

## INTEGRATIVE ACTIVITIES (IA)

**\$459,860,000**  
**+\$12,800,000 / 2.9%**

**IA Funding**  
(Dollars in Millions)

	FY 2015 Actual	FY 2016 Estimate	FY 2017 Request	Change Over FY 2016 Estimate	
				Amount	Percent
EPSCoR	\$165.46	\$160.00	\$170.69	\$10.69	6.7%
Graduate Research Fellowships	166.72	165.96	166.08	0.12	0.1%
INSPIRE	10.89	13.75	-	-13.75	-100.0%
Major Research Instrumentation	74.28	75.69	90.00	14.31	18.9%
NSF INCLUDES	-	1.88	1.88	-	-
Planning and Policy Support <sup>1</sup>	[0.95]	[1.35]	1.43	[1.43]	N/A
Research Investment Communications (RIC)	3.14	3.14	3.14	-	-
Science & Technology Centers Class of 2016	-	20.00	20.00	-	-
Science & Technology Centers Administration	1.23	0.90	0.90	-	-
Science & Technology Policy Institute	4.74	4.74	4.74	-	-
STAR METRICS	1.00	1.00	1.00	-	-
<b>Total, IA</b>	<b>\$427.46</b>	<b>\$447.06</b>	<b>\$459.86</b>	<b>\$12.80</b>	<b>2.9%</b>

Totals may not add due to rounding.

<sup>1</sup> Planning and Policy Support funding for FY 2015 and FY 2016 is displayed for comparability. FY 2015 and FY 2016 activities are supported by the Other Program Related Administration. See the Program Accounts: R&RA and EHR chapter for more information.

The FY 2017 Budget Request for Integrative Activities (IA) is \$459.86 million, of which \$451.30 million is discretionary funding and \$8.56 million is new mandatory funding. The mandatory funding will support Experimental Program to Stimulate Competitive Research (EPSCoR) activities, with particular emphasis on 1) enhancing the development of a diverse group of high-quality early career investigators, and 2) strengthening interdisciplinary research collaborations across EPSCoR jurisdictions and more broadly in the research community. Examples of EPSCoR activities in these areas include an EPSCoR Research Fellows component for early career faculty under the Research Infrastructure Improvement (RII) activities and the expansion of the RII Track-2: Focused EPSCoR Collaborations with increased emphasis on the development of a diverse group of academic leaders in NSF priority areas.

### About IA

IA builds capacity across NSF research and education communities through long-lived “flagship” programs, such as Science and Technology Centers (STCs) and Major Research Instrumentation (MRI); strengthens the science and engineering enterprise throughout the U.S. through EPSCoR; develops human capital through the Graduate Research Fellowship (GRF) program; and develops the NSF-wide evaluation and assessment capability (EAC).

The FY 2017 Budget Request will support research in both the Administration’s and NSF’s priority areas, including clean energy and Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS). The Office of Integrative Activities (OIA) will co-lead activities with the Directorates for Education and Human Resources (EHR) and Engineering (ENG) in NSF INCLUDES (Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science), a comprehensive national initiative to enhance U.S. leadership in science and engineering discovery and innovation by proactively

## *Integrative Activities*

seeking and developing science, technology, engineering and mathematics (STEM) talent from all sectors and groups in our society.

### **FY 2017 Summary**

All funding changes are over the FY 2016 Estimate.

