



# **Onward and Forward – A Snapshot of NSF Funding Opportunities**

**Kansas EPSCoR State Conference**

**Manhattan, KS      October 6, 2009**

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**NSF EPSCoR**



# EPSCoR Mission

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**To assist the National Science Foundation 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.”***



# NSF EPSCoR Jurisdictions

1980

Arkansas  
Maine  
Montana  
South Carolina  
West Virginia

2001

Hawaii  
New Mexico

2002

U.S. Virgin Islands

1985

Alabama  
Kentucky  
Nevada  
North Dakota  
Oklahoma  
Puerto Rico  
Vermont  
Wyoming

2003

Delaware

2004

New Hampshire  
Rhode Island  
Tennessee

1987

Idaho  
Louisiana  
Mississippi  
South Dakota

2009

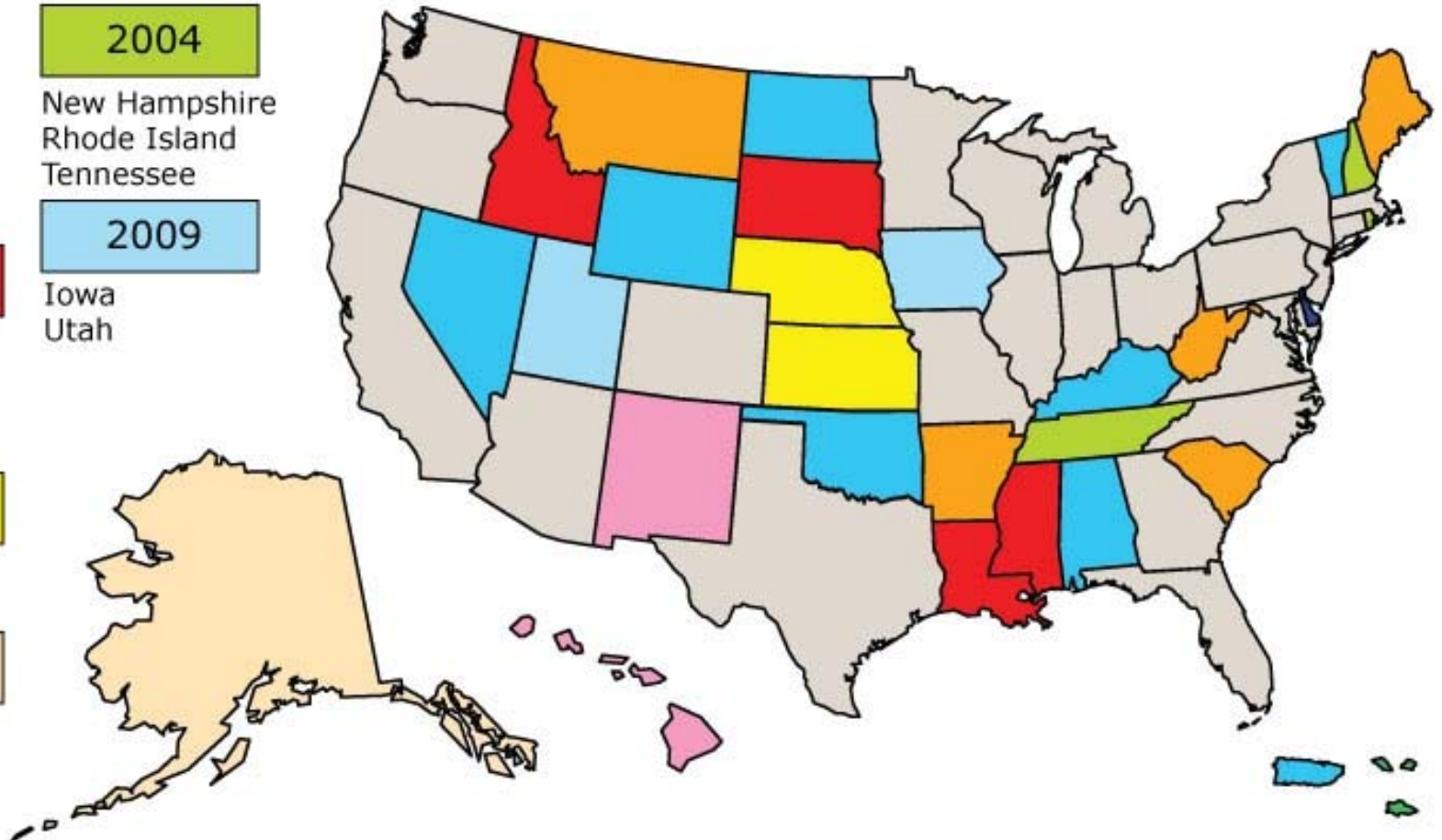
Iowa  
Utah

1992

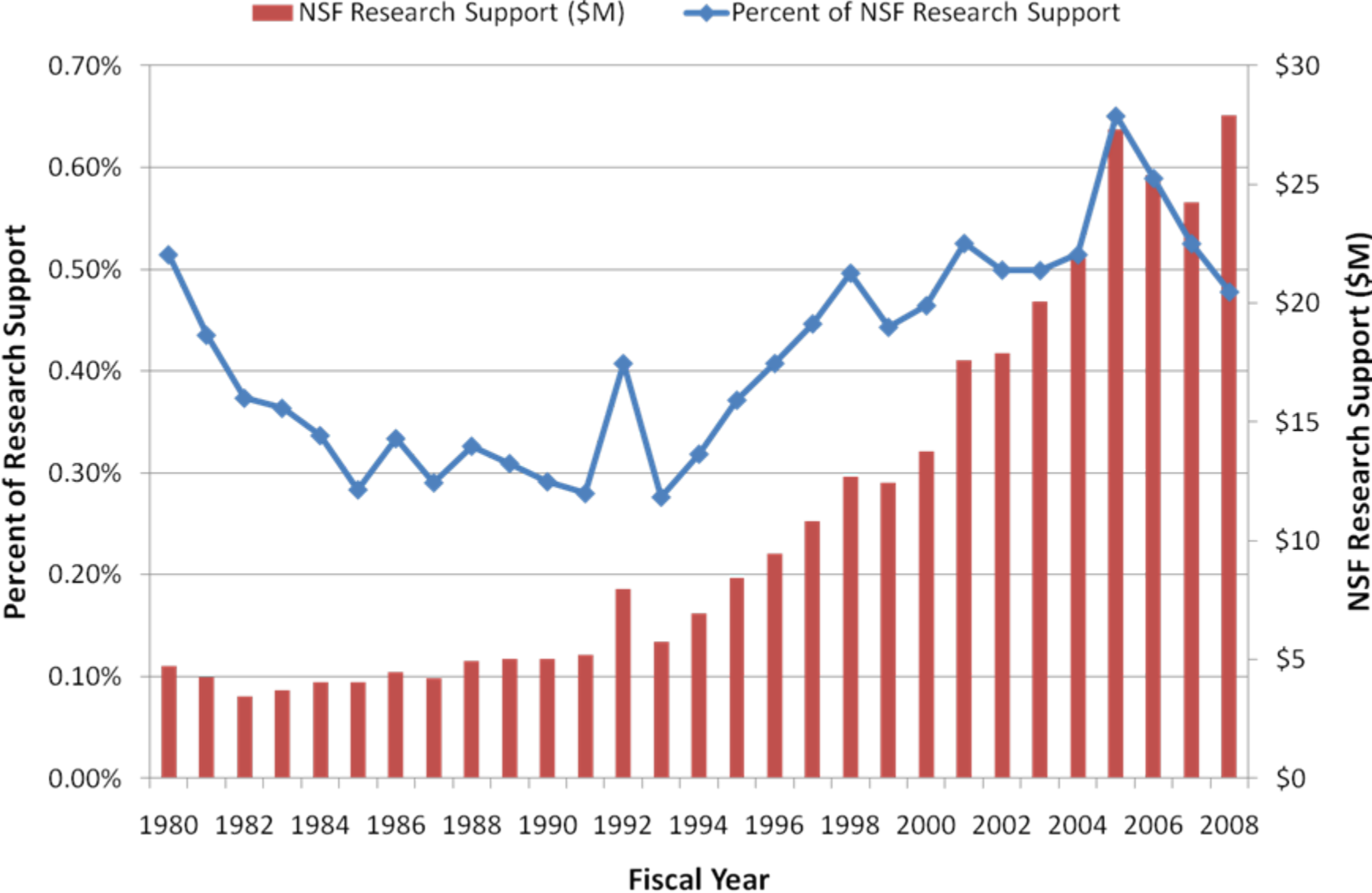
Kansas  
Nebraska

2000

Alaska

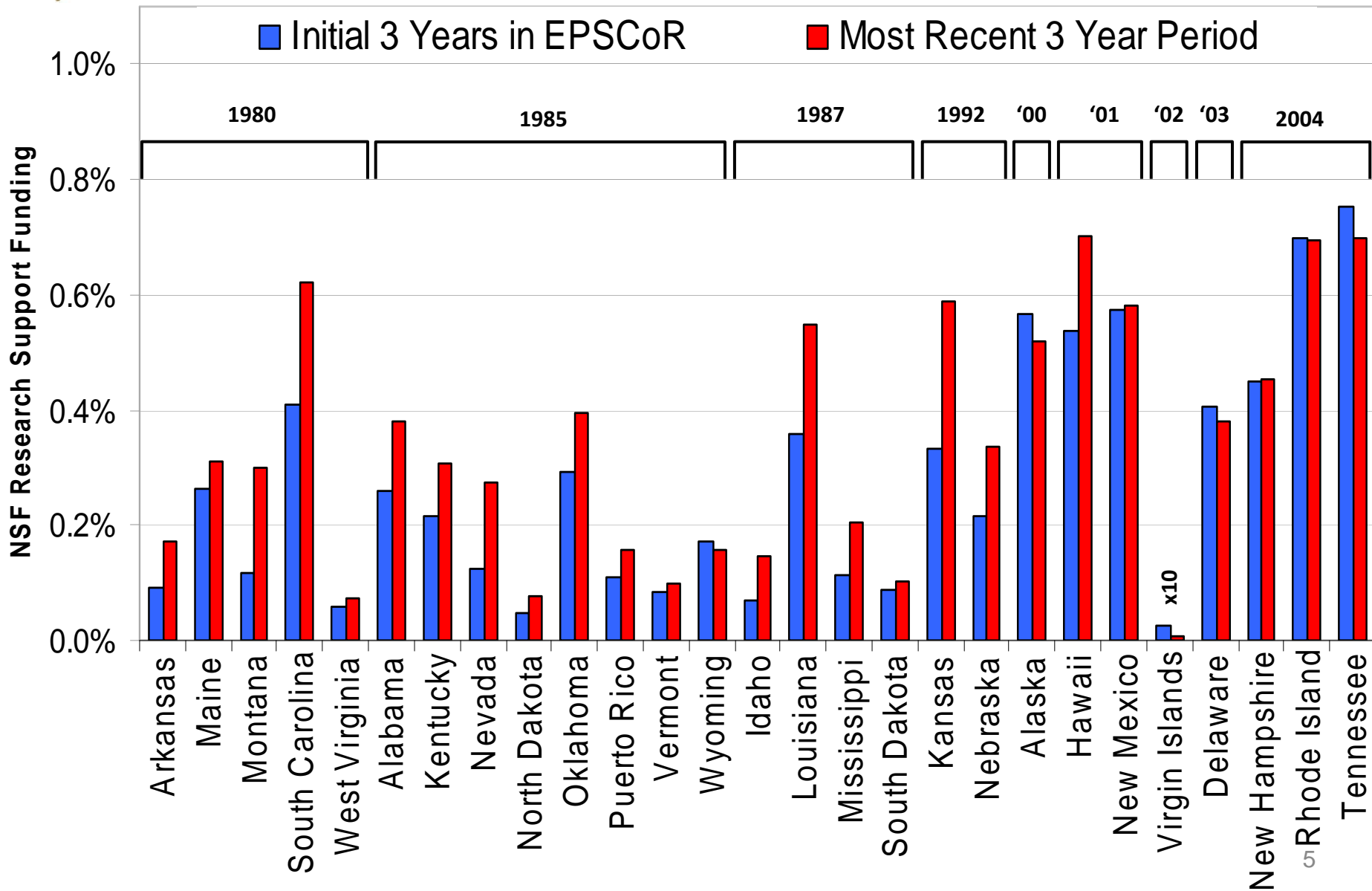


# Research Support Funding: Kansas





# We Are Heading in the Right Direction

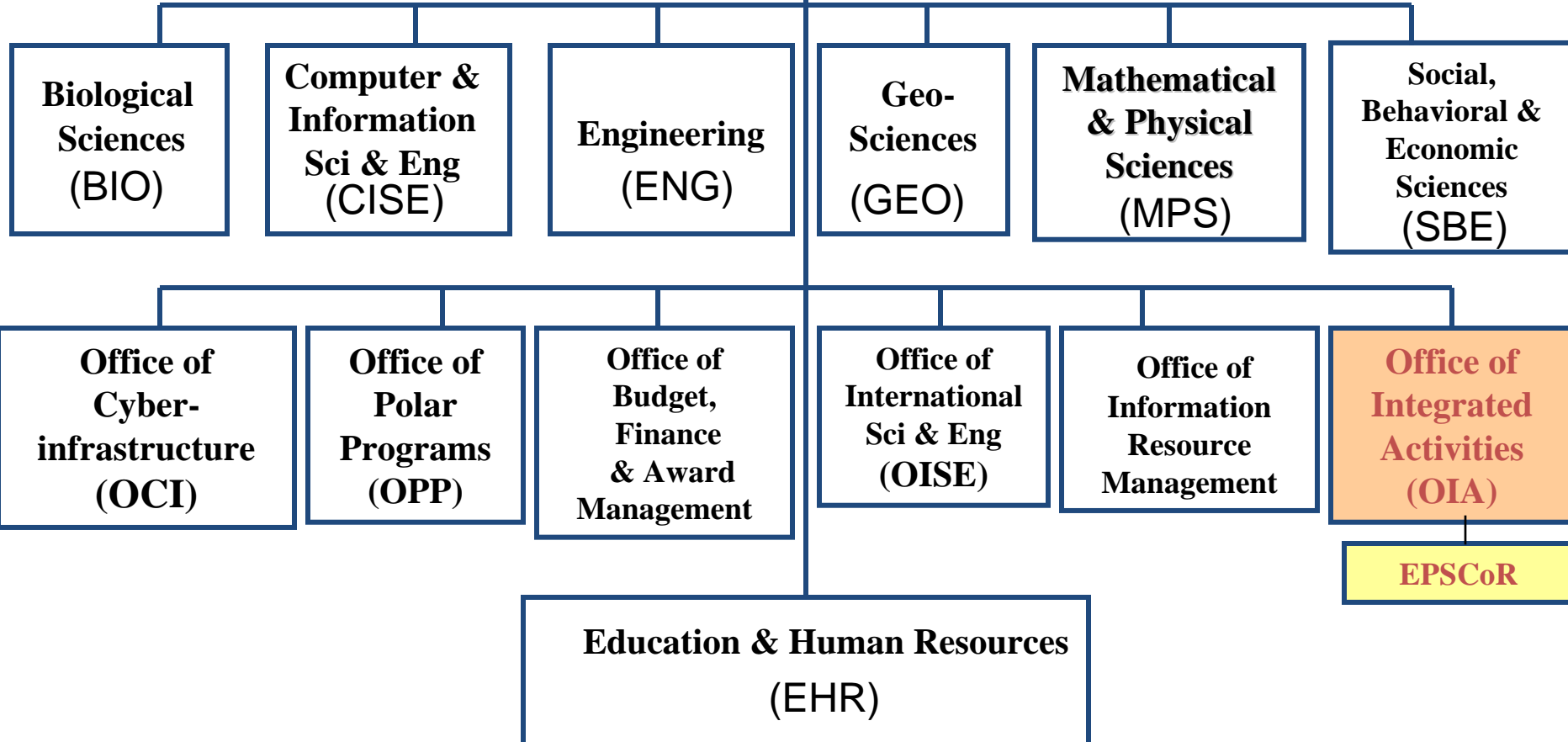




# Basic NSF Organization

**National Science Board**

**Director & Deputy Director**



# NSF Funding: Kansas

<b>FY</b>	<b>EPS</b>	<b>Non-EPS</b>	<b>Total</b>
1999	2.6	16.3	18.9
2000	1.4	17.6	19.0
2001	3.5	20.9	24.4
2002	3.4	22.6	26.0
2003	5.3	21.7	27.0
2004	6.5	24.2	30.7
2005	5.9	30.2	36.0
2006	5.0	27.8	32.8
2007	3.3	26.7	30.0
2008	4.7	26.8	31.5
<b>FY 99-08</b>	<b>41.7</b>	<b>234.6</b>	<b>276.3</b>



