U.S. DEPARTMENT OF ENERGY

Office of Science
U.S. DEPARTMENT OF ENERGY

Overview of Basic Energy Sciences Program

NAS Board on Physics and Astronomy
Solid-State Sciences Committee

Dr. Harriet Kung
Director, Office of Basic Energy Sciences
Office of Science
U.S. Department of Energy

1 April 2009

What's New?

- New Administration & DOE
- Secretary Chu's plans for DOE
- BES staffing update
- BES strategic planning
- Budgets – Hardly a tidy, linear process this year
  - H.R. 1, The American Recovery and Reinvestment Act (ARRA) of 2009
  - FY 2009 Budget Appropriation
  - EFRCs and SISGR Updates
  - FY 2010 Budget

Federal Energy Regulatory Commission

Office of the Secretary
Dr. Steven Chu, Secretary

Vacant, Deputy Secretary*

Office of the Under Secretary For Nuclear Security/ Administrator for National Nuclear Security Administration
Thomas P. D'Agostino

- Deputy Administrator for Defense Programs
- Deputy Administrator for Defense Nuclear Nonproliferation
- Deputy Administrator for Naval Reactors
- Deputy Under Secretary for Counter-terrorism
- Associate Administrator for Defense Nuclear Security
- Associate Administrator for Emergency Operations
- Associate Administrator for Infrastructure & Environment
- Associate Administrator for Management & Administration

Office of the Under Secretary

Vacant
Under Secretary

- Assistant Secretary for Energy Efficiency & Renewable Energy
- Assistant Secretary for Environmental Management
- Assistant Secretary for Fossil Energy
- Assistant Secretary for Nuclear Energy
- Assistant Secretary for Electricity Delivery & Energy Reliability
- Civilian Radioactive Waste Management
- Legacy Management

Office of the Under Secretary for Science

Vacant,
Under Secretary for Science

- Office of Science
  - Advanced Scientific Computing Research
  - **BES**
  - Biological & Environmental Research
  - Fusion Energy Science
  - High Energy Physics
  - Nuclear Physics
  - Workforce Development for Teachers & Scientists

- General Counsel
- Chief Financial Officer
- Chief Information Officer
- Human Capital Management
- Management

- Health, Safety & Security
- Economic Impact & Diversity
- Inspector General
- Hearings & Appeals
- Intelligence and Counterintelligence
- Public Affairs

- Energy Information Administration
- Southeastern Power Administration
- Bonneville Power Administration
- Western Area Power Administration
- Southwestern Power Administration

DOE's Priorities and Goals

Priority: Science and Discovery: Invest in science to achieve transformational discoveries

- Organize and focus on breakthrough science
- Develop and nurture science and engineering talent
- Coordinate DOE work across the department, across the government, and globally

Priority: Change the landscape of energy demand and supply

- Drive energy efficiency to decrease energy use in homes, industry and transportation
- Develop and deploy clean, safe, low carbon energy supplies
- Enhance DOE's application areas through collaboration with its strengths in Science

Priority: Economic Prosperity: Create millions of green jobs and increase competitiveness

- Reduce energy demand
- Deploy cost-effective low-carbon clean energy technologies at scale
- Promote the development of an efficient, "smart" electricity transmission and distribution network
- Enable responsible domestic production of oil and natural gas
- Create a green workforce

Priority: National Security and Legacy: Maintain nuclear deterrent and prevent proliferation

- Strengthen non-proliferation and arms control activities
- Ensure that the U.S. weapons stockpile remains safe, secure, and reliable without nuclear testing
- Complete legacy environmental clean-up

Priority: Climate Change: Position U.S. to lead on climate change policy, technology, and science

- Provide science and technology inputs needed for global climate negotiations
- Develop and deploy technology solutions domestically and globally
- Advance climate science to better understand the human impact on the global environment

Priority: Science and Discovery

Invest in science to achieve transformational discoveries

- **Focus on transformational science**
  - Connect basic and applied sciences
  - Re-energize the national labs as centers of great science and innovation
  - Double the Office of Science budget
  - Embrace a degree of risk-taking in research
  - Create an effective mechanism to integrate national laboratory, university, and industry activities
- **Develop science and engineering talent**
  - Train the next generation of scientists and engineers
  - Attract and retain the most talented researchers
- **Collaborate universally**
  - Partner globally
  - Support the developing world
  - Build research networks across departments, government, nation and the globe

Office of Basic Energy Sciences

Harriet Kung, Director

Wanda Smith, Administrative Specialist

BES Budget and Planning
Bob Astheimer, Technical Advisor
Margie Davis, Financial Management
Vacant, Program Support Specialist

BES Operations
Rich Burrow, DOE Technical Office Coordination
Don Freeburn, DOE and Stakeholder Interactions
Ken Rivera, Laboratory Infrastructure / ES&H
Katie Perine, Program Analyst / BESAC
Vacant, Technology Office Coordination

Materials Sciences and Engineering Division

Jim Horwitz, Acting Director
◆ Ehsan Khan, Program Manager
Christie Ashton, Program Analyst
Charnice Waters, Secretary

aterials Discovery, sign, and Synthesis
Arvind Kini
Kerry Gorey, P.A.

aterials Chemistry
Dick Kelley
Jim McBreen, BNL
Vacant

omolecular Materials
Mike Markowitz

thesis and Processing
Bonnie Gersten
Jeff Tsao, SNL
Mike Coltrin, SNL

ech. Coordination ogram Management
John Vetrano
Vacant

Condensed Matter and Materials Physics
Jim Horwitz
Marsophia Agnant, P.A.

Exp. Cond. Mat. Phys.
Andy Schwartz
● Doug Finnemore, Ames
Vacant

Theo. Cond. Mat. Phys.
Michael Lee
△ Arun Bansil, NEU
■ Jim Davenport, BNL
● Kim Ferris, PNNL

Physical Behavior of Materials
Refik Kortan

Mechanical Behavior and Radiation Effects
John Vetrano

Scattering and Instrumentation Sciences
Helen Kerch
Cheryl Howard, P.A.

