

Fall 2009 AdCom Update

Directorate for Engineering

Thomas W. Peterson

Assistant Director for Engineering

October 21, 2009



ENG Update

- AdCom business
- New ENG staff
- Budget and trends
- Priorities
- Emerging areas



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Changes in AdCom

- Leadership: Steven Castillo begins as chair
- Membership:
 - Ilesanmi Adesida, University of Illinois at Urbana–Champaign, begins membership



Future AdCom Meeting Dates

- April 21–22, 2010
- October 20–21, 2010



Fall Meeting Agenda Items

- ENG Update
- ADVANCE
- CBET and CMMI COVs
- Innovation



Fall 2009 Meeting Focus: Innovation

- Define role for ENG
- Identify areas of importance
 - Research
 - Education

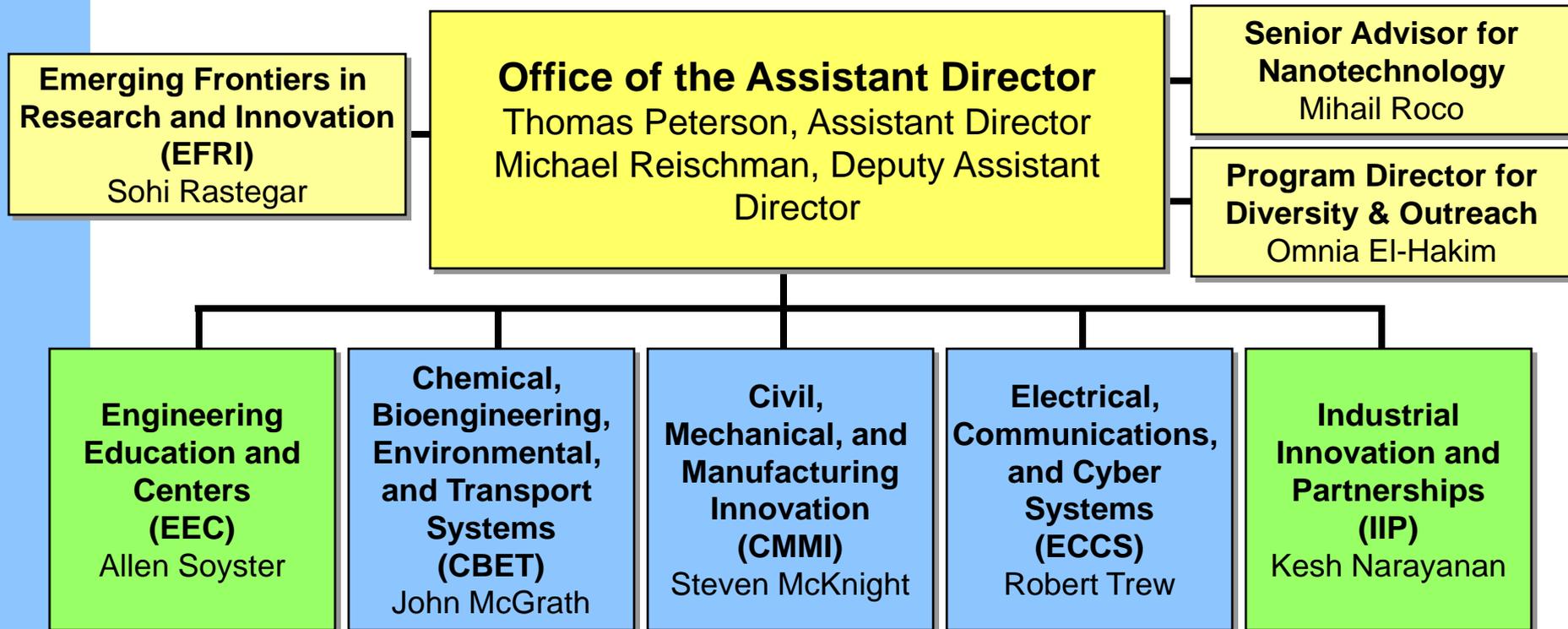


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Directorate for Engineering (ENG)



CBET

- **George Antos**, Program Director for Catalysis and Biocatalysis (Catalyst Realizations/University of Wisconsin)
- **Arvind Atreya**, Program Director for Combustion, Fire, and Plasma Systems (University of Michigan)
- **Lenore Clesceri**, Expert (NSF/RPI)
- **Nicholas Clesceri**, Expert (WATERS Network Project Office/RPI)
- **Charles Garris**, Expert (George Washington University)
- **James Lee**, Expert (Washington State University)
- **William Weigand**, Expert (University of Maryland)
- **H. Henning Winter**, Program Director for Fluid Dynamics (University of Massachusetts, Amherst)
- **Peter Wu**, AAAS Fellow (Concord Biomedical Sciences & Emerging Technologies/MIT)



CMMI

- **Steven McKnight**, Division Director (Army Research Laboratory)
- **John Daniels**, Program Director for Geotechnical Engineering and Geomechanics and Geotechnical Systems (EEC AAAS Fellow)
- **Terria Davis**, Program Assistant
- **Kenneth Jones**, Administrative Support Assistant
- **J. Philip King**, AAAS Fellow (New Mexico State University)
- **Tom Moynihan**, Program Assistant
- **Glaucio Paulino**, Program Director for Mechanics of Materials (University of Illinois at Urbana–Champaign)
- **Jyasha Smith**, Program Assistant
- **Mary Toney**, Program Director for Material Processing and Manufacturing (Albany International Corp.)



