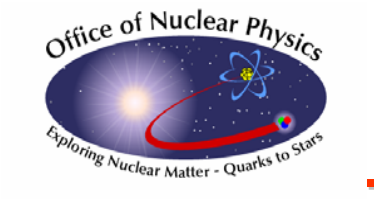


U.S. Department of Energy

Office of Science

Nuclear Physics Program Budget FY 2008

Nuclear Science Advisory Committee

Dennis Kovar
Associate Director of the Office of Science
for Nuclear Physics
March 8, 2007

Outline

- FY 2007 Appropriation
- FY 2008 Congressional Budget Request
- Outlook
- Office of Nuclear Physics

FY 2007 Appropriations

Had a Continuing Resolution (CR) until February 15th

FY 2007 Appropriations for Office of Science (SC) is $3,796 Million
- This is +$200 Million over FY 2006 (including earmarks of $129 Million)
- This is ~$305 Million less than the Congressional Budget Request ($4,101 Million)

- SC is given flexibility in distribution of funds
- No "new programs"
- DOE and OMB (Administration) need to approve distribution
- Need to report back to Congress on how funds distributed (by March 15th)

FY 2007 NP Budget Request was $454 Million (~+24% over FY 2006)
- Since SC funding reduced – NP funding will be reduced
- Impacts of reductions on NP can be assessed when final distribution is approved
- Approval expected later this month

FY 2008 Congressional Budget Request formulated assuming FY 2007 Request
- SC FY 2008 Request is +7.2% over FY 2007 Request
- NP FY 2008 Request is +3.8% over FY 2007 Request

Office of Science
FY 2008 Congressional Budget Request

U.S. Department of Energy
Office of Science

(B/A in thousands)

	FY 2005 Approp.	FY 2006 Approp.	FY 2007 Request to Congress	FY 2007 vs. † FY 2006		FY 2008 Request to Congress	FY 2008 vs. FY 2007	
Basic Energy Sciences	1,083,616	1,110,148	1,420,980	+310,832	+28.0%	1,498,497	+77,517	+5.5%
Advanced Scientific Computing Research	226,180	228,382	318,654	+90,272	+39.5%	340,198	+21,544	+6.8%
Biological & Environmental Research								
BER Base Program	487,474	435,476	510,263	+74,787	+17.2%	531,897	+21,634	+4.2%
Congressionally-directed projects	79,123	128,601	——	-128,601	-100.0%	——	——	——
Total, Biological & Environmental Research	566,597	564,077	510,263	-53,814	-9.5%	531,897	+21,634	+4.2%
High Energy Physics	722,906	698,238	775,099	+76,861	+11.0% ††	782,238	+7,139	+0.9% ††
Nuclear Physics	394,549	357,756	454,060	+96,304	+26.9%	471,319	+17,259	+3.8%
Fusion Energy Sciences	266,947	280,683	318,950	+38,267	+13.6%	427,850	+108,900	+34.1%
Science Laboratories Infrastructure	37,498	41,684	50,888	+9,204	+22.1%	78,956	+28,068	+55.2%
Science Program Direction	154,031	159,118	170,877	+11,759	+7.4%	184,934	+14,057	+8.2%
Workforce Development for Teachers & Scientists	7,599	7,120	10,952	+3,832	+53.8%	11,000	+48	+0.4%
S&S	67,168	68,025	70,987	+2,962	+4.4%	70,987	——	——
Use of prior year balances	-5,062	——	——	——	——	——	——	——
SBIR/STTR (from SC programs)	77,842	81,160	——	-81,160	-100.0%	——	——	——
Subtotal, Science	3,599,871	3,596,391	4,101,710	+505,319	+14.1%	4,397,876	+296,166	+7.2%
SBIR/STTR (transferred from other DOE programs)	35,779	35,653	——	-35,653	-100.0%	——	——	——
Total, Science	3,635,650	3,632,044	4,101,710	+469,666	+12.9%	4,397,876	+296,166	+7.2%

† The FY 2008 President's Budget Request and the material presented here assume the requested level for FY 2007, as the timing of FY 2007 appropriations did not allow their inclusion.