X-ray Scattering
Lane Wilson

Neutron Scattering
Thiyaga P. Thiyagarajan

Electron and Scanning Probe Microscopies
Jane Zhu

DOE EPSCoR*
Tim Fitzsimmons
● Helen Farrell, INL

* Experimental Program to Stimulate Competitive Research

L E G E N D
◆ Detailee (from DOE laboratories)
■ Detailee, ½ time
■ Detailee, ½ time, not at HQ
● Detailee, ¼ time, not at HQ
◆ On detail from SC-2, ½ time
△ IPA (Interagency Personnel Act)
P.A. Program Assistant

Scientific User Facilities Division

Pedro Montano, Director
Linda Cerrone, Program Support Specialist
Rocio Meneses, Program Assistant

Operations

X-ray and Neutron Scattering Facilities
Roger Klaffky
Vacant

Nanoscience Centers & E-beam Centers
Tof Carim
Vacant

Accelerator and Detector R&D
Vacant

Facility Coordination, Metrics, Assessment
Van Nguyen

Construction

Linac Coherent Light Source
Tom Brown

NSLS II
Tom Brown

Spallation Neutron Source Upgrades
Tom Brown

TEAM
Tom Kiess

Instrument MIEs (SING, LUSI, etc.)
Tom Kiess

Advanced Light Source User Support Building

Chemical Sciences, Geosciences, and Biosciences Division

Eric Rohlfing, Director
Diane Marceau, Program Analyst
Michaelene Kyler-King, Program Assistant

Fundamental Interactions
Michael Casassa
Robin Felder, P.A.

Atomic, Molecular, and Optical Sciences
Jeff Krause

Gas-Phase Chem. Phys.
Wade Sisk
◆ Larry Rahn, SNL

Condensed-Phase and Interfacial Mol. Sci.
Greg Fiechtner

Computational and Theoretical Chemistry
Mark Pederson

Photo- and Bio-Chemistry
Rich Greene
Sharron Watson, P.A.

Solar Photochemistry
Mark Spitler

Photosynthetic Systems
Gail McLean

Physical Biosciences
Bob Stack

Chemical Transformations
John Miller
Teresa Crockett, P.A

Catalysis Science
Raul Miranda
Paul Maupin
◆

Heavy Element Chemistry
Lester Morss
● Norm Edelstein, LBN

Separations and Analysis
Bill Millman
◆ Larry Rahn, SNL

Geosciences
Nick Woodward
◆ Pat Dobson, LBNL

Technology Office Coordination
Marvin Singer
Vacant

February 20(

Five BES Investment Drivers

- *Science that addresses the DOE mission*
- *Science that advances our understanding of the natural world*
- *Enabling tools – the scientific user facilities and other unique instruments for the Nation*
- *Stewardship of DOE-owned research institutions*
- *Workforce development and the Nation's universities*

Challenge: Maintain balance among these five hungry beasts, each demanding immediate care and feeding.

The mission of the Basic Energy Sciences program is to foster and support fundamental research to expand the scientific foundations for new and improved energy technologies and for mitigating the environmental impacts of energy use. A central tenet of the BES program is that discovery science is the foundation for innovation and technology breakthroughs.

The 10 "Basic Research Needs ..." Workshops

10 workshops; 5 years; more than 1,500 participants from academia, industry, and DOE labs

Basic Research Needs to Assure a Secure Energy Future (BESAC)

- Basic Research Needs for the Hydrogen Economy
- Basic Research Needs for Solar Energy Utilization
- Basic Research Needs for Superconductivity
- Basic Research Needs for Solid State Lighting
- Basic Research Needs for Advanced Nuclear Energy Systems
- Basic Research Needs for the Clean and Efficient Combustion of 21st Century Transportation Fuels
- Basic Research Needs for Geosciences: Facilitating 21st Century Energy Systems
- Basic Research Needs for Electrical Energy Storage
- Basic Research Needs for Catalysis for Energy Applications
- Basic Research Needs for Materials under Extreme Environments

BES Strategic Planning

10 workshops; 5 years; more than 1,500 participants from academia, industry, and DOE labs

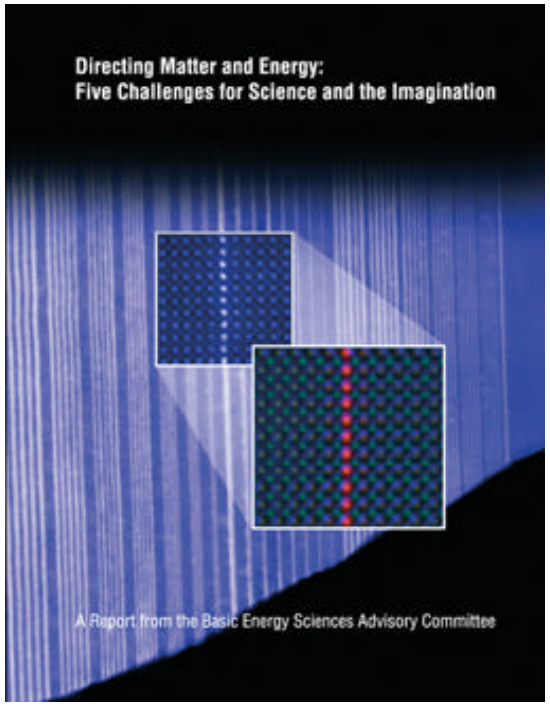
Important Recurring Themes – Disruptive Technologies Require "Control"

Control of materials properties and functionalities through electronic and atomic design

- New materials discovery, design, development, and fabrication, especially materials that perform well under extreme conditions
- "Control" of photon, electron, spin, phonon, and ion transport in materials
- Science at the nanoscale, especially low-dimensional systems
- Designer catalysts
- Designer interfaces and membranes
- Structure-function relationships
- Bio-materials and bio-interfaces, especially at the nanoscale
- New tools for spatial characterization, temporal characterization, and for theory/modeling/computation

BES Advisory Committee Grand Challenges Report

Directing Matter and Energy: Five Challenges for Science and the Imagination



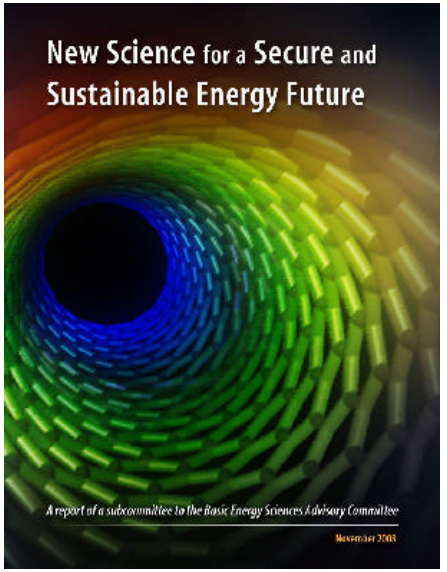
BESAC Grand Challenges Report 2007

- How do we control materials processes at the level of electrons?
- How do we design and perfect atom- and energy-efficient syntheses of revolutionary new forms of matter with tailored properties?
- How do remarkable properties of matter emerge from the complex correlations of atomic or electronic constituents and how can we control these properties?
- How can we master energy and information on the nanoscale to create new technologies with capabilities rivaling those of living things?
- How do we characterize and control matter away—especially very far away—from equilibrium?

