to meet the research objectives of the strategic plan, including a description of how progress toward the research objectives will be evaluated;

(ii) specify the funding allocated to each major research objective of the strategic plan and the source of funding by agency for the current fiscal year;

(iii) estimate the funding required for each major research objective of the strategic plan for the following 3 fiscal years; and

(iv) track ongoing and completed Federal cybersecurity research and development projects.

(3) REPORTS TO CONGRESS.—The heads of the applicable agencies and departments, working through the National Science and Technology Council and Networking and Information Technology Research and Development Program, shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives—

(A) the strategic plan not later than 1 year after the date of enactment of this Act;

(B) each quadrennial update to the strategic plan; and

(C) the implementation roadmap under subparagraph (D), and its annual updates, which shall be appended to the annual report required under section 101(a)(2)(D) of the High-Performance Computing Act of 1991 (15 U.S.C. 5511(a)(2)(D)).

(4) DEFINITION OF APPLICABLE AGENCIES AND DEPARTMENTS.—In this subsection, the term "applicable agencies and departments" means the agencies and departments identified in [clauses (i) through (x) of section 101(a)(3)(B) of the High-Performance Computing Act of 1991 (15 U.S.C. 5511(a)(3)(B)) or designated under clause (xi) of that section] *clauses (i) through (xi) of section 101(a)(3)(B) of the High-Performance Computing Act of 1991 (15 U.S.C. 5511(a)(3)(B)) or designated under clause (xii) of that section*.

* * * * * * *

21ST CENTURY NANOTECHNOLOGY RESEARCH AND DEVELOPMENT ACT

[15 U.S.C. 7501 et seq.]

SEC. 2. NATIONAL NANOTECHNOLOGY PROGRAM.

[15 U.S.C. 7501]

* * * * * * *

(c) PROGRAM MANAGEMENT.—The National Science and Technology Council shall oversee the planning, management, and coordination of the Program. The Council, itself or through an appropriate subgroup it designates or establishes, shall—

(1) establish goals and priorities for the Program, based on national needs for a set of broad applications of nanotechnology;

(2) establish program component areas, with specific priorities and technical goals, that reflect the goals and priorities established for the Program;

(3) oversee interagency coordination of the Program, including with the activities of the Defense Nanotechnology Research and Development Program established under section 246 of the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (Public Law 107–314) and the National Institutes of Health;

[(4) develop, within 12 months after the date of enactment of this Act, and update every 3 years thereafter, a strategic plan to guide the activities described under subsection (b), meet the goals, priorities, and anticipated outcomes of the participating agencies, and describe—

[(A) how the Program will move results out of the laboratory and into application for the benefit of society;

[(B) the Program's support for long-term funding for interdisciplinary research and development in nanotechnology; and

[(C) the allocation of funding for interagency nanotechnology projects;]

(4) develop, not later than 5 years after the date of the release of the most-recent strategic plan, and update every 5 years thereafter, a strategic plan to guide the activities described under subsection (b) that describes—

(A) the near-term and long-term objectives for the Program;

(B) the anticipated schedule for achieving the near-term objectives; and

(C) the metrics that will be used to assess progress toward the near-term and long-term objectives;

(D) how the Program will move results out of the laboratory and into application for the benefit of society;

(E) the Program's support for long-term funding for interdisciplinary research and development in nanotechnology; and

(F) the allocation of funding for interagency nanotechnology projects;

(5) propose a coordinated interagency budget for the Program to the Office of Management and Budget to ensure the maintenance of a balanced nanotechnology research portfolio and an appropriate level of research effort;

(6) exchange information with academic, industry, State and local government (including State and regional nanotechnology programs), and other appropriate groups conducting research on and using nanotechnology;

(7) develop a plan to utilize Federal programs, such as the Small Business Innovation Research Program and the Small Business Technology Transfer Research Program, in support of the activity stated in subsection (b)(7);

(8) identify research areas that are not being adequately addressed by the agencies' current research programs and address such research areas;

(9) encourage progress on Program activities through the utilization of existing manufacturing facilities and industrial infrastructures such as, but not limited to, the employment of underutilized manufacturing facilities in areas of high unemployment as production engineering and research testbeds; and

(10) in carrying out its responsibilities under paragraphs (1) through (9), take into consideration the recommendations of the Advisory Panel, suggestions or recommendations developed pursuant to subsection (b)(10)(D), and the views of academic, State, industry, and other appropriate groups conducting research on and using nanotechnology.

(d) ANNUAL REPORT.—The Council shall prepare an annual report, to be submitted to the Senate Committee on Commerce, Science, and Transportation and the House of Representatives Committee on Science, and other appropriate committees, at the time of the President's budget request to Congress, that includes—

(1) the Program budget, for the current fiscal year, for each agency that participates in the Program, including a breakout of spending for the development and acquisition of research facilities and instrumentation, for each program component area, and for all activities pursuant to subsection (b)(10);

(2) the proposed Program budget for the next fiscal year, for each agency that participates in the Program, including a breakout of spending for the development and acquisition of research facilities and instrumentation, for each program component area, and for all activities pursuant to subsection (b)(10);

(3) an analysis of the progress made toward achieving the goals and priorities established for the Program;

(4) an analysis of the extent to which the Program has incorporated the recommendations of the Advisory Panel; and

(5) an assessment of how Federal agencies are implementing the plan described in subsection (c)(7), and a description of the amount of Small Business Innovative Research and Small Business Technology Transfer Research funds supporting the plan.

SEC. 4. ADVISORY PANEL.

[15 U.S.C. 7503]

* * * * * * *

[(d) REPORTS.—The Advisory Panel shall report, not less frequently than once every 2 fiscal years, to the President on its assessments under subsection (c) and its recommendations for ways to improve the Program. The first report under this subsection shall be submitted within 1 year after the date of enactment of this Act. The Director of the Office of Science and Technology Policy shall transmit a copy of each report under this subsection to the Senate Committee on Commerce, Science, and Technology, the House of Representatives Committee on Science, and other appropriate committees of the Congress.]

(d) REPORTS.—Not later than 4 years after the date of the most recent assessment under subsection (c), and quadrennially thereafter, the Advisory Panel shall submit to the President, the Com-

mittee on Commerce, Science, and Transportation of the Senate, and the Committee on Science, Space, and Technology of the House of Representatives a report its assessments under subsection (c) and its recommendations for ways to improve the Program.

(e) TRAVEL EXPENSES OF NON-FEDERAL MEMBERS.—Non-Federal members of the Advisory Panel, while attending meetings of the Advisory Panel or while otherwise serving at the request of the head of the Advisory Panel away from their homes or regular places of business, may be allowed travel expenses, including per diem in lieu of subsistence, as authorized by section 5703 of title 5, United States Code, for individuals in the government serving without pay. Nothing in this subsection shall be construed to prohibit members of the Advisory Panel who are officers or employees of the United States from being allowed travel expenses, including per diem in lieu of subsistence, in accordance with existing law.

(f) EXEMPTION FROM SUNSET.—Section 14 of the Federal Advisory Committee Act shall not apply to the Advisory Panel.

SEC. 5. [TRIENNIAL] *QUADRENNIAL* EXTERNAL REVIEW OF THE NATIONAL NANOTECHNOLOGY PROGRAM.

[15 U.S.C. 7504]

(a) IN GENERAL.—The Director of the National Nanotechnology Coordination Office shall enter into an arrangement with the National Research Council of the National Academy of Sciences to conduct a [triennial] *quadrennial* evaluation of the Program, including—

(1) an evaluation of the technical accomplishments of the Program, including a review of whether the Program has achieved the goals under the metrics established by the Council;

(2) a review of the Program's management and coordination across agencies and disciplines;

(3) a review of the funding levels at each agency for the Program's activities and the ability of each agency to achieve the Program's stated goals with that funding;

(4) an evaluation of the Program's success in transferring technology to the private sector;

(5) an evaluation of whether the Program has been successful in fostering interdisciplinary research and development;

(6) an evaluation of the extent to which the Program has adequately considered ethical, legal, environmental, and other appropriate societal concerns;

(7) recommendations for new or revised Program goals;

(8) recommendations for new research areas, partnerships, coordination and management mechanisms, or programs to be established to achieve the Program's stated goals;

(9) recommendations on policy, program, and budget changes with respect to nanotechnology research and development activities;

(10) recommendations for improved metrics to evaluate the success of the Program in accomplishing its stated goals;

(11) a review of the performance of the National Nanotechnology Coordination Office and its efforts to promote access to and early application of the technologies, innovations, and expertise derived from Program activities to agency missions and

systems across the Federal Government and to United States industry;

(12) an analysis of the relative position of the United States compared to other nations with respect to nanotechnology research and development, including the identification of any critical research areas where the United States should be the world leader to best achieve the goals of the Program; and

(13) an analysis of the current impact of nanotechnology on the United States economy and recommendations for increasing its future impact.

