

**INCLUSION ACROSS THE NATION OF COMMUNITIES
OF LEARNERS THAT HAVE BEEN UNDERREPRESENTED
FOR DIVERSITY IN ENGINEERING AND SCIENCE
(NSF INCLUDES)**

\$15,000,000

Overview

In FY 2016, NSF will launch NSF INCLUDES (Inclusion across the Nation of Communities of Learners that have been Underrepresented for Diversity in Engineering and Science), a comprehensive national initiative using a collective impact approach to increase the preparation, participation, advancement, and contributions of all scientists and engineering students, including those who have been traditionally underserved and/or underrepresented in all fields of science, technology, engineering, and mathematics (STEM). This includes, e.g., underrepresented ethnic/racial groups, women and girls and persons with disabilities. Diversity is a critical driver of excellence in research and innovation in STEM in the 21st century,¹ as the future of science depends upon diversity of thought that will strengthen the scientific infrastructure. Full representation of all of America’s STEM talent is a competitive advantage to enrich this diversity of thoughts and approaches, and thus advance science and engineering knowledge and the wellbeing of the Nation.

Currently the U.S. STEM enterprise faces numerous challenges to broadening participation including: under-participation across demographic groups; under-preparation and lack of opportunity for members of all demographic groups to learn meaningful, relevant STEM content; under-resourcing for some groups leading to growing disparities; and under-production of a diverse STEM workforce to ensure global competitiveness. NSF INCLUDES is designed to mobilize the STEM communities to bring renewed focus to solving broadening participation (BP) challenges by addressing a set of “bold visions for inclusion” at the national level, collectively. The initiative will support two of NSF’s Strategic Goals and associated objectives: *Goal 1: Transform the Frontiers of Science and Engineering – Objective 2: Integrate education and research to support the development of a diverse STEM workforce with cutting-edge capabilities and Goal 2: Stimulate Innovation and Address Societal Needs through Research and Education – Objective 1: Strengthen the links between fundamental research and societal needs through investments and partnerships.*

Total Funding for NSF INCLUDES

(Dollars in Millions)

FY 2014 Actual	FY 2015 Estimate	FY 2016 Request
-	-	\$15.00

Goal

The long-term goal of NSF INCLUDES is to fund new research, models, and partnerships that lead to demonstrable progress – moving the needle – in meeting the challenge of broadening participation in science and engineering. With special attention to the cross-cutting areas of inclusion, relevance, scalability, and sustainability, NSF will support a new set of NSF strategic investments to expand the culture of diversity in science and engineering across all sectors.

¹ Page, S. E.; *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies*; Princeton University Press, 2007.

Approach

NSF will employ an agency-wide broadening participation campaign that is complementary to key Administration diversity efforts in STEM, such as: the White House College Opportunity initiative;² the My Brother's Keeper initiative;³ the annual White House Science Fair;⁴ the Women in STEM virtual resource and the Equal Futures Partnership to engage and attract more females to STEM education and STEM careers;⁵ the Technology Showcase to demonstrate the power of technology to level the playing field for persons with disabilities;⁶ and the Tech Inclusion Champions of Change.⁷

In FY 2016, NSF INCLUDES will pilot two new models. The first (Network Pilot) will impact inclusion at large-scale via professional and social networks and effective technologies designed for collective impact. The second (Youth Empowerment Pilot) will create a new approach to empowering youth by engaging them directly in STEM, and will catalyze innovative discipline-specific initiatives. Overall co-ordination will be provided by the Office of Integrative Activities (OIA) Head and the Directorate for Education and Human Resources (EHR) Assistant Director (AD), in conjunction with NSF senior management and the NSF INCLUDES Working Group, comprising representatives from all directorates and offices. The Network Pilot will be led by OIA, and the Youth Empowerment pilot will be led by EHR. All of NSF's directorates will engage in domain-specific elements of NSF INCLUDES. This initiative will require the use of formal solicitations and Dear Colleague Letters to make awards and cooperative agreements, as well as post-award supplements. NSF INCLUDES is intended as a six-year activity, FY 2015 through FY 2020. The pilot activities will be three-year efforts with a review in the third year to determine next steps.