- EPSCoR (+\$10.69 million, to a total of \$170.69 million) funding in FY 2017 will catalyze key research themes, including national research priorities within and among EPSCoR jurisdictions that empower knowledge generation, broaden participation in science and engineering, and strengthen the research opportunities available to early career faculty.
- The GRF program invests (+\$120,000, to a total of \$166.08 million) in the U.S. science and engineering (S&E) human capital development necessary to ensure the Nation's leadership in STEM research and innovation through the selection and support of outstanding U.S. graduate students. IA provides 50 percent of NSF's funding for GRF, with the remainder provided by the Directorate for Education and Human Resources (EHR). For additional information on GRF, see the discussion on Major Investments in STEM Graduate Education narrative in the NSF-Wide Investments section.
- Dedicated funding is not necessary to encourage the kinds of projects supported through INSPIRE. Starting in FY 2017, each directorate will continue support for INSPIRE-like interdisciplinary research through core and cross-cutting programs, coordinating with other directorates and divisions, as necessary, for internal review of these projects. NSF anticipates developing a new funding mechanism that will manifest many of the principles of INSPIRE. This new funding mechanism will have guidelines published in the annual NSF Grants Proposal Guide, and will be available to any researcher conducting transformational, interdisciplinary research in fields that NSF supports. Therefore, in FY 2017, IA INSPIRE co-funding is eliminated.
- The MRI program (+\$14.31 million, to a total of \$90.0 million) will continue to catalyze new knowledge and discoveries by empowering the Nation's scientists and engineers with state-of-the-art research instrumentation. The MRI program supports instrument acquisition or development, such as microscopes, spectrometers, cyberinfrastructure, genome sequencers, or telescopes. MRI also supports research-intensive learning environments that promote the development of a diverse workforce as well as facilitates academic and private sector partnerships. The FY 2017 funding level will support roughly 190 MRI awards.
- NSF INCLUDES' (no change, to a total of \$1.88 million) goal is to develop the STEM talent of women, members of racial and ethnic groups that have been underrepresented in STEM, and people with disabilities.
- Planning and Policy Support funding in FY 2017 is \$1.43 million. This budget line is being established to support certain NSF-wide policy and planning activities. This includes support for workshops on long-term foundational research and education questions. It also includes certain activities previously supported through other program related administration, including annual agency awards (the Vannevar Bush Award, Public Service Award, Alan T. Waterman Award, and National Medal of Science), and several summer science internship programs that target science, technology, engineering, and mathematics students from underrepresented groups. The FY 2017 Budget Request will also fund NSF collaborations with the National Academies of Science, including the Government-University-Industry

Research Roundtable,<sup>1</sup> and the Committee on Science, Engineering, and Public Policy.<sup>2</sup>