(b) STUDY ON MOLECULAR SELF-ASSEMBLY.—As part of the first [triennial] *quadrennial* review conducted in accordance with subsection (a), the National Research Council shall conduct a one-time study to determine the technical feasibility of molecular self-assembly for the manufacture of materials and devices at the molecular scale.

(c) STUDY ON THE RESPONSIBLE DEVELOPMENT OF NANOTECHNOLOGY.—As part of the first [triennial] *quadrennial* review conducted in accordance with subsection (a), the National Research Council shall conduct a one-time study to assess the need for standards, guidelines, or strategies for ensuring the responsible development of nanotechnology, including, but not limited to—

(1) self-replicating nanoscale machines or devices;

(2) the release of such machines in natural environments;

(3) encryption;

(4) the development of defensive technologies;

(5) the use of nanotechnology in the enhancement of human intelligence; and

(6) the use of nanotechnology in developing artificial intelligence.

[(d) EVALUATION TO BE TRANSMITTED TO CONGRESS.—The Director of the National Nanotechnology Coordination Office shall transmit the results of any evaluation for which it made arrangements under subsection (a) to the Advisory Panel, the Senate Committee on Commerce, Science, and Transportation and the House of Representatives Committee on Science upon receipt. The first such evaluation shall be transmitted no later than June 10, 2005, with subsequent evaluations transmitted to the Committees every 3 years thereafter.]

(d) REPORT.—

(1) IN GENERAL.—Not later than 30 days after the date the first evaluation under subsection (a) is received, and quadrennially thereafter, the Director of the National Nanotechnology Coordination Office shall report to the President its assessments under subsection (c) and its recommendations for ways to improve the Program.

(2) CONGRESS.—Not later than 30 days after the date the President receives the report under paragraph (1), the Director of the Office of Science and Technology Policy shall transmit a copy of the report to Congress.

NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT OF 1988

[Public Law 100–570; 102 Stat. 2865]

SEC. 113. [EXPERIMENTAL] *ESTABLISHED* PROGRAM TO STIMULATE COMPETITIVE RESEARCH.

[42 U.S.C. 1862g]

(a) The Director shall operate [an Experimental Program to Stimulate Competitive Research] *a program to stimulate competitive research (known as the Established Program to Stimulate Competitive Research)*, the purpose of which is to assist those States that—

(1) historically have received relatively little Federal research and development funding; and

(2) have demonstrated a commitment to develop their research bases and improve science and engineering research and education programs at their universities and colleges.

(b) A State which has received an initial award under such Program, whether or not the award was received before or after the date of enactment of this Act, shall be eligible for up to 5 years of additional support under [the program] *the Program* if that State provides assurances of new matching funds and submits an acceptable new plan for using Program funds and matching funds to build the research capabilities of the State.

NATIONAL SCIENCE FOUNDATION AUTHORIZATION ACT OF 2002

[Public Law 107–368; 116 Stat. 3034]

SEC. 9. MATHEMATICS AND SCIENCE EDUCATION PARTNERSHIPS.

[42 U.S.C. 1862n]

* * * * * * *

(c) ACCOUNTABILITY AND DISSEMINATION.—

(1) ASSESSMENT REQUIRED.—The Director shall evaluate the program established under subsection (a). At a minimum, such evaluation shall—

(A) use a common set of benchmarks and assessment tools to identify best practices and materials developed and demonstrated by the partnerships; and

(B) to the extent practicable, compare the effectiveness of practices and materials developed and demonstrated by the partnerships authorized under this section with those of partnerships funded by other State or Federal agencies.

(2) REPORT ON EVALUATIONS.—Not later than 4 years after the date of enactment of the America COMPETES Act, the Director shall transmit a report summarizing the evaluations required under subsection (b)(1)(E) of grants received under this program and describing any changes to the program recommended as a result of these evaluations to the Committee on Science and Technology and the Committee on Education and Labor of the House of Representatives and to the Committee on Commerce, Science, and Transportation and the Committee on Health, Education, Labor, and Pensions of the Senate. Such report shall be made widely available to the public.

(3) ANNUAL MEETING.—The Director, in consultation with the Secretary of Education, shall convene an annual meeting of the partnerships participating under this section to foster greater national collaboration.

[(4) REPORT ON COORDINATION.—The Director, in consultation with the Secretary of Education, shall provide an annual report to the Committee on Science of the House of Representatives, the Committee on Education and the Workforce of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, and the Committee on Health, Education, Labor, and Pensions of the Senate describing how the program authorized under this section has been and will be coordinated with other programs with similar purposes. The report under this paragraph shall be submitted along with the President's annual budget request.]

[(5)]*(4)* TECHNICAL ASSISTANCE.—At the request of an eligible partnership or a State educational agency, the Director shall provide the partnership or agency with technical assistance in meeting any requirements of this section, including providing advice from experts on how to develop—

(A) a quality application for a grant; and

(B) quality activities from funds received from a grant under this section.

(d) DEFINITIONS.—In this section—

(1) the term "mathematics and science teacher" means a science, technology, engineering, or mathematics teacher at the elementary school or secondary school level; and

(2) the term "science", in the context of elementary and secondary education, includes technology and pre-engineering.

SEC. 10A. NATIONAL SCIENCE FOUNDATION TEACHING FELLOWSHIPS AND MASTER TEACHING FELLOWSHIPS.

[42 U.S.C. 1862n-1a]

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(k) STEM TEACHER SERVICE AND RETENTION.—

(1) IN GENERAL.—The Director shall develop and implement practices for increasing the proportion of individuals receiving fellowships under this section who—

(A) fulfill the service obligation required under subsection (h); and

(B) remain in the teaching profession in a high need local educational agency beyond the service obligation.

(2) PRACTICES.—The practices described under paragraph (1) may include—

(A) partnering with nonprofit or professional associations or with other government entities to provide individuals receiving fellowships under this section with opportunities for professional development, including mentorship programs that pair those individuals with currently employed and recently retired science, technology, engineering, mathematics, or computer science professionals;

(B) increasing recruitment from high need districts;

(C) establishing a system to better collect, track, and respond to data on the career decisions of individuals receiving fellowships under this section;

(D) conducting research to better understand factors relevant to teacher service and retention, including factors specifically impacting the retention of teachers from underrepresented groups, including women and minorities; and

(E) conducting pilot programs to improve teacher service and retention.

SEC. 14. MAJOR RESEARCH EQUIPMENT AND FACILITIES CONSTRUCTION PLAN.

[42 U.S.C. 1862n-4]

[(a) PRIORITIZATION OF PROPOSED MAJOR RESEARCH EQUIPMENT AND FACILITIES CONSTRUCTION.—

[(1) DEVELOPMENT OF PRIORITIES.—

[(A) The Director shall—

[(i) develop a list indicating by number the relative priority for funding under the major research equipment and facilities construction account that the Director assigns to each project the Board has approved for inclusion in a future budget request; and

[(ii) submit the list described in clause (i) to the Board for approval.

[(B) The Director shall update the list prepared under subparagraph (A) each time the Board approves a new project that would receive funding under the major research equipment and facilities construction account, as necessary to prepare reports under paragraph (2), and, from time to time, submit any updated list to the Board for approval.

[(2) ANNUAL REPORT.—Not later than 90 days after the date of enactment of this Act, and not later than each June 15 thereafter, the Director shall transmit to the Committee on Science of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, and the Committee on Health, Education, Labor, and Pensions of the Senate a report containing—

[(A) the most recent Board-approved priority list developed under paragraph (1)(A);

[(B) a description of the criteria used to develop such list; and

[(C) a description of the major factors for each project that determined the ranking of such project on the list, based on the application of the criteria described pursuant to subparagraph (B).

[(3) CRITERIA.—The criteria described pursuant to paragraph (2)(B) shall include, at a minimum—

[(A) scientific merit;

[(B) broad societal need and probable impact;

[(C) consideration of the results of formal prioritization efforts by the scientific community;

[(D) readiness of plans for construction and operation;

[(E) the applicant's management and administrative capacity of large research facilities;

[(F) international and interagency commitments; and

[(G) the order in which projects were approved by the Board for inclusion in a future budget request.]