†† A portion of Stanford Linear Acceleration Center linac operations transfers from High Energy Physics to Basic Energy Sciences in FY 2007 and FY 2008. Excluding the linac operations funding, the remainder of the High Energy Physics budget increases by 12.6% in the FY 2007 request and a further 3.7% in FY 2008.

Office of Nuclear Physics
FY 2007 Congressional Budget Request

U.S. Department of Energy
Office of Science

(millions)

	FY05	FY06	Request FY07	vs FY06	vs FY05
Research Operating	134.3	125.1	146.5	*+17.1%*	*+ 9.1%*
Research Cap. Equip.	6.2	8.5	14.5	*+70.6%*	*+134%*
<Research>	140.5	133.6	161.0	*+20.5%*	*+14.6%*
RHIC	130.6	116.4	143.3	*+23.1%*	*+ 9.7%*
CEBAF	75.1	65.3	77.5	*+18.7%*	*+ 3.3%*
HRIBF	11.7	10.9	13.7	*+23.7%*	*+15.6%*
ATLAS	10.2	9.0	12.4	*+37.8%*	*+22.4%*
88-Inch Cyclotron	3.0	3.0	3.1	*+ 4.5%*	*+ 4.5%*
MIT/Bates	9.4	2.5	2.0		
<Facility Operations>	240.0	207.1	252.1	*+21.7%*	*+ 5.0%*
12 GeV Upgrade R&D/PED	2.3	4.5	9.5		
EBIS (RHIC)	-	2.0	7.5		
<Construction>	2.3	6.5	17.0	*+165%*	*+313%*
Other (GPP/SBIR/etc)	22.0	19.8	24.0		
<Stewardship>	22.0	19.8	24.0	*+21.2%*	*+9.1%*
Nuclear Physics Total	404.8	367.0	454.1	*+23.7%*	*+12.2%*

Nuclear Physics Program in FY 2007

FY 2007 Budget Request for NP ($454M) allowed for effective utilization of the program's scientific facilities and makes important investments for the future

- University and Laboratory research efforts are restored to approximately FY 2005 levels.
  - Restoration of ~10% of PhD researchers and students
  - Support for SciDAC is increased
  - Enhanced efforts in nuclear data/measurements relevant to nuclear power
- National User Facilities (RHIC, CEBAF, ATLAS and HRIBF) operate at near optimum levels.
- Important instrumentation projects are continued and started:
  - Detector (STAR and PHENIX) and accelerator (EBIS) upgrades at RHIC
  - Heavy-ion detector upgrade at LHC/CERN
  - GRETINA
  - FNPB and EDM experiment at SNS
  - Lattice Gauge QCD (LQCD) Initiative (with HEP)
- The 12 GeV CEBAF Upgrade Project continues Project Engineering and Design (PED).
  - Project Engineering and Design (PED) started in FY 2006
- R&D that address next generation capabilities is supported:
  - Superconducting radio-frequency developments at TJNAF
  - Electron cooling at RHIC to reach higher beam luminosities
  - No RIA R&D, but R&D at FY 2006 level to develop exotic beam capabilities

Office of Nuclear Physics
FY 2008 Congressional Budget Request

U.S. Department of Energy
Office of Science

	(millions)			
			Request	
	FY06	FY07	FY08	vs FY07
Research Operating	125.1	146.2	150.4	+ *2.9 %*
Research Cap. Equip.	8.5	14.5	19.1	+*32.2 %*
<Research>	133.6	160.7	169.6	+ *5.6 %*
RHIC	116.4	143.3	146.5	+ *2.2 %*
CEBAF	65.3	77.5	78.3	+ *1.0 %*
HRIBF	10.9	13.6	13.9	+ *2.7 %*
ATLAS	9.0	12.4	13.7	+*10.8 %*
88-Inch Cyclotron	3.0	3.1	3.3	+ *4.5 %*
MIT/Bates	2.5	2.0	2.0	
<Facility Operations>	207.1	252.0	257.7	+ *2.2 %*
12 GeV Upgrade R&D/PED	4.5	9.5	14.5	
EBIS (RHIC)	2.0	7.5	4.2	
<Construction>	6.5	17.0	18.7	+ *9.9 %*
Other (GPP/SBIR/etc)	19.8	24.4	25.3	
<Stewardship>	19.8	24.4	25.3	+ *3.7 %*
Nuclear Physics Total	367.0	454.1	471.3	+ *3.8 %*

