

U.S. Department of Energy



Office of Science

Nuclear Physics Program FY 2007

Nuclear Science Advisory Committee

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Associate Director of the Office of Science
for Nuclear Physics
July 21, 2006**



Outline

U.S. Department of Energy



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- Status of FY 2007 Budget Request
- Office of Nuclear Physics



FY 2007 Congressional Budget Request



- **SC Budget Request is +\$505M (+14.4%) above FY 2006 Appropriations**
- **NP Budget Request is + \$87M (+23.7%) above FY 2006 Appropriations**

(dollars in thousands)

	FY 2005 Approp.	FY 2006 Approp.	FY 2007 President's Request	FY 2007 vs. FY 2006
Basic Energy Sciences.....	1,083,616	1,134,557	1,420,980	+286,423
Advanced Scientific Computing Research.....	226,180	234,684	318,654	+83,970
Biological and Environmental Research				
Base program.....	487,474	451,131	510,263	+59,132
Congressional-directed projects.....	79,123	128,700	—	-128,700
Total, Biological and Environmental Research.....	566,597	579,831	510,263	-69,568
High Energy Physics.....	722,906	716,694	775,099	+58,405
Nuclear Physics.....	394,549	367,034	454,060	+87,026
Fusion Energy Sciences.....	266,947	287,644	318,950	+31,306
Science Laboratories Infrastructure.....	37,498	41,684	50,888	+9,204
Science Program Direction.....	154,031	159,118	170,877	+11,759
Workforce Development for Teachers and Scientists.....	7,599	7,120	10,952	+3,832
Small Business Innovation Research/Technology Transfer.....	113,621	—	—	—
Safeguards and Security.....	67,168	68,025	70,987	+2,962
Subtotal, Science.....	3,640,712	3,596,391	4,101,710	+505,319
Use of prior year balances.....	-5,062	—	—	—
Total, Science.....	3,635,650	3,596,391	4,101,710	+505,319



DOE NP Program in FY 2007

FY 2007 Budget Request for NP (\$454M) allows 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 Ph.D 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 has obtained CD-1 approval.**
 - Project Engineering and Design (PED) is supported in FY 2007 (and 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
 - R&D to develop rare isotope beam capabilities



Status of FY 2007 NP Budget Request (millions of dollars)



House Appropriations Bill

- Provided funding at the President’s Request

Senate Appropriations Bill

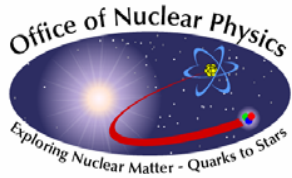
- Removed \$20M NP Request for “High Energy Density R&D” (i.e.; HI program)
- Directed \$20M to a recommended new “Office of High Energy Density Science”

Immediate FY 2007 Impact:

- Terminates support for all NP-supported University & Lab RHIC users
- or no RHIC running and RIF’s at BNL

Conference Committee to meet in September

	<u>FY05</u>	<u>FY06</u>	<u>Request FY07</u>	<u>House Mark</u>	<u>Senate Mark</u>
Medium Energy	118.6	108.5	122.8	-	-
Heavy Ion	170.4	160.1	197.5	-	177.5 (-20)
Low Energy	74.7	68.2	83.9	-	-
Theory	<u>30.9</u>	<u>28.1</u>	<u>35.3</u>	-	-
<Base Program>	394.5	365.1	439.5	439.5	419.5 (-20)
Construction	<u> </u>	<u>2.0</u>	<u>14.5</u>	-	-
Nuclear Physics Total	394.5	367.0	454.4	454.4	434.4 (-20)



NSAC Matters

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Existing Charge:

- Charge for NuSAG to do an assessment of options for next-generation neutrino beams and detector configurations. Fall 2006

New Charges:

- Committee of Visitors (COV) to assess the effectiveness of DOE SC ONP February 2007
- A taskforce to examine the options for a U.S. rare isotope beam facility March 2007
- A new Long Range Plan for U.S. nuclear science December 2007

NSAC Membership:

- Members appointed for one, two and three year terms
- Appointments of one-year terms expire December 5, 2006
- Appointments of new members become effective December 5, 2006



Nuclear Physics Office Activities

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FY 2006 NP Outstanding Junior Investigators (OJI):