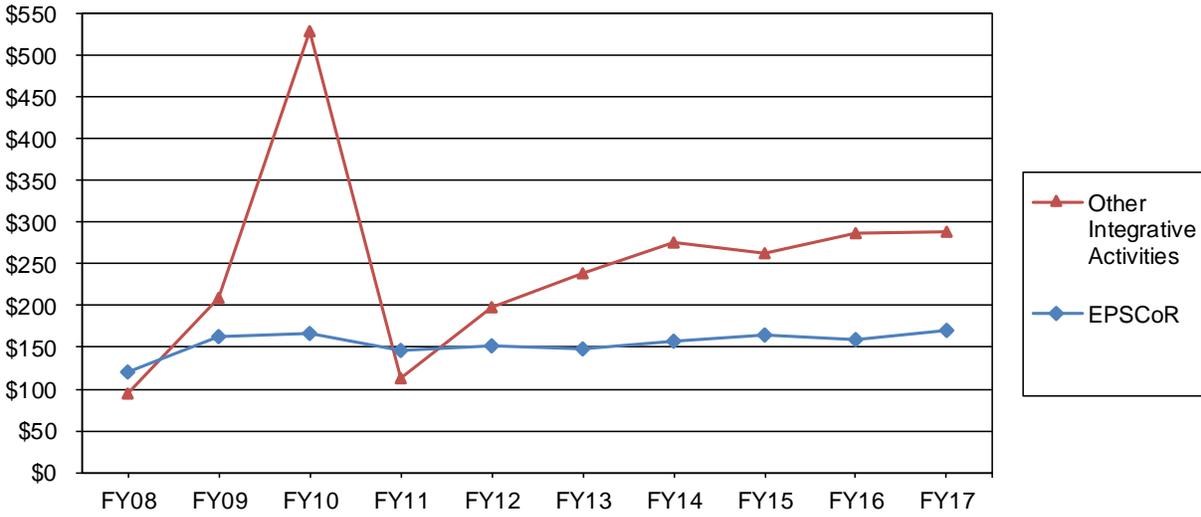
- Research Investment Communications (RIC) funding in FY 2017 is \$3.14 million, equal to the FY 2016 Estimate. RIC is a leading-edge communications effort that is essential for public awareness and support of science and engineering. RIC creates products and processes through traditional and social media platforms that make NSF's investments in science, technology, engineering, education, and mathematics readily available and easily understandable to everyone. In FY 2017, RIC will continue its focus on informing policy makers, the media, and the general public about the impact of NSF's investments on their daily lives and the Nation's future.
- The Science and Technology Centers: Integrative Partnerships (STC) (no change, to a total of \$20.90 million) program supports innovative, potentially transformative, complex research and education projects that require large-scale, long-term awards. STCs engage the Nation's intellectual talent through partnerships among academia, industry, national laboratories, and government. These collaborations create synergies that enhance the training of the next generation of scientists, engineers, and educators; and the creation of job opportunities. STCs have impressive records of research achievements as well as fostering strong partnerships with industry. The FY 2017 Request will provide continuing support of four centers established through the 2016 STC cohort as well as post award management for each of the 12 centers.
- The Science and Technology Policy Institute (STPI) (no change, to a total of \$4.74 million) is a Federally Funded Research and Development Center (FFRDC) sponsored by NSF on behalf of the White House Office of Science and Technology Policy (OSTP). STPI provides analysis of significant domestic and international science and technology policies and developments for OSTP and other federal agencies.
- Science and Technology for America's Reinvestment: Measuring the Effect of Research on Innovation, Competitiveness, and Science (STAR METRICS) (no change, to a total of \$1.0 million) is an interagency pilot activity that represents a new approach to developing information on how NSF and other federal Research and Development (R&D) investments affect the innovation ecosystem. Funding will enable NSF to meet commitments to the interagency STAR METRICS partnership, promote the integration of elements of STAR METRICS into developing an assessment and evaluation information system linked to NSF's management information systems, and support assessment and evaluation pilots in NSF programs using STAR METRICS tools.

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<sup>1</sup> <http://sites.nationalacademies.org/pga/guirr/index.htm>

<sup>2</sup> <http://sites.nationalacademies.org/pga/cosepup/index.htm>

**IA Subactivity Funding**  
(Dollars in Millions)



FY 2009 reflects both the FY 2009 omnibus appropriation and funding provided through the American Recovery and Reinvestment Act of 2009 (P.L. 111-5).

## Program Monitoring and Evaluation

### External Program Evaluations and Studies

- In FY 2014, IA initiated an evaluation of the INSPIRE program to develop and execute a formative evaluation to test whether the process is one conducive to achieve program and portfolio-level goals. Two formative evaluations are being conducted for INSPIRE. Final results from these studies are expected in September 2016.
- In 2014, two independent studies of EPSCoR were completed by the National Academy of Sciences (NAS) and the Science and Technology Policy Institute (STPI). The National Academy of Sciences study was conducted on all federal agencies that administer an EPSCoR or a program similar to the EPSCoR. The study focused on program eligibility, program focus, merit review process, and evaluation. This study was conducted by NAS' Committee on Science, Engineering, and Public Policy. The Science and Technology Policy Institute (STPI) study focused on the NSF's current eligibility criterion for jurisdictions and recommendations for better targeting available funding to those jurisdictions for which the EPSCoR program can provide the largest incremental benefit to their research infrastructure. NSF's response to the findings and recommendations of the NAS and STPI reports was transmitted to congressional staff by the Office of Legislative and Public Affairs (OLPA) and posted on the NSF EPSCoR website.<sup>3</sup> In response to recommendations:
  - EPSCoR has added more focus on the development of early career faculty in the RII Track-2 activities.
  - EPSCoR is working with the Evaluation and Assessment Capability (EAC) Section to outline the next phase of program evaluation (target is August 2016).
  - NSF has requested that the EPSCoR Interagency Coordinating Committee provide recommendations for EPSCoR eligibility options for further consideration by the Foundation (target is September 2016).