ECCS

- **Robert Trew**, Division Director (North Carolina State University)
- **Dominique Dagenais**, Expert (Avanex/Oclaro Corp.)
- **Samir El-Ghazaly**, Program Director for Electronics, Photonics, and Device Technologies (Univ. of Arkansas)
- **Cynthia Greene**, Operations Specialist
- **Tracy May**, Program Assistant
- **Dwayne Mitchell**, Program Support Manager
- **Sara Rudolph**, Program Assistant
- **Randall Sisco**, Program Assistant
- **Kawthar Zaki**, Expert (University of Maryland)



EEC

- **LaTanya Brooks**, Program Assistant
- **Daniel De Kee**, Program Director for Engineering Research Centers (Tulane University)
- **Gwen Hardenbergh**, Program Support Manager
- **Elena Hillenburg**, Program Assistant (IIP SCEP Student)
- **John Lamancusa**, Expert (Pennsylvania State University)



IIP

- **Tiffany Sargent**, AAAS Fellow (Intel Corp.)
- **Ben Schrag**, Program Director (Micro Magnetics)
- **Ruth Shuman**, Program Director (consultant/
University of Minnesota Venture Center)
- **Kevin Simmons**, Einstein Fellow (Eagle's View
Academy/Florida State College at Jacksonville
Aviation Center of Excellence)
- **Ben Van Dusen**, Einstein Fellow (South Eugene
High School, Oregon)
- **Grace Wang**, Program Director (Hitachi)
- **Josephine Yuen**, Program Director (Trifomix, Inc.)



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Budget and Trends

- FY 2009 Budget
- American Recovery and Reinvestment Act (ARRA)
- FY 2010 NSF Budget
- Proposal pressures and trends



Coordinated Three Budgets

- FY 2009
- American Recovery and Reinvestment Act (ARRA)
- FY 2010 budget request from President submitted



NSF Budget Summary

NSF	FY 2008 Actual	FY 2009 Request	FY 2009 Omnibus	FY 2009 plus ARRA	FY 2010 Request
Amount	\$6.065	\$6.854	\$6.490	\$9.492	\$7.045
Change over FY 2008	n/a	13.0%	7.0%	56.5%	16.2%



Dollars in billions

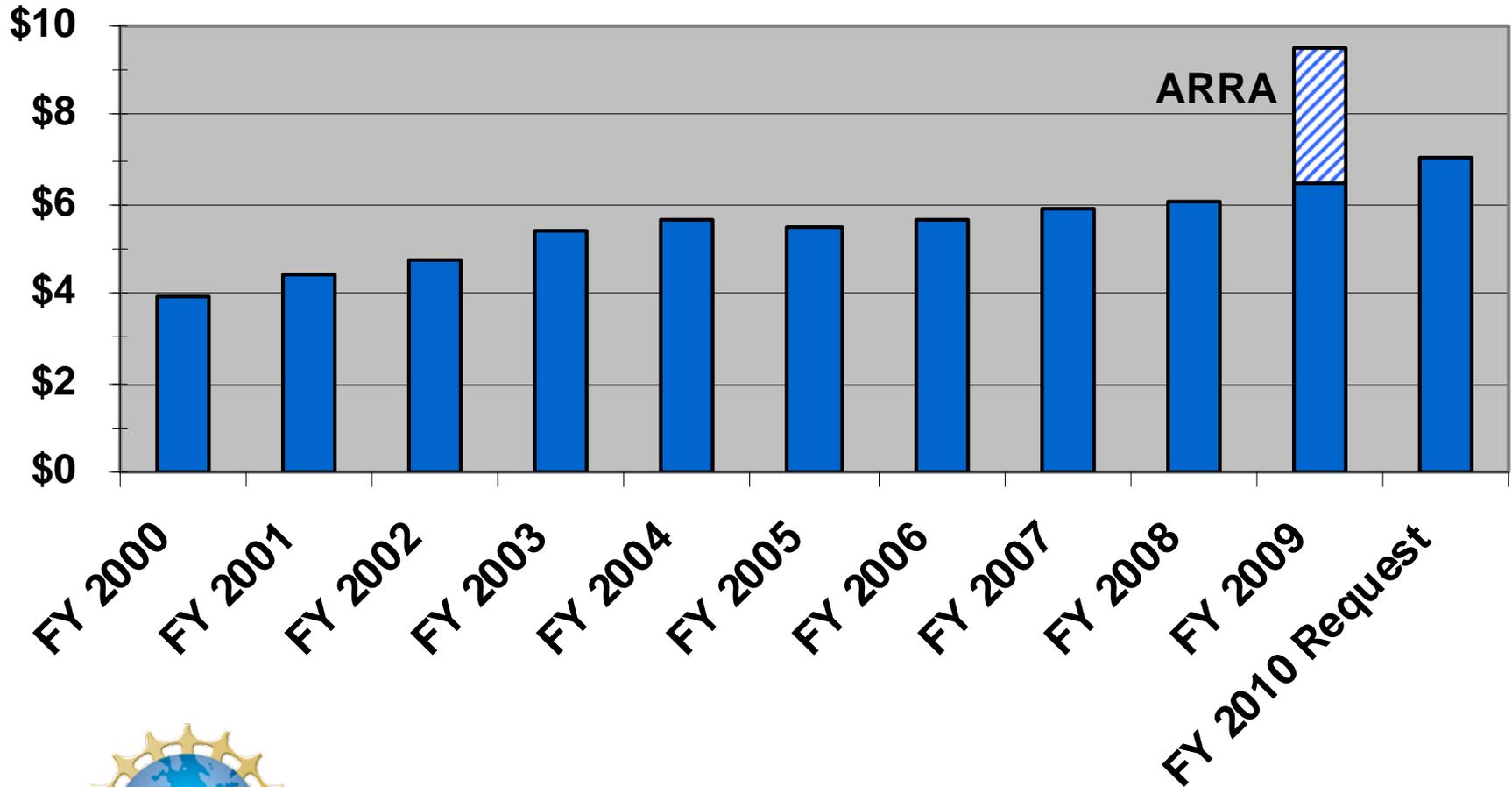
NSF Research and Related Activities (R&RA)

