Argonne NATIONAL LABORATORY

… for a brighter future

U.S. Department of Energy

UChicago ▶ Argonne LLC

Office of Science U.S. DEPARTMENT OF ENERGY

A U.S. Department of Energy laboratory managed by UChicago Argonne, LLC

APS/User Monthly Operations Meeting

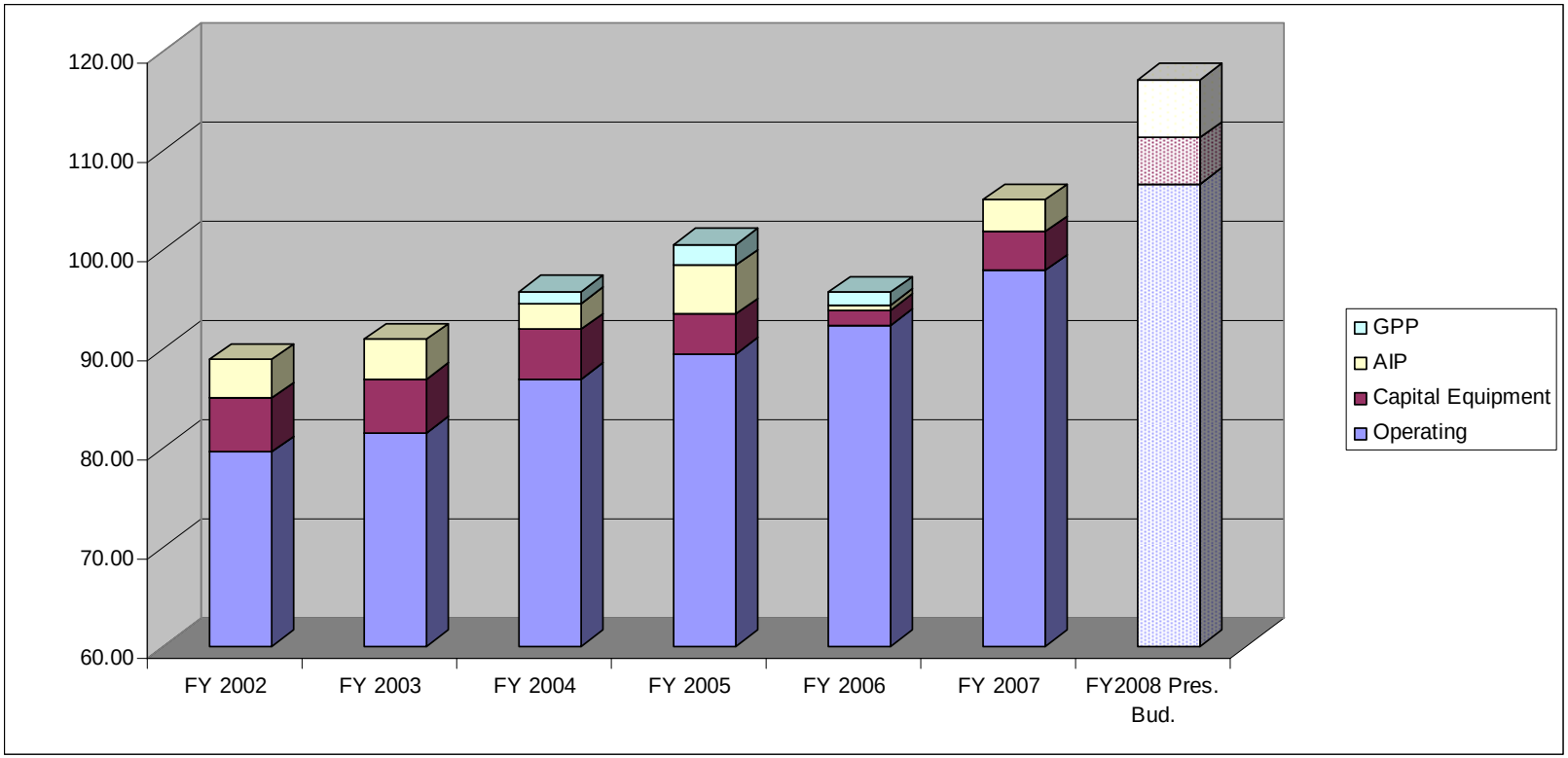
J. Murray Gibson

September 26, 2007

Agenda

- 2:30 p.m. Refreshments
- 2:45 p.m. APS Update -- Murray Gibson
- 3:05 p.m. Summary of the U of C Reviews -- Dennis Mills
- 3:20 p.m. Network Security and Impact on Science -- Ken Sidorowicz
- 3:40 p.m. Adjourn

Budget issues



- Delay on projects until new year, concerns re congressional action

From Ray Orbach's talk to BESAC 09/21/2007

Office of Science
FY 2008 Funding Status
(budget authority in thousands of dollars)

	FY 2007 Approp.	FY 2008					
		Request	Req. vs. 07	House	House vs. Request	Senate	Sen. vs. Request
Basic Energy Sciences	1,250,250	1,498,497	+248,247	1,498,497	——	1,512,257	+13,760
Advanced Scientific Computing	283,415	340,198	+56,783	340,198	——	334,898	-5,300
Biological and Environmental	483,495	531,897	+48,402	581,897	+50,000	605,320[a]	+73,423
High Energy Physics	751,786	782,238	+30,452	782,238	——	789,238	+7,000
Nuclear Physics	422,766	471,319	+48,553	471,319	——	471,319	——
Fusion Energy Sciences	318,950	427,850	+108,900	427,850	——	427,850	——
