The National Science Foundation Experimental Program to Stimulate Competitive Research (NSF EPSCoR)

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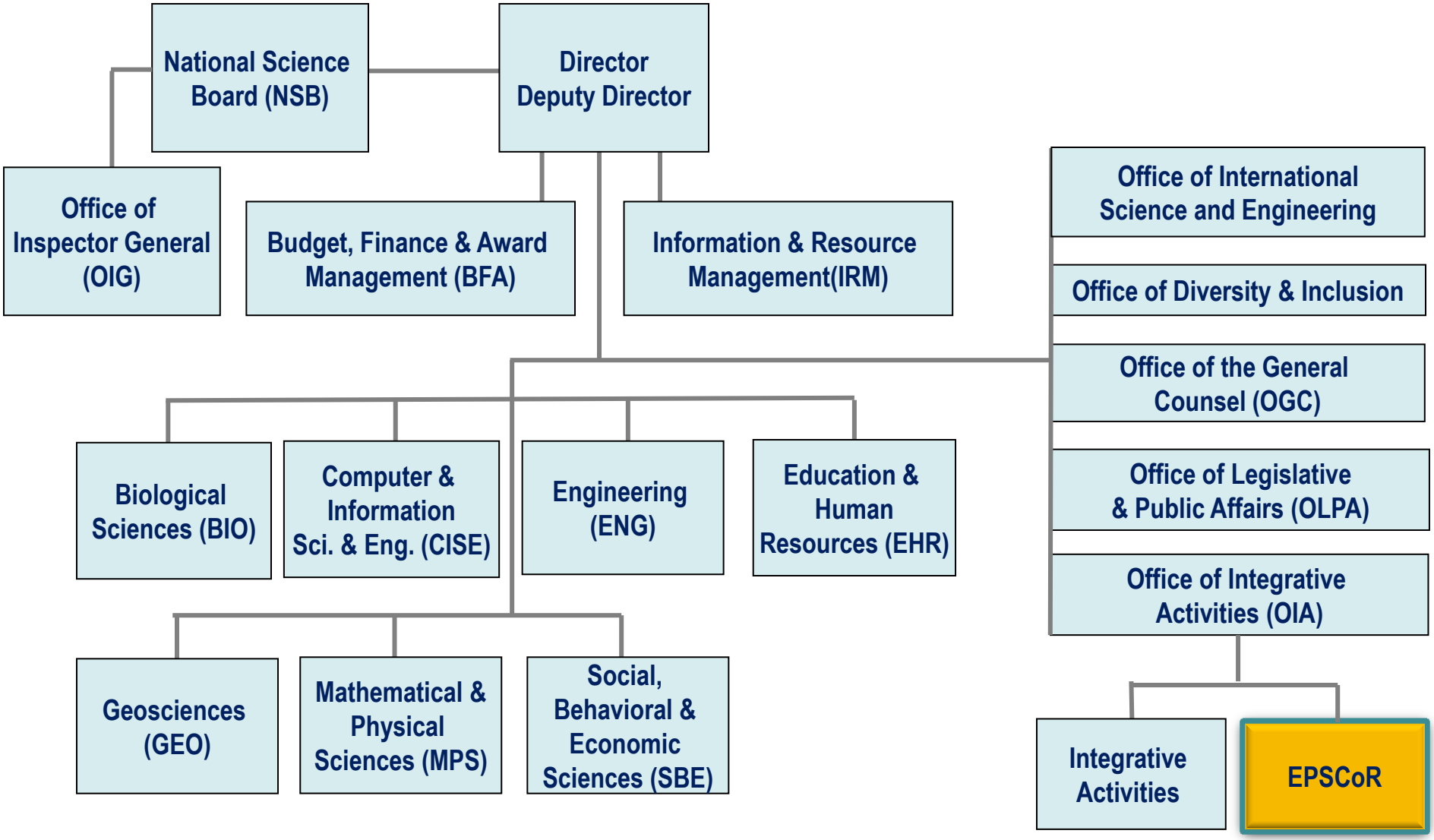
Mission

NSF - “To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense, while avoiding the undue concentration of research and education”

IIA – “To lead and coordinate strategic programs and opportunities that: advance research excellence and innovation; develop human and infrastructure capacity critical to the U.S. science and engineering enterprise; and promote global engagement of scientists and engineers at all career stages.”

EPSCoR – “Advance excellence in science and engineering research and education in order to achieve sustainable increases in research, education, and training capacity and competitiveness that will enable EPSCoR jurisdictions to have increased engagement in areas supported by the NSF.”

NSF Organization



NSF Statistics

- **FY14 NSF Funding Rate**
  - Proposals received: 48,074
  - Proposals awarded: 10,981 (23%)

- **FY14 Appropriations Budget: $7.17B***
  - $5.81B for Research Support
  - $846.5M for Education & Human Resources
  - $200M for Major Research Equipment

* Total includes agency operations

Administration: ~2100 staff in Arlington, VA

Eligibility

- Current eligibility is a three-year rolling average of a percentage of NSF Research and Related Activities funding to a state: ≤ 0.75%

- 28 jurisdictions are eligible (states, territories, commonwealth).

EPSCoR Jurisdictions

1980
Arkansas
Maine
Montana
South Carolina
West Virginia

1985
Alabama
Kentucky
Nevada
North Dakota
Oklahoma
Puerto Rico
Vermont
Wyoming

1987
Idaho
Louisiana
Mississippi
South Dakota

1992
Kansas
Nebraska

2000
Alaska

2001
Hawaii
New Mexico

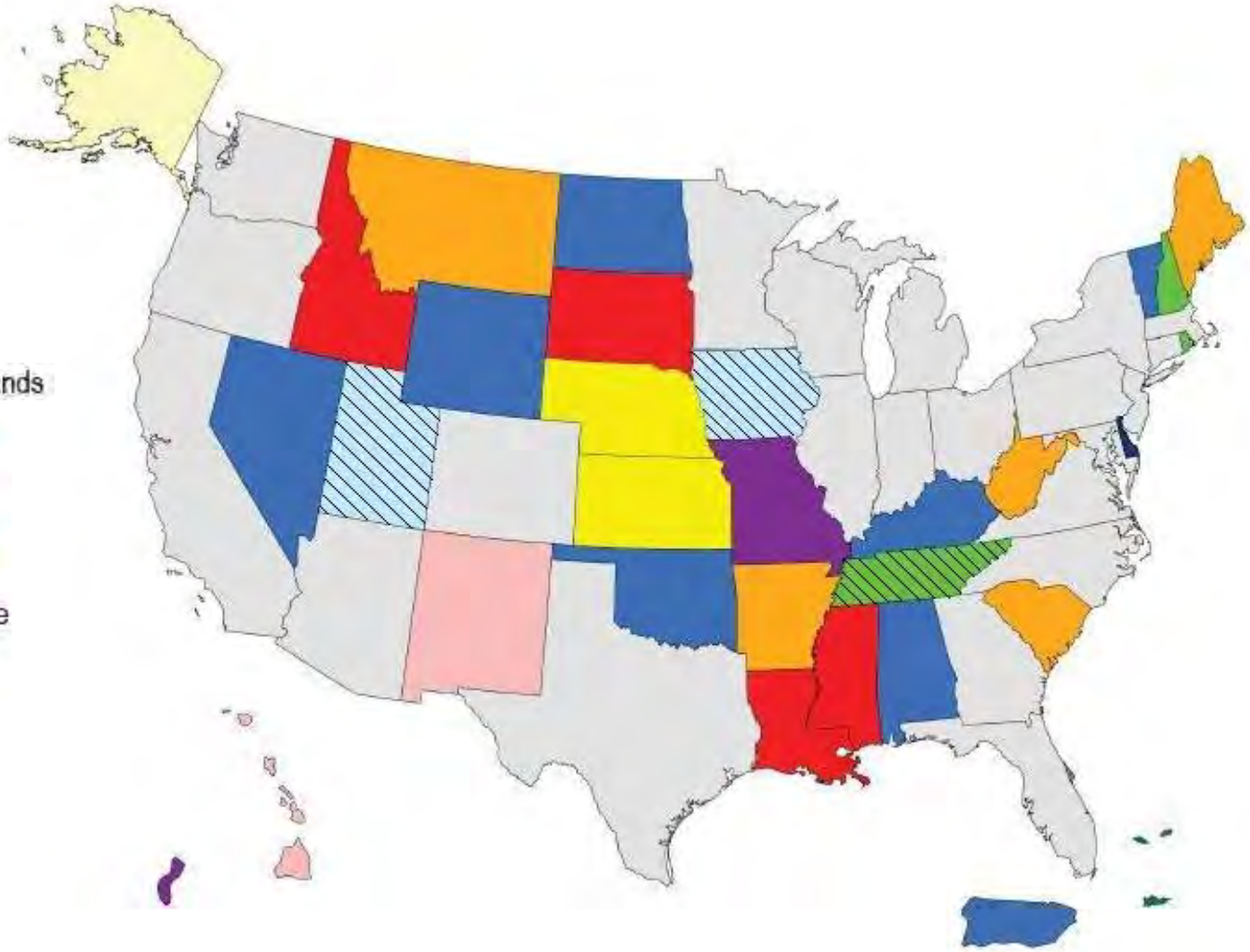
2002
U.S. Virgin Islands

2003
Delaware

2004
New Hampshire
Rhode Island
Tennessee

2009
Iowa
Utah

2012
Guam
Missouri



Note: IA, TN, & UT are no longer EPSCoR-eligible.

EPSCoR Portfolio Activity

- **Research Infrastructure Improvement (RII)**

  Proposals from eligible jurisdictions submitted by a designee of the jurisdiction's governing committee
  - **Track-1** (up to $4M per year for up to 5 years)
  - **Track-2** (up to $1.5M per year for up to 4 years; consortia among jurisdictions)
  - **Track-3** (new in FY13; up to $750k total for up to 5 years; focus on broadening participation)
- **Co-Funding with NSF Directorates and Offices**
  - Meritorious proposals reviewed in NSF programs
- **Outreach Activities and Workshops**

EPSCoR Big Picture Overview

- **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

So you are in an EPSCoR jurisdiction…

- Do you know who is on the State EPSCoR steering committee?
- Do you know what is in your State Science and Technology (S&T) Plan
- Do you know who is your State EPSCoR Project Director?
- Is seed funding for emerging areas possible?

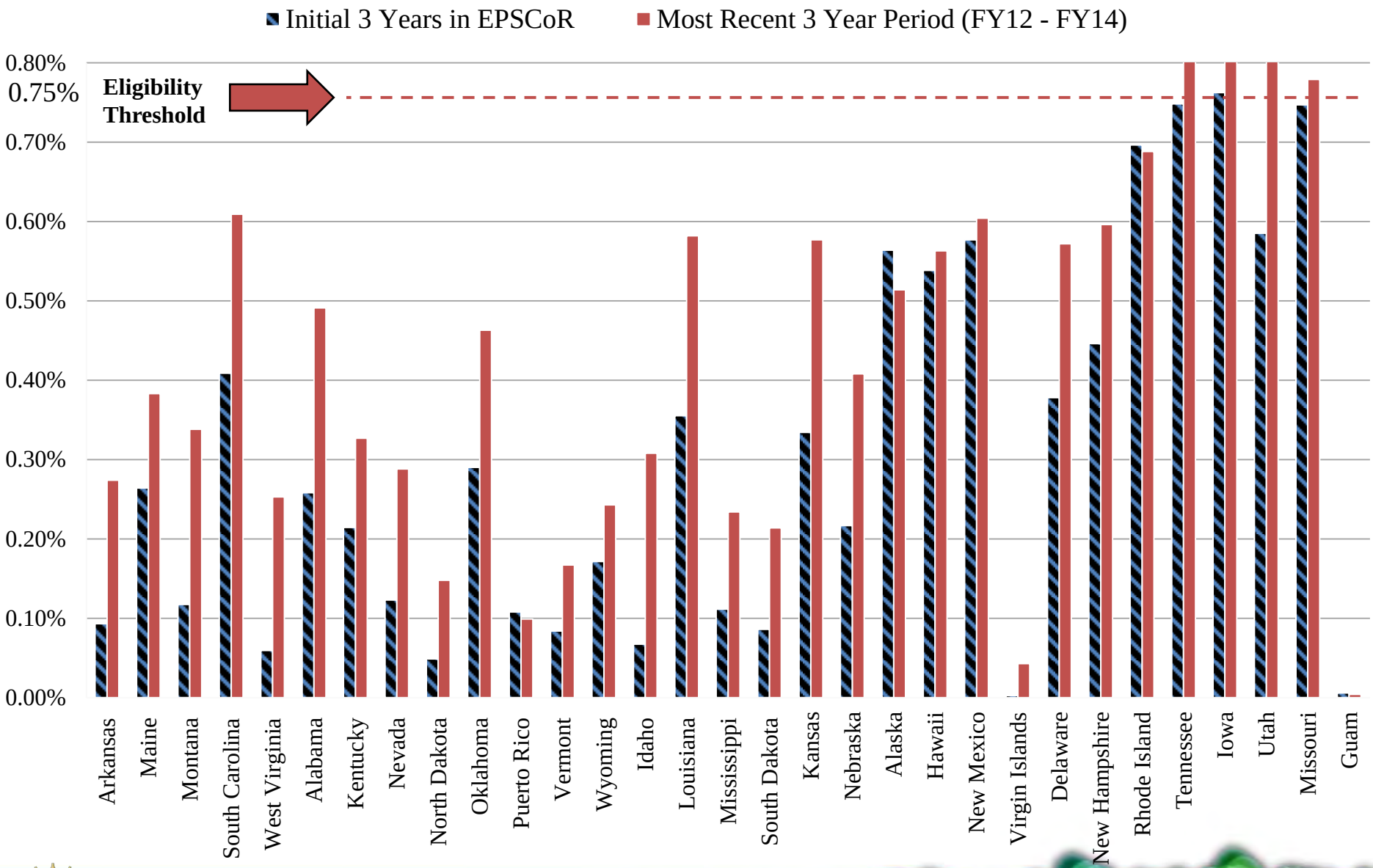
EPSCoR Funding

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

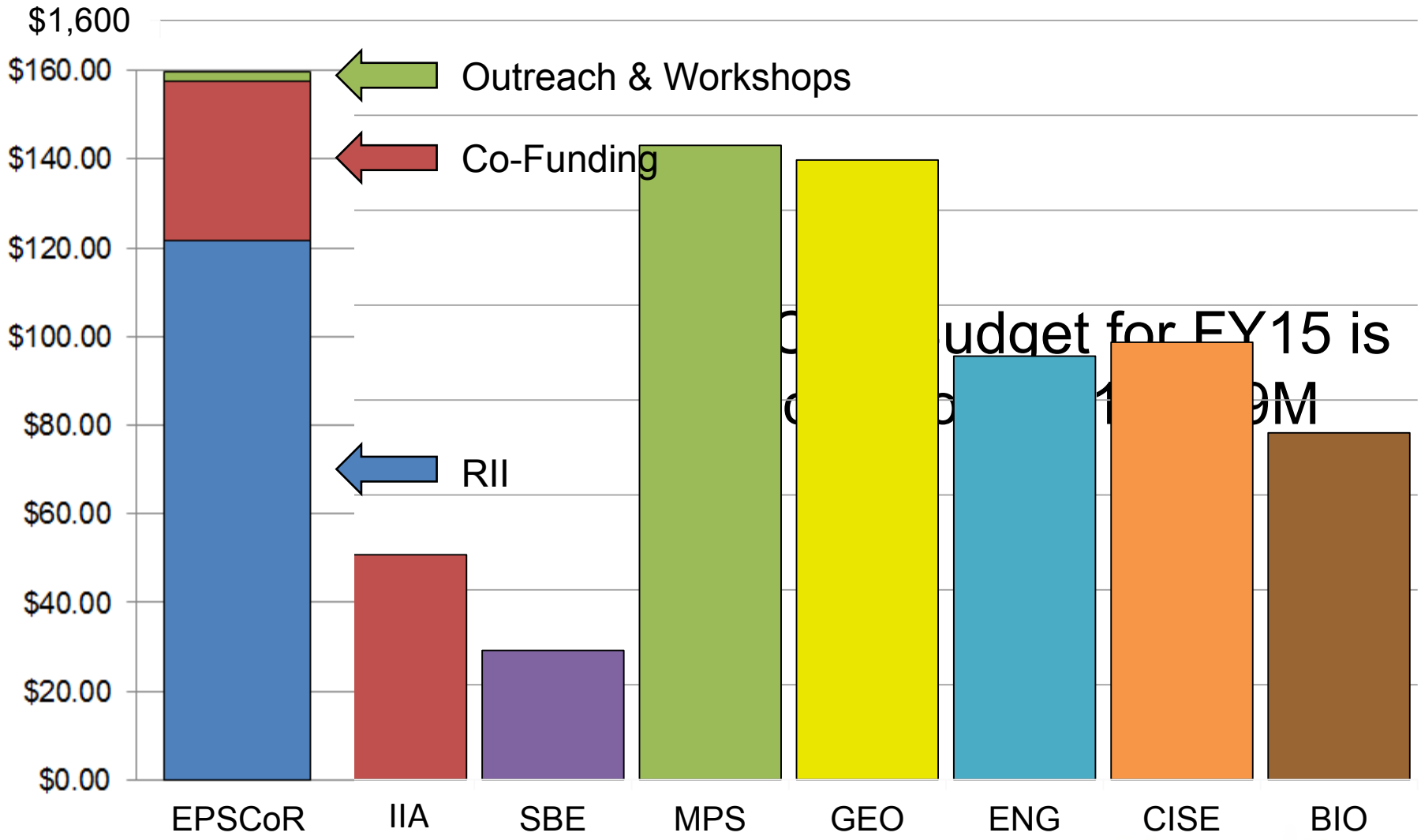
Activity	FY10	FY11	FY12	FY13	FY14
RII	100.2	106.2	110.6	116.3	132.2
Co-funding	45.4	39.4	38.8	30.8	25.0
Outreach & Workshops	1.5	1.2	1.5	0.5	1.0
Total	147.1	146.8	150.9	147.6	158.2

*Amounts in $M

NSF Research Support Funding



FY15 R&RA by Directorate/Office, $M



Powering the Kentucky Bio-Economy for a Sustainable Future

- New technologies for energy generation and storage in addition to new membranes that can be used in environmental remediation.
- Research activities in Advanced Bio-Inspired Membrane Technologies, Chemical Biology for Advanced Materials, and Electrochemical Energy Storage.
- Research activities will lead to batteries that are self- repairing, lower cost and more efficient than currently available.
- STEM programs, mentoring, and research opportunities will specifically recruit females, first generation college students, rural students and low income students from the Appalachian regions of Kentucky.
- High school teachers supported to receive STEM training related to renewable energy research.
- Significant ties are developed between academic research and industrial research leading to increased commercialization and economic development opportunities.

The Missouri Transect: Climate, Plants, and Community

- Sustainability and resilience - how plants and crops adapt to increased climate variability.
- High-resolution climate data, high-throughput genomics and phenomics techniques, biotechnology and regional climate modeling.
- Science Education and Outreach Team will develop learning tools for Missouri citizens about climate change and its predicted effects on agriculture and the environment.
- Public education programs will share information about how scientists study climate change and how they research new plant drought/stress tolerance traits.
- Special emphasis on increasing the proficiency and interest of underrepresented groups and women in Science, Technology, Engineering, and Mathematics.

Co-funding

- Joint support of meritorious NSF proposals
- Steps
  - Proposal submittal to specific NSF Directorate/Office
  - Be responsive to the solicitation
  - Questions to managing Program Officer
  - Merit review in accordance with NSF policies
    - Availability of funds
- Co-funding priorities

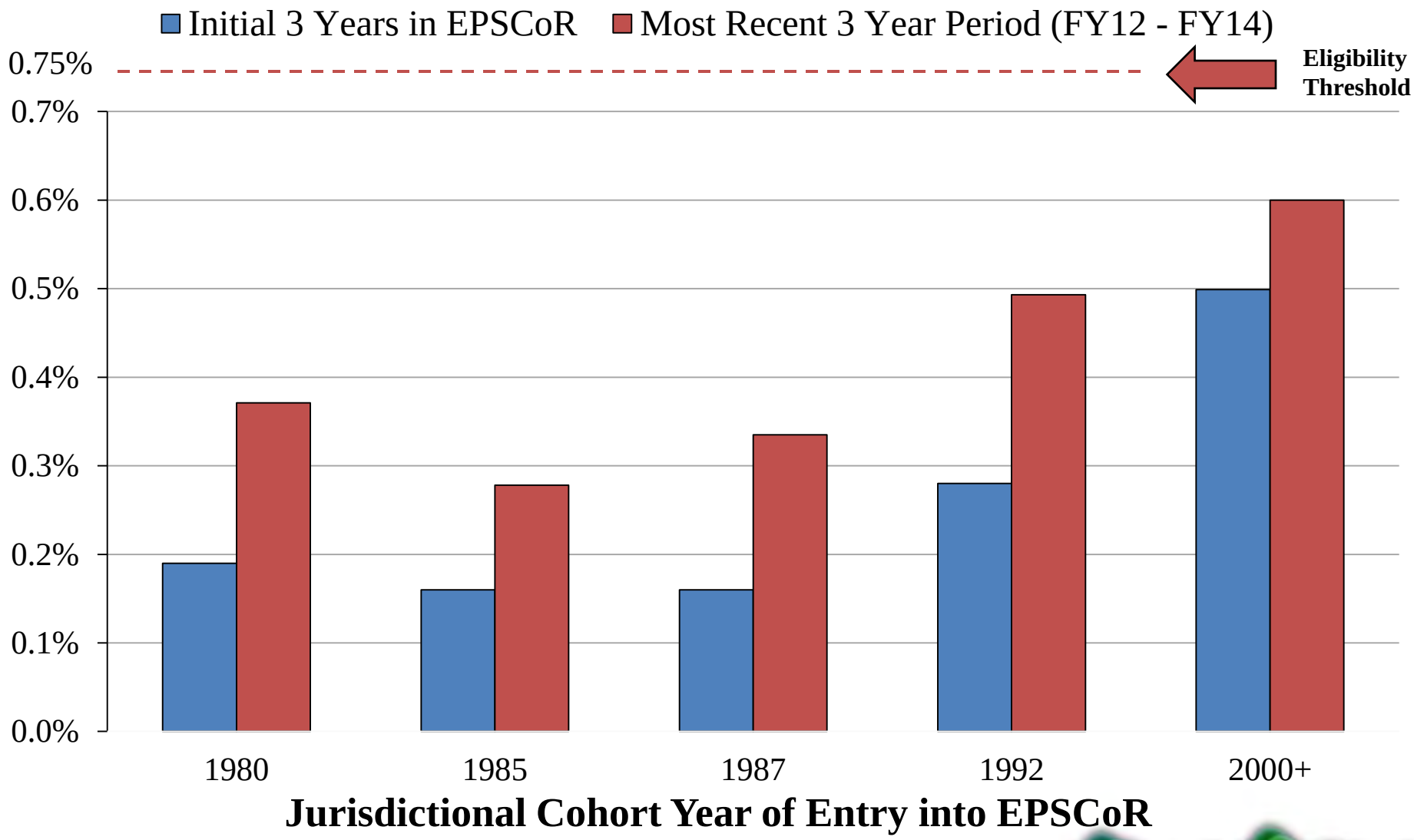
New PI	Student involvement
Collaborative/Multidisciplinary	Synergistic with NSF investments
Broaden participation	Integration of research and education

- http://www.nsf.gov/od/iia/programs/epscor/EPSCoR_Co-funding_Mechanism.pdf

Workshops and Outreach

- Supports community-based activities designed to explore opportunities in emerging areas of S&E, and to share best practices in planning and implementation in strategic planning, diversity, communication, cyberinfrastructure, evaluation, and other areas of importance to EPSCoR jurisdictions
- Supports outreach travel to enable NSF staff to interact with the EPSCoR community
- Current conference and workshop solicitation (NSF 12-588):
  - http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf12588&org=NSF
- EPSCoR outreach procedures: http://www.nsf.gov/od/iia/programs/epscor/Outreach_Procedures_FY2015.pdf
- Contact: Uma Venkateswaran, uvenkate@nsf.gov, (703) 292-7732

NSF Research Support Funding
Total NSF R&RA, Including EPSCoR RII



Questions to think about

- Jurisdictional Impacts
  - How do activities align with the research and the S&T plan?
  - What is the potential impact on research capacity in the jurisdiction?
  - How are the activities integrated? Is the whole greater than the sum of the parts?
  - How do partnerships and collaborations advance project goals?

Questions to think about (+)

- Diversity
  - How does the project broaden participation of women and under-represented minorities?
  - What does diversity mean for the jurisdiction? (groups underrepresented in STEM, persons with disabilities, economically disadvantaged, first-generation college students)
  - Institutional diversity (MSI, HBCU, TCU, PUI)

Questions to think about (++)

- Sustainability
  - Does the project build research and activities that will thrive beyond the award period?
  - What value do partnerships bring and will they continue beyond the award period?
  - Do the participants have goals and milestones for extramural funding that are reasonable and achievable?

Things to keep in mind

- Research should be the core of the proposal's the intellectual merit!

- Read and follow the solicitation
  - Project description elements
  - Keep merit review criteria in mind

Things to keep in mind (+)

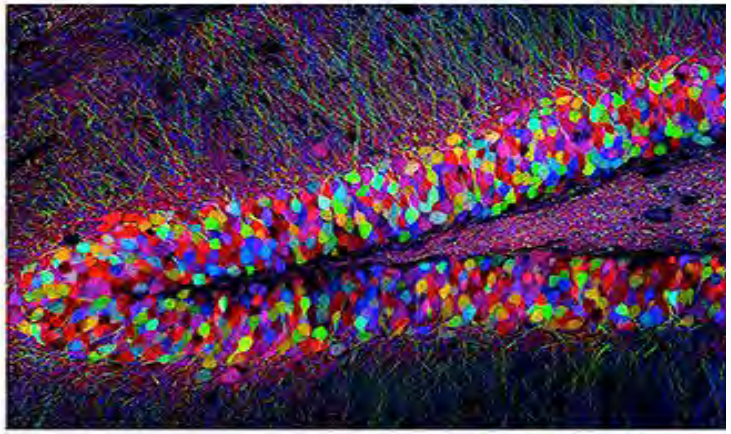
- Start early! These are large, complex proposals with many moving parts.
- Interdisciplinary groups of writers need time to understand how they fit together into a team
- You may have to (help) make some hard decisions…

Things to keep in mind (++)

- Write to the reviewers/panel
  - Provide information that experts need in order to judge research activities
  - Avoid jargon that complicates review by broad audience
  - Describe research methods, tools, approaches
  - Emphasize unique, novel, transformative techniques and methods

NSF FY 2016 Initiatives

Understanding the Brain



$144 million

Innovations at the Nexus of Food, Energy, and Water Systems

$75 million

Risk and Resilience

$58 million

NSF INCLUDES

$15 million

Understanding The Brain

- 2013 White House initiative: Brain Research through Advancing Innovative Neurotechnologies (BRAIN).

- NSF is investing $144M to enhance understanding of brain complexity, in action and context

Understanding the Brain (+)

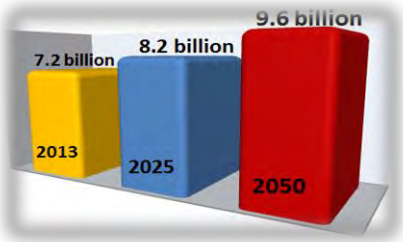
- NSF focus on fundamental principles underlying brain structure and function.
  - New neuroscience discoveries will help foster brain health; increasing understanding of relationships between neuronal activity, cognitive processes, and behavior;
  - Engineering solutions that enhance, replace or compensate for lost function; developing innovative technologies, tools and instrumentation, computational infrastructure, theory, and models
  - Promote learning across the lifespan and build brain-inspired smarter technologies for improved quality of life. exploring links between environment, behavior, and brain function;
  - Training the next generation of neuroscientists and neuroengineers.

INFEWS: Innovations at the Nexus of Food, Energy and Water Systems

THE 2050 PICTURE

WORLD'S POPULATION BOOMS

>9 BILLION by 2050



~60% increase

2050

FOOD

~30% increase

2050

WATER

~50% increase

2010 2050

ENERGY

INFEWS (+)

Investing $75M to study these interconnected forces by designing and modeling solutions to the natural, social, and human-built factors involved

Responds to:

- Growing global populations
- Extensive changes in land use
- Variability in precipitation patterns

NSF Priority
NSF INCLUDES

Inclusion across the Nation of Communities of Learners that have been Underrepresented for Diversity in Engineering and Science

Goals:

- Increase the preparation, participation, advancement, and potential contributions of those who have been traditionally underserved and/or underrepresented in the STEM enterprise.
- Develop new, scalable concepts to provide focus for collaborative action
- Produce rapid progress on changing the balance of diversity in STEM

NSF Priority
Risk and Resilience

Investing $58M to fund research that addresses the nation's need for resilience in response to disasters, both natural and man-made

- One supporting program is Critical Resilient Interdependent Infrastructure Systems and Processes (CRISP), a Foundation-wide effort that addresses the need for resilient and sustainable infrastructure critical to U.S. economic competitiveness and national security.

- Dear Colleague Letter to announce Prediction of and Resilience against Extreme EVENTS (PREEVENTS) later this year. Focus on natural hazards and extreme events, with potential for disciplinary and multidisciplinary projects at all scales, especially areas ready for significant near- or medium-term advances.

What Can You Do?

- Stay abreast of funding priorities and opportunities
- Write to the solicitation
- Communicate with managing Program Officers
- Participate in grants-writing workshops
- Utilize NSF EPSCoR outreach
- Serve as a reviewer
- Serve as a NSF rotating Program Officer

NSF Program Officer (Rotator) Opportunities

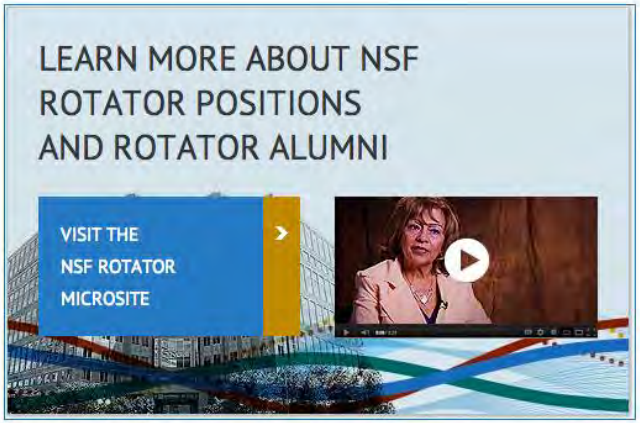
http://www.nsf.gov

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

Temporary/Rotator Programs

Take advantage of a rare opportunity to have an impact on science research and funding in a temporary or rotator position at NSF.

NSF offers a chance for scientists, engineers, and educators to join us as temporary program directors - called rotators. Rotators make recommendations about which proposals to fund; influence new directions in the fields of science, engineering, and education; support cutting-edge interdisciplinary research; and mentor junior research members. As a rotator, you will be in a prime position to collaborate with others and increase your visibility as you survey the entire breadth of U.S. and international science, engineering, and education in real time. In addition, as a temporary program director, you can retain your ties to your current institution and return to it with new insights and experience for your team.



You can become a rotator either as a Visiting Scientist, Engineer, and Educator (VSEE) or as an Intergovernmental Personnel Act (IPA) assignee. While rotators can come on temporary assignment under the IPA program for up to four years, most rotating assignments last one to two years.

What are my main responsibilities as a program director?
Program directors oversee the National Science Foundation's "gold standard" merit review process and may help define new funding opportunities. Key responsibilities include

Thank you!