	FY 2009 Current Plan	FY 2010 Request	Amount Change	Percent Change
Biological Sciences	\$655.81	733.00	\$77.19	11.8%
Computer and Information Science and Engineering	573.74	633.00	59.26	10.3%
Engineering (includes SBIR/STTR)	693.34	764.52	71.18	10.3%
Geosciences	807.13	909.00	101.87	12.6%
Mathematical and Physical Sciences	1,255.96	1380.00	124.04	9.9%
Social, Behavioral, and Economic Sciences	240.3	257.00	16.7	6.9%
Office of Cyberinfrastructure	199.28	219.00	19.72	9.9%
Office of International Science and Engineering	44.03	49.00	4.97	11.3%
U.S. Polar Research Programs	470.67	516.00	45.33	9.6%
Integrative Activities	241.34	271.12	29.78	12.3%
Arctic Research Commission	1.5	1.60	0.1	6.7%
Total, R&RA	\$5,183.10	\$5,733.24	\$550.14	10.6%

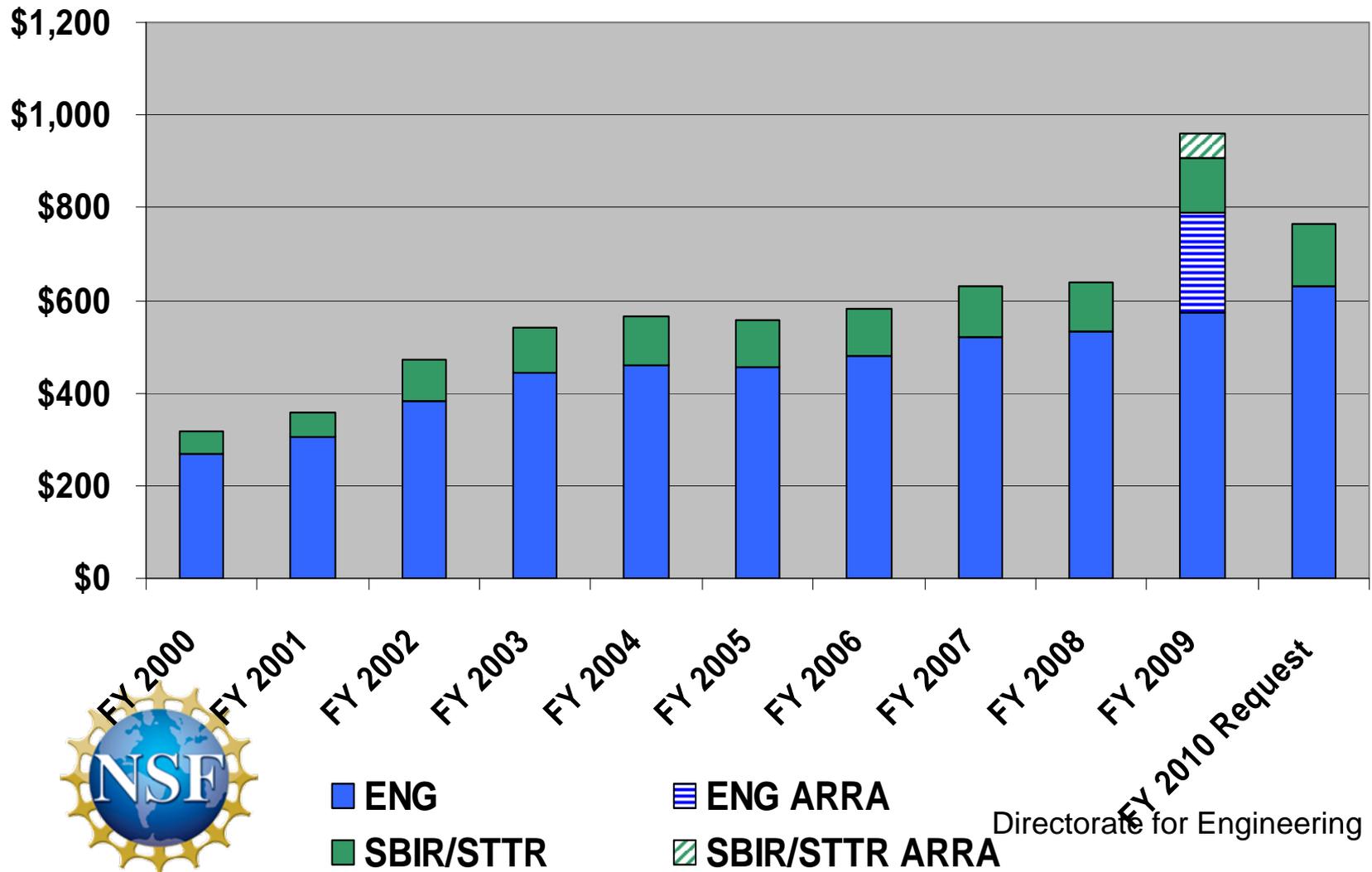


Dollars in millions. Totals may not add due to rounding.