<sup>3</sup> [www.nsf.gov/epscor](http://www.nsf.gov/epscor)

- In FY 2016,
  - The results of the formative evaluation for the Career Life Balance initiative will be released in September 2016.
  - EAC has four (4) evaluative/monitoring activities underway, each of which is summarized below:
    - Graduate Research Fellowship Program (GRFP). This activity encompasses the development and piloting, of a survey instrument and survey process that may be used as a permanent longitudinal monitoring system to assess program outcomes. The data tracking is being conducted by National Opinion Research Center (NORC) at the University of Chicago. Results are expected to be used to track the careers of the fellows. Final results from this pilot data collection for monitoring longitudinal career outcomes of fellowship recipients are expected in FY 2018.
    - Research Experience for Undergraduates (REU). The purpose of this project is: (1) to develop a framework for evaluating the REU Sites program, and (2) to build, pilot, test, and present findings for a web-based longitudinal data collection system that can be used, initially, to track REU Site participants, but can be adapted to measure participant outcomes. Final results are expected in FY 2019.
    - NSF Innovation Corps (I-Corps™) Teams Program. The I-Corps™ program has gained national visibility as a model for nurturing innovation and, as such, there is an increased need for assessing and quantifying the impact of this NSF investment on society. In particular, NSF is interested in evaluating the impact the I-Corps™ team program has had on team members themselves as well as on their academic organizations. A rigorous longitudinal outcome/impact evaluation of the I-Corps™ Teams program is being conducted with results expected in FY 2017.
    - Science, Engineering and Education for Sustainability (SEES). NSF has awarded a contract to conduct an evaluation of the SEES portfolio, which is scheduled to sunset in FY 2017. In FY 2015, NSF exercised its option year; thus, the final results are now expected in early FY 2017. The evaluation is designed to determine NSF's success in achieving program- and portfolio-level goals. The evaluation seeks specifically to measure the success of SEES in terms of:
      - the development of new knowledge and concepts that advance the overarching goal of a sustainable human future;
      - new and productive connections made between researchers in a range of disciplines; and
      - the development of a workforce capable of meeting sustainability challenges.
- In FY 2017, EAC will launch evaluations of INFEWS, Understanding the Brain (UtB), and NSF INCLUDES.

#### Committees of Visitors (COV)

In 2015, COV reviewed the EPSCoR program and found no program areas in need of significant improvement. The COV presented their report to the NSF Director with nine recommendations. The COV's recommendations and NSF's response were published in late FY 2015.<sup>4</sup>

- In 2016, a COV will review the MRI program. (The last MRI COV was convened in FY 2010.)
- In 2017, a COV will review the STC program. (The last STC COV was convened in FY 2011.)

The Performance chapter provides details regarding the periodic reviews of programs and portfolios of programs by external Committees of Visitors and directorate Advisory Committees. Please see this chapter for additional information.

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<sup>4</sup> <http://nsf.gov/od/oia/activities/cov/oia/2015/Response-to-2015-COV-Recommendations.pdf>

**EXPERIMENTAL PROGRAM TO STIMULATE  
COMPETITIVE RESEARCH (EPSCOR)**

**\$170,690,000  
+\$10,690,000 / 6.7%**

**EPSCoR Funding**  
(Dollars in Millions)

	FY 2015 Actual	FY 2016 Estimate	FY 2017 Request	Change Over FY 2016 Estimate	
				Amount	Percent
<b>Total, EPSCoR</b>	<b>\$165.46</b>	<b>\$160.00</b>	<b>\$170.69</b>	<b>\$10.69</b>	<b>6.7%</b>
Research Infrastructure Improvement (RII)	137.44	128.00	138.56	10.56	8.3%
Co-Funding	27.55	30.00	30.13	0.13	0.4%
Outreach and Workshops	0.47	2.00	2.00	-	-

Totals may not add due to rounding.