Investment Framework

NSF INCLUDES Funding by Directorate

(Dollars in Millions)

Directorate/Office	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request
BIO	-	-	\$1.40
CISE	-	-	1.78
EHR	-	-	3.00
ENG	-	-	1.40
GEO	-	-	2.44
MPS	-	-	2.60
SBE	-	-	0.50
IA	-	-	1.88
Total, NSF INCLUDES	-	-	\$15.00

Totals may not add due to rounding.

FY 2014 – FY 2015

NSF INCLUDES will be designed as a coordinated strategy responsive to the Committee on Equal Opportunities in Science and Engineering's (CEOSE) recommendation to build capacity and knowledge for catalyzing a national effort to make measurable progress on broadening participation in America's STEM workforce. In FY 2014, NSF established a Broadening Participation Working Group to develop

² www.whitehouse.gov/the-press-office/2014/08/13/fact-sheet-improving-college-opportunity

³ www.whitehouse.gov/my-brothers-keeper

⁴ www.whitehouse.gov/science-fair

⁵ www.whitehouse.gov/blog/2013/09/23/equal-futures-partnership-new-agenda-progress

⁶ www.whitehouse.gov/blog/2010/07/20/power-technology-power-equality

⁷ www.whitehouse.gov/champions/tech-inclusion

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options for the CEOSE-recommended bold new initiative, including the leverage of the current knowledge base of research and best practices for broadening participation. Furthermore, NSF INCLUDES will be customized, as needed, to specific diversity challenges in disciplines identified by directorate advisory committees and reports from national disciplinary societies. A foundational pillar will be developed in FY 2015 by fostering a national conversation to identify a set of community-driven “bold visions” for broadening participation. Community and stakeholder engagement to shape NSF INCLUDES and its bold vision development activities will be staged over two fiscal years, FYs 2015 and 2016.

FY 2016 Request

In FY 2016, based on the aforementioned new models that focus on networks and youth empowerment, respectively, two NSF-wide pilot programs will be launched: NSF INCLUDES: Networks for STEM Excellence and NSF INCLUDES: Empowering All Youth for STEM. Both pilots will provide support to the most innovative projects to collectively achieve the set of “bold visions.” These “bold visions” will be approaches that allow for coordinated, focused attention to a small set of clearly defined goals, where individual organizations agree to work together to aim at specifics that have been demonstrated to be effective in a number of settings. The pilots will be designed to build on evidence emerging from existing efforts, as well as all extant evidence, to extend these efforts in new directions. Additionally, these pilot programs will be deliberately designed to engage communities and sectors in partnerships that extend beyond the communities that typically seek NSF funding, including business and industry.

The Networks for STEM Excellence pilot will catalyze the implementation of networks consistent with CEOSE’s and the NSF Broadening Participation Working Group’s recommendations for centers/institutes and partnerships.⁸ Moreover, this pilot builds on extensive NSF experience in funding centers, networks, alliances, systemic approaches, and the research evidence about the effectiveness of such approaches in making lasting change. The key idea is to leverage existing programs, people, organizations, alliances, and institutions by providing resources that will allow the formation of new networks and synergies, to form NSF’s next generation of BP investments. This pilot is expected to achieve greater multiplicative impacts than prior efforts. It seeks transformative scale results to grow what works, building on strategies such as distributed platforms of effective networks, training others to deliver the solution, unbundling and scaling up the parts that have the greatest impact, strengthening a field of key players and building communities of experts and practitioners, changing public systems, innovating to drive down costs, and engaging the community (for example, the Year Up model).⁹ By exploiting the inherent and structural power of professional/social networks, networks will be encouraged to use technological innovations as part of their approach to sharing information and scaling ideas. Features of this approach will include shared goals across institutions and partners; common outcomes and metrics, and strategies for outreach and communication (for example, collective impact).¹⁰ Networks will identify one or more of the NSF INCLUDES bold visions as the drivers for their work.