- Prof. Sean Fleming University of Arizona
- Prof. Joseph Formaggio MIT
- Prof. Michael Zingale State University of New York/Stony Brook

(FY 2007 – Deadline November 2006)

FY 2005 DOE Early Career Scientist and Engineer Awards have yet to be announced

FY 2006 rare isotope beam R&D

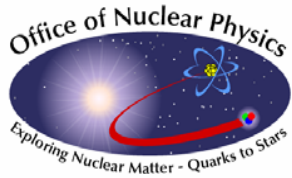
- 25 projects funded (\$3.96 M)
(FY 2007 – Deadline November 2006 – Request (\$4.0M))

Nuclear data and computing R&D relevant to Advanced Fuel Cycle (AFC)

- Workshop August 10-11, 2006: Bethesda, Maryland: see web site on NP
(FY 2007 – Deadline Nov-Dec 2006 – Request (\$2.4M))

New Grant proposals

- New grant proposals received by the deadline will be acted upon in the fiscal year
(FY 2007 – Deadline November 1, 2006)



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Division Director positions have been filled

- Gene Henry - Physics Research Division
- Jehanne Simon-Gillo - Facility and Project Management Division

New Program Manager

- For Advanced Technologies and R&D - Manouchehr Farkhondeh (February 2006)

Two new vacancies:

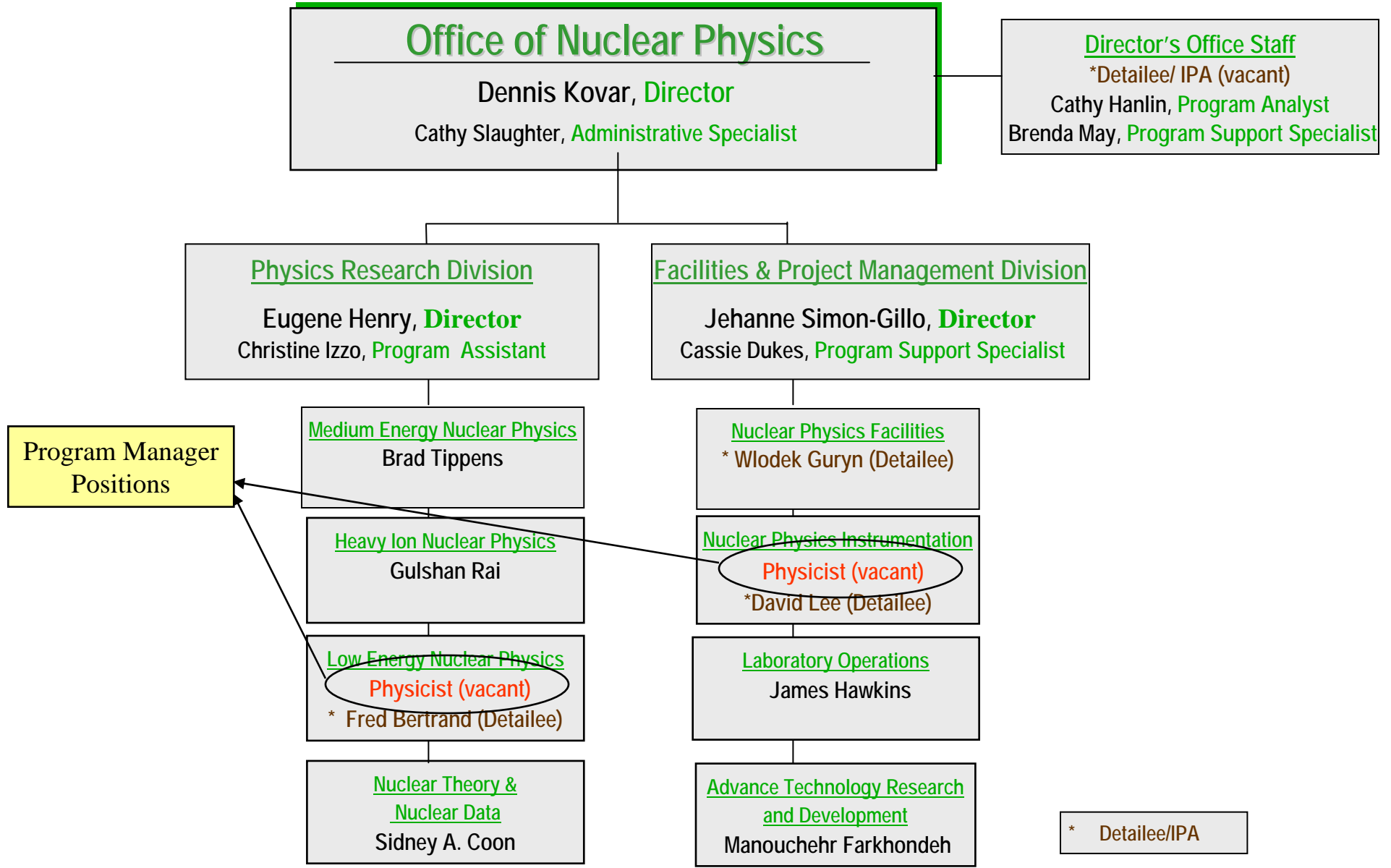
- Program Manager for Nuclear Physics Instrumentation (Deadline – August 16, 2006)
- Program Manager for Low Energy Nuclear Physics (Deadline –September 8, 2006)

