U.S. Department of Energy's

Office of Science

Briefing for the Advanced Scientific Computing Advisory Committee

FY05 Budget Request For the Office of Science

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April 5, 2004

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The Office of Science FY 05 Budget Request

(dollars in thousands)

	FY 2003 Comparable Approp.	FY 2004 Comparable Approp.	FY 2005 President's Request	FY 2005 Request vs. FY 2004 Appropriation	
Science					
Basic Energy Sciences	1,001,941	1,010,591	1,063,530	+52,939	+5.2%
Advanced Scientific Computing Research	163,185	202,292	204,340	+2,048	+1.0%
Biological & Environmental Research	494,360	641,454	501,590	-139,864	-21.8%
Congressionally-directed projects	*(51,927)*	*(140,762)*	*(——)*	*(-140,762)*	*(-100.0%)*
Core Biological and Environmental Research	*(442,433)*	*(500,692)*	*(501,590)*	*(+898)*	*(+0.2%)*
High Energy Physics	702,038	733,631	737,380	+3,749	+0.5%
Nuclear Physics	370,655	389,623	401,040	+11,417	+2.9%
Fusion Energy Sciences	240,695	262,555	264,110	+1,555	+0.6%
Science Laboratories Infrastructure	45,109	54,280	29,090	-25,190	-46.4%
Science Program Direction	137,425	152,581	155,268	+2,687	+1.8%
Workforce Development for Scientists & Teachers	5,392	6,432	7,660	+1,228	+19.1%
Small Business Innovation Research/Technology Transfer	100,172	——	——	——	——
Safeguards and Security	61,272	56,730	67,710	+10,980	+19.4%
Subtotal, Science	3,322,244	3,510,169	3,431,718	-78,451	-2.2%
Use of prior year balances	——	-10,000	——	+10,000	+100.0%
Total, Science	**3,322,244**	**3,500,169**	**3,431,718[a]**	**-68,451**	**-2.0%**
Total, excluding Congressionally-directed projects	*(3,270,317)*	*(3,359,407)*	*(3,431,718)*	*(+72,311)*	*(+2.2%)*

[a] *Note, when compared to the FY 2004 request (comparable), the FY 2005 request increases $104,885,000 (3.2%).*

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Office of Science FY05 Priorities

Science increases 2.2% after Congressionally directed projects are set aside

- **Research Priorities**
  - ITER Negotiations and Supporting R&D ($38M, +30M)
  - Next Generation Computational Architecture and continued development of leadership class computation ($38M, Sustains FY04 congressional increase of $30M)
  - Nanoscale Science, Engineering, & Technology ($211M, +8M)
  - Hydrogen Production, Storage, and Use ($49M, +21M)
  - Genomics: GTL, including Project Engineering & Design for Protein Production and Tags Facility ($80M, +9M)
  - Climate Change Science Program ($134M, +1M)
  - Scientific Discovery through Advanced Computing (SciDAC) ($64M, +2M)
  - Workforce – Increase Laboratory Science Teachers Professional Development ($1.5M, +0.5M) and minority serving institution faculty sabbatical program ($0.5M)
  - R&D for new facilities - RIA, BTeV (*Fermilab*), 12 GeV Upgrade (*Thomas Jefferson*) to explore the fundamental nature of energy & matter ($15M, +5M)
  - Linac Coherent Light Source R&D, PED and long lead procurements ($54M, +45M)
- **Return on Investments: User Facility Operations at 95% of optimum vs. 92% in FY04** ($1,383M, +43M)
- **Safeguards & Security Enhanced Readiness** ($68M, +11M)

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FY05 Budget Highlights

- ITER – The Path to Fusion Power
  - *Demonstrate the scientific and technological feasibility of creating and controlling a sustained burning plasma.*
  - *Negotiations with China, South Korea, the European Union, Japan, and the Russian Federation*
- High End Computing – Leadership Class Machines
- Science Enabling the Hydrogen Economy
  - **Production**: *using sunlight through photovoltaic electrolysis, photoelectro chemistry, or artificial photosynthesis; thermochemical splitting of water; microbial production.*
  - **Storage**: *nanostructured materials; metallic, light, and complex hydrides; novel storage materials based on nitrides and imides; improved kinetics of hydrogen uptake and release*
  - **Fuel Cells**: *Novel membranes, new electrocatalysts, understanding fuel oxidation in porous ceramics and composites, lower temperature ionic conductors.*
- Linac Coherent Light Source X-Ray Free Electron Laser– A New Window on Nature
  - *Stop action pictures of chemical reaction dynamics will enable development of new catalysts and chemical processes.*
  - *Detailed structural studies of single macromolecules and their reactions, providing a revolutionary experimental tool for biologists and chemists.*
- Protein Production and Tags Facility – Accelerating Genomic Research
  - *Mass produces proteins directly from genome data, identifying and creating "tags" to allow researchers nationwide to understand the functions of these proteins in living systems.*
  - *Needed to harness microbes for DOE missions, e.g: hydrogen production, carbon sequestration, bioremediation*