(a) PRIORITIZATION OF PROPOSED MAJOR RESEARCH EQUIPMENT AND FACILITIES CONSTRUCTION.—

(1) DEVELOPMENT OF PRIORITIES.—The Director shall—

(A) develop a list indicating by number the relative priority for funding under the major research equipment and facilities construction account that the Director assigns to each project the Board has approved for inclusion in a future budget request; and

(B) submit the list described in subparagraph (A) to the Board for approval.

(2) CRITERIA.—The Director shall include in the criteria for developing the list under paragraph (1) the readiness of plans for construction and operation, including confidence in the estimates of the full life-cycle cost (as defined in section 2 of the National Science Foundation Authorization Act of 1998 (42 U.S.C. 1862k note)) and the proposed schedule of completion.

(3) UPDATES.—The Director shall update the list prepared under paragraph (1) each time the Board approves a new project that would receive funding under the major research equipment and facilities construction account and periodically submit any updated list to the Board for approval.

(b) [Omitted]

[(c)**]***(b)* PROJECT MANAGEMENT.—No national research facility project funded under the major research equipment and facilities construction account shall be managed by an individual whose appointment to the Foundation is temporary.

[(d)BOARD APPROVAL OF MAJOR RESEARCH EQUIPMENT AND FACILITIES PROJECTS.—

[(1) IN GENERAL.—The Board shall explicitly approve any project to be funded out of the major research equipment and facilities construction account before any funds may be obligated from such account for such project.

[(2) REPORT.—Not later than September 15 of each fiscal year, the Board shall report to the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Health, Education, Labor, and Pensions of the Senate, and the Committee on Science of the House of Representatives on the conditions of any delegation of authority under section 4 of the National Science Foundation Act of 1950 (42 U.S.C. 1863) that relates to funds appropriated for any project in the major research equipment and facilities construction account.**]**

(c) BOARD APPROVAL OF MAJOR RESEARCH EQUIPMENT AND FACILITIES PROJECTS.—The Board shall explicitly approve any project to be funded out of the major research equipment and facilities construction account before any funds may be obligated from such account for such project.

[(e) NATIONAL ACADEMY OF SCIENCES STUDY ON MAJOR RESEARCH EQUIPMENT AND FACILITIES CONSTRUCTION.—

[(1) STUDY.—Not later than 3 months after the date of enactment of this Act, the Director shall enter into an arrangement with the National Academy of Sciences to perform a study on setting priorities for a diverse array of disciplinary and interdisciplinary Foundation-sponsored large research facility projects.

[(2) TRANSMITTAL TO CONGRESS.—Not later than 15 months after the date of the enactment of this Act, the Director shall transmit to the Committee on Science and the Committee on Appropriations of the House of Representatives, and to the Committee on Commerce, Science, and Transportation, the Committee on Health, Education, Labor, and Pensions, and the Committee on Appropriations of the Senate, the study conducted by the National Academy of Sciences together with the Foundation's reaction to the study authorized under paragraph (1).]

AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009

[Public Law 111–5; 123 Stat. 245]

SEC. 13202. RESEARCH AND DEVELOPMENT PROGRAMS.

[42 U.S.C. 17912]

(a) HEALTH CARE INFORMATION ENTERPRISE INTEGRATION RESEARCH CENTERS.—

(1) IN GENERAL.—The Director of the National Institute of Standards and Technology, in consultation with the Director of the National Science Foundation and other appropriate Federal agencies, shall establish a program of assistance to institutions of higher education (or consortia thereof which may include nonprofit entities and Federal Government laboratories) to establish multidisciplinary Centers for Health Care Information Enterprise Integration.

(2) REVIEW; COMPETITION.—Grants shall be awarded under this subsection on a merit-reviewed, competitive basis.

(3) PURPOSE.—The purposes of the Centers described in paragraph (1) shall be—

(A) to generate innovative approaches to health care information enterprise integration by conducting cutting-edge, multidisciplinary research on the systems challenges to health care delivery; and

(B) the development and use of health information technologies and other complementary fields.

(4) RESEARCH AREAS.—Research areas may include—

(A) interfaces between human information and communications technology systems;

(B) voice-recognition systems;

(C) software that improves interoperability and connectivity among health information systems;

(D) software dependability in systems critical to health care delivery;

(E) measurement of the impact of information technologies on the quality and productivity of health care;

(F) health information enterprise management;

(G) health information technology security and integrity; and

(H) relevant health information technology to reduce medical errors.

(5) APPLICATIONS.—An institution of higher education (or a consortium thereof) seeking funding under this subsection shall submit an application to the Director of the National Institute of Standards and Technology at such time, in such

manner, and containing such information as the Director may require. The application shall include, at a minimum, a description of—

(A) the research projects that will be undertaken by the Center established pursuant to assistance under paragraph (1) and the respective contributions of the participating entities;

(B) how the Center will promote active collaboration among scientists and engineers from different disciplines, such as information technology, biologic sciences, management, social sciences, and other appropriate disciplines;

(C) technology transfer activities to demonstrate and diffuse the research results, technologies, and knowledge; and

(D) how the Center will contribute to the education and training of researchers and other professionals in fields relevant to health information enterprise integration.

(b) NATIONAL INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT PROGRAM.—The [National High-Performance Computing Program] *Networking and Information Technology Research and Development Program* established by section 101 of the High-Performance Computing Act of 1991 (15 U.S.C. 5511) shall include Federal research and development programs related to health information technology.

ENTERPRISE INTEGRATION ACT OF 2002

[15 U.S.C. 278g-5]

SEC. 3. ENTERPRISE INTEGRATION INITIATIVE.

[15 U.S.C. 278g-5]

(a) ESTABLISHMENT.—The Director shall establish an initiative for advancing enterprise integration within the United States. In carrying out this section, the Director shall involve, as appropriate, the various units of the National Institute of Standards and Technology, including the National Institute of Standards and Technology laboratories (including the Building and Fire Research Laboratory), the *Hollings* Manufacturing Extension Partnership program established under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l), and the Malcolm Baldrige National Quality Program. This initiative shall build upon ongoing efforts of the National Institute of Standards and Technology and of the private sector, shall involve consortia that include government and industry, and shall address the enterprise integration needs of each United States major manufacturing industry at the earliest possible date.

(b) ASSESSMENT.—For each major manufacturing industry, the Director may work with industry, trade associations, professional societies, and others as appropriate, to identify enterprise integration standardization and implementation activities underway in the United States and abroad that affect that industry and to assess the current state of enterprise integration within that industry. The Director may assist in the development of roadmaps to permit supply chains within the industry to operate as an integrated electronic enterprise. The roadmaps shall be based on voluntary consensus standards.

(c) AUTHORIZED ACTIVITIES.—In order to carry out this Act, the Director may work with industry, trade associations, professional societies, and others as appropriate—

(1) to raise awareness in the United States, including awareness by businesses that are majority owned by women, minorities, or both, of enterprise integration activities in the United States and abroad, including by the convening of conferences;

(2) on the development of enterprise integration roadmaps;

(3) to support the development, testing, promulgation, integration, adoption, and upgrading of standards related to enterprise integration including application protocols; and

(4) to provide technical assistance and, if necessary, financial support to small- and medium-sized businesses that set up pilot projects in enterprise integration.

(d) MANUFACTURING EXTENSION PROGRAM.—The Director shall ensure that the Manufacturing Extension Program is prepared to advise small- and medium-sized businesses on how to acquire the expertise, equipment, and training necessary to participate fully in supply chains using enterprise integration.

AMERICA COMPETES ACT

[Public Law 110–69; 121 Stat. 572]

SEC. 1008. SENSE OF CONGRESS ON INNOVATION ACCELERATION RESEARCH.

[42 U.S.C. 6603]

(a) SENSE OF CONGRESS ON SUPPORT AND PROMOTION OF INNOVATION IN THE UNITED STATES.—It is the sense of Congress that each Federal research agency should strive to support and promote innovation in the United States through high-risk, high-reward basic research projects that—

(1) meet fundamental technological or scientific challenges;

(2) involve multidisciplinary work; and

(3) involve a high degree of novelty.

(b) SENSE OF CONGRESS ON SETTING ANNUAL FUNDING GOALS FOR BASIC RESEARCH.—It is the sense of Congress that each Executive agency that funds research in science, technology, engineering, or mathematics should set a goal of allocating an appropriate percentage of the annual basic research budget of such agency to funding high-risk, high-reward basic research projects described in subsection (a).