Nuclear Physics Program in FY 2008

FY 2008 Budget Request for NP ($471.3M) allows for effective utilization of the program's scientific facilities and makes important investments for the future

- University and Laboratory research efforts are maintained at near FY 2007 levels
- National User Facilities (RHIC, CEBAF, ATLAS and HRIBF) operate at near optimum levels.
- Important instrumentation projects are continued and started
- The 12 GeV CEBAF Upgrade Project continues Project Engineering Design (PED)
- Solicitation of proposals for design of a rare isotope beam facility planned
- R&D that address next generation capabilities is supported:

FY 2008 Budget Request

Research

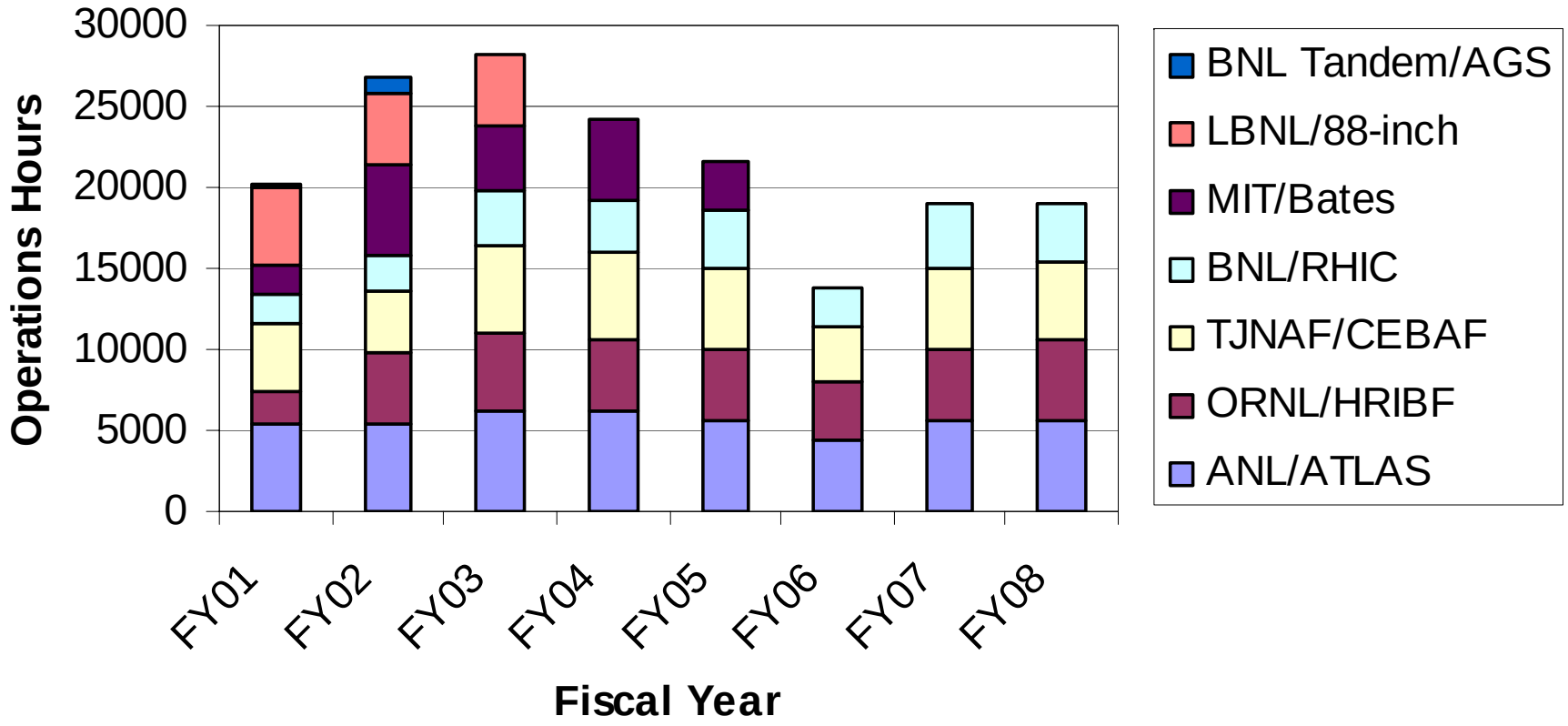
U.S. Department of Energy
Office of Science

