



**ENG AdCom
Response to COV**

Chemical and Transport Systems Division

May 3, 2006

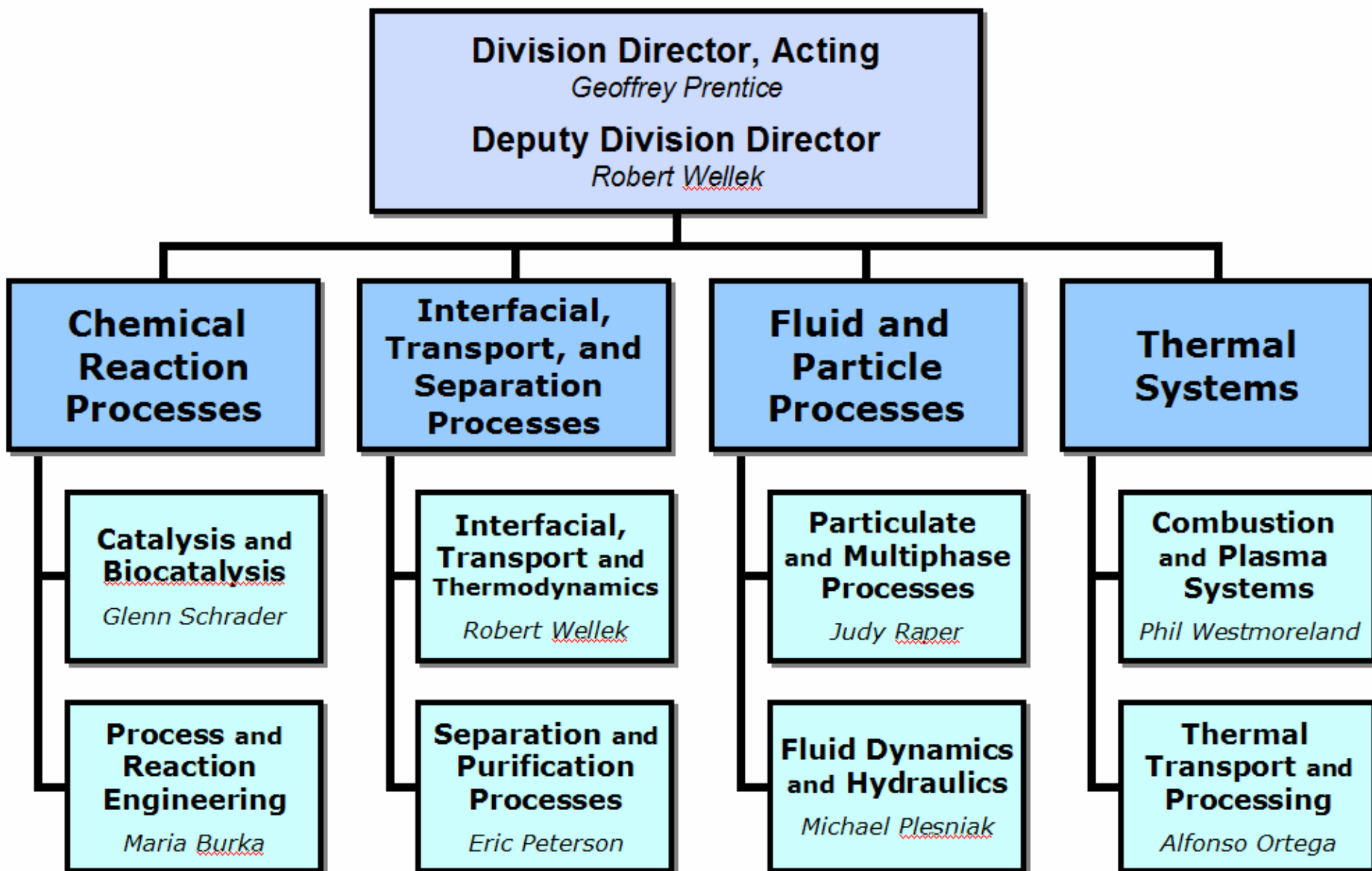
Geoffrey Prentice
Interim Division Director
Chemical and Transport Systems

Outline



- ❖ **Recent Developments**
- ❖ **Success Rates**
- ❖ **Budgets**
- ❖ **Response to Previous COV Report**

Chemical and Transport Systems (CTS)



Openings in CTS

- ❖ **DD for CBET** being recruited
- ❖ **Program Directors - Open Positions** beginning in the Summer/Fall of 2006
 - ◆ **Catalysis and Bio-catalysis**
 - ◆ **Combustion and Plasma Systems**
 - ◆ **Fluid Dynamics and Hydraulics**
 - ◆ **Thermal Transport and Thermal Processing**
 - ◆ **Energy for Sustainability (CBET)**

Merging Divisions and Priorities

Fiscal Year 2006

Bioengineering and Environmental Systems

Chemical and Transport Systems

Civil and Mechanical Systems

Design and Manufacturing Innovation

Electrical and Communications Systems

Engineering Education And Centers

Office of Industrial Innovation

Cyber-Systems

GOALI
I/UCRCs
Partnerships

Fiscal Year 2007

Office of Emerging Frontiers in Research and Innovation (EFRI)

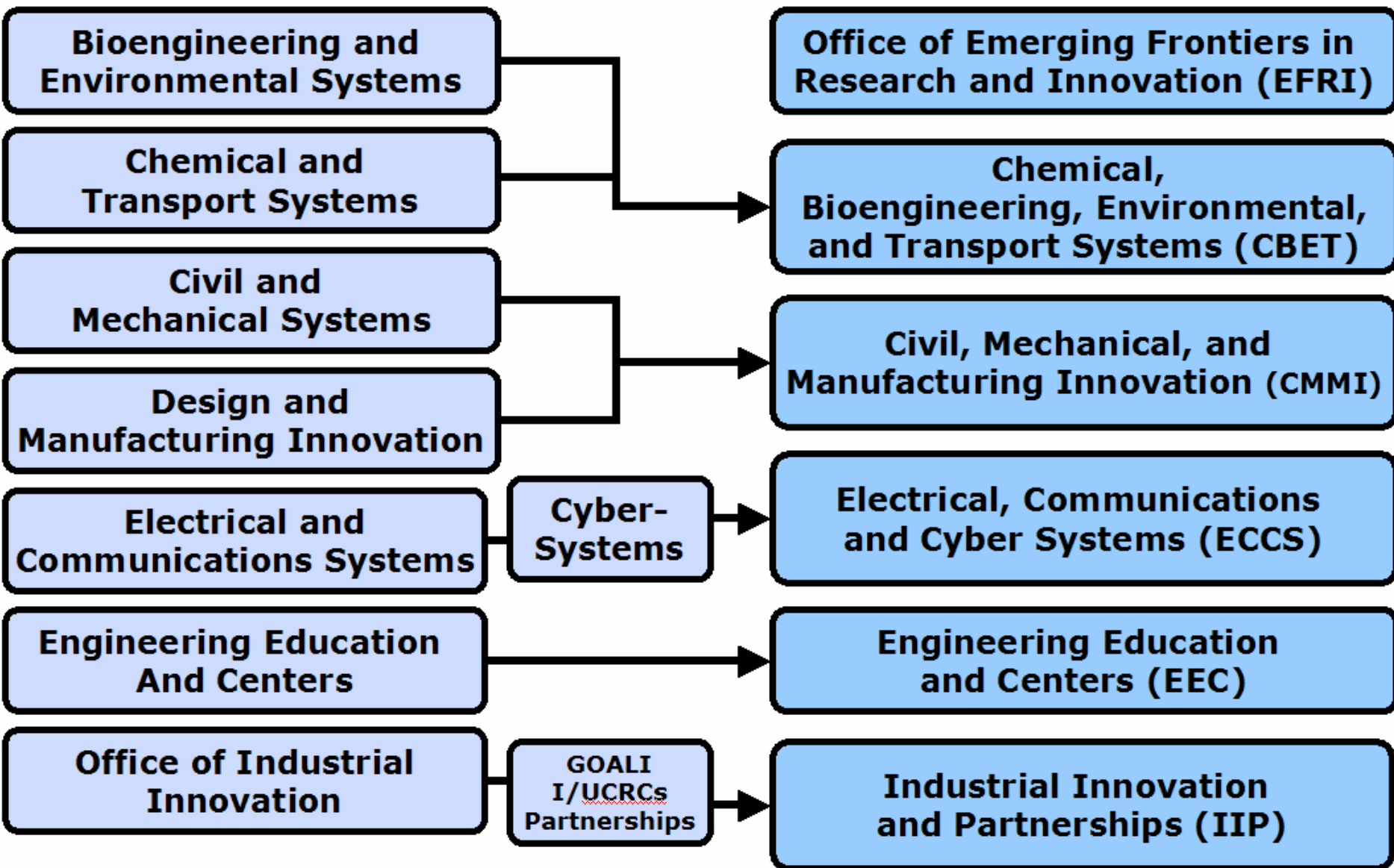
Chemical, Bioengineering, Environmental, and Transport Systems (CBET)

Civil, Mechanical, and Manufacturing Innovation (CMMI)

Electrical, Communications and Cyber Systems (ECCS)

Engineering Education and Centers (EEC)

Industrial Innovation and Partnerships (IIP)



CBET Structure

**Four Clusters with 17 Programs
and a New Program Director**

- ❖ *Chemical, Biochemical, and Biotechnology Systems*
- ❖ *Transport & Thermal Fluids Phenomena*
- ❖ *Biomedical Engineering and Engineering Healthcare*
- ❖ *Environmental Engineering and Sustainability*

Emerging Areas in CTS

❖ **Nanoscale Phenomena**

◆ **Nanocatalysis**

WTEC Study Currently Underway

◆ **Nanotechnology in water purification**

US / Israeli Nanowater Workshop - March 2006

❖ **Energy and Environment**

◆ **Hydrogen combustion**

Workshop - March 2006

◆ **Low-temperature fuel cells**

Workshop - June 2005

Emerging Areas in CTS

❖ Cyberinfrastructure

- ◆ Simulation-based Engineering Science Report – February 2006
- ◆ Shared Cyberinfrastructure for Chemical Process Design
- ◆ Cybercombustion Workshop – April 2006

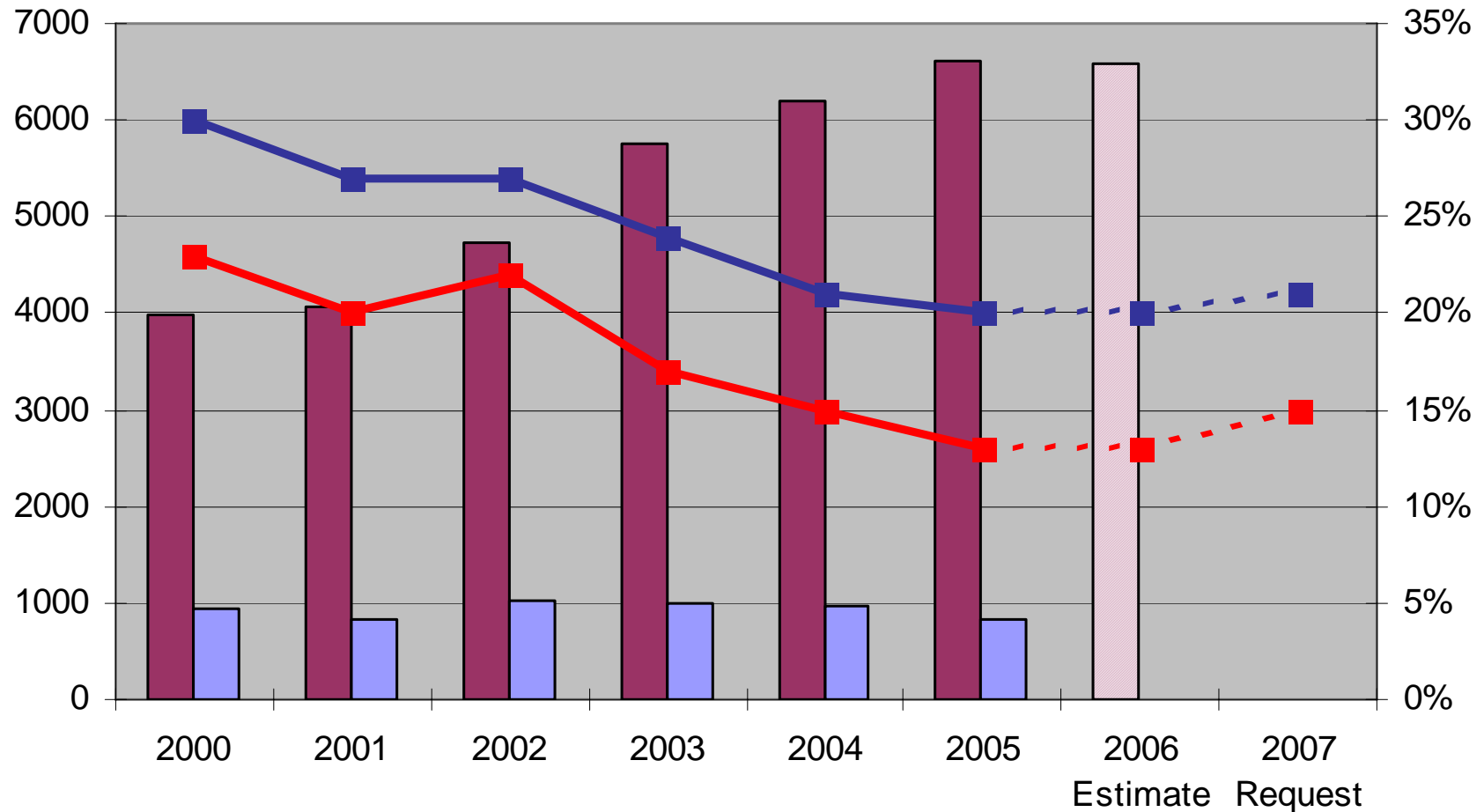
❖ Biology in Engineering

- ◆ Joint NSF/NIH initiative in obesity
Planned for 2007
- ◆ Bioengineering and Nanotechnology
Conference – September 2006