BES in a New Era of Science: Serving the Present, Shaping the Future

BESAC New Science for a Secure and Sustainable Energy Future Report

- The present pace of change for clean energy technologies is not sufficient to meet future needs. BES must lead a major campaign focused on increasing the rate of discoveries and establishing US leadership in next-generation carbon-free energy technologies.
- Significant discoveries will come at the intersection of control science with complex functional materials. …. BES must move aggressively in these directions lest the US fall behind in the global competition for the discoveries that underpin future energy sources, systems, and processes.
- It will take 'dream teams' of highly educated talent, equipped with forefront tools, and focused on the most pressing challenges to increase the rate of discovery. To make progress most rapidly, these teams must work to close gaps between needs and capabilities in synthesis, measurement, theory, and computation.
- U.S. leadership requires BES to lead a national effort to aggressively recruit the best talent through a series of workforce development aimed at inspiring today's students and young researchers to be the discoverers, inventors, and innovators of tomorrow's energy.



http://www.sc.doe.gov/bes/reports/files/NSSSEF_rpt.p

U.S. Department of Energy

Office of Science

The Office of Science FY 09 Budget Request

(dollars in thousands)

	FY 2007 Approp.	FY 2008 Approp.	FY 2009 Request to Congress	FY 2009 Request to Congress vs. FY 2008 Approp.	
Basic Energy Sciences	1,221,380	1,269,902	1,568,160	+298,258	+23.5%
Advanced Scientific Computing Research	275,734	351,173	368,820	+17,647	+5.0%
Biological and Environmental Research	480,104	544,397	568,540	+24,143	+4.4%
High Energy Physics	732,434	689,331	804,960	+115,629	+16.8%
Nuclear Physics	412,330	432,726	510,080	+77,354	+17.9%
Fusion Energy Sciences	311,664	286,548	493,050	+206,502	+72.1%
Science Laboratories Infrastructure	41,986	66,861	110,260	+43,399	+64.9%
Science Program Direction	166,469	177,779	203,913	+26,134	+14.7%
Workforce Dev. for Teachers & Scientists	7,952	8,044	13,583	+5,539	+68.9%
Safeguards and Security (gross)	75,830	75,946	80,603	+4,657	+6.1%
SBIR/STTR (SC funding)	86,936	——	——	——	——
Subtotal, Office of Science	3,812,819	3,902,707	4,721,969	+819,262	+21.0%
Adjustments*	23,794	70,435	——	-70,435	——
Total, Office of Science	3,836,613	3,973,142	**4,721,969**	**+748,827**	**+18.8%**

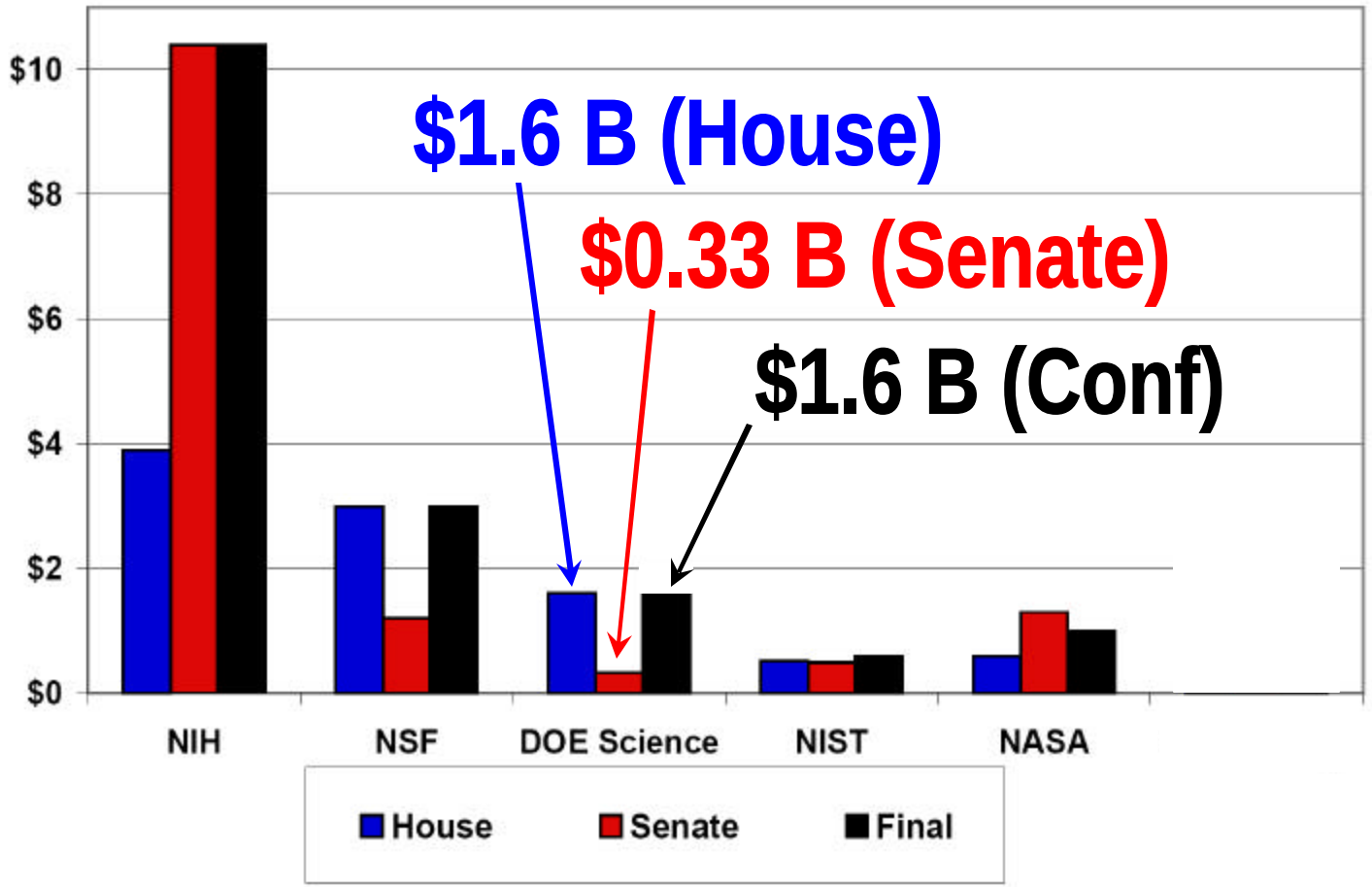
* Adjustments include SBIR/STTR funding transferred from other DOE offices (FY 2007 only), a charge to reimbursable customers for their share of safeguards and security costs (FY 2007 and FY 2008), Congressionally-directed projects and a rescission of a prior year Congressionally-directed project (FY 2008 only), and offsets for the use of prior year balances to fund current year activities (FY 2007 and FY 2008).