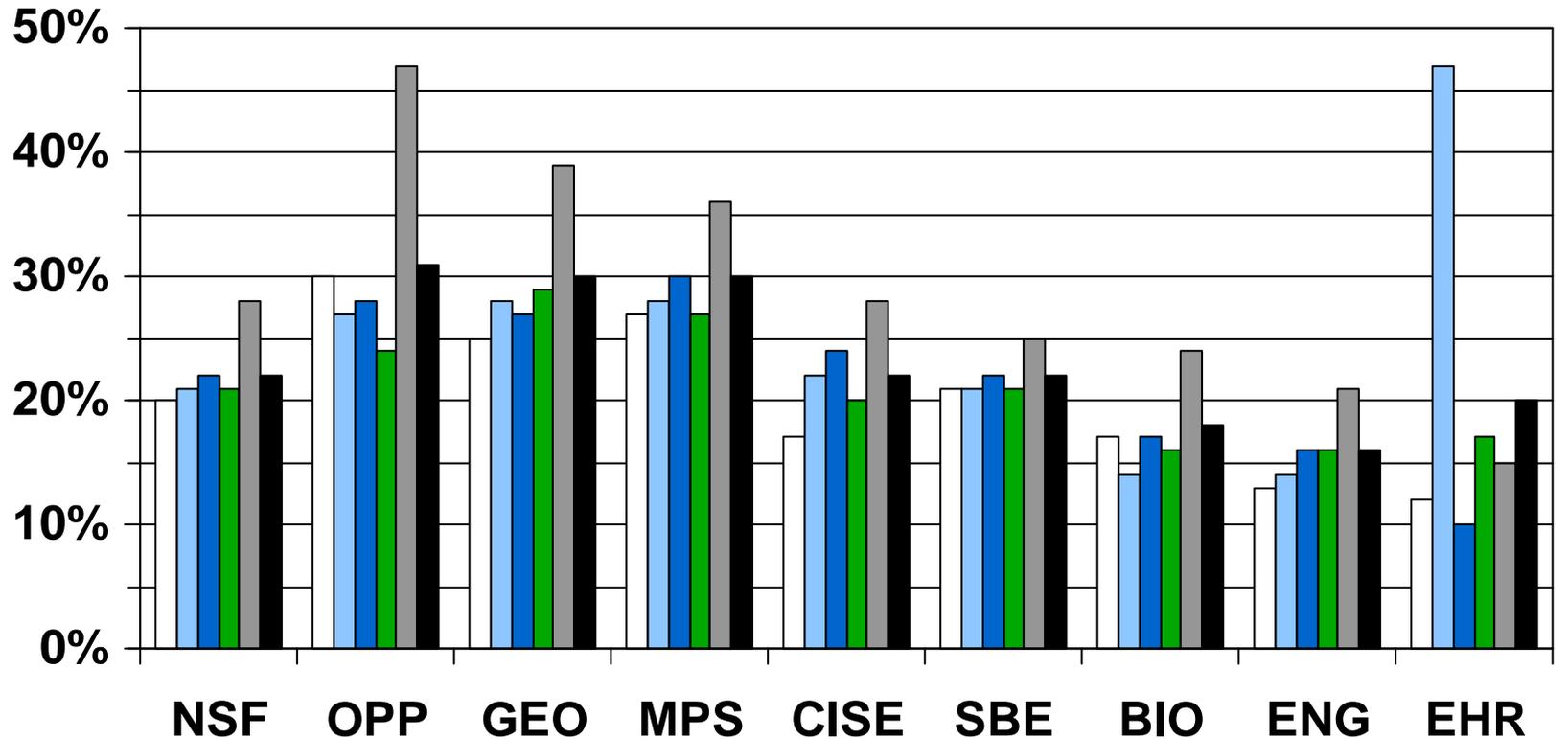
NSF Budget (\$B)



ENG and SBIR/STTR Budgets (\$M)