millions

	FY06	FY07	Request FY08	vs FY07	vs FY06
Research					
Universities	55.3	63.2	65.6	+ *3.8 %*	*+18.6 %*
Laboratories	64.1	73.5	75.2	+ *2.3 %*	*+17.3 %*
SciDAC & LQCD	2.0	3.0	3.1		
Exotic Beam R&D	4.0	4.0	4.0		
Enhanced R&D for NE	-	2.4	2.5		
Operating Subtotal	125.4	146.2	150.4	+ *2.9 %*	*+19.9 %*
Research Capital Equipment					
GRETINA	3.0	3.9	4.4		
FNPB	1.9	1.5	1.5		
STAR TOF	2.4	2.4	-		
PHENIX Silicon VTX	-	2.0	2.0		
PHENIX Forward Vertex Detector	-	-	1.0		
PHNIX Nose Cone Calorimeter	-	-	1.4		
HI LHC	-	1.0	2.0		
nEDM	-	1.3	3.0		
CUORE	-	-	0.5		
University CE	0.8	0.9	0.9		
Laboratory CE	0.4	1.5	2.5		
Capital Equip Subtotal	8.5	14.5	19.2	*+32.2 %*	*+225 %*
Research Subtotal	133.9	160.7	169.6	+ *5.6 %*	+26.6 %

FY 2007 Budget Request
Facility Operations

- RHIC operates 30 weeks (~100% optimum utilization)
- CEBAF operate at ~90% of optimum utilization
- HRIBF and ATLAS operate at ~ 85% of optimum utilization (will take a ~ year to train new operators for 7-day operations)



FY 2008 is a very important year

President's American Competitiveness Initiative

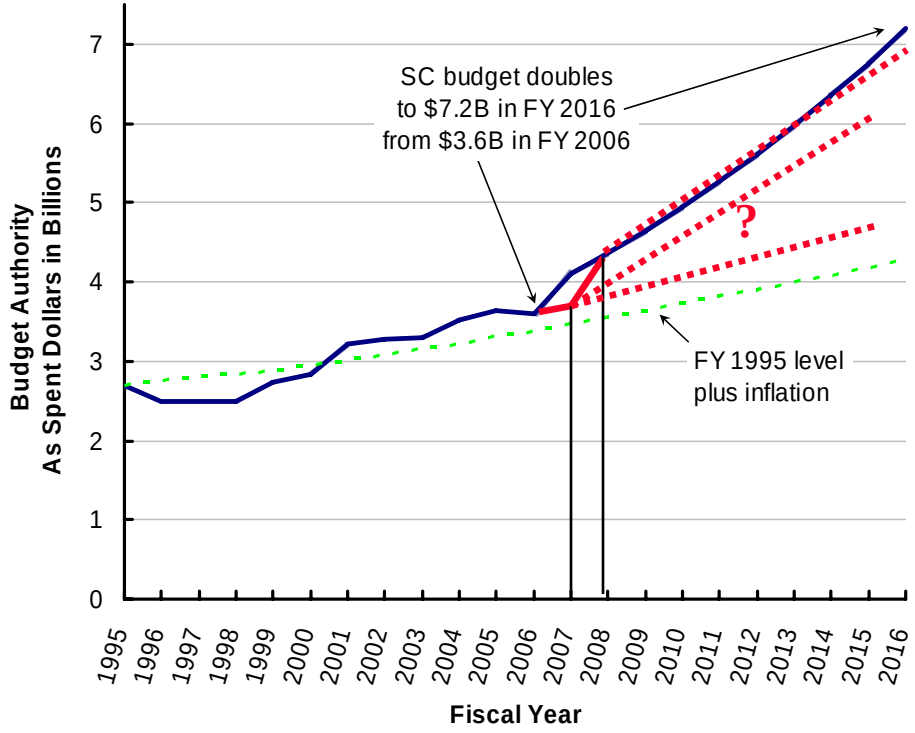
U.S. Department of Energy
Office of Science

"We must continue to lead the world in human talent and creativity. Our greatest advantage in the world has always been our educated, hardworking, ambitious people -- and we're going to keep that edge. Tonight I announce an American Competitiveness Initiative, to encourage innovation throughout our economy, and to give our nation's children a firm grounding in math and science."