[(c) REPORT.—Each Executive agency described in subsection (b) shall submit to Congress each year, together with documents submitted to Congress in support of the budget of the President for the fiscal year beginning in such year (as submitted pursuant to section 1105 of title 31, United States Code), a report describing whether a funding goal as described in subsection (b) has been established, and if such a goal has been established, the following:

[(1) A description of such funding goal.

[(2) Whether such funding goal is being met by the agency.

[(3) A description of activities supported by amounts allocated in accordance with such funding goal.]

[(d)]*(c)* DEFINITIONS.—In this section:

(1) BASIC RESEARCH.—The term "basic research" has the meaning given such term in the Office of Management and Budget Circular No. A-11.

(2) EXECUTIVE AGENCY.—The term "Executive agency" has the meaning given such term in section 105 of title 5, United States Code.

SEC. 4002. NOAA OCEAN AND ATMOSPHERIC SCIENCE EDUCATION PROGRAMS.

[33 U.S.C. 893a]

(a) IN GENERAL.—The Administrator of the National Oceanic and Atmospheric Administration shall conduct, develop, support, promote, and coordinate formal and informal educational activities at all levels to enhance public awareness and understanding of ocean, coastal, Great Lakes, and atmospheric science and stewardship by the general public and other coastal stakeholders, including underrepresented groups in ocean and atmospheric science and policy careers. In conducting those activities, the Administrator shall build upon the educational programs and activities of agency, with consideration given to the goal of promoting the participation of individuals from underrepresented groups*, including ethnic, racial, and economic minority groups,* in STEM fields and in promoting the acquisition and retention of highly qualified and motivated young scientists to complement and supplement workforce needs.

(b) EDUCATIONAL PROGRAM GOALS.—The education programs developed by NOAA shall, to the extent applicable—

(1) carry out and support research based programs and activities designed to increase student interest and participation in STEM;

(2) improve public literacy in STEM;

(3) employ proven strategies and methods for improving student learning and teaching in STEM;

(4) provide curriculum support materials and other resources that—

(A) are designed to be integrated with comprehensive STEM education;

(B) are aligned with national science education standards; [and]

(C) are designed considering the unique needs of underrepresented racial and ethnic groups, translating such materials and other resources into appropriate multi-lingual curricula;

[(C)]*(D)* promote the adoption and implementation of high-quality education practices that build toward college and career-readiness; and

(E) are promoted widely, especially among underrepresented groups (including among racial and ethnic minority communities); and

(5) create and support opportunities for enhanced and ongoing professional development for teachers using best practices that improves the STEM content and knowledge of the teachers, including through programs linking STEM teachers with STEM educators at the higher education level.

(c) NOAA SCIENCE EDUCATION PLAN.—The Administrator, appropriate National Oceanic and Atmospheric Administration programs, ocean atmospheric science and education experts, and inter-

ested members of the public shall maintain a science education plan setting forth education goals and strategies for the Administration, as well as programmatic actions to carry out such goals and priorities over the next 20 years, and evaluate and update such plan every 5 years.

(d) METRICS.—In executing the National Oceanic and Atmospheric Administration science education plan under subsection (c), the Administrator shall maintain a comprehensive system for evaluating the Administration's educational programs and activities. In so doing, the Administrator shall ensure that such education programs have measurable objectives and milestones as well as clear, documented metrics for evaluating programs. For each such education program or portfolio of similar programs, the Administrator shall—

(1) encourage the collection of evidence as relevant to the measurable objectives and milestones; and

(2) ensure that program or portfolio evaluations focus on educational outcomes and not just inputs, activities completed, or the number of participants.

[(d)**]***(e)* CONSTRUCTION.—Nothing in this section may be construed to affect the application of section 438 of the General Education Provisions Act (20 U.S.C. 1232a) or sections 504 and 508 of the Rehabilitation Act of 1973 (29 U.S.C. 794 and 794d).

[(e)**]***(f)* STEM DEFINED.—In this section, the term "STEM" means the academic and professional disciplines of science, technology, engineering, and mathematics.

[SEC. 6111. PURPOSE.

[20 U.S.C. 9811]

[The purpose of this part is—

[(1) to develop and implement programs to provide integrated courses of study in science, technology, engineering, mathematics, or critical foreign languages, and teacher education, that lead to a baccalaureate degree in science, technology, engineering, mathematics, or a critical foreign language, with concurrent teacher certification;

[(2) to develop and implement 2- or 3-year part-time master's degree programs in science, technology, engineering, mathematics, or critical foreign language education for teachers in order to enhance the teachers' content knowledge and pedagogical skills; and

[(3) to develop programs for professionals in science, technology, engineering, mathematics, or critical foreign language education that lead to a master's degree in teaching that results in teacher certification.]

[SEC. 6112. DEFINITIONS.

[20 U.S.C. 9812]

[In this part:

[(1) CHILDREN FROM LOW-INCOME FAMILIES.—The term "children from low-income families" means children described in section 1124(c)(1)(A) of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 6333(c)(1)(A)).

[(2) ELIGIBLE RECIPIENT.—The term "eligible recipient" means an institution of higher education that receives grant funds under this part on behalf of a department of science,

technology, engineering, mathematics, or a critical foreign language, or on behalf of a department or school with a competency-based degree program (in science, technology, engineering, mathematics, or a critical foreign language) that includes teacher certification, for use in carrying out activities assisted under this part.

[(3) HIGH-NEED LOCAL EDUCATIONAL AGENCY.—The term "high-need local educational agency" means a local educational agency or educational service agency—

[(A)(i) that serves not fewer than 10,000 children from low-income families;

[(ii) for which not less than 20 percent of the children served by the agency are children from low-income families; or

[(iii) with a total of less than 600 students in average daily attendance at the schools that are served by the agency and all of whose schools are designated with a school locale code of 41, 42, or 43, as determined by the Secretary; and

[(B)(i) for which there is a high percentage of teachers providing instruction in academic subject areas or grade levels for which the teachers are not highly qualified; or

[(ii) for which there is a high teacher turnover rate or a high percentage of teachers with emergency, provisional, or temporary certification or licensure.

[(4) HIGHLY QUALIFIED.—The term "highly qualified" has the meaning given such term in section 9101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801) and, with respect to special education teachers, in section 602 of the Individuals with Disabilities Education Act (20 U.S.C. 1401).

[(5) PARTNERSHIP.—The term "partnership" means a partnership that—

[(A) shall include—

[(i) an eligible recipient;

[(ii)(I)(aa) a department within the eligible recipient that provides a program of study in science, technology, engineering, mathematics, or a critical foreign language; and

[(bb) a school, department, or program of education within the eligible recipient, or a 2-year institution of higher education that has a teacher preparation offering or a dual enrollment program with the eligible recipient; or

[(II) a department or school within the eligible recipient with a competency-based degree program (in science, technology, engineering, mathematics, or a critical foreign language) that includes teacher certification; and

[(iii) not less than 1 high-need local educational agency and a public school or a consortium of public schools served by the agency; and

[(B) may include a nonprofit organization that has a demonstrated record of providing expertise or support to meet the purposes of this part.

[(6) TEACHING SKILLS.—The term "teaching skills" means the ability to—

[(A) increase student achievement and learning and increase a student's ability to apply knowledge;

[(B) effectively convey and explain academic subject matter;

[(C) employ strategies grounded in the disciplines of teaching and learning that—

[(i) are based on scientifically valid research;

[(ii) are specific to academic subject matter; and

[(iii) focus on the identification of students' specific learning needs, particularly students with disabilities, students who are limited English proficient, students who are gifted and talented, and students with low literacy levels, and the tailoring of academic instruction to such needs;

[(D) conduct ongoing assessment of student learning;

[(E) effectively manage a classroom; and

[(F) communicate and work with parents and guardians, and involve parents and guardians in their children's education.]

[SEC. 6113. PROGRAMS FOR BACCALAUREATE DEGREES IN SCIENCE, TECHNOLOGY, ENGINEERING, MATHEMATICS, OR CRITICAL FOREIGN LANGUAGES, WITH CONCURRENT TEACHER CERTIFICATION.