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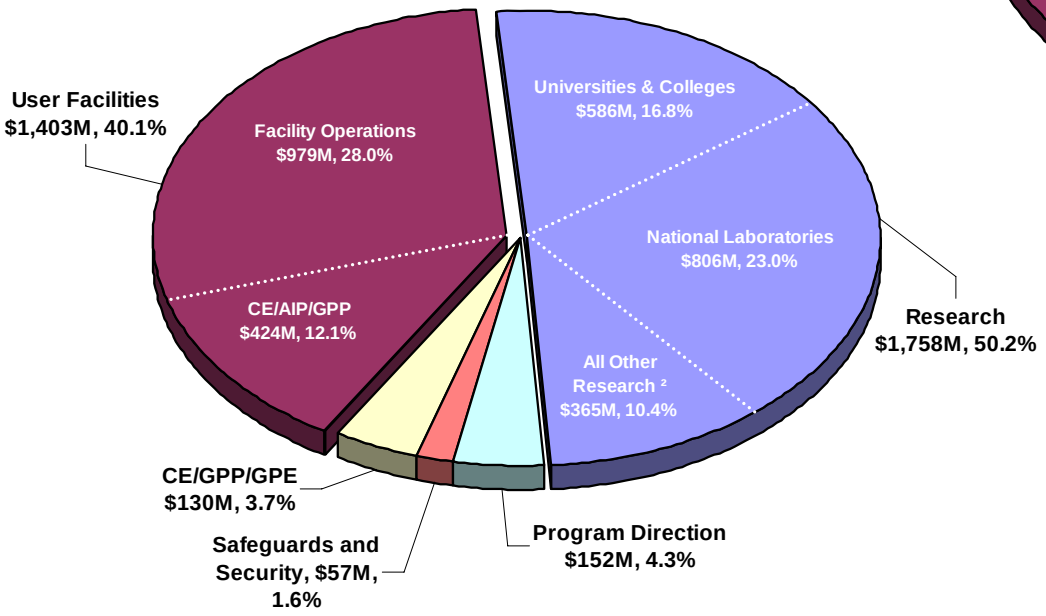
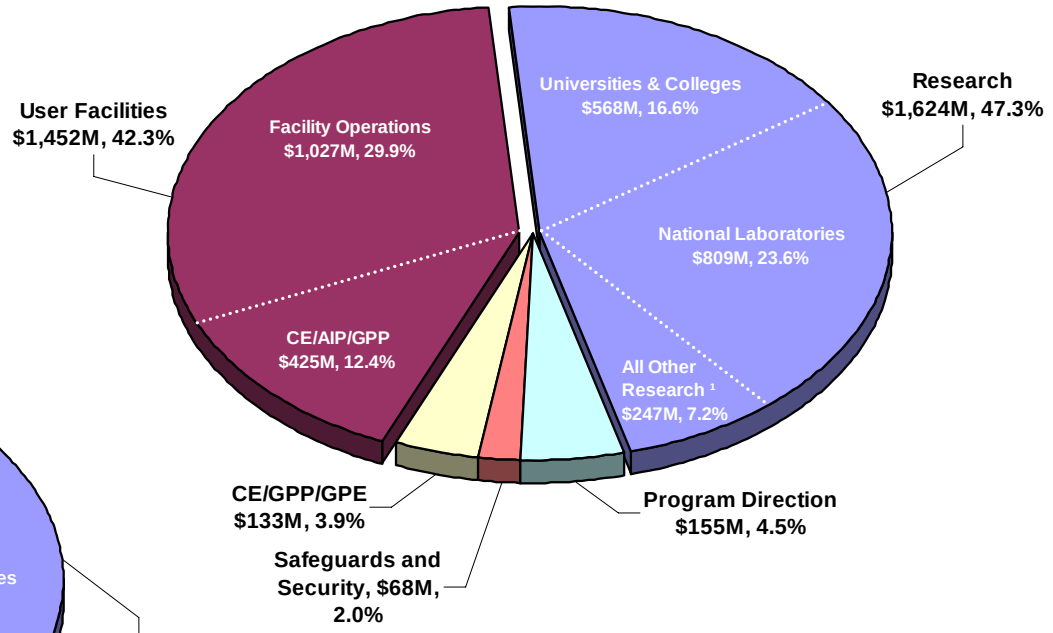
The Office of Science FY 05 Budget Request

FY 2004 Appropriation, $3,500 Million



² *includes funding for non-profits, other federal agencies, private insitutions, and Congressionally-directed projects.*

FY 2005 Request, $3,432 Million



¹ *includes funding for non-profits, other federal agencies, and private insitutions.*

Why OneSC?

"Ensuring SC research continues to deliver top quality science requires becoming "best in class" in our management practices, including utilizing existing resources more effectively. We must provide our employees a management environment in which success and high performance can continue in the face of changing resources, requirements, and societal needs."

Dr. Raymond Orbach

Key Points

- Phase 1
  - Structurally integrates and conforms SC program, operational, and support elements
  - Clarifies Roles, Responsibilities, Authorities and Accountabilities (R2A2s)
  - Removes a layer of management between the Director and the Laboratory Site Managers
  - No relocations, involuntary separations or reductions-in–force planned or expected
- Phase 2 will
  - Improve efficiency through process reengineering
  - Bring coherence to SC performance by focusing everyone in SC on the science mission
- First Major Change in Decades

Previous SC Structure was overly complex

- Line and staff roles not well understood
- Business practices vary
- Many M&O contractors did not have a single DOE point of contact and authority
- Mixed lines of authority and accountability for Site Offices
  - 7 reported to SC Operations Offices (CH & OR)
  - 1 reported to an EM Operations Office (RL)
  - 2 reported to SC Headquarters but supported by NNSA

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OneSC Structure