Office of Science FY 2009 ARRA & Omnibus Appropriations

	FY 2008 Enacted Approp.	FY 2008 Current Approp	FY 2009 Base Appropriation				FY 200 Recover Act Appr
			Request to Congress	House Mark	Senate Mark	Confer-ence	
SCIENCE							
Basic Energy Sciences	1,283,402	1,252,756	1,568,160	1,599,660	1,415,378	1,571,972	
Advanced Scientific Computing Research	351,173	341,774	368,820	378,820	368,820	368,820	
Biological & Environmental Research	544,397	531,063	568,540	578,540	598,540	601,540	
High Energy Physics	720,317	702,845	804,960	804,960	804,960	795,726	
Nuclear Physics	434,226	423,671	510,080	517,080	510,080	512,080	
Fusion Energy Sciences	302,048	294,933	493,050	499,050	493,050	402,550	
Science Laboratories Infrastructure	64,861	66,861	110,260	145,760	110,260	145,380	
Science Program Direction	177,779	177,779	203,913	203,913	186,695	186,695	
Workforce Development for Teachers & Scientists	8,044	8,044	13,583	13,583	13,583	13,583	
Safeguards & Security	75,946	75,946	80,603	80,603	80,603	80,603	
Small Business Innovation Research/Tech. Transfer	——	92,997	——	——	——	——	
Subtotal, Science	3,962,193	3,968,669	4,721,969	4,821,969	4,581,969	4,678,949	
Advanced Research Projects Agency-Energy	——	——	——	15,000	——	15,000	
Congressionally-directed projects	123,623	120,161	——	39,700	58,500	93,687	
SBIR/STTR (transfer from other DOE offices)	——	47,241	——	——	——	——	
Subtotal, Science	4,085,816	4,136,071	4,721,969	4,876,669	4,640,469	4,787,636	
S&S (reimb. chg.)	-5,605	-5,605	——	——	——	——	
Rescission of prior year Congressionally-directed proj	-44,569	-44,569	——	——	——	——	
Use of prior year balances	——	-3,014	——	-15,000	——	-15,000	
Total, Science	4,035,642	4,082,883	4,721,969	4,861,669	4,640,469	4,772,636	+1,600,0

H.R. 1, The American Recovery and Reinvestment Act of 2009

2009 Supplemental Recovery Funding for R&D
(House, Senate, and Final bills)
(budget authority in billions of dollars)



Source: AAAS analysis of R&D in House, Senate, and Final stimulus appropriations bills (HR 1).
FEB. '09 © 2009 AAAS

AAAS

The American Recovery and Reinvestment Act of 2009

The $787 billion **American Recovery and Reinvestment Act of 2009** (ARRA) includes $281 billion in tax cuts and $506 billion in government spending. Included are **$17.33 billion in science investments** (NIH, 10B; NSF, $3B; **DOE, $2B**; NASA, $1B; NOAA, $0.83B; NIST, $0.36B; USGS, $0.14B).

Science, Department of Energy: $2 billion for **basic research into the physical sciences** including high-energy physics, nuclear physics, and fusion energy sciences and improvements to DOE laboratories and scientific facilities. $400 million is for the Advanced Research Project Agency – Energy to support high-risk, high-payoff research into energy sources and energy efficiency. (House Press Release, February 13, 2009)

The **Basic Energy Sciences** (BES) program will invest **$500.3 million** of the ARRA funding for the following five activities:

- **$150.0M** to accelerate the civilian construction of the **National Synchrotron Light Source II** (NSLS-II) at Brookhaven National Laboratory;
- **$14.7M** to complete the construction of the **User Support Building** (USB) at the Advanced Light Source (ALS) at Lawrence Berkeley National Laboratory;
- **$33.6M** to complete the Linac Coherent Light Source (LCLS) **Ultrafast Science Instruments** (LUSI) MIE project at SLAC National Accelerator Laboratory;
- **$25.0M** for capital equipment replenishment and augmentation at the five BES **Nanoscale Science Research Centers** (NSRCs); and
- **$277.0M** for **Energy Frontier Research Centers** (EFRCs).

FY 2009 Energy and Water Development Appropriations
Basic Energy Sciences

House Report 110-921

"The Committee recommendation for Basic Energy Sciences is $1,599,660,000, an increase of $31,500,000 over the budget request and an increase of $329,758,000 over the current fiscal year. For purposes of reprogramming during fiscal year 2009, the Department may allocate funding among all operating accounts within Basic Energy Sciences, consistent with the reprogramming guidelines outlined earlier in this report."

Senate Report 110-416

"The Committee provides $1,415,378,000 for Basic Energy Sciences. Of these funds $145,468,000 is provided for construction activities as requested in the budget. The remaining $1,269,910,000 is for research. Within the research funds provided $17,000,000 is for the Experimental Program to Stimulate Competitive Research [EPSCoR]. Of the decrease, $59,495,000 of basic solar research is moved to the EERE solar energy research and development program."

H.R.1105 - Omnibus Appropriations Act, 2009
Division C - Energy and Water Development and Related Agencies Appropriations Act, 2009

"Basic Energy Sciences.—The bill provides $1,571,972,407 for this program. Within this amount, $17,000,000 is provided for the Experimental Program to Stimulate Competitive Research (EPSCoR). Full funding is provided to support the operations of the major scientific user facilities and the five Nanoscale Science Research Centers, as well as additional instrumentation for the Spallation Neutron Source and the Linac Coherent Light Source. The control level is at the Basic Energy Sciences level."