[20 U.S.C. 9813]

[(a) PROGRAM AUTHORIZED.—From the amounts made available to carry out this section under section 6116(1) and not reserved under section 6115(d) for a fiscal year, the Secretary is authorized to award grants, on a competitive basis, to eligible recipients to enable partnerships served by the eligible recipients to develop and implement programs to provide courses of study in science, technology, engineering, mathematics, or critical foreign languages that—

[(1) are integrated with teacher education; and

[(2) lead to a baccalaureate degree in science, technology, engineering, mathematics, or a critical foreign language with concurrent teacher certification.

[(b) APPLICATION.—Each eligible recipient desiring a grant under this section shall submit an application to the Secretary at such time and in such manner as the Secretary may require. Each application shall—

[(1) describe the program for which assistance is sought;

[(2) describe how a department of science, technology, engineering, mathematics, or a critical foreign language participating in the partnership will ensure significant collaboration with a teacher preparation program in the development of undergraduate degrees in science, technology, engineering, mathematics, or a critical foreign language, with concurrent teacher certification, including providing student teaching and other clinical classroom experiences or how a department or school participating in the partnership with a competency-based degree program has ensured, in the development of a baccalaureate degree program in science, technology, engineering, mathematics, or a critical foreign language, the provision of

concurrent teacher certification, including providing student teaching and other clinical classroom experiences;

[(3) describe the high-quality research, laboratory, or internship experiences, integrated with coursework, that will be provided under the program;

[(4) describe how members of groups that are underrepresented in the teaching of science, technology, engineering, mathematics, or critical foreign languages will be encouraged to participate in the program;

[(5) describe how program participants will be encouraged to teach in schools determined by the partnership to be most in need, and the assistance in finding employment in such schools that will be provided;

[(6) describe the ongoing activities and services that will be provided to graduates of the program;

[(7) describe how the activities of the partnership will be coordinated with any activities funded through other Federal grants, and how the partnership will continue the activities assisted under the program when the grant period ends;

[(8) describe how the partnership will assess the content knowledge and teaching skills of the program participants; and

[(9) provide any other information the Secretary may reasonably require.

[(c) PRIORITY.—Priority shall be given to applications whose primary focus is on placing participants in high-need local educational agencies.

[(d) AUTHORIZED ACTIVITIES.—

[(1) IN GENERAL.—Each eligible recipient receiving a grant under this section shall use the grant funds to enable a partnership to develop and implement a program to provide courses of study in science, technology, engineering, mathematics, or a critical foreign language that—

[(A) are integrated with teacher education programs that promote effective teaching skills; and

[(B) lead to a baccalaureate degree in science, technology, engineering, mathematics, or a critical foreign language with concurrent teacher certification.

[(2) PROGRAM REQUIREMENTS.—The program shall—

[(A) provide high-quality research, laboratory, or internship experiences for program participants;

[(B) provide student teaching or other clinical classroom experiences that—

[(i) are integrated with coursework; and

[(ii) lead to the participants' ability to demonstrate effective teaching skills;

[(C) if implementing a program in which program participants are prepared to teach science, technology, engineering, mathematics, or critical foreign language courses, include strategies for improving student literacy;

[(D) encourage the participation of individuals who are members of groups that are underrepresented in the teaching of science, technology, engineering, mathematics, or critical foreign languages;

[(E) encourage participants to teach in schools determined by the partnership to be most in need, and actively

assist the participants in finding employment in such schools;

[(F) offer training in the use of and integration of educational technology;

[(G) collect data regarding and evaluate, using measurable objectives and benchmarks, the extent to which the program succeeded in—

[(i) increasing the percentage of highly qualified mathematics, science, or critical foreign language teachers, including increasing the percentage of such teachers teaching in those schools determined by the partnership to be most in need;

[(ii) improving student academic achievement in mathematics, science, and where applicable, technology and engineering;

[(iii) increasing the number of students in secondary schools enrolled in upper level mathematics, science, and, where available, technology and engineering courses; and

[(iv) increasing the numbers of elementary school and secondary school students enrolled in and continuing in critical foreign language courses;

[(H) collect data on the employment placement and retention of all graduates of the program, including information on how many graduates are teaching and in what kinds of schools;

[(I) provide ongoing activities and services to graduates of the program who teach elementary school or secondary school, by—

[(i) keeping the graduates informed of the latest developments in their respective academic fields; and

[(ii) supporting the graduates of the program who are employed in schools in the local educational agency participating in the partnership during the initial years of teaching through—

[(I) induction programs;

[(II) promotion of effective teaching skills; and

[(III) providing opportunities for regular professional development; and

[(J) develop recommendations to improve the school, department, or program of education participating in the partnership.

[(e) ANNUAL REPORT.—Each eligible recipient receiving a grant under this section shall collect and report to the Secretary annually such information as the Secretary may reasonably require, including—

[(1) the number of participants in the program;

[(2) information on the academic majors of participating students;

[(3) the race, gender, income, and disability status of program participants;

[(4) the placement of program participants as teachers in schools determined by the partnership to be most in need;

[(5) the extent to which the program succeeded in meeting the objectives and benchmarks described in subsection (d)(2)(G); and

[(6) the data collected under subparagraphs (G) and (H) of subsection (d)(2).

[(f) TECHNICAL ASSISTANCE.—From the funds made available under section 6116(1), the Secretary may provide technical assistance to an eligible recipient developing a baccalaureate degree program with concurrent teacher certification, including technical assistance provided through a grant or contract awarded on a competitive basis to an institution of higher education or a technical assistance center.

[(g) COMPLIANCE WITH FERPA.—Any activity under this section shall be carried out in compliance with section 444 of the General Education Provisions Act (20 U.S.C. 1232g) (commonly known as the Family Educational Rights and Privacy Act of 1974).

[(h) INDUCTION PROGRAM DEFINED.—In this section, the term "induction program" means a formalized program for new teachers during not less than the teachers' first 2 years of teaching that is designed to provide support for, and improve the professional performance and advance the retention in the teaching field of, beginning teachers. Such program shall promote effective teaching skills and shall include the following components:

[(1) High-quality teacher mentoring.

[(2) Periodic, structured time for collaboration with teachers in the same department or field, as well as time for information-sharing among teachers, principals, administrators, and participating faculty in the partner institution.

[(3) The application of empirically based practice and scientifically valid research on instructional practices.

[(4) Opportunities for new teachers to draw directly upon the expertise of teacher mentors, faculty, and researchers to support the integration of empirically based practice and scientifically valid research with practice.

[(5) The development of skills in instructional and behavioral interventions derived from empirically based practice and, where applicable, scientifically valid research.

[(6) Faculty who—

[(A) model the integration of research and practice in the classroom; and

[(B) assist new teachers with the effective use and integration of technology in the classroom.

[(7) Interdisciplinary collaboration among exemplary teachers, faculty, researchers, and other staff who prepare new teachers on the learning process and the assessment of learning.

[(8) Assistance with the understanding of data, particularly student achievement data, and the data's applicability in classroom instruction.

[(9) Regular evaluation of the new teacher.]

[SEC. 6114. PROGRAMS FOR MASTER'S DEGREES IN SCIENCE, TECHNOLOGY, ENGINEERING, MATHEMATICS, OR CRITICAL FOREIGN LANGUAGE EDUCATION.

[20 U.S.C. 9814]

[(a) PROGRAM AUTHORIZED.—From the amounts made available to carry out this section under section 6116(2) and not reserved under section 6115(d) for a fiscal year, the Secretary is authorized to award grants, on a competitive basis, to eligible recipients to enable the partnerships served by the eligible recipients to develop and implement—

[(1) 2- or 3-year part-time master's degree programs in science, technology, engineering, mathematics, or critical foreign language education for teachers in order to enhance the teacher's content knowledge and teaching skills; or

[(2) programs for professionals in science, technology, engineering, mathematics, or a critical foreign language that lead to a 1-year master's degree in teaching that results in teacher certification.