The FY 2017 Budget Request for EPSCoR is \$170.69 million, of which \$162.13 million is discretionary funding and \$8.56 million is new mandatory funding. The FY 2017 mandatory funding is within the RII line in the above table, this funding will target EPSCoR Research Fellows and an expansion of the RII Track-2 Focused EPSCoR Collaborations in NSF priority areas.

EPSCoR assists NSF in its statutory function “to strengthen research and education in science and engineering throughout the United States and to avoid undue concentration of such research and education.” EPSCoR seeks to advance excellence in science and engineering research and education to achieve sustainable increases in research, education, and training capacity and competitiveness that will enable EPSCoR jurisdictions to have increased engagement in the science and engineering supported by NSF.

In FY 2016, the EPSCoR Interagency Coordinating Committee was tasked with examining the eligibility criteria across the five agencies with active programs (Department of Energy (DOE), National Aeronautics and Space Administration (NASA), National Institutes of Health (NIH), NSF, and U.S. Department of Agriculture (USDA)) and to determine if there should be a common federal EPSCoR eligibility criterion. A summary of recommendations is targeted for July 2016.

EPSCoR uses three strategic investment tools: Research Infrastructure Improvement (RII) awards, Co-Funding, and Outreach/Workshops.

**FY 2017 Summary**

All funding increases represent change over the FY 2016 Estimate.

**Research Infrastructure Improvement (RII)**

- RII (+\$5.69 million, to a total of \$133.69 million) awards support development of physical, human, and cyber-based research infrastructure in EPSCoR jurisdictions with emphasis on collaborations among academic researchers, the private sector, and state and local governments to affect sustainable improvements in research infrastructure. These awards are designed to improve the research competitiveness of jurisdictions by strengthening their academic research infrastructure in areas of science and engineering supported by NSF and critical to the particular jurisdiction’s science and technology initiative or plan. RII awards also increase the participation of underrepresented groups in STEM and enable broader regional and topical collaborations among jurisdictions and facilitate the enhancement of discovery, learning, and economic development of EPSCoR jurisdictions. The RII portfolio consists of projects addressing all three components of the food-energy-water nexus,

renewable energy, and nanomaterials. In addition, it contains collaborative inter-jurisdictional projects focused on NSF priorities such as UtB and INFEWS.

**Co-Funding**

- Co-funding (+\$5.0 million to a total of \$35.0 million): EPSCoR co-invests with NSF directorates and offices on meritorious proposals from individual investigators, groups, and centers in EPSCoR jurisdictions that are submitted to the Foundation’s research and education programs, and to crosscutting initiatives such as clean energy and INFEWS. These proposals are merit reviewed in NSF disciplinary programs and recommended for award, but cannot be funded without the combined, leveraged support of EPSCoR. Through co-funding, EPSCoR co-invests in NSF strategic priority areas as well as early investigator development (e.g., the Faculty Early Career Development Program (CAREER)).

**Outreach and Workshops**

- The Outreach and Workshops (no change from the FY 2016 Estimate of \$2.0 million) component of EPSCoR solicits requests for workshops, conferences, and other community-based activities designed to explore opportunities in emerging areas of science and engineering, and to share best practices in strategic planning, diversity, communication, cyberinfrastructure, evaluation, and other capacity-building areas of importance to EPSCoR jurisdictions. EPSCoR also supports outreach travel that enables NSF staff from all directorates and offices to directly engage and inform the EPSCoR research community about NSF opportunities, priorities, programs, and policies.

**Number of People Involved in EPSCoR Activities**

	FY 2015 Actual Estimate	FY 2016 Estimate	FY 2017 Estimate Total
Senior Researchers	579	600	600
Other Professionals	267	300	300
Postdoctoral Associates	72	70	70
Graduate Students	894	900	900
Undergraduate Students	488	500	500
K-12 Teachers	5,320	5,100	5,500
K-12 Students	97,128	94,000	100,300
<b>Total Number of People</b>	<b>104,748</b>	<b>101,470</b>	<b>108,170</b>

*Integrative Activities*