Science Lab Infrastructure	41,986	78,956	+36,970	151,806	+72,850	88,956	+10,000
Science Program Direction	166,469	184,934	+18,465	178,290	-6,644	184,934	——
Workforce Development	7,952	11,000	+3,048	11,000	——	11,000	——
Safeguards and Security	70,225	70,987	+762	70,987	——	70,987	——
Total, Science	**3,797,294**	**4,397,876**	**+600,582**	**4,514,082**	**+116,206**	**4,496,759**	**+98,883**
Less: Earmarks	——	——	——	-70,145[a]	-70,145	-49,150[a]	-49,150
Total, Science except earmarks	3,797,294	4,397,876	+600,582	4,443,937	+46,061	4,447,609	+49,733

[a] The House report did not specify which program(s) earmarks were to be funded in. Senate earmarks are funded within the Biological and Environmental Research program.

DOE Review of APS

- December 10-13th, 2007
  - Mark your calendars – users and employees involvement will be needed!
- UC reviews were very positive and provide a good experience
  - Denny will discuss

Upgrade planning

- We are submitting this week an R&D proposal to BES
- We want to hold a retreat next summer ("Strategic Planning Meeting on the APS Upgrade") - planning will begin with APSUO/PUC soon
- BESAC will hold a workshop to address science driven needs for new facilities, which is the next key step in their planning process

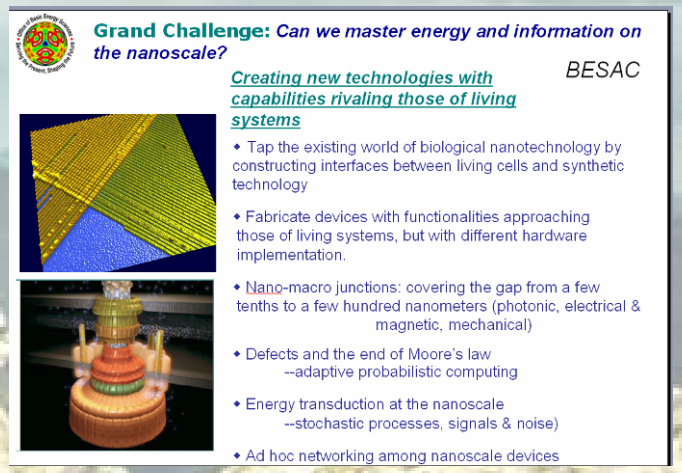
ANL/APS efforts will be supported by LDRD in FY2008