ENG and NSF Funding Rates

Research Grants

ENG Proposals and Awards

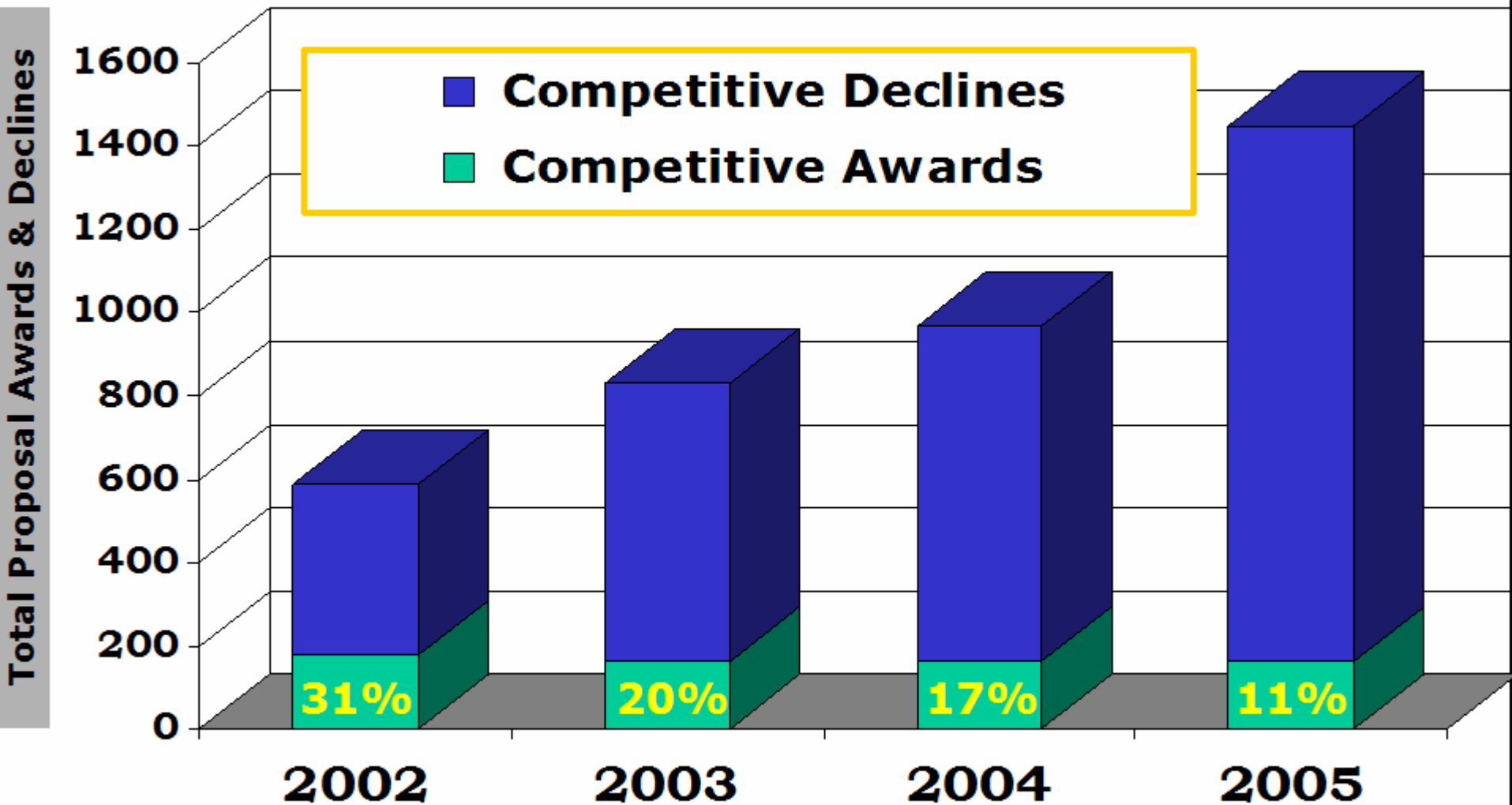


Funding Rate Percent





CTS Funding Rate for Competitive Research Awards



Declines
Awards

407
179

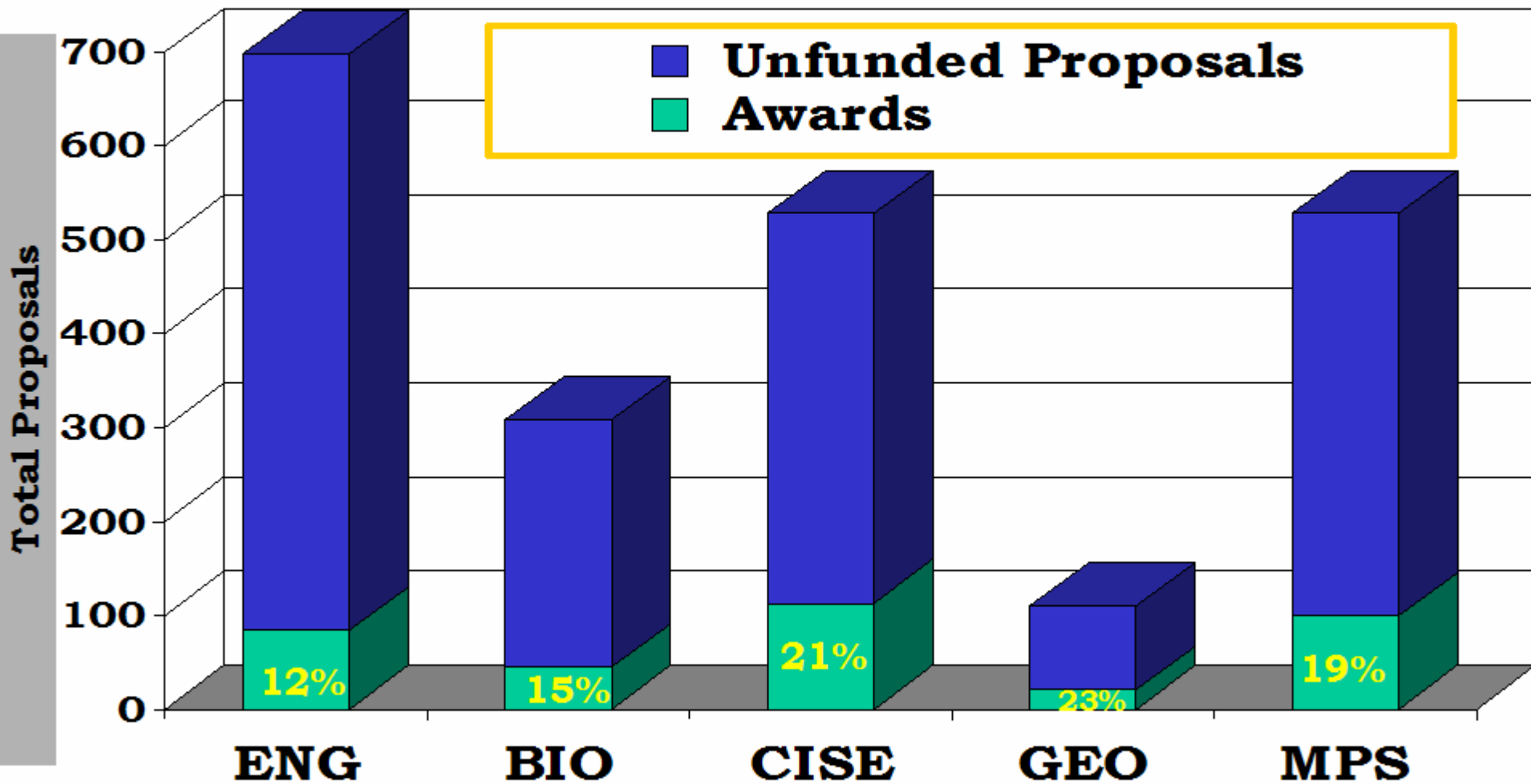
664
166

803
163

1286
162

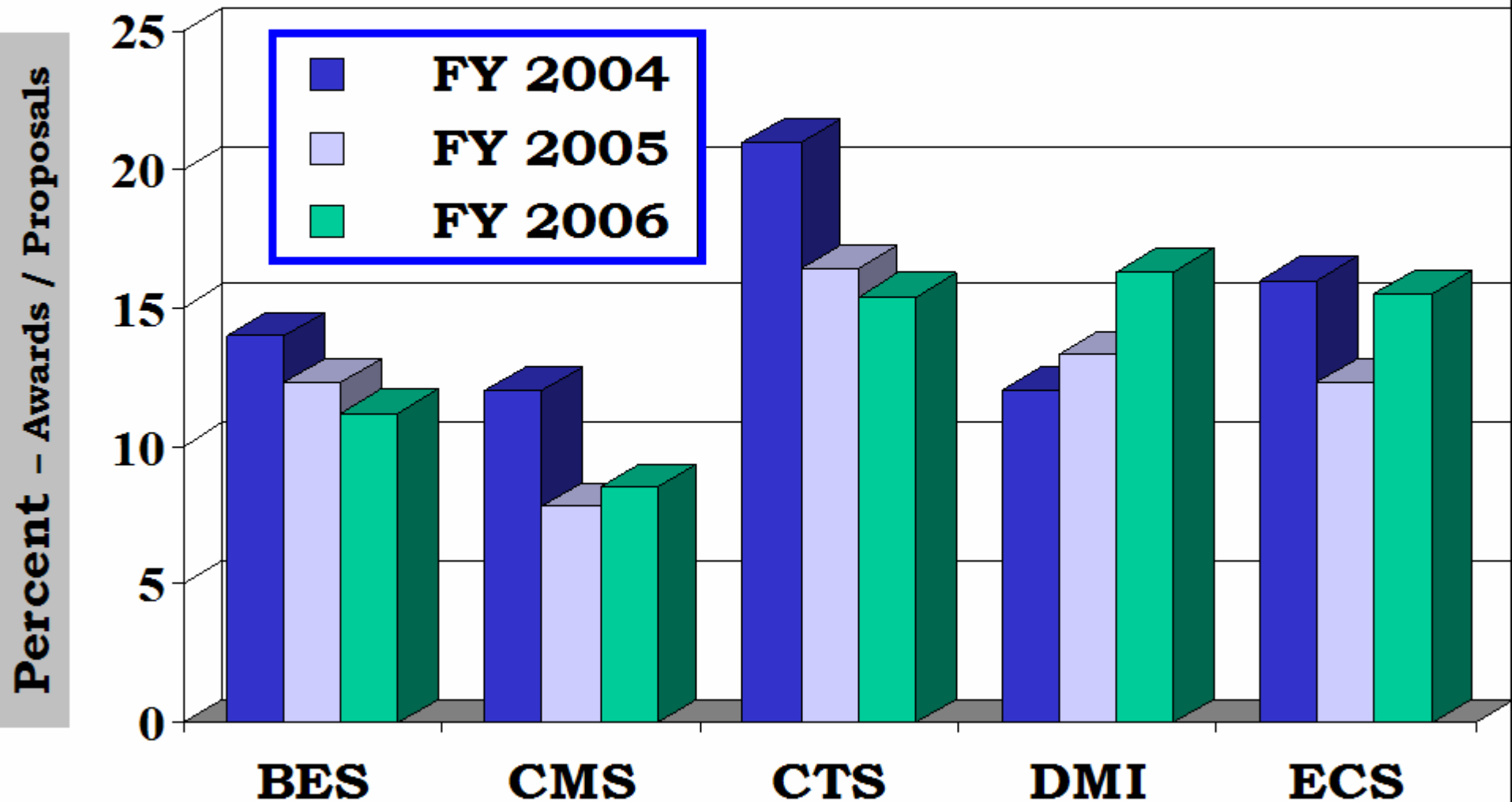
CAREER Program Awards by Directorate

FY 2005



| | | | | | |
|------------------|------------|------------|------------|-----------|------------|
| Awards | 84 | 45 | 113 | 20 | 99 |
| Proposals | 716 | 306 | 530 | 87 | 512 |

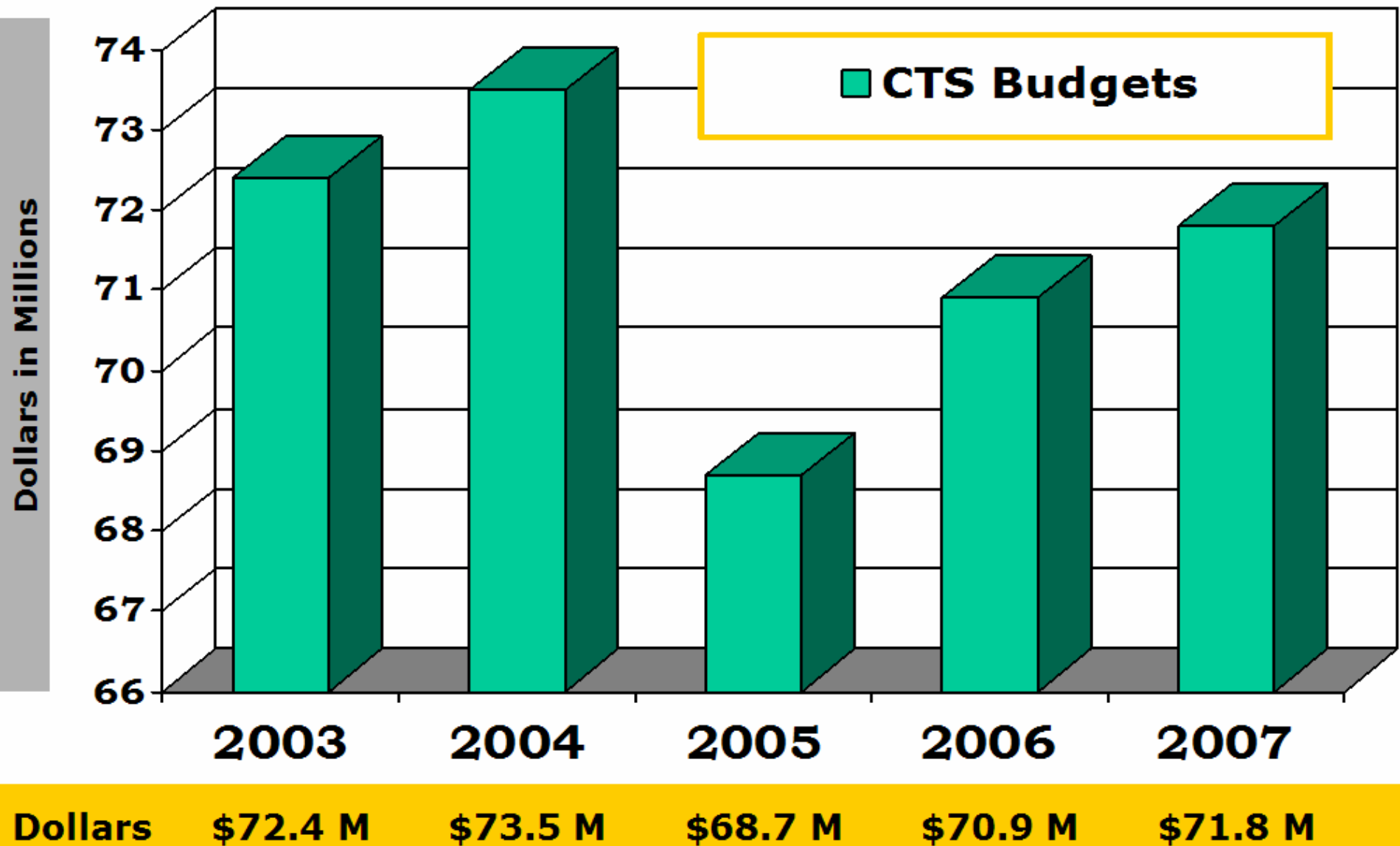
National Science Foundation Directorate for Engineering
CAREER Grant Award Success Rates
FY 2004-2006





CTS Budgets

FY2007: Projected CTS Share of CBET with 1.3% Increase



FY06 Budget and FY07 Request

❖ FY06 Plan

◆ BES \$52 million, CTS \$71 million

❖ FY07 Request

◆ CBET \$124 million

Major Initiatives with Impact on CBET in FY07

❖ **NNI**

◆ **\$43 million**

❖ **Sensors/Explosives**

◆ **\$5 million**

❖ **EFRI** (e.g., Energy, Cyberinfrastructure, Sustainability)

◆ **\$25 million total ENG**

Response to 2003 COV - Slide 1 of 2

- ❖ **Merit Review** – Poor response from mail reviewer
 - ◆ In FY04 changed from mail review to panel review with two windows in FY04. Also increased proposal pressure
- ❖ **Merit Review** – Broader impact weighting uneven
 - ◆ PDs brief panels
 - ◆ NSF-wide merit review committee, chaired by Kathie Olsen - examining these issues
- ❖ **Diversity of reviewers** – Improvement needed in geographical (West Coast), minority, women
 - ◆ Continue emphasis on achieving balance
 - ◆ Recruit from national laboratories and industry
 - ◆ Have initiated web-based new reviewer database
 - ◆ Continue to recruit from CTS-sponsored minority workshops

❖ Low Average Award Size

- ◆ Because of budget reductions and mortgage reduction policies, median award size is down about 5% to \$80,000/yr from FY03 to FY05
- ◆ With continued mortgage restrictions and small projected increases in the core, median award size should be little changed.

❖ Multidisciplinary Awards Should Be Increased

- ◆ Initiatives (NIRT, sensors, multiscale modeling) have been effective
- ◆ More difficult to foster cooperation between divisions when funding is tight
- ◆ EFRI should increase multidisciplinary activity in selected areas