	FY 200 Enacted	FY 2009 Request	This Bill	This Bill vs. Enacted	This Bill vs. Request
Total, BES	**1,269,902**	**1,568,160**	**1,571,972**	**+302,070**	**+3,812**

(in thousands)

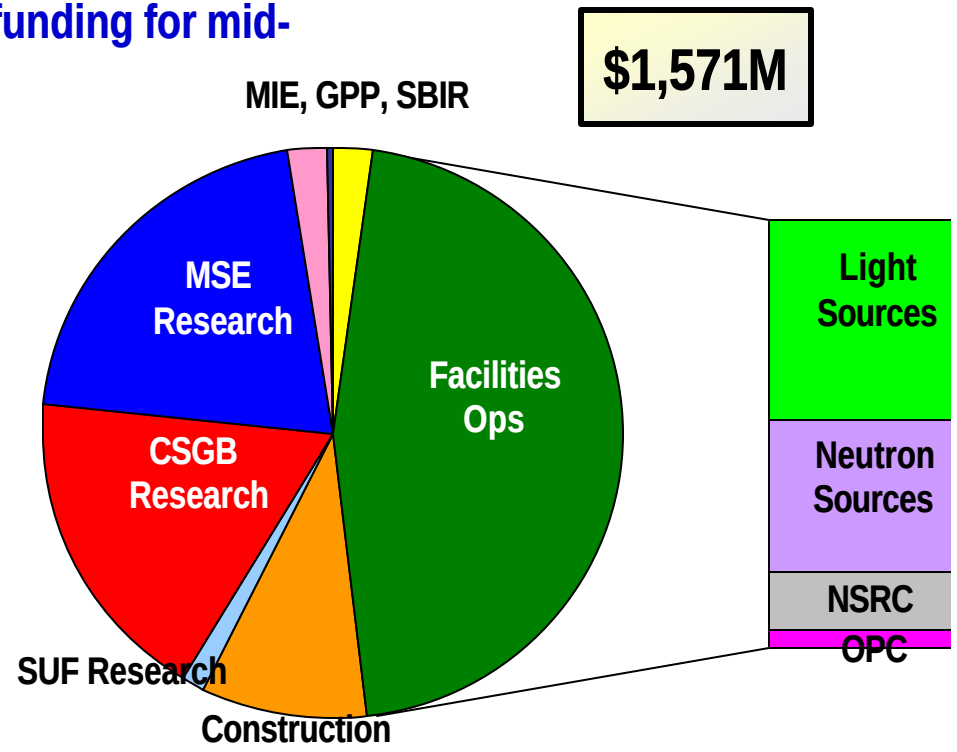
http://docs.house.gov/rules/omni/jes/divcjes_111_hromni2009_jes.pdf

FY 2009 BES Budget

Omnibus Appropriations Act 2009

- **Core research programs**
  - $100M for Energy Frontier Research Centers
  - ~$55M for single investigator and small group awards for grand science and energy research (including one-time funding for mid-scale instrumentation and ultrafast science)
  - Facility-related research (detectors, optics, etc.)
  - $17M for EPSCoR (vs. request of $8.24M)

- **Scientific user facilities operations**
  - Full funding for:
    - Synchrotron light sources
    - Neutron scattering facilities
    - Electron microcharacterization facilities
    - Nanoscale Science Research Centers

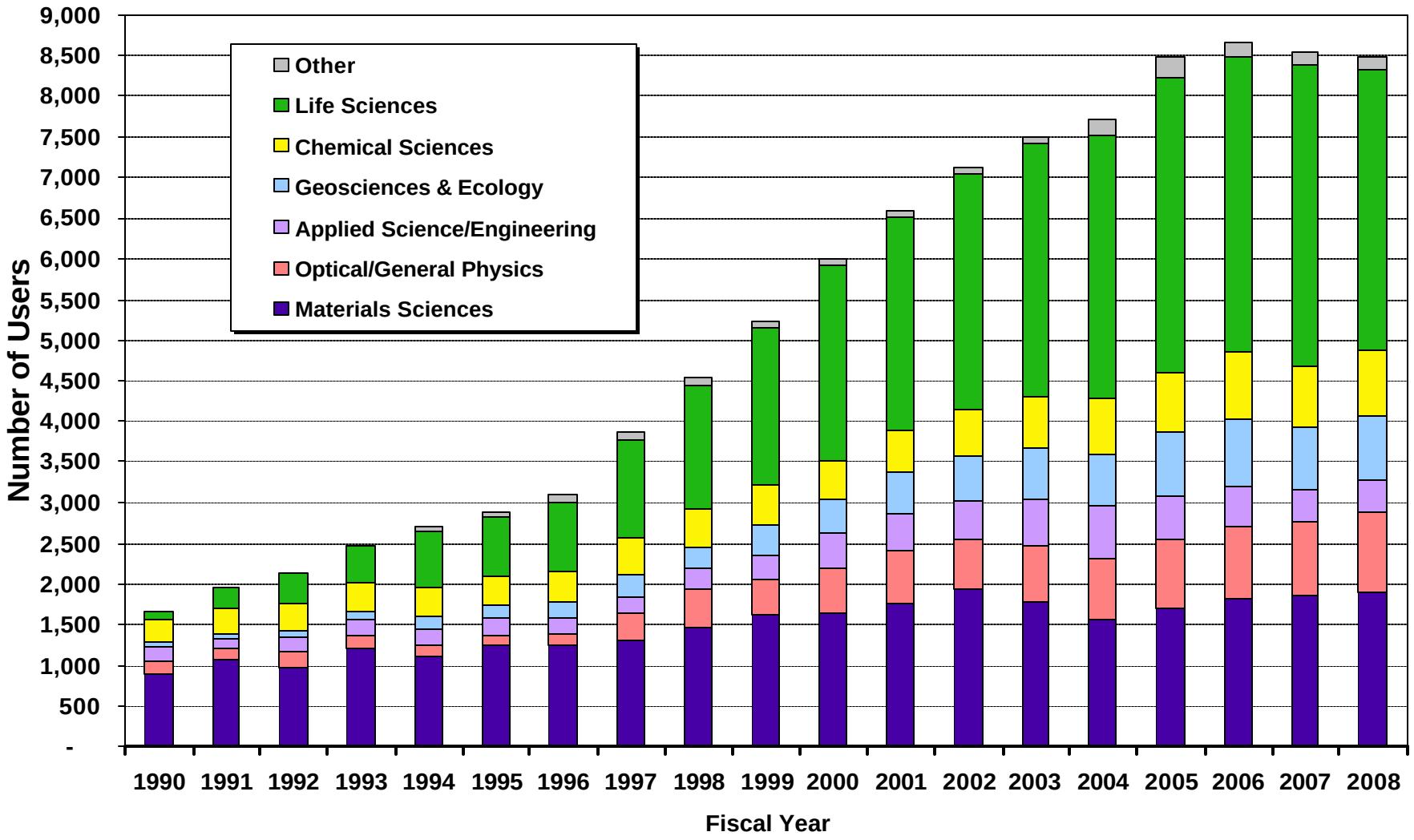


- **Construction and instrumentation**
  - Full funding for:
    - National Synchrotron Light Source-II
    - Linac Coherent Light Source + Linac operations + instruments
    - Advanced Light Source User Support Building
    - Spallation Neutron Source instruments