"First, I propose to double the federal commitment to the most critical basic research programs in the physical sciences over the next 10 years. This funding will support the work of America's most creative minds as they explore promising areas such as nanotechnology, supercomputing, and alternative energy sources."

President Bush – State of the Union
January 2006

Office of Science Budget
Doubling from FY 2006 to FY 2016



FY 2007-2012 Nuclear Physics Program

SC submitted its FY 2007- 2011 program plan to Congress in FY 2007 - assuming out-year funding of the ACI (doubling in 10 years)

In SC's 10-year plan NP would be able to implement a world-class program:

- Operate and implement the capabilities of the user facilities (RHIC, CEBAF, HRIBF and ALTAS) to achieve their scientific goals.
  - 12 GeV CEBAF Upgrade project is completed
  - Upgrades of RHIC accelerator/detectors and RHIC II starts midway in period
  - ATLAS and HRIBF research capabilities are developed to mount forefront programs.
  - Proceed with construction of a rare isotope beam facility compatible with available funds
- Pursue promising high impact scientific opportunities
  - Participate in heavy ion studies at the higher energies of LHC
  - Start studies of nuclear structure with GRETINA
  - Start measurements of fundamental neutron properties at the FNPB at SNS
  - Participate in neutrinoless Double Beta Decay measurements
  - Utilize leading edge computers to make progress in nuclear physics
  - Accelerator R&D performed for next-generation nuclear physics research capabilities

SC's plan is revisited each year in budget formulation process

- Address changing out-year projections
- Address new projects/programs added/eliminated in that years budget formulation
- Address new high priorities established by SC/DOE/Administration

Nuclear Physics Office Activities

FY 2007 NP Outstanding Junior Investigators (OJI):

- Panel met January February 23, 2007 -- 20 applicants -- awards will be announced soon

FY 2007 RIA R&D

- Review panel met in December 2006 (32 proposals – requesting $11.2M)
- Awaiting approval NP funding for FY 2007 ($3.5-$4.0M anticipated)

Preparing for FY 2009 Budget Exercise (pre-CRB, CRB, OMB & President)

- RIBF Taskforce Report will be important input to Office
- NSAC LRP could influence FY 2009, but late in the budget formulation process

Changes in Office of Nuclear Physics (NP)

- Program Manager for Nuclear Physics Instrumentation in process of being filled
- Unfilled positions will be advertised in FY 2007
    - Program Manager for Low Energy Physics
    - Program Manager for Facilities
    - Technical Advisory
- Two unfilled Detailee/IPA positions

- Contact our office if interested

Office of Nuclear Physics Staffing

U.S. Department of Energy
Office of Science

Office of Nuclear Physics

Dennis Kovar, Director

Cathy Slaughter, Administrative Specialist

Director's Office Staff

07-P Technical Advisor (vacant)

Program Analyst
Cathy Hanlin

Program Support Specialist
Brenda May

Physics Research Division

Eugene Henry, **Director**

Christine Izzo, Program Assistant

- Medium Energy Nuclear Physics — Brad Tippens
- Heavy Ion Nuclear Physics — Gulshan Rai
- Low Energy Nuclear Physics — A Physicist (vacant)
- Nuclear Theory & Nuclear Data — Sidney A. Coon

Facilities & Project Management Division

Jehanne Simon-Gillo, **Director**

Cassie Dukes, Program Support Specialist

- Nuclear Physics Facilities — 07-P Physicist (vacant); Wlodek Guryn (Detailee)
- Nuclear Physics Instrumentation — A Physicist (vacant)
- Laboratory Operations — James Hawkins
- Advanced Technology R & D — Manouchehr Farkhondeh
- Nuclear Physics Major Projects — 08 General Engineer (vacant)

A On-going

07-P Approved for FY 2007

08 Planned for FY 2008

Februarv 2007