NSF: Supporting Research and Education to Benefit the Nation

Denise M. Barnes, Head
NSF EPSCoR
April 4, 2017
NSF Core Mission: Fundamental Research

Strategic Goals

Transform the Frontiers
Innovate for Society
Perform as a Model Organization

NSF by the Numbers

$8B FY 2017 budget request
93% funds research, education and related activities
50,000 proposals
12,000 awards funded
2,000 NSF-funded institutions
350,000 NSF-supported researchers

Fund research in all S&E disciplines
Fund STEM education & workforce
Nobel Prize winners
NSF Statistics

• **FY16 NSF Funding Rate (Budget: $7.46 B*)**
  - Proposals received: 49,308
  - Proposals awarded: 11,895 (24%)

• **FY17 Appropriations Budget Request: $7.96B***
  - $6.43B for Research Support
  - $952.9M for Education & Human Resources
  - $193.1M for Major Research Equipment

* Includes agency operations (~2100 staff in Arlington, VA)
NSF Organization


Office of Integrative Activities (OIA) - EPSCoR  Office of International S&E (OISE)  Computer & Informational S&E (CISE)  Education & Human Resources (EHR)
Visitors and Real ID Act: 28 states and territories will not be able to use their state/territory issued driver’s license to access federal facilities. Please bring alternative ID (e.g., passport, Federal PIV card, Global Entry card, University ID with Photo and expiration dates, etc.) or be escorted by an NSF employee. Note – South Carolina is compliant with the Real ID Act and residents from the state do not need an alternate form of ID.
NSF Ideas for Future Investment

**RESEARCH IDEAS**

- Harnessing Data for 21st Century Science and Engineering
- Work at the Human–Technology Frontier: Shaping the Future
- The Quantum Leap: Leading the Next Quantum Revolution
- Understanding the Rules of Life: Predicting Phenotype
- Navigating the New Arctic
- Windows on the Universe: The Era of Multi-messenger Astrophysics

**PROCESS IDEAS**

- Growing Convergent Research at NSF
- Mid-scale Research Infrastructure
- NSF 2050: The Integrative Foundational Fund
- NSF INCLUDES: Enhancing Science and Engineering through Diversity
Harnessing Data for 21st Century Science and Engineering

Pursue fundamental research in data science and engineering, the development of a cohesive, federated, national-scale approach to research data infrastructure, and the development of a 21st-century data-capable workforce.

NSF can uniquely lead a bold initiative to create a data-enabled future for the Nation’s science, engineering and educational enterprises, and for the country more broadly.
Shaping the New Human-Technology Frontier

Designing, building and deploying the human-centered engineered systems with cognitive and adaptive capacities that are best matched to collaboration with humans, individually and in their smart-and-connected communities.

Seek to understand how technologies affect human behavior and social organizations and how technologies are and can be shaped through interactions with people and designers.
Rapidly changing patterns of research require a new approach to research infrastructure for NSF’s science and engineering activities.

The funding structure available at NSF ranges from relatively small research infrastructure projects through the Major Research Instrumentation (MRI) program, to larger projects through the Major Research Equipment and Facilities Construction (MREFC) funding. Missing that mid-scale infrastructure leaves essential science undone.
Increasingly, science and engineering advances drive the U.S. economy, so creating inclusive pathways for more people to become scientists and engineers is a national priority.

NSF INCLUDES aims to build on the proven success of a wide variety of programs across the U.S. in reaching populations traditionally underserved in STEM.

NSF wants to help create collaborative alliances of partner organizations with a shared goal in STEM inclusion and the potential to realize national impacts.

We're looking for novel approaches. Our 2016 call for proposals is open to diverse teams of stakeholders that may include:

- Academic institutions
- Industry
- Non-profits
- Government
- Professional organizations
- Science- and industry-focused organizations
Building Research Infrastructure to Advance Science and Engineering Research and Education Across America

EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH (EPSCoR)
Current EPSCoR Jurisdictions

* Missouri not eligible for new RII awards
Enhances research competitiveness of targeted jurisdictions (states, territories, commonwealth) by strengthening STEM capacity and capability

Goals
- Catalyze jurisdiction-wide research capability
- Advance STEM training/workforce development
- Broaden participation of diverse groups and institutions in STEM
- Effect engagement in STEM at national and global levels
- Impact jurisdictional economic development

Jurisdiction-wide partnerships

- Federal, state, and private-sector
- Governance by steering committee
- Alignment with jurisdiction’s S&T plan
- Multi-faceted approach to infrastructure improvement, including physical, human, and cyber

Administratively complex

- Team-based
- Cross-sectors
- Cross-institutions
EPSCoR Investment Strategies

• **Research Infrastructure Improvement (RII)** (79% of EPSCoR budget)
  Support physical, human, and cyber infrastructure within academic institutions across the state
  • RII Track-1: State-based capacity building program, multi-discip & inst
  • RII Track-2: Focused EPSCoR Collaborations, more than one state
  • RII Track-3: Building Diverse Communities
  • RII Track-4: EPSCoR Research Fellows
    New in FY17

• **Co-Funding with NSF Directorates and Offices** (20% of EPSCoR budget)
  Meritorious proposals reviewed in other NSF programs

• **Outreach and Workshops** (1% of EPSCoR budget)
  Interaction among EPSCoR Community and NSF; builds mutual awareness
EPSCoR Funding ($M)

EPSCoR funding represents ~2.7% of NSF’s overall research support

<table>
<thead>
<tr>
<th>Activity</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>RII</td>
<td>110.6</td>
<td>116.3</td>
<td>132.2</td>
<td>137.4</td>
<td>130.4</td>
</tr>
<tr>
<td>Co-funding</td>
<td>38.8</td>
<td>30.8</td>
<td>25.3</td>
<td>27.6</td>
<td>28.5</td>
</tr>
<tr>
<td>Outreach &amp; Workshops</td>
<td>1.5</td>
<td>0.5</td>
<td>1.0</td>
<td>0.5</td>
<td>1.1</td>
</tr>
<tr>
<td><strong>Total</strong>*</td>
<td>150.9</td>
<td>147.6</td>
<td>158.2</td>
<td>165.5</td>
<td>160.0</td>
</tr>
</tbody>
</table>

* May not add due to rounding
FY16 Research by Directorate/Office, $M

- Outreach & Workshops
- Co-Funding
- RII
## NSF Funding: South Carolina

<table>
<thead>
<tr>
<th>Year</th>
<th>Total $M</th>
<th>Research $M</th>
<th>EHR $M</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY16</td>
<td>60.16</td>
<td>55.88</td>
<td>4.28</td>
</tr>
<tr>
<td>FY15</td>
<td>58.60</td>
<td>47.15</td>
<td>11.45</td>
</tr>
<tr>
<td>FY14</td>
<td>53.81</td>
<td>47.81</td>
<td>6.00</td>
</tr>
<tr>
<td>FY13</td>
<td>45.30</td>
<td>35.07</td>
<td>10.23</td>
</tr>
<tr>
<td>FY12</td>
<td>64.56</td>
<td>58.90</td>
<td>5.66</td>
</tr>
<tr>
<td>Total</td>
<td>282.43</td>
<td>244.81</td>
<td>37.62</td>
</tr>
<tr>
<td>Average</td>
<td>56.49</td>
<td>48.96</td>
<td>7.52</td>
</tr>
</tbody>
</table>
NSF Proposal Success Rates in South Carolina

For more fine-scale data on funding rates: http://dellweb.bfa.nsf.gov/awdfr3/default.asp
<table>
<thead>
<tr>
<th>FY16</th>
<th>Proposals Awarded</th>
<th>Success Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Carolina</td>
<td>98</td>
<td>17.6%</td>
</tr>
<tr>
<td>All EPSCoR</td>
<td>1678</td>
<td>21.5%</td>
</tr>
</tbody>
</table>
## EPSCoR Co-Funding: South Carolina 5 Fiscal Years

<table>
<thead>
<tr>
<th>FY12 – FY16</th>
<th>Proposals Awarded</th>
<th>Project Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Carolina</td>
<td>55</td>
<td>$18.08M</td>
</tr>
<tr>
<td>EPSCoR</td>
<td>961</td>
<td>$404.31M</td>
</tr>
</tbody>
</table>
NSF Research Support Funding

- Initial 3 Years in EPSCoR
- Most Recent 3 Year Period (FY14 - FY16)

Eligibility Threshold

States and Territories: Arkansas, Maine, Montana, South Carolina, West Virginia, Alabama, Kentucky, Nevada, North Dakota, Oklahoma, Puerto Rico, Vermont, Wyoming, Idaho, Louisiana, Mississippi, South Dakota, Kansas, Nebraska, Alaska, Hawaii, New Mexico, Virgin Islands, Delaware, New Hampshire, Rhode Island, Tennessee, Iowa, Utah, Missouri, Guam
# University of South Carolina, Columbia Success Rates, by DIR (FY12 – FY16)

<table>
<thead>
<tr>
<th>DIR</th>
<th>Proposals</th>
<th>Awards</th>
<th>Inst. Success Rate</th>
<th>NSF Success Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO</td>
<td>67</td>
<td>21</td>
<td>31.3%</td>
<td>24.9%</td>
</tr>
<tr>
<td>CISE</td>
<td>104</td>
<td>17</td>
<td>16.3%</td>
<td>22.7%</td>
</tr>
<tr>
<td>EHR</td>
<td>46</td>
<td>8</td>
<td>17.4%</td>
<td>19.2%</td>
</tr>
<tr>
<td>ENG</td>
<td>445</td>
<td>76</td>
<td>17.1%</td>
<td>19.9%</td>
</tr>
<tr>
<td>GEO</td>
<td>186</td>
<td>42</td>
<td>22.6%</td>
<td>27.5%</td>
</tr>
<tr>
<td>MPS</td>
<td>299</td>
<td>86</td>
<td>28.8%</td>
<td>26.8%</td>
</tr>
<tr>
<td>O/D</td>
<td>44</td>
<td>20</td>
<td>45.5%</td>
<td>44.8%</td>
</tr>
<tr>
<td>SBE</td>
<td>133</td>
<td>23</td>
<td>17.3%</td>
<td>22.4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1324</strong></td>
<td><strong>293</strong></td>
<td><strong>22.1%</strong></td>
<td><strong>23.5%</strong></td>
</tr>
</tbody>
</table>
South Carolina EPSCoR

- Do you know how to contact SC EPSCoR?
- Do you know how RII Track-1 proposal topics are selected?
- Does your research align with the S&T plan?
- What are current SC EPSCoR awards, activities, and opportunities for research, education, outreach, and collaboration?
- Are seed funding and emerging opportunities possible?
- SC EPSCoR Website [https://www.epscoridea.org](https://www.epscoridea.org) – speak to the Project Director and other members of SC EPSCoR Office
What can you do?

• Stay abreast of NSF funding priorities and opportunities; familiarize and take part in SC EPSCoR activities
• Participate in grant-writing workshops
• APPLY!!! And respond to the solicitation and review criteria
• Revise and resubmit; Manage awards efficiently – follow guidelines
• Serve as a reviewer
• Serve as a NSF Rotating Program Officer [https://www.nsf.gov/careers/](https://www.nsf.gov/careers/)
• Communicate with NSF Program Officers, SC EPSCoR Leadership
Navigating https://www.nsf.gov
Useful Resources on nsf.gov

• Find Funding, Award Search at http://www.nsf.gov
  Directorate/Divisions/Program; cross-cutting, students, postdocs, and
  international opportunities

• Proposal Preparation and Merit Review
  Proposal and Award Policies and Procedures Guide (PAPPG)
  effective for proposals submitted on or after Jan. 30, 2017

• Merit Review Process Video

• NSF Outreach – Grants Conference Presentations
  https://nsf.gov/bfa/dias/policy/outreach.jsp#present

• NSF Days – Presentation Slides
  https://www.nsf.gov/about/congress/nsfdays/index.jsp
NSF Program Officer (Rotator) Opportunities

http://www.nsf.gov

- About NSF: Career Opp → Temporary/Rotator Programs
- About NSF: Career Opp → Job Openings: Science/Engineering/Education
- (All or specific NSF Unit)
Thank You