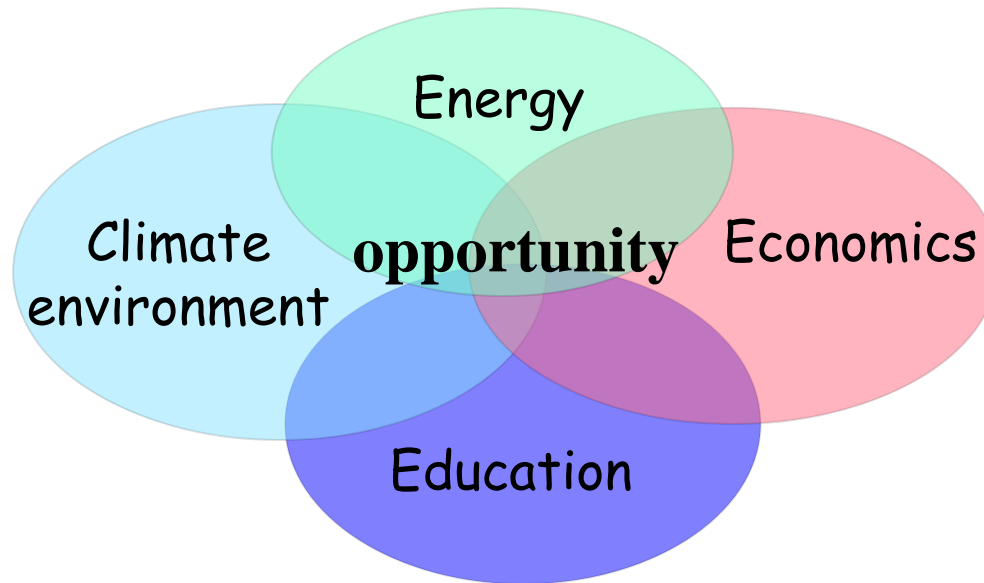
# NSF Funding Mechanisms

Foundation wide, Directorate, Division or Program specific activities for Research, Education, Innovation, Broadening Participation ...

- Individual investigators & groups (faculty, postdoc, grad, u/g)
- Initiatives and special programs
- Crosscutting programs – MRI, CDI, PIRE, IGERT, GRFP...
- Centers – STC, ERC, I/UCRC, NSEC, MRSEC, CCI, CREST
- Facilities – DUSEL, NHFML, synchrotron, telescopes, observatories, ....
- CAREER (junior faculty; research and education integration)
- Graduate Student Training - IGERT, GRFP, GK-12
- Research Experience for Undergrads (REU) and Teachers (RET)
- STEM Workforce development – ATE, ITEST, Robert Noyce Teacher Scholarship
- Outreach to K-12 students and general public
- Diversity – ADVANCE, AGEP, LSAMP, TCUP, FASED, directorates'
- International activities – PIRE, IRES, DDEP, IMI, MWN, ICC

# Energy-Climate and the NSF Mission

- ❖ NSF's mission: *support the progress of science, integrate research and education; advance national health, prosperity, and welfare; and secure national defense.*
- ❖ Unique among federal agencies, NSF has the capability to address the full depth and breadth of research and education for sustainable development.
- ❖ The urgency of energy-climate research agenda, and the readiness of the science and engineering community to pursue it fully, creates a unique opportunity – and a primary responsibility – for the NSF. Broad scope, coherence, and coordination across the Foundation are to be expected.





# Climate Change Research – Challenges

- **Regional Climate Change Modeling & Prediction**
- **Ice Sheet Changes & Rising Sea Levels**
- **Water Scarcity**
- **Ocean Acidification**
- **Methane Gas**
- **Extreme Events**
- **Biodiversity and Ecosystem Function**
- **Human Health**
- **Scientifically Informed Adaptation & Mitigation**
- **Potentially Disruptive Climate Change**
- **Dealing with Uncertainty**
- **Masking Events**
- **Unintended Consequences**





# Research Funding Opportunities

- Dear Colleague Letter: Multi-scale Modeling (MSM) [NSF 09-032]
- Climate and Large-Scale Dynamics (CLD) Program [PD 06-5740]
- Paleoclimate Program [PD 98-1530]
- Paleo Perspectives on Climate Change (P2C2) [NSF 08-505]
- Climate Process and Modeling Teams (CPT) [NSF 09-568]
- Dynamics of Coupled Natural & Human Systems (CNH) [NSF 07-598]