Basic Energy Sciences User Facilities Hosted 10,995 Users in FY 2008

FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	
									Synchrotron Radiation Light Sources
2,551	2,523	2,413	2,206	2,299	2,256	2,105	2,219	2,128	National Synchrotron Light Source (NSLS)
895	907	1,023	867	741	1,007	1,124	1,151	1,147	Stanford Synchrotron Radiation Laboratory (SSRL)
1,036	1,163	1,385	1,662	1,898	2,003	2,158	1,748	1,938	Advanced Light Source (ALS)
1,527	1,989	2,299	2,767	2,773	3,215	3,274	3,420	3,279	Advanced Photon Source (APS)
6,009	6,582	7,120	7,502	7,711	8,481	8,661	8,538	8,492	
									High-Flux Neutron Sources
-	-	-	-	-	-	-	24	165	Spallation Neutron Source (SNS)
153	-	22	51	48	96	42	72	258	High Flux Isotope Reactor (HFIR)
230	240	243	229	279	244	211	173	89	Intense Pulsed Neutron Source (IPNS)
25	122	164	269	339	221	297	272	261	Manuel Lujan Jr. Neutron Scattering Center (Lujan Cen
408	362	429	549	666	561	550	541	773	
									Electron Beam Microcharacterization Centers
392	405	477	532	617	690	-	-	-	Center for Microanalysis of Materials
83	88	103	95	128	154	140	199	153	Electron Microscopy Center for Materials Research
201	212	232	253	241	232	205	183	152	National Center for Electron Microscopy
99	97	111	112	109	150	132	159	144	Shared Research Equipment Program
775	802	923	992	1,095	1,226	477	541	449	
									Nanoscale Science Research Centers
-	-	-	-	-	-	139	309	404	Center for Nanophase Materials Sciences
-	-	-	-	-	-	-	164	303	Molecular Foundry
-	-	-	-	-	-	-	189	272	Center for Integrated Nanotechnologies
-	-	-	-	-	-	-	112	196	Center for Nanoscale Materials
-	-	-	-	-	-	-	-	106	Center for Functional Nanomaterials
						139	774	1,281	

User Profile by Discipline of Experiments for the four BES Light Sources



Summary of BES Budget Evolution FY 2006 – FY 2009

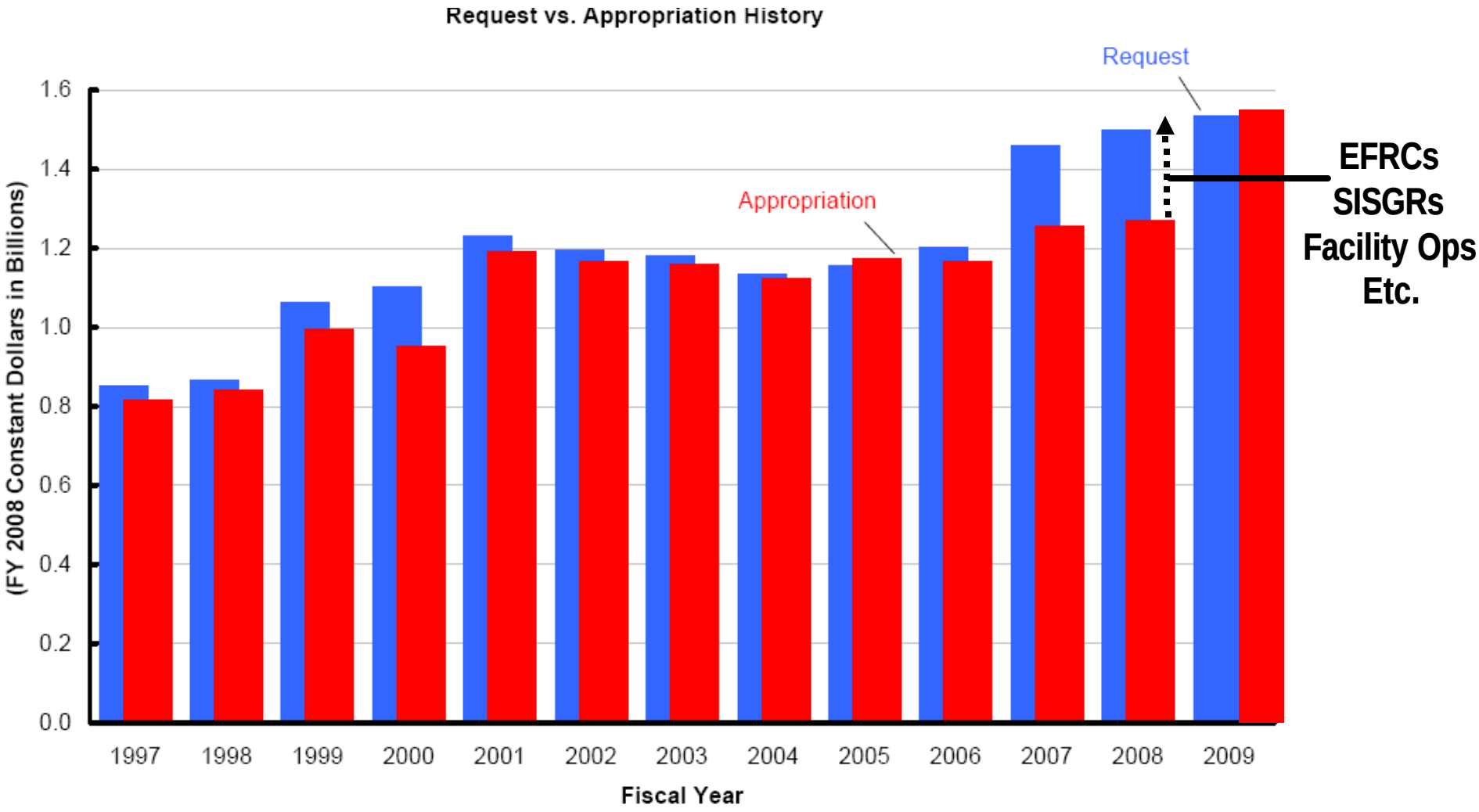
- **FY 2006:** a lean year.

- **FY 2007 and FY 2008:** appropriations were below the President's Requests by $170M and $230M, respectively. Impacts included declination of 700 proposals for new research awards; premature termination of IPNS; delay of USB, LCLS, LUSI, and SING-II of one year or more; held core research program flat, and kept facilities at FY 2006 level of effort with only very small increases.