[(b) APPLICATION.—Each eligible recipient desiring a grant under this section shall submit an application to the Secretary at such time and in such manner as the Secretary may require. Each application shall describe—

[(1) how a department of science, technology, engineering, mathematics, or a critical foreign language will ensure significant collaboration with a school, department, or program of education in the development of the master's degree programs authorized under subsection (a), or how a department or school with a competency-based degree program has ensured, in the development of a master's degree program, the provision of rigorous studies in science, technology, engineering, mathematics, or a critical foreign language that enhance the teachers' content knowledge and teaching skills;

[(2) the role of the local educational agency in the partnership in developing and administering the program and how feedback from the local educational agency, school, and participants will be used to improve the program;

[(3) how the program will help increase the percentage of highly qualified mathematics, science, or critical foreign language teachers, including increasing the percentage of such teachers teaching in schools determined by the partnership to be most in need;

[(4) how the program will—

[(A) improve student academic achievement in mathematics, science, and, where applicable, technology and engineering and increase the number of students taking upper-level courses in such subjects; or

[(B) increase the numbers of elementary school and secondary school students enrolled and continuing in critical foreign language courses;

[(5) how the program will prepare participants to become more effective science, technology, engineering, mathematics, or critical foreign language teachers;

[(6) how the program will prepare participants to assume leadership roles in their schools;

[(7) how teachers (or science, technology, engineering, mathematics, or critical foreign language professionals) who are members of groups that are underrepresented in the teaching of science, technology, engineering, mathematics, or critical foreign languages and teachers from schools determined by the partnership to be most in need will be encouraged to apply for and participate in the program;

[(8) the ongoing activities and services that will be provided to graduates of the program;

[(9) how the partnership will continue the activities assisted under the grant when the grant period ends;

[(10) how the partnership will assess, during the program, the content knowledge and teaching skills of the program participants; and

[(11) methods to ensure applicants to the master's degree program for professionals in science, technology, engineering, mathematics, or a critical foreign language demonstrate advanced knowledge in the relevant subject.

[(c) AUTHORIZED ACTIVITIES.—Each eligible recipient receiving a grant under this section shall use the grant funds to develop and implement a 2- or 3-year part-time master's degree program in science, technology, engineering, mathematics, or critical foreign language education for teachers in order to enhance the teachers' content knowledge and teaching skills, or programs for professionals in science, technology, engineering, mathematics, or a critical foreign language that lead to a 1-year master's degree in teaching that results in teacher certification. The program shall—

[(1) promote effective teaching skills so that program participants become more effective science, technology, engineering, mathematics, or critical foreign language teachers;

[(2) prepare teachers to assume leadership roles in their schools by participating in activities such as teacher mentoring, development of curricula that integrate state of the art applications of science, technology, engineering, mathematics, or critical foreign language into the classroom, working with school administrators in establishing in-service professional development of teachers, and assisting in evaluating data and assessments to improve student academic achievement;

[(3) use high-quality research, laboratory, or internship experiences for program participants that are integrated with coursework;

[(4) provide student teaching or clinical classroom experience;

[(5) if implementing a program in which participants are prepared to teach science, technology, engineering, mathematics, or critical foreign language courses, provide strategies for improving student literacy;

[(6) align the content knowledge in the master's degree program with challenging student academic achievement standards and challenging academic content standards established by the State in which the program is conducted;

[(7) encourage the participation of—

[(A) individuals who are members of groups that are underrepresented in the teaching of science, technology, engineering, mathematics, or critical foreign languages;

[(B) members of the Armed Forces who are transitioning to civilian life; and

[(C) teachers teaching in schools determined by the partnership to be most in need;

[(8) offer tuition assistance, based on need, as appropriate;

[(9) create opportunities for enhanced and ongoing professional development for teachers that improves the science, technology, engineering, mathematics, and critical foreign language content knowledge and teaching skills of such teachers; and

[(10) evaluate and report on the impact of the program, in accordance with subsection (d).

[(d) EVALUATION AND REPORT.—Each eligible recipient receiving a grant under this section shall evaluate, using measurable objectives and benchmarks, and provide an annual report to the Secretary regarding, the extent to which the program assisted under this section succeeded in the following:

[(1) Increasing the number and percentage of science, technology, engineering, mathematics, or critical foreign language teachers who have a master's degree and meet 1 or more of the following requirements:

[(A) Are teaching in schools determined by the partnership to be most in need, and taught in such schools prior to participation in the program.

[(B) Are teaching in schools determined by the partnership to be most in need, and did not teach in such schools prior to participation in the program.

[(C) Are members of a group underrepresented in the teaching of science, technology, engineering, mathematics, or a critical foreign language.

[(2) Bringing professionals in science, technology, engineering, mathematics, or a critical foreign language into the field of teaching.

[(3) Retaining teachers who participate in the program.]

[SEC. 6115. GENERAL PROVISIONS.

[20 U.S.C. 9815]

[(a) DURATION OF GRANTS.—The Secretary shall award each grant under this part for a period of not more than 5 years.

[(b) MATCHING REQUIREMENT.—Each eligible recipient that receives a grant under this part shall provide, from non-Federal sources, an amount equal to 50 percent of the amount of the grant (which may be provided in cash or in kind) to carry out the activities supported by the grant.

[(c) SUPPLEMENT, NOT SUPPLANT.—Grant funds provided under this part shall be used to supplement, and not supplant, other Federal or State funds.

[(d) EVALUATION.—From amounts made available for any fiscal year under section 6116, the Secretary shall reserve such sums as may be necessary—

[(1) to provide for the conduct of an annual independent evaluation, by grant or by contract, of the activities assisted under this part, which shall include an assessment of the impact of the activities on student academic achievement; and

[(2) to prepare and submit an annual report on the results of the evaluation described in paragraph (1) to the Committee

on Health, Education, Labor, and Pensions of the Senate, the Committee on Education and Labor of the House of Representatives, and the Committees on Appropriations of the Senate and House of Representatives.]

[SEC. 6116. AUTHORIZATION OF APPROPRIATIONS.

[20 U.S.C. 9816]

[There are authorized to be appropriated to carry out this part $4,000,000 for each of fiscal years 2011 through 2013, of which—

[(1) $2,000,000 shall be available to carry out section 6113 for each of fiscal years 2011 through 2013; and

[(2) $2,000,000 shall be available to carry out section 6114 for each of fiscal years 2011 through 2013.]

SEC. 7012. FUNDING FOR SUCCESSFUL SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS EDUCATION PROGRAMS.

[42 U.S.C. 1862o-4]

(a) EVALUATION OF PROGRAMS.—The Director shall, on an annual basis, evaluate all of the Foundation's grants that are scheduled to expire within 1 year and—

(1) that have the primary purpose of meeting the objectives of the Science and Engineering Equal Opportunity Act (42 U.S.C. 1885 et seq.); or

(2) that have the primary purpose of providing teacher professional development.

(b) CONTINUATION OF FUNDING.—For grants that are identified under subsection (a) and that are determined by the Director to be successful in meeting the objectives of the initial grant solicitation, the Director may extend the duration of those grants for not more than 3 additional years beyond their scheduled expiration without the requirement for a recompetition.

[(c) REPORT TO CONGRESS.—Not later than 1 year after the date of enactment of this Act, and annually thereafter, the Director shall submit a report to the Committee on Science and Technology of the House of Representatives and to the Committee on Commerce, Science, and Transportation and the Committee on Health, Education, Labor, and Pensions of the Senate that—

[(1) lists the grants that have been extended in duration by the authority provided under this section; and

[(2) provides any recommendations the Director may have regarding the extension of the authority provided under this section to programs other than those specified in subsection (a).]

SEC. 7031. ENCOURAGING PARTICIPATION.

[42 U.S.C. 1862o-11]

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[(b) EVALUATION AND REPORT.—The Director shall establish metrics to evaluate the success of the programs established by the Foundation for encouraging individuals identified in section 33 or 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a or 1885b) to study and prepare for careers in science, technology, engineering, and mathematics, including programs that provide for mentoring for such individuals. The Director shall carry out evaluations based on the metrics developed and report to Congress annually on the findings and conclusions of the evaluations.]

[Public Law 111–358; 124 Stat. 3982]

SEC. 101. COORDINATION OF FEDERAL STEM EDUCATION.

[42 U.S.C. 6621]

(a) ESTABLISHMENT.—The Director shall establish a committee under the National Science and Technology Council, including the Office of Management and Budget, with the responsibility to coordinate Federal programs and activities in support of STEM education, including at the National Science Foundation, the Department of Energy, the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, the Department of Education, and all other Federal agencies that have programs and activities in support of STEM education.