# GEO Education Priorities

- **K-12**
  - More rigorous & consistent presence in curriculum
  - High school student research experiences
  - Better teacher preparation
- **Undergraduate**
  - Curriculum that reflects emerging workforce needs (inter-disciplinary)
  - More research opportunities for students
  - Stronger presence in pre-service teacher preparation
  - Increased presence in community colleges and minority-serving institutions
- **Graduate/Post-doc**
  - Mentoring & networking
  - Interdisciplinary training required to implement research agenda
- **Informal Education Venues**
  - Marketing of relevance, importance & career opportunities
  - An Earth System Science literate public
- **Broadening participation of underrepresented groups across the board!**



# GEO Education Funding Opportunities

- Geoscience Education (GeoEd)
  - Biannual, Track 1 proof-of-concept & Track 2 implementation;
  - Revised solicitation due soon; Next deadline January 2010
- Opportunities for Enhancing Diversity in the Geosciences (OEDG)
  - Biannual, Track 1 proof-of-concept & Track 2 scale-up;
  - Planning Grant option – deadline Nov. 3, 2009 [NSF 08-605]
  - Next Track 1 & 2 competition in Fall 2010
- Geoscience Teacher Training (GEO-Teach)
  - Develop models for scaling up effective teacher professional development
  - Next competition TBD – likely late 2010
- Global Learning & Observations to Benefit the Environment (GLOBE)
  - International secondary school student hands-on research (w/NASA)
  - Next competition TBD – likely late 2010
- Earth Sciences Postdoctoral Fellowship (EAR-PF) [NSF 09-526]
- Centers for Ocean Science Education Excellence (COSEE)
- REU, RET, CAREER, ADVANCE, GK-12



# Solar Energy Initiative (SOLAR)

**CHE-DMR-DMS program supports interdisciplinary efforts by groups of researchers to address the scientific challenges of highly efficient harvesting, conversion, and storage of solar energy (NSF 08-598, 09-604)**

- **New in FY 2009; Solicitation planned for 3 years - to 2011 and renewable another 3 years**
- **Deadline: pre-proposal: Dec 08, 2009; Full Proposal: March 10, 2010**  
**Funding in FY 2009: ~ \$6 M; 8 awards**  
**(planned) FY 2010: \$ 7M (estimated: 3-10 awards)**
- **Expected typical award size: \$500,000 per year**

**Research groups must include three or more co-Principal Investigators:**

- **one in Chemistry**
- **another in Materials Research**
- **another in Mathematics or Statistics**



# Emerging Frontiers in Research and Innovation (EFRI)

**Interdisciplinary initiatives at the emerging frontier of engineering research and education - transformative opportunities, potentially leading to new research areas, new industries or capabilities, significant progress on a recognized national need or grand challenge.**

**EFRI-2010 (NSF 09-606) coordinated with NSF, DOE and EPA**

**(1) Renewable Energy Storage (RESTOR); (2) Science in Energy and Environmental Design (SEED): Engineering Sustainable Buildings.**

**Deadlines: Letter of Intent: Oct. 9, 2009; pre-proposal: Nov. 13, 2009;**

**Full Proposal: March 31, 2010**

**Funding (planned) FY 2010: \$ 29M (estimated: 14, 4-year awards)**

**ENG/CBET (Chemical, Bioengineering, Environment, Transport Systems)**

- Chemical, Biochemical, and Biotechnology Systems**
- Environmental Engineering and Sustainability**
  - Energy for sustainability, Environmental sustainability,**
  - Environmental Implications of Energy Technologies**

*It is clear that the **future course of history will be determined** by the rates at which people breed and die, by the rapidity with which nonrenewable resources are consumed, **by the extent and speed with which agricultural production can be improved, by the rate at which the under-developed areas can industrialize, by the rapidity with which we are able to develop new resources, as well as by the extent to which we succeed in avoiding future wars. All of these factors are interlocked.***

Harrison Brown (1917-1986),  
*The Challenge of Man's Future*, 1954



“My pre-occupation with the great problems at the intersection of science and technology with the human condition – and with the interconnectedness of these problems with each other – began when I read *The Challenge of Man's Future* in high school”

– John Holdren (President Obama's Science Advisor)



**Thank You**