- **FY 2009:** President's Request was comparable to the FY 2008 President's Request and continues priorities established in recent years. The EFRC (~ $100M) was proposed as a new implementation mechanism that consolidates parts of the individual increases in basic research for hydrogen, solar energy utilization, electrical energy storage, and advanced nuclear energy systems. Core research program was slated for significant increases (~ $60M) in discovery and use-inspired research areas. All operating facilities are given robust increases in operation funding to mitigate the small increase in FY 2007 and FY 2008, which gives an average of 9-10% increase over the three-year period FY 2007 - FY 2009. H.R. 1105 omnibus appropriation provides most of the requested increases, except a ~ 5M decrease in research funding.

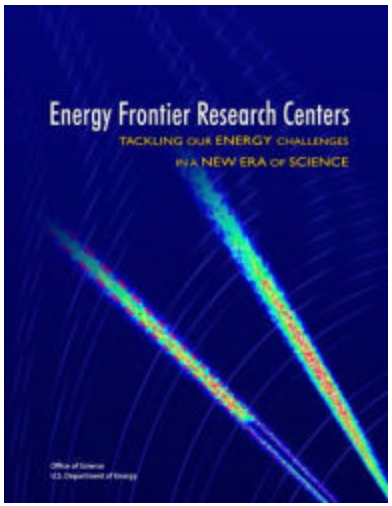
12-Year History of Request vs. Appropriation for BES (FY08 Constant Dollars)*

*** Prior to FY 2008 Supplemental & FY 2009 Recovery Act Funding**



Energy Frontier Research Center Collaboration

Tackling our energy challenges in a new era of science



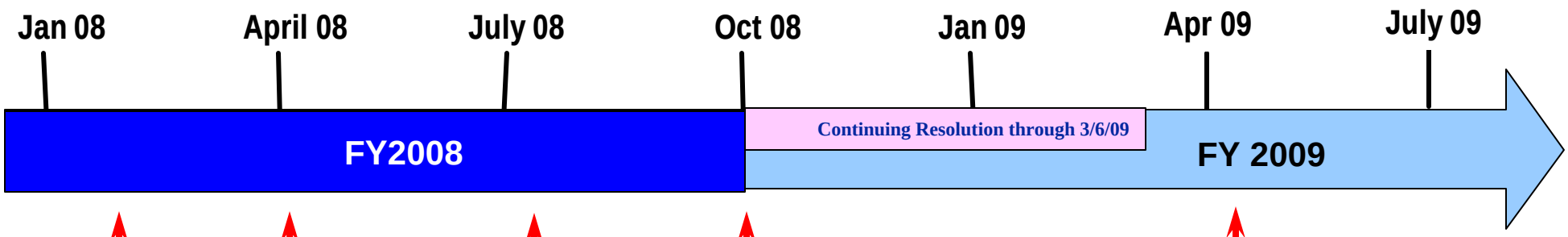
Engaging the Talents of the Nation's Researchers for the Broad Energy Sciences: BES announced the initiation of EFRCs to accelerate the scientific breakthroughs needed to create advanced energy technologies for the 21st century. The EFRCs will pursue the fundamental understanding necessary to meet the global need for abundant, clean, and economical energy.

EFRC will pursue *collaborative* fundamental research that addresses both energy challenges and science grand challenges in areas such as:

- Solar Energy Utilization
- Catalysis for Energy
- Electrical Energy Storage
- Solid State Lighting
- Superconductivity
- Other
- Geosciences for Nuclear Waste and CO_2 Storage
- Advanced Nuclear Energy Systems
- Combustion of 21st Century Transportation Fuels
- Hydrogen Production, Storage, and Use
- Materials Under Extreme Environments
- Conversion of Biological Feedstock to Portable Fuels

EFRC

Timeline of the EFRC Solicitation



2/2008

BES rolled-out EFRC in FY2009 Budget Request & BESAC

4/2008

EFRC FOA issued
Amended 4/2008
6/2008
9/2008

7/2008

BES Received 251 Letters of Intent

10/2008

BES 261 Full Proposals Received

BES

Conducted Merit Reviews

Awards Announcement

EFRC

Single-Investigator and Small-Group Research
Tackling our energy challenges in a new era of science

SISGR will significantly enhance the core research programs in BES and pursue the fundamental understanding necessary to meet the global need for abundant, clean, and economical energy.

Awards are planned for three years, with funding in the range of $150-300 K/yr for single-investigator awards and $500-1500 K/yr for small-group awards

Areas of interest include:

Grand challenge science: ultrafast science; chemical imaging, complex & emergent behavior

Use inspired discovery science: basic research for electrical energy storage; advanced nuclear energy systems; solar energy utilization; hydrogen production, storage, and use; geological CO2 sequestration; other basic research areas identified in BESAC and BES workshop reports with an emphasis on nanoscale phenomena