(b) RESPONSIBILITIES.—The committee established under subsection (a) shall—

(1) coordinate the STEM education activities and programs of the Federal agencies;

(2) coordinate STEM education activities and programs with the Office of Management and Budget;

(3) encourage the teaching of innovation and entrepreneurship as part of STEM education activities;

(4) review STEM education activities and programs to ensure they are not duplicative of similar efforts within the Federal government;

(5) develop, implement through the participating agencies, and update once every 5 years a 5-year STEM education strategic plan, which shall—

(A) specify and prioritize annual and long-term objectives;

(B) specify the common metrics that will be used to assess progress toward achieving the objectives;

(C) describe the approaches that will be taken by each participating agency to assess the effectiveness of its STEM education programs and activities; and

(D) with respect to subparagraph (A), describe the role of each agency in supporting programs and activities designed to achieve the objectives**[**; and**]***;*

(6) establish, periodically update, and maintain an inventory of Federally sponsored STEM education programs and activities, including documentation of assessments of the effectiveness of such programs and activities and rates of participation by women, underrepresented minorities, and persons in rural areas in such programs and activities**[**.**]***;*

(7) collaborate with the STEM Education Advisory Panel established under section 303 of the American Innovation and Competitiveness Act and other outside stakeholders to ensure the engagement of the STEM education community;

(8) review the measures used by a Federal agency to evaluate its STEM education activities and programs;

(9) request and review feedback from States on how the States are utilizing Federal STEM education programs and activities; and

(10) recommend the reform, termination, or consolidation of Federal STEM education activities and programs, taking into

consideration the recommendations of the STEM Education Advisory Panel.

[(b)]*(c)* [RESPONSIBILITIES OF OSTP] *RESPONSIBILITIES OF OSTP*.—The Director shall encourage and monitor the efforts of the participating agencies to ensure that the strategic plan under subsection (b)(5) is developed and executed effectively and that the objectives of the strategic plan are met.

[(c)]*(d)* [REPORT] *REPORT*.—The Director shall transmit a report annually to Congress at the time of the President's budget request describing the plan required under subsection (b)(5). The annual report shall include—

(1) a description of the STEM education programs and activities for the previous and current fiscal years, and the proposed programs and activities under the President's budget request, of each participating Federal agency;

(2) the levels of funding for each participating Federal agency for the programs and activities described under paragraph (1) for the previous fiscal year and under the President's budget request;

(3) an evaluation of the levels of duplication and fragmentation of the programs and activities described under paragraph (1);

(4) except for the initial annual report, a description of the progress made in carrying out the implementation plan, including a description of the outcome of any program assessments completed in the previous year, and any changes made to that plan since the previous annual report[; and]*;*

(5) a description of how the participating Federal agencies will disseminate information about Federally supported resources for STEM education practitioners, including teacher professional development programs, to States and to STEM education practitioners, including to teachers and administrators in schools that meet the criteria described in subsection (c)(1)(A) and (B) of section 3175 of the Department of Energy Science Education Enhancement Act (42 U.S.C. 7381j(c)(1)(A) and (B))[.]*;*

(6) a description of all consolidations and terminations of Federal STEM education programs and activities implemented in the previous fiscal year, including an explanation for the consolidations and terminations;

(7) recommendations for reforms, consolidations, and terminations of STEM education programs or activities in the upcoming fiscal year; and

(8) a description of any significant new STEM education public-private partnerships.

SEC. 502. DEFINITIONS.

[42 U.S.C. 1862p note]

In this subtitle:

(1) DIRECTOR.—The term "Director" means the Director of the National Science Foundation.

[(2) EPSCOR.—The term "EPSCoR" means the Experimental Program to Stimulate Competitive Research.]

(2) EPSCOR.—The term "EPSCoR" means—

(A) the Established Program to Stimulate Competitive Research established by the Foundation; or

(B) a program similar to the Established Program to Stimulate Competitive Research at another Federal agency.

(3) FOUNDATION.—The term "Foundation" means the National Science Foundation established under section 2 of the National Science Foundation Act of 1950 (42 U.S.C. 1861).

(4) INSTITUTION OF HIGHER EDUCATION.—The term "institution of higher education" has the meaning given such term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

(5) STATE.—The term "State" means one of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, or any other territory or possession of the United States.

(6) UNITED STATES.—The term "United States" means the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and any other territory or possession of the United States.

SEC. 517. EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH.

[42 U.S.C. 1862p-9]

(a) FINDINGS.—The Congress finds that—

(1) [The National] *the National* Science Foundation Act of 1950 stated, "it shall be an objective of the Foundation to strengthen research and education in the sciences and engineering, including independent research by individuals, throughout the United States, and to avoid undue concentration of such research and [education,] *education*";

(2) National Science Foundation funding remains highly concentrated, [with 27 States and 2 jurisdictions, taken together, receiving only about 10 percent of all NSF research funding; each of these States received only a fraction of one percent of Foundation's research dollars each year;] *with 28 States and jurisdictions, taken together, receiving only about 12 percent of all National Science Foundation research funding;*

[(3) the Nation requires the talent, expertise, and research capabilities of all States in order to prepare sufficient numbers of scientists and engineers, remain globally competitive and support economic development.]

(3) each of the States described in paragraph (2) receives only a fraction of 1 percent of the Foundation's research dollars each year;

(4) first established at the National Science Foundation in 1979, the Experimental Program to Stimulate Competitive Research (referred to in this section as "EPSCoR") assists States and jurisdictions historically underserved by Federal research and development funding in strengthening their research and innovation capabilities;

(5) the EPSCoR structure requires each participating State to develop a science and technology plan suited to State and local research, education, and economic interests and objectives;

(6) EPSCoR has been credited with advancing the research competitiveness of participating States, improving awareness of science, promoting policies that link scientific investment and

economic growth, and encouraging partnerships between government, industry, and academia;

(7) EPSCoR proposals are evaluated through a rigorous and competitive merit-review process to ensure that awarded research and development efforts meet high scientific standards; and

(8) according to the National Academy of Sciences, EPSCoR has strengthened the national research infrastructure and enhanced the educational opportunities needed to develop the science and engineering workforce.

(b) CONTINUATION OF PROGRAM.—The Director shall continue to carry out EPSCoR, with the objective of helping the eligible States to develop the research infrastructure that will make them more competitive for Foundation and other Federal research funding. The program shall continue to increase as the National Science Foundation funding increases.

[(c) CONGRESSIONAL REPORTS.—The Director shall report to the appropriate committees of Congress on an annual basis, using the most recent available data—

[(1) the total amount made available, by State, under EPSCoR;

[(2) the amount of co-funding made available to EPSCoR States;

[(3) the total amount of National Science Foundation funding made available to all institutions and entities within EPSCoR States; and

[(4) efforts and accomplishments to more fully integrate the 29 EPSCoR jurisdictions in major activities and initiatives of the Foundation.]

[(d)]*(c)* COORDINATION OF EPSCOR AND SIMILAR FEDERAL PROGRAMS.—

(1) ANOTHER FINDING.—The Congress finds that a number of Federal agencies have programs, such as [Experimental Programs to Stimulate Competitive Research] *EPSCoR* and the National Institutes of Health Institutional Development Award program, designed to increase the capacity for and quality of science and technology research and training at academic institutions in States that historically have received relatively little Federal research and development funding.

(2) COORDINATION REQUIRED.—The EPSCoR Interagency Coordinating Committee, chaired by the National Science Foundation, shall—

(A) coordinate [EPSCoR and Federal EPSCoR-like programs] *each EPSCoR* to maximize the impact of Federal support for building competitive research infrastructure, and in order to achieve an integrated Federal effort;

(B) coordinate agency objectives with State and institutional goals, to obtain continued non-Federal support of science and technology research and training;

(C) develop metrics to assess gains in academic research quality and competitiveness, and in science and technology human resource development;

(D) conduct a cross-agency evaluation of [EPSCoR and other Federal EPSCoR-like programs] *each EPSCoR* and accomplishments, including management, investment, and

metric-measuring strategies implemented by the different agencies aimed to increase the number of new investigators receiving peer-reviewed funding, broaden participation, and empower knowledge generation, dissemination, application, and national research and development competitiveness;

(E) coordinate the development and implementation of new, novel workshops, outreach activities, and follow-up mentoring activities among [EPSCoR or EPSCoR-like programs] *each EPSCoR* for colleges and universities in EPSCoR States and territories in order to increase the number of proposals submitted and successfully funded and to enhance statewide coordination of [EPSCoR and Federal EPSCoR-like programs] *each EPSCoR*;

(F) coordinate the development of new, innovative solicitations and programs to facilitate collaborations, partnerships, and mentoring activities among faculty at all levels in non-EPSCoR and EPSCoR States and jurisdictions;

(G) conduct an evaluation of the roles, responsibilities and degree of autonomy that program officers or managers (or the equivalent position) have in executing [EPSCoR programs] *each EPSCoR* at the different Federal agencies and the impacts these differences have on the number of EPSCoR State and jurisdiction faculty participating in the peer review process and the percentage of successful awards by individual EPSCoR State jurisdiction and individual researcher; and

(H) conduct a survey of colleges and university faculty at all levels regarding their knowledge and understanding of EPSCoR, and their level of interaction with and knowledge about their respective State or Jurisdictional EPSCoR Committee.