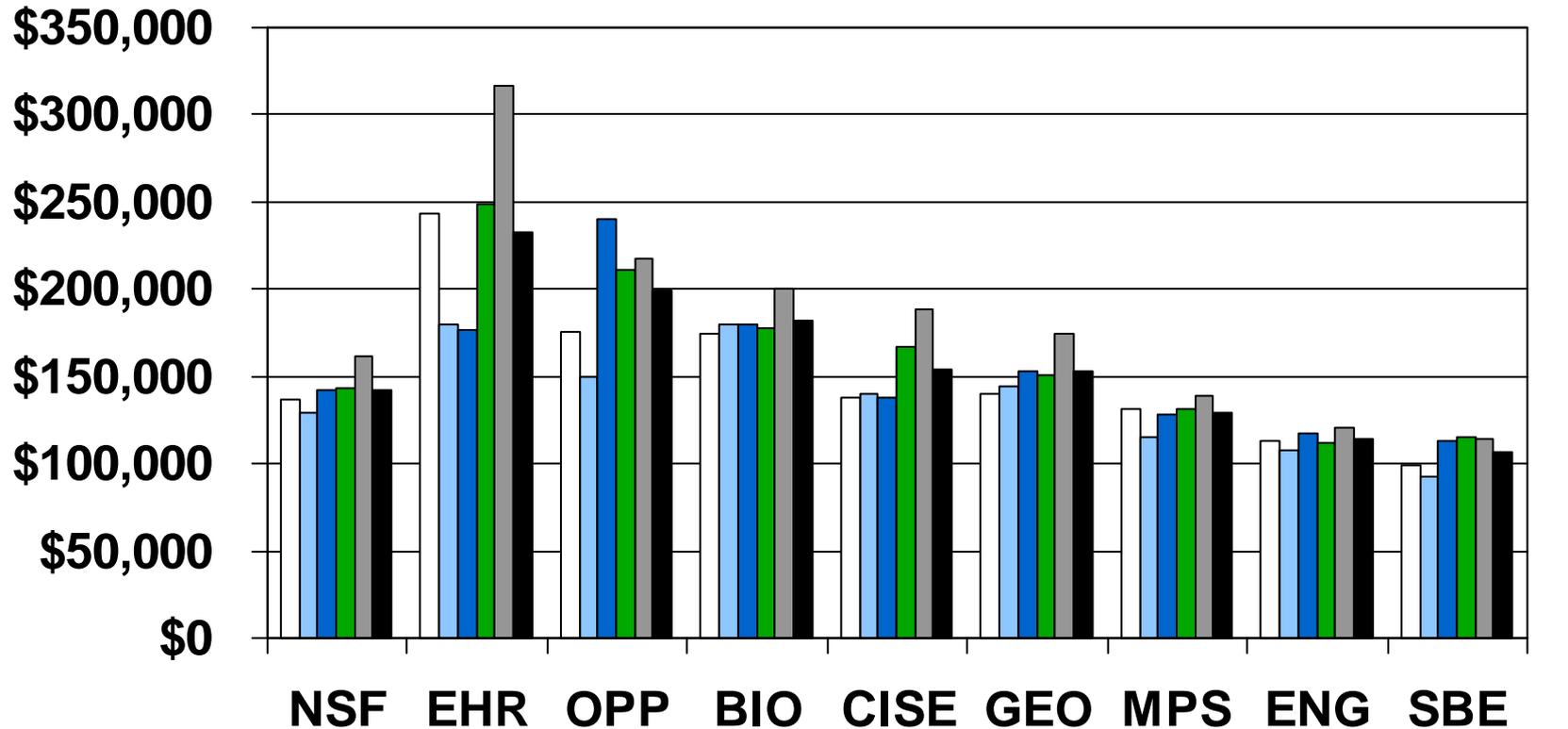
Funding Rates for Competitive NSF Awards, 2005–2009



2005
 2006
 2007
 2008
 2009
 Average

Directorate for Engineering

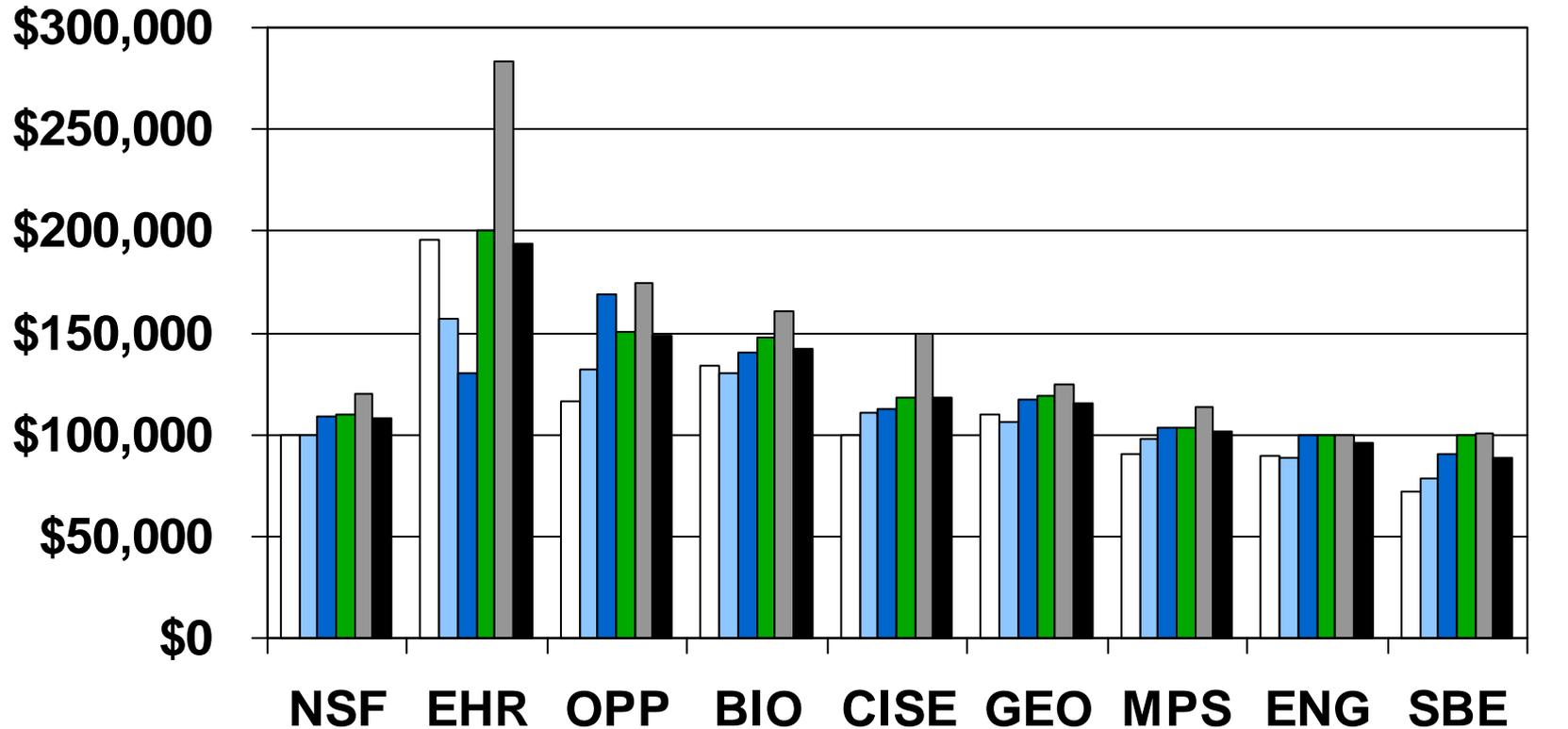
Mean Award Size, 2005–2009



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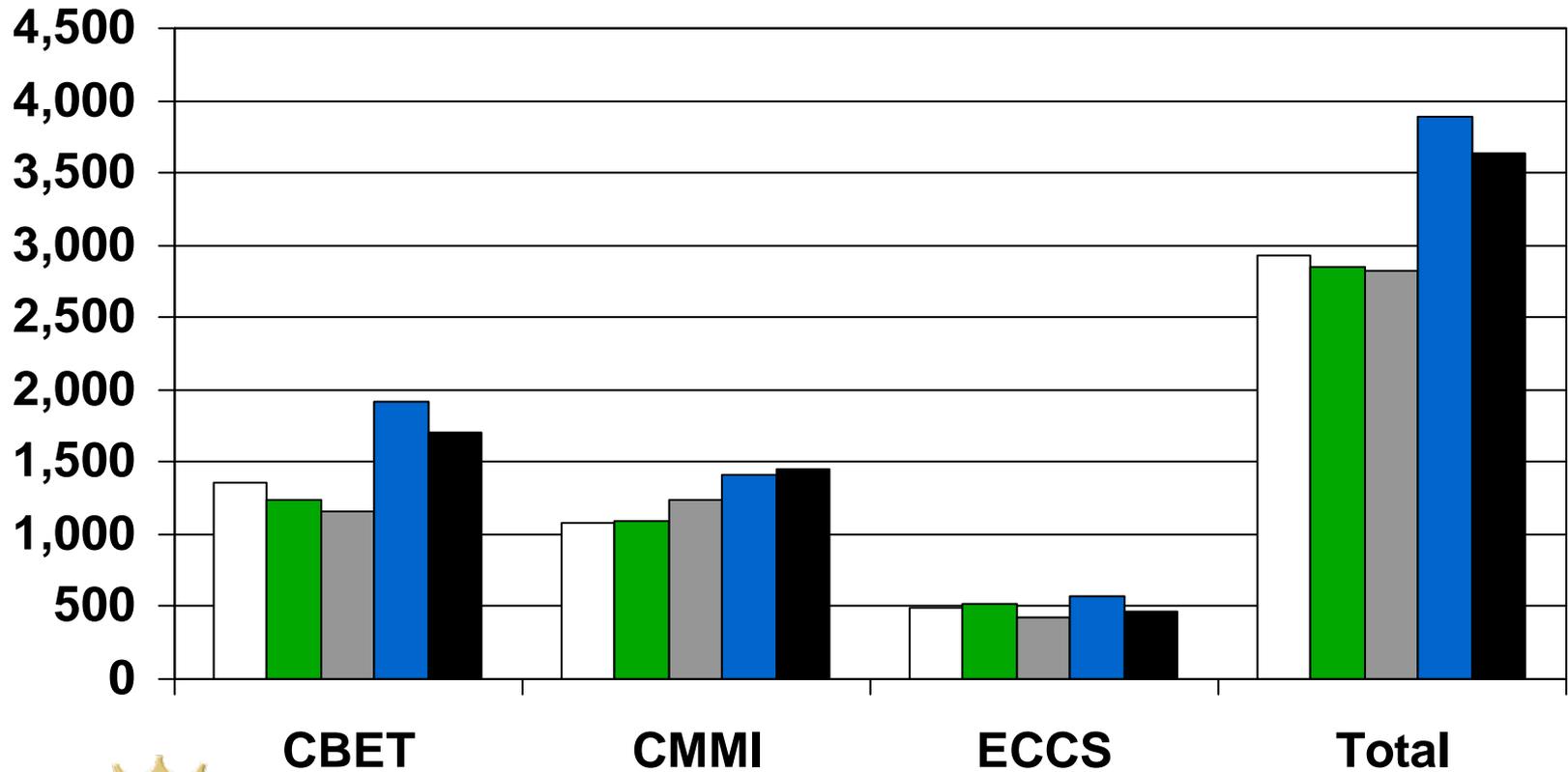
Median Award Size, 2005–2009



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Directorate for Engineering

ENG Unsolicited Proposal Submissions



□ Fall 2007
■ Spring 2008
■ Fall 2008
■ Fall 2009

■ Spring 2008
■ Spring 2009

Directorate for Engineering

ARRA Impacts

- Young Investigators
 - 80 additional CAREER awards
 - 16 additional GRF [above the 80 Women in Engineering (WENG) GRF Fellows funded annually by ENG]
 - 1 additional IGERT in the area of energy
 - 40 postdocs in industry
- High Risk / High Reward Research
 - 7 additional EFRI awards
- Translational Research
 - 257 additional small businesses (50% increase)
 - 9 additional I/UCRCs



ARRA Priorities for NSF

- Increase success rate for highly meritorious research proposals
- Emphasize support for early investigators
- No new solicitations
- Additional funding for two prior solicitations:
 - Major Research Instrumentation (2nd round)
 - Academic Research Infrastructure



Growth in ENG Research Support to Broaden Participation

- Broadening Participation Research Initiation Grants in Engineering (BRIGE)
 - 38 total in FY 2009 (28 regular appropriation + 10 ARRA) (28 total in FY 2008)
 - Reaching out to 9 new locations, including Hawaii and Puerto Rico (see maps)
- Graduate Research Supplements (GRS)
 - 29 total in FY 2009 (12 CBET, 9 CMMI, 5 ECCS, 2 EEC, and 1 EFRI)



Growth in ENG Outreach to Broaden Participation

National and International Workshops

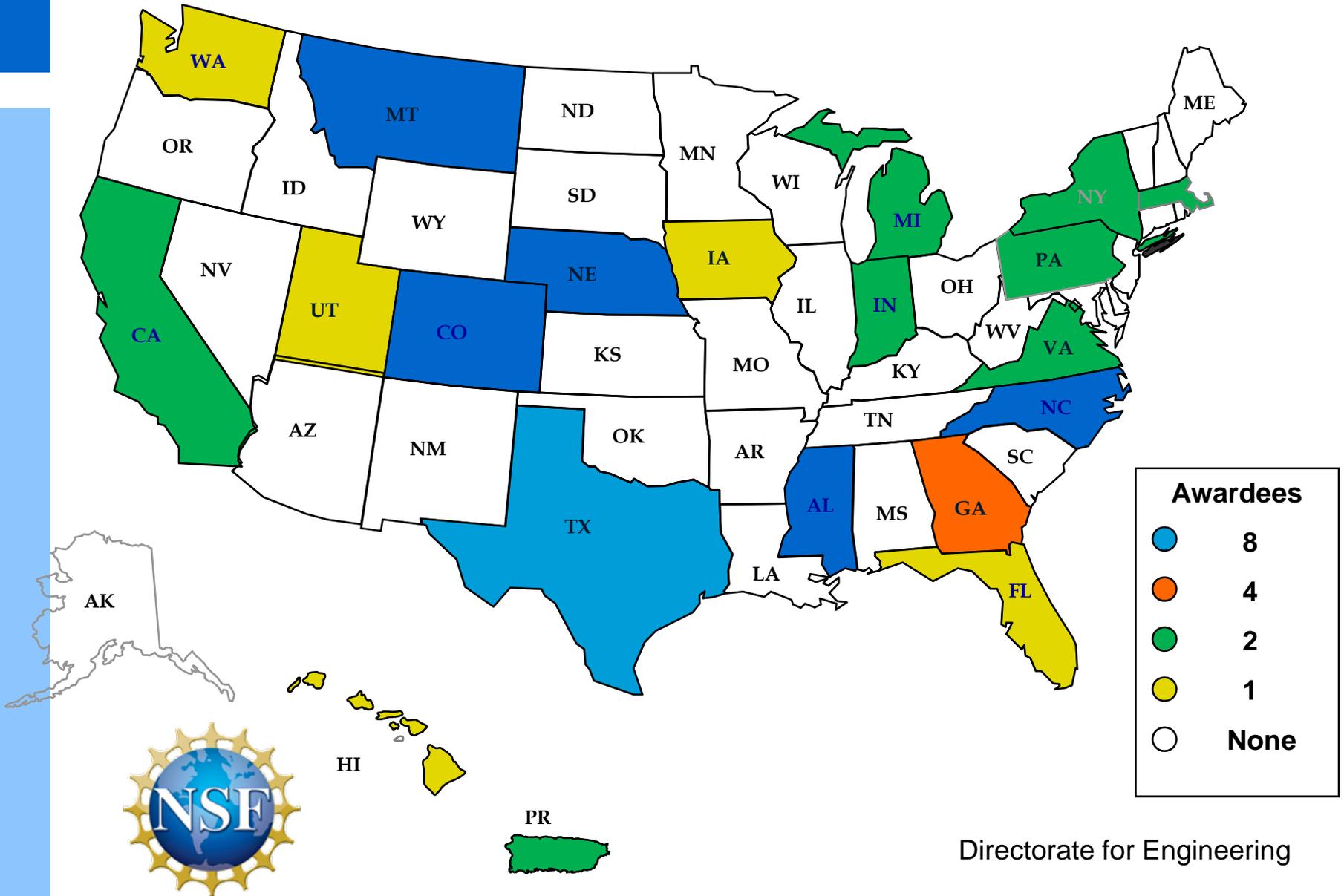
- Address topics of community importance
- Involve faculty and students
- Leverage NSF funding and increase others' commitment to goals through partnerships

Collaboration with Professional Organizations

- Provide mentoring and strengthen community networks
- Engage students, faculty, and community members
- Disseminate resources and develop curricula



FY 2009 BRIGE Awards



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Presidential Priorities

- Energy and climate
- Cyber-infrastructure
- Nanotechnology
- Convergence of biology and the physical sciences/engineering
- Innovation
- Crosscutting priorities
 - Increasing support for high-risk/high-return research
 - Tripling the number of GRFs
 - Increasing support for early investigators



FY 2010 NSF Initiatives

- Climate Change Science Program
- National Nanotechnology Initiative (NNI)
- Networking and Information Technology R&D

- Climate Research
- Cyber-enabled Discovery and Innovation (CDI)
- Science and Engineering Beyond Moore's Law (SEBML)



Other ENG Investments

- **Sustainability**
 - RE-ENERGYSE: REgaining our ENERGY Science and Engineering Edge, in collaboration with Dept. of Energy
- **Bioeconomy**
- **Innovation**



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OSTP Interest in ENG-related Areas

- Simulation Based Engineering and Science
- Nano – EHS
- Science and Engineering Beyond Moore's Law
- The Bio-Science-Engineering Interface
- **INNOVATION**

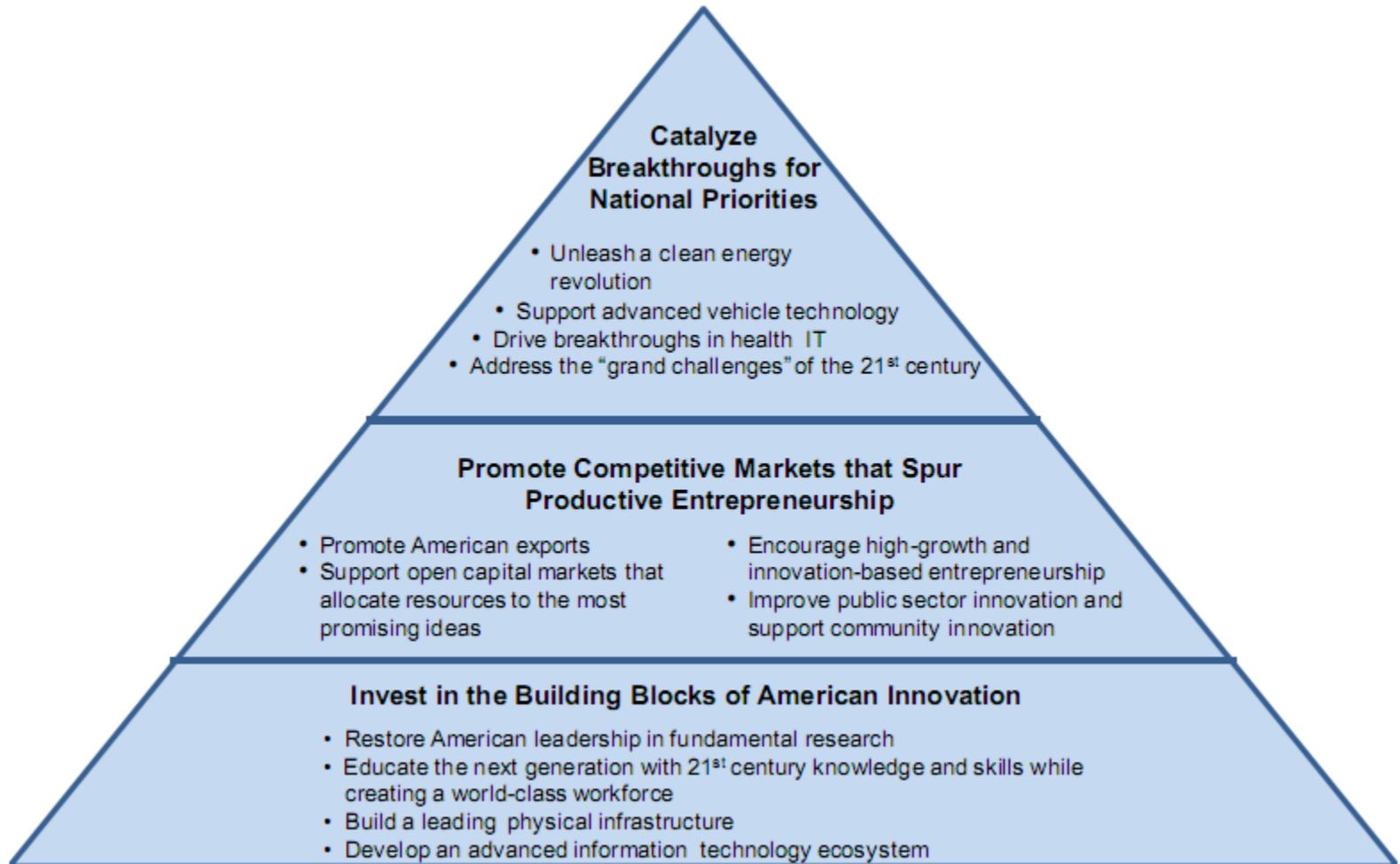


Innovation

- Innovation and Information Policy
 - Susan Crawford, National Economic Council
- Regional Innovation Clusters
 - Ginger Lew, National Economic Council
- In both cases, involvement of DOC, DOE, DOEd, DOL, NSF, OSTP, USDA



Innovation for Growth



Emerging Area - Innovation

- Current contributions to Innovation
- Industry-Inspired Research
- Innovation Fellowships