Three Detailees in ONP now:

- David Lee (LANL)
- Wlodek Guryń (BNL)
- Fred Bertrand (ORNL)

(Please contact our office if interested in Detailee/IPA position)

Office of Nuclear Physics





Backup



FY 2007 Nuclear Physics Budget Request (millions of dollars)

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	<u>FY05</u>	<u>FY06</u>	<u>Request FY07</u>	<u>vs FY06</u>	<u>vs FY05</u>
Research Operating	134.3	125.1	146.5	+17.1%	+ 9.1%
Research Cap. Equip.	<u>6.2</u>	<u>8.5</u>	<u>14.5</u>	+70.6%	+134%
<Research>	140.5	133.6	161.0	+20.5%	+14.6%
RHIC	130.6	115.5	143.3	+24.1%	+ 9.7%
CEBAF	75.1	65.2	77.5	+19.9%	+ 3.3%
HRIBF	11.7	10.9	13.7	+23.7%	+15.6%
ATLAS	10.2	8.8	12.4	+40.3%	+22.4%
88-Inch Cyclotron	3.0	3.0	3.1	+ 4.5%	+ 4.5%
MIT/Bates	<u>9.4</u>	<u>2.5</u>	<u>2.0</u>		
<Facility Operations>	240.0	205.9	252.1	+22.7%	+ 5.0%
12 GeV Upgrade R&D/PED	2.3	4.5	9.5		
EBIS (RHIC)	<u>-</u>	<u>2.0</u>	<u>7.5</u>		
<Construction>	2.3	6.5	17.0	+165%	+313%
Other (GPP/SBIR/etc)	<u>22.0</u>	<u>21.0</u>	<u>24.0</u>		
<Stewardship>	22.0	21.0	24.0	+14.3%	+9.1%
Nuclear Physics Total	404.8	367.0	454.1	+23.7%	+12.2%



FY 2007 Budget Request Research

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	<u>FY05</u>	<u>FY06</u>	<u>Request FY07</u>	<u>vs FY06</u>	<u>vs FY05</u>
<u>Research</u>					
Universities	58.0	55.4	63.1	+13.9%	+ 8.8%
Laboratories	67.5	63.7	74.0	+16.2%	+ 9.6%
SciDAC & LQCD	2.5	2.0	3.0		
Rare isotope beam R&D	6.4	4.0	4.0		
Enhanced R&D for NE	-	-	2.4		
Operating Subtotal	134.3	125.1	146.5	+17.1%	+9.1%
 <u>Research Capital Equipment</u>					
GRETINA	2.5	3.0	3.9		
FNPB	1.2	1.9	1.5		
STAR TOF	-	2.4	2.4		
PHENIX VTX	-	-	2.0		
HI LHC	-	-	1.0		
nEDM	-	-	1.3		
University CE	1.5	0.8	0.9		
Laboratory CE	1.1	0.4	1.5		
Capital Equip Subtotal	6.2	8.5	14.5	+70.6%	+134%
 Research Subtotal	140.5	133.6	161.0	+20.0%	+14.6%