(3) MEETINGS AND REPORTS.—The Committee shall meet at least twice each fiscal year and shall submit an annual report to the appropriate committees of Congress describing progress made in carrying out paragraph (2).

[[(e)]*(d)* FEDERAL AGENCY REPORTS.—Each Federal agency that administers an EPSCoR or Federal EPSCoR-like program shall submit to the OSTP as part of its Federal budget submission—

[(1) a description of the program strategy and objectives;

[(2) a description of the awards made in the previous year, including—

[(A) the percentage of reviewers and number of new reviewers from EPSCoR States;

[(B) the percentage of new investigators from EPSCoR States;

[(C) the number of programs or large collaborator awards involving a partnership of organizations and institutions from EPSCoR and non-EPSCoR States; and

[(3) an analysis of the gains in academic research quality and competitiveness, and in science and technology human resource development, achieved by the program in the last year.]

(d) FEDERAL AGENCY REPORTS.—Each Federal agency that administers an EPSCoR shall submit to Congress, as part of its Federal budget submission—

(1) a description of the program strategy and objectives;

(2) a description of the awards made in the previous fiscal year, including—

(A) the total amount made available, by State, under EPSCoR;

(B) the total amount of agency funding made available to all institutions and entities within each EPSCoR State;

(C) the efforts and accomplishments to more fully integrate the EPSCoR States in major agency activities and initiatives;

(D) the percentage of EPSCoR reviewers from EPSCoR States; and

(E) the number of programs or large collaborator awards involving a partnership of organizations and institutions from EPSCoR and non-EPSCoR States; and

(3) an analysis of the gains in academic research quality and competitiveness, and in science and technology human resource development, achieved by the program over the last 5 fiscal years.

[(f)]*(e)* NATIONAL ACADEMY OF SCIENCES STUDY.—

(1) IN GENERAL.—The Director shall contract with the National Academy of Sciences to conduct a study on all Federal agencies that administer an [Experimental Program to Stimulate Competitive Research or a program similar to the Experimental Program to Stimulate Competitive Research] *EPSCoR*.

(2) MATTERS TO BE ADDRESSED.—The study conducted under paragraph (1) shall include the following:

(A) A delineation of the policies of each Federal agency with respect to the awarding of grants to EPSCoR States.

(B) The effectiveness of each program.

(C) Recommendations for improvements for each agency to achieve EPSCoR goals.

(D) An assessment of the effectiveness of EPSCoR States in using awards to develop science and engineering research and education, and science and engineering infrastructure within their States.

(E) Such other issues that address the effectiveness of EPSCoR as the National Academy of Sciences considers appropriate.

[(g)](f) AWARD STRUCTURE UPDATES.—In implementing the mandate to maximize the impact of Federal EPSCoR support on building competitive research infrastructure, and based on the inputs and recommendations of previous EPSCoR reviews, the head of each Federal agency administering an EPSCoR program shall—

(1) consider modifications to EPSCoR proposal solicitation, award type, and project evaluation—

(A) to more closely align with current agency priorities and initiatives;

(B) to focus EPSCoR funding on achieving critical scientific, infrastructure, and educational needs of that agency;

(C) to encourage collaboration between EPSCoR-eligible institutions and researchers, including with institutions and researchers in other States and jurisdictions;

(D) to improve communication between State and Federal agency proposal reviewers; and

(E) to continue to reduce administrative burdens associated with EPSCoR;

(2) consider modifications to EPSCoR award structures—

(A) to emphasize long-term investments in building research capacity, potentially through the use of larger, renewable funding opportunities; and

(B) to allow the agency, States, and jurisdictions to experiment with new research and development funding models; and

(3) consider modifications to the mechanisms used to monitor and evaluate EPSCoR awards—

(A) to increase collaboration between EPSCoR-funded researchers and agency staff, including by providing opportunities for mentoring young researchers and for the use of Federal facilities;

(B) to identify and disseminate best practices; and

(C) to harmonize metrics across participating Federal agencies, as appropriate.

SEC. 526. BROADER IMPACTS REVIEW CRITERION.

[123 Stat. 4019]

(a) GOALS.—The Foundation shall apply a Broader Impacts Review Criterion to achieve the following goals:

(1) Increased economic competitiveness of the United States.

(2) Development of a globally competitive STEM workforce.

(3) Increased participation of women and underrepresented minorities in STEM.

(4) Increased partnerships between academia and industry.

(5) Improved pre-K-12 STEM education and teacher development.

[(6) Improved undergraduate STEM education.]

(6) Improved undergraduate STEM education and instruction.

(7) Increased public scientific literacy.

(8) Increased national security.

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TITLE 10. ARMED FORCES SUBTITLE A. GENERAL MILITARY LAW PART III. TRAINING AND EDUCATION CHAPTER 111. SUPPORT OF SCIENCE, MATHEMATICS, AND ENGINEERING EDUCATION

§ 2199. Definitions

In this chapter:

(1) The term "defense laboratory" means a laboratory operated by the Department of Defense or owned by the Department of Defense and operated by a contractor or a facility of a Defense Agency at which research and development activities are conducted.

(2) The term "institution of higher education" has the meaning given such term in section 101 of the Higher Education Act of 1965.

(3) The term "regional center for the transfer of manufacturing technology" means a [regional center] *manufacturing extension center* for the transfer of manufacturing technology *and best practices* referred to in section [25(a)] *25(b)* of the National Institute of Standards and Technology Act (15 U.S.C. 278k).

TITLE 51. NATIONAL AND COMMERCIAL SPACE PROGRAMS
SUBTITLE IV. AERONAUTICS AND SPACE RESEARCH AND EDUCATION CHAPTER 403. NATIONAL SPACE GRANT COLLEGE AND FELLOWSHIP PROGRAM

§ 40303. National space grant college and fellowship program

(a) ESTABLISHMENT.—The Administrator shall establish and maintain, within the Administration, a program to be known as the national space grant college and fellowship program. The national space grant college and fellowship program shall consist of the financial assistance and other activities provided for in this chapter. The Administrator shall establish long-range planning guidelines and priorities, and adequately evaluate the program.

(b) FUNCTIONS.—Within the Administration, the program shall—

(1) apply the long-range planning guidelines and the priorities established by the Administrator under subsection (a);

(2) advise the Administrator with respect to the expertise and capabilities which are available through the national space grant college and fellowship program, and make such expertise available to the Administration as directed by the Administrator;

(3) evaluate activities conducted under grants and contracts awarded pursuant to sections 40304 and 40305 of this title to ensure that the purposes set forth in section 40301 of this title are implemented;

(4) encourage other Federal departments, agencies, and instrumentalities to use and take advantage of the expertise and capabilities which are available through the national space grant college and fellowship program, on a cooperative or other basis;

(5) encourage cooperation and coordination with other Federal programs concerned with the development of space resources and fields related to space;

(6) advise the Administrator on the designation of recipients supported by the national space grant college and fellowship program and, in appropriate cases, on the termination or suspension of any such designation; and

(7) encourage the formation and growth of space grant and fellowship programs.

(c) GENERAL AUTHORITIES.—To carry out the provisions of this chapter, the Administrator may—

(1) accept conditional or unconditional gifts or donations of services, money, or property, real, personal or mixed, tangible or intangible;

(2) accept and use funds from other Federal departments, agencies, and instrumentalities to pay for fellowships, grants, contracts, and other transactions; and

(3) issue such rules and regulations as may be necessary and appropriate.

(d) PROGRAM ADMINISTRATION COSTS.—In carrying out the provisions of this chapter, the Administrator—

(1) shall maximize appropriated funds for grants and contracts made under section 40304 in each fiscal year; and

(2) in each fiscal year, the Administrator shall limit its program administration costs to no more than 5 percent of funds appropriated for this program for that fiscal year.

(e) REPORTS.—For any fiscal year in which the Administrator cannot meet the administration cost target under subsection (d)(2), if the Administration is unable to limit program costs under subsection (b), the Administrator shall submit to the appropriate committees of Congress a report, including—

(1) a description of why the Administrator did not meet the cost target under subsection (d); and

(2) the measures the Administrator will take in the next fiscal year to meet the cost target under subsection (d) without drawing upon other Federal funding.

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