

PPPL Institutional Issues

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**Office of Fusion Energy Sciences
Budget and Planning Meeting
March 11-12, 2008**

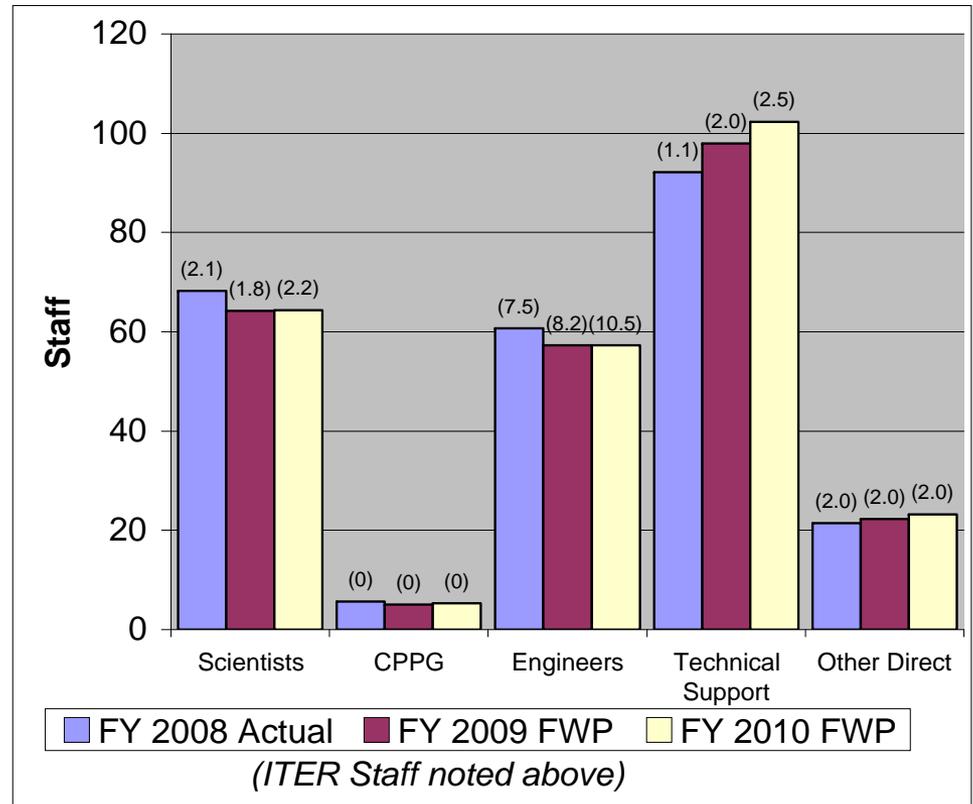
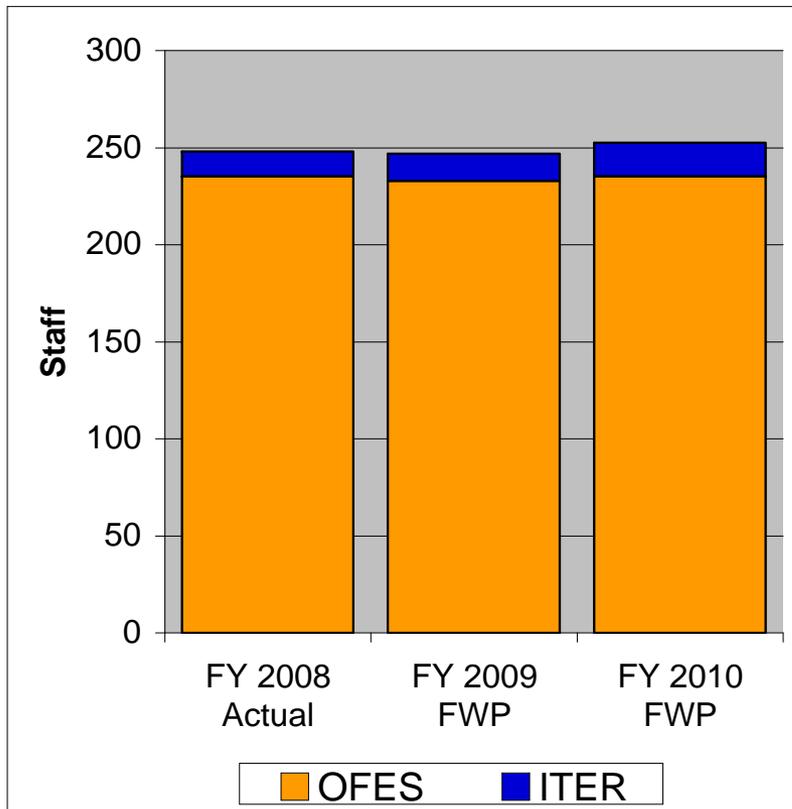
Budget Requirements to Support OFES Programs

Project	FY'08	FY'09		FY'10	
	Mar. AFP	Base	Inc	Base	Inc
NSTX	\$32.9	\$29.7	\$2.1 (5.7)	\$30.3	\$1.8 (4.9)
NCSX	13.9	18.8		18.5	
QPS/ARIES	0.2	0.1		0.1	
DIII-D/C-MOD Coll.	6.5	6.2	1.1	6.3	1.8
International Coll.	2.5	2.4	0.6	2.4	0.6
PS&T	4.2	4.1	1.7	4.2	1.7
Heavy Ion Beams	1.0	1.0	0.6	1.0	0.6
Diagnostic Support	0.5	0.4	0.0	0.4	0.2
Theory/SciDAC	7.2	7.4	0.5	7.5	0.5
Science Education	0.7	0.7	0.1	0.8	0.1
General Plant Projects	1.6	2.0		2.0	0.8
All Other	0.6	0.7	0.3	0.7	0.7
<i>OFES Initiatives</i>			1.8		3.0
Total OFES	\$72.0	\$73.5	\$8.9	\$74.2	\$11.7
ITER at PPPL - exclude	2.6	4.4		5.6	
Total OFES incl. ITER (dollars in millions)	\$74.6	\$77.9	\$8.9 (12.5)	\$79.8	\$11.7 (14.8)

() full utilization case



Direct Staffing Covered by OFES and ITER Funding Plan



- Increase in technical support is accomplished by term labor to support NCSX construction.

PPPL is Actively Supporting ITER

- **ITER Project Responsibilities**

WBS Responsibility:

Diagnostics - D. Johnson

Steady State Electric Power - C. Neumeyer

Engineering - TF conductor R&D, Design support for CS (on hold)

- ICH transmission line R&D support (on hold)

- **STAC Member - R. Goldston**

- **ITER Design Review Working Group Members**

Buildings - C. Neumeyer

In-vessel Comp's - C. Skinner, D. Johnson

Design Rev's. - R. Hawryluk

H&CD - J. Hosea, L. Grisham

Motivated incremental request for Li neutralizer for ITER NNBI system resulting in reduced gas load by 75-80%, increased power by 15-25%, and reduced heat load on accelerator & source by 2MW.

- **STAC Work Plan**

ELM Control - R. Hawryluk, G. Loesser

Research Plan - M. Bell

Plasma Shaping - C. Kessel

Vertical Stabilization - D. Gates

H&CD - J. Hosea, L. Grisham

- **Burning Plasma Organization**

Council Vice Chair - M Zarnstorff

Council Member - R. Hawryluk

Broad research participation including TG leaders/deputies:

J. Menard, C. Phillips, R. Nazikian, D. Gates, C. Kessel

PPPL Plans on Actively Participating in *OFES Initiatives*

- **Fusion Simulation Project** provides an opportunity for accelerating scientific understanding through advanced computing and the tools the U. S. fusion community needs for:
 - **Current experiments, which provide a platform to validate models.**
 - **ITER, which will need accurate predictive models.**
- **Workshops and Design Studies** enabling a community decision on new facility initiatives.
 - **The Greenwald report identified important scientific opportunities, which we as a community need to develop a plan to address.**
- **HEDLP** provides a set of exciting scientific opportunities.
 - **Continue strong participation in the VNL-HIFS.**
 - **Participate in theoretical and experimental HEDLP studies.**

□ Preparing for a Transition from NSTX to NCSX

- **Bring NSTX research to a successful conclusion.**
 - **Complete analysis and documentation of NSTX scientific results.**
 - **Establish on-going collaborations with MAST to pursue ST research.**
- **Safely shutdown the NSTX Facility.**
- **Successfully complete the construction of NCSX.**
- **Prepare for NCSX operations.**
 - **Construct the upgrades for NCSX heating phase.**
 - **Build the NCSX research team, including collaborators.**
 - **Participate in stellarator collaborations prior to NCSX operations.**

Impact of a 10% Reduction in FY'10 Relative to the Base Case

- **Staffing Impact**
 - The impact of a 10% reduction in FY'10 would result in a loss of ~43 scientists, engineers, technicians and administrators relative to present staff, assuming severance is funded separately.
 - Loss of staff with unique skills will have a profound impact of being able to execute and support the diversity of programs.
- **Programmatic Impact**
 - NSTX operation decreased from 12 to 6 weeks focused on transport studies with BES and exploiting liquid lithium divertor.
 - Eliminate installation of HHFW ELM resilience.
 - Eliminate studies of non-inductive startup and high power RF.
 - Delay in NCSX operations by 1-2 months.
- **Operational Impact**
 - Unable to meet Office of Science expectations on facility maintenance initiatives and GPP.
 - Increased risk in meeting environmental, financial and other regulatory requirements.

Summary

- **PPPL participates in, and supports, the broad portfolio of research activities in OFES.**
 - **Strong elements of our program are:**
 - **collaboration on PPPL facilities and**
 - **collaboration on other facilities around the nation and the world.**
 - **Inter-institutional collaborations prepare us for ITER and beyond.**
- **ITER is a major scientific opportunity for the entire Fusion Energy Science community**
 - **PPPL looks forward to continuing to contribute to ITER in collaboration with the community.**
- **All large facilities, including NSTX, would make a greater impact with more run time and upgrades.**
- **Careful transition from NSTX to NCSX is critical.**
- **Successful completion of NCSX is a critical priority of the Laboratory.**
 - **Exploration and exploitation of 3-D physics provide unique opportunities.**