The Empowering All Youth for STEM pilot will invite proposals to design, implement, and assess models to ignite greater demand for STEM learning opportunities for middle grades youth. In contrast with more traditional approaches to informal STEM learning, this pilot will emphasize engaging young people more directly in the kinds of STEM learning opportunities that they seek. It will build on literature about such important variables as grit, collaborative problem solving, growth mindset, and motivation. Empowering All Youth for STEM will catalyze innate curiosity, generate excitement, and engage learners in experiencing science and technology learning and participation on their terms and to build on their own emerging curiosity and experiences in STEM. The projects should propose ways of empowering youth

⁸ The NSF BP Working Group recommendations will be available by end of FY 2015.

⁹ www.ssireview.org/articles/entry/transformational_scale_the_future_of_growing_what_works

¹⁰ www.ssireview.org/articles/entry/collective_impact

and building their capacity to seek out existing or develop new local, regional, national, and international resources to feed their appetites for STEM and to support them in engaging in STEM experiences. New NSF investments in this pilot will go to community organizations, informal learning enterprises, developers of technology, cyberlearning experts, and creative partnerships that can leverage other stakeholders with shared interest in this space, and that can focus in high-needs areas and on populations that are underrepresented in STEM. Proposers may identify one or more of the “bold visions” that are driving their efforts.

In addition to the two pilot programs, a third focus in FY 2016 is the expansion and re-framing of directorate-based broadening participation efforts to align for greater impact. This component of NSF INCLUDES will leverage disciplinary opportunities to fill STEM positions in key growth areas with scientists and engineers from underrepresented groups; and to ensure that diversity of background and perspectives drives innovation as well as a sustained, coordinated approach to BP.

FY 2017 – FY 2020

NSF will continue to make the case for and invest in education, mentoring, and research in order to create STEM experiences to empower every segment of the American population to succeed regardless of demographic characteristics. NSF INCLUDES will capitalize on NSF’s role in basic research across all fields of science and engineering and across all levels and venues of STEM education. The ongoing activities in FY 2017 and beyond include: supporting innovative projects to achieve new levels of partnerships and scale as well as generate new knowledge to inform future broadening participation efforts; engaging the NSF Evaluation and Assessment Capability in the oversight responsibilities for assessing and evaluating the NSF INCLUDES portfolio, including a three-year review to determine next steps; and continuing the convening of stakeholders to maintain the national momentum for diversifying the STEM enterprise and disseminate promising/best practices.

Evaluation Framework

In FY 2016, an external evaluation will be contracted for NSF INCLUDES monitoring and evaluation. Evaluation will be driven by a focus on the “bold visions” and on the design of indicators and measures for tracking NSF’s collective progress toward achieving them. External evaluation experts and NSF staff will develop and refine the theory of action/logic framework for each of the major investment goals of NSF INCLUDES, including annual metrics and ambitious short- and long-term targets (three-year and five or more years, respectively). To be successful, NSF INCLUDES must be systemic, have impact at scale, and be sustainable. Key to this broader impact of the initiative is an evidence-based approach that drives management decision-making, mid-course corrections, improvements, and enhancements for yields greater than incremental progress. Additionally, tracking studies will be employed to determine the contributions to excellence, equity, diversity and inclusion in STEM.

NSF INCLUDES provides the opportunity to implement a coordinated approach for evaluating ongoing efforts. Therefore, results from NSF INCLUDES will strengthen, improve, or refine ongoing programs. This investment priority will be closely monitored for breaking new ground in both assessment practices and innovative solutions for addressing the underrepresentation challenge in STEM. This will happen through, for example, the use of a portfolio approach and innovative text-mining tools for portfolio analysis. The development of common cross-directorate BP performance goals and milestones within the context of NSF’s broader impacts criterion will promote bold BP actions that will help ensure the return on the investment of NSF INCLUDES. The progress of the implementation of this investment will be monitored and reviewed quarterly to ensure that it is on track as part of a FY 2016 performance goal. For more information about monitoring key program investments, see the FY 2016 Annual Performance Plan in the Performance chapter.