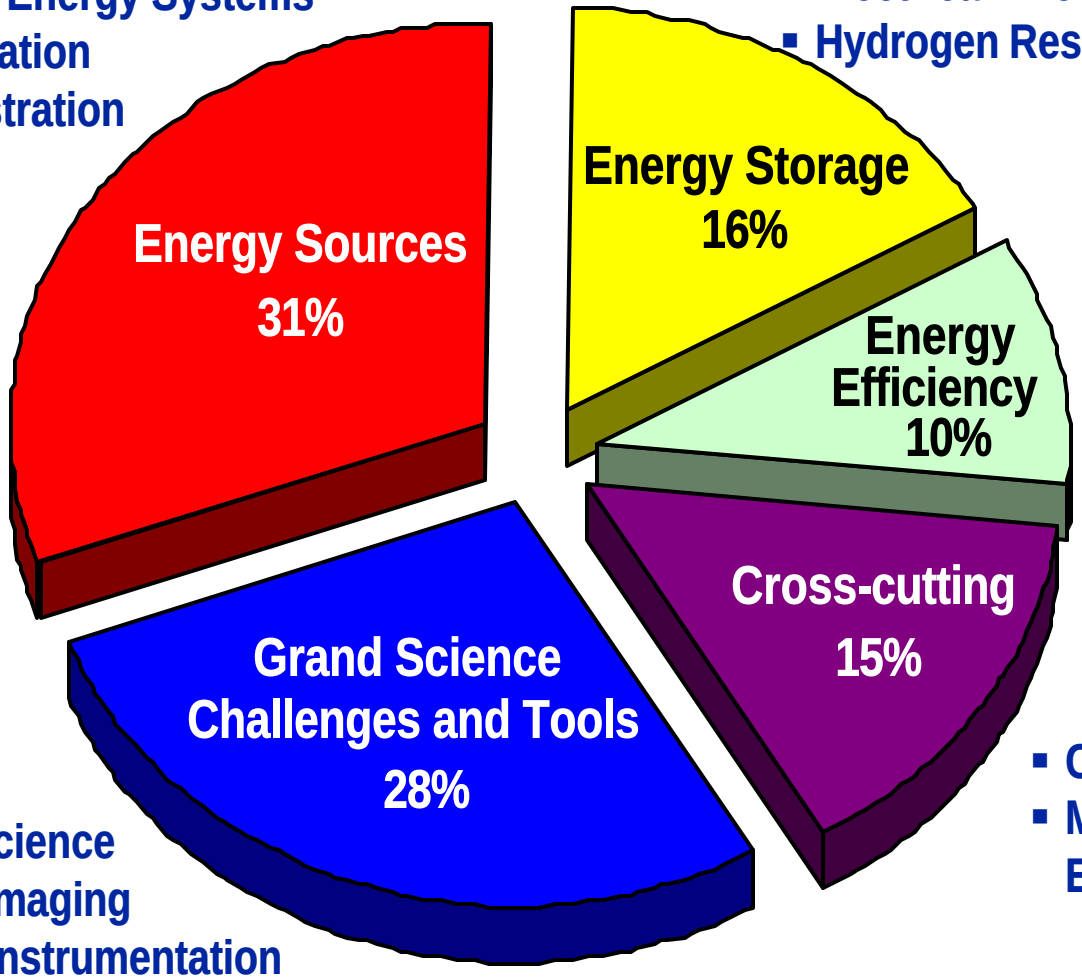
Tools for grand challenge science: midscale instrumentation; accelerator and detector research (exclude capital equipment supports)

SISGR Solicitation Status

879 Whitepapers; ~ 88% from Universities; 11% DOE Labs; 1% Other Institutions

- Advanced Nuclear Energy Systems
- Solar Energy Utilization
- Geological Sequestration of Carbon Dioxide

- Electrical Energy Storage
- Hydrogen Research

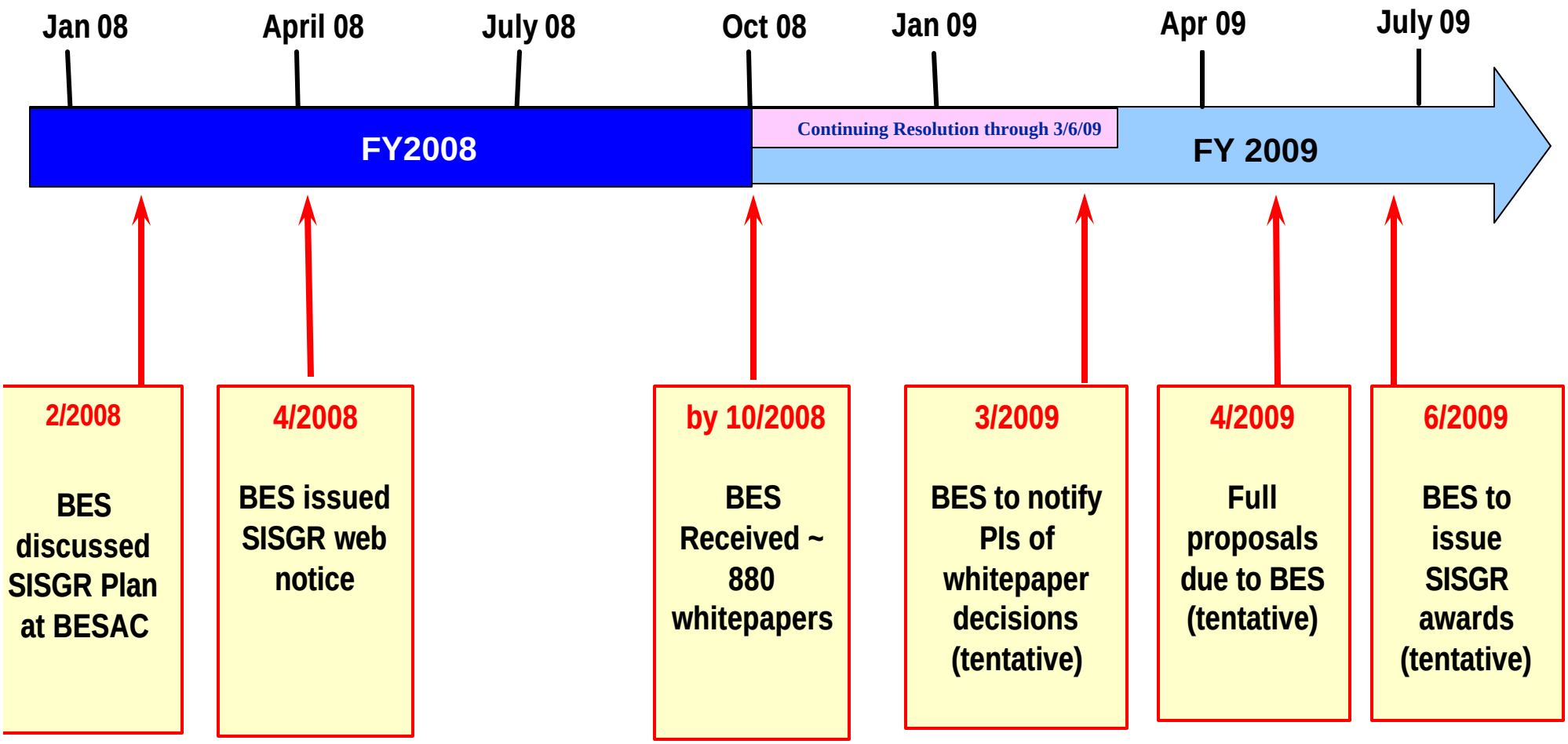


- Solid-state Lighting
- Clean and Efficient Combustion
- Superconductivity

- Catalysis for Energy
- Materials under Extreme Environments

- Ultrafast Science
- Chemical Imaging
- Mid-scale Instrumentation
- Complex Systems and Emergent Behavior

Timeline of the SISGR



FY 2010 Budget

On February 26, the Administration's FY 2010 Budget Overview will be released.

The agency summaries in the overview provide highlights of the agency budget; the overview also describes certain administration initiatives and other proposals.

DOE will not make commitments about specific programs not specifically mentioned in the overview or address account level details until the release of the full budget in April.

OMB Memo, M-09-11, February 19, 2009