- Laboratory has made high level strategic LDRD allocations
  - Facilities LDRD (Denny Mills, coordinator) received highest allocation of $4.3M
  - Announcements will go out in next few weeks
    - *New ERL Accelerator R&D funding*
    - *New science funding*
      - Imaging and Ultrafast Science
    - *Additional detector development*

Controlling Matter and Energy: Five Challenges for Science and the Imagination

Graham Fleming and Mark Ratner

September 20, 2007



**Please note: this material has not yet been reviewed or approved by BESAC

A Twenty-Year Outlook

Ray Orbach, 9/21

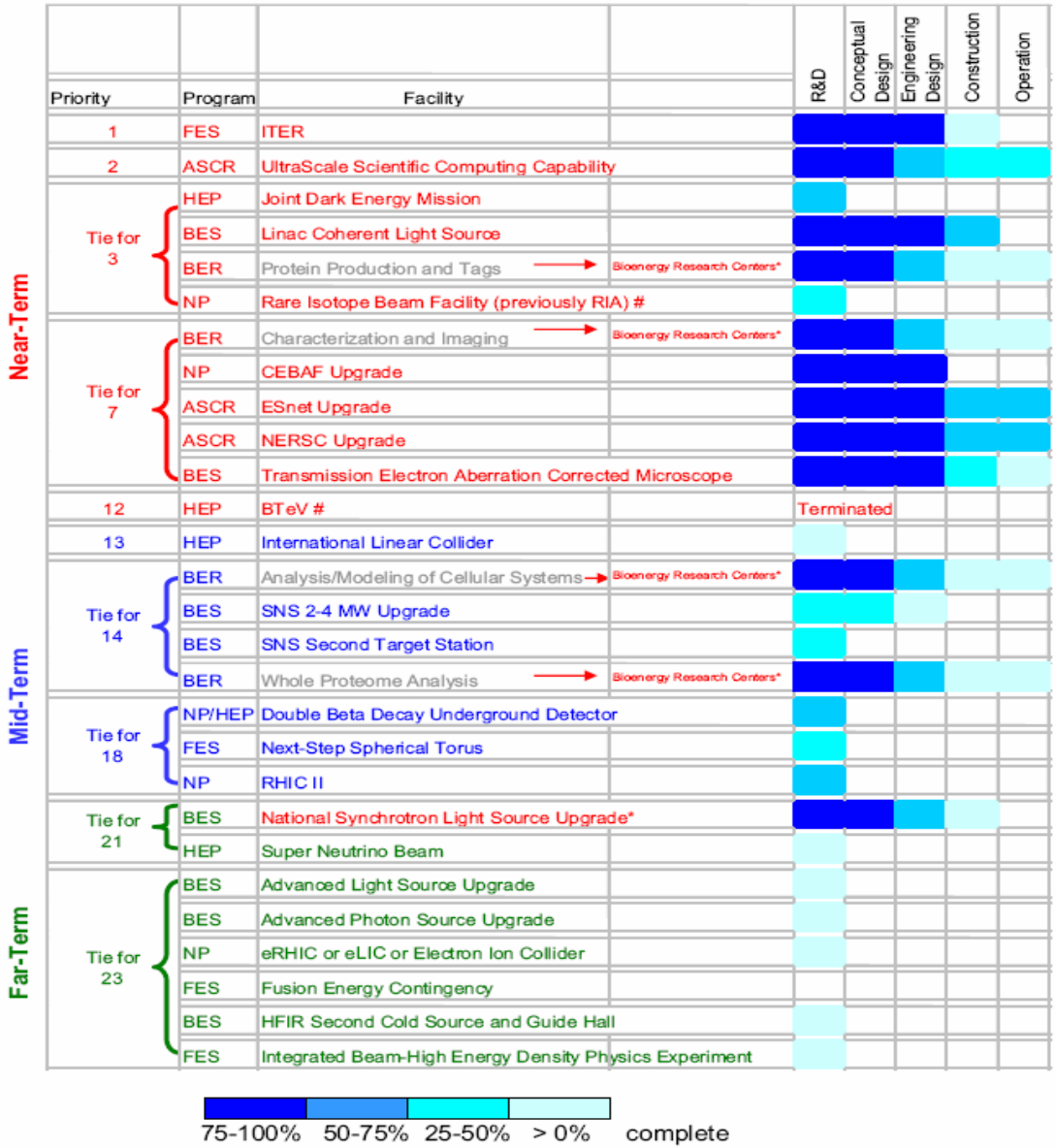
In November, 2003 DOE's Office of Science proposed a portfolio of 28 prioritized new scientific facilities and upgrades of current facilities spanning scientific disciplines to ensure the U.S. retains its primacy in critical areas of science and technology well into the next century.

The *Facilities for the Future of Science: A Twenty-Year Outlook* was the first long-range facilities plan prioritized across disciplinary lines ever issued by a government science funding agency anywhere in the world.

Significant progress has been made in implementing the plan and deploying many of the planned facilities.

We have just finished an update on where we are at now in 2007.

Status of *Facilities For the Future: 20-Year Outlook* – By the end of FY 2008



*Technology readiness changed
Changed due to planned facility abroad

21st Century Light Sources:
An assessment of needs driven by new scientific opportunities
Charge to BESAC from Ray Orbach (9/21/07)

- The BES suite of storage-ring-based light sources is one of the largest and most scientifically productive complex of user facilities in the world, serving more than 8,500 users each year.

- The Linac Coherent Light Source at SLAC, the first hard x-ray, linac-based light source, will be added to this complex in FY 2009. It will be fully operational a year or two later.

- The National Synchrotron Light Source – II at BNL, an advanced ultra bright storage-ring-based light source, will be added to the complex a few years later, in approximately 2015.

- By 2015, with LCLS and NSLS-II newly operating, the youngest of today's BES light sources will be approaching its 20th birthday. Now is the time for DOE and the scientific community to begin the process of strategic planning for the 21st century light sources that will be as impactful as today's light sources and address the scientific needs of the community in the 21st Century.

- The scientific opportunities and mission needs – as developed over the past five years in ten Basic Research Needs workshops and in the BESAC Grand Challenges study – are the major drivers for the specifications of new and upgraded light sources.

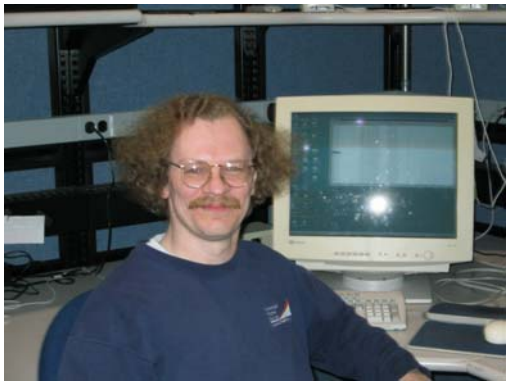
Orbach charge to BESAC (cont.)

Consider the characteristics of the next generation light sources that will address the scientific and technological challenges put forth in the Basic Research Needs workshops reports and the BESAC Grand Challenge study and that will enable new and innovative ways of probing our material world in the 21st Century.

The characteristics to be specified are the standard ones used to describe light sources: wavelength, flux, brightness, emittance, coherence, pulse length, potential instrument suite, availability and reliability of the entire system, and user accessibility. The charge excludes consideration of the many specific pre-proposals or proposals for light sources that are currently being discussed in the community. However, the capabilities of various types of light sources (including lasers, storage-ring-based and linac-based light sources, or other types of light sources) should be evaluated against the preferred characteristics of the new light sources. Both upgrades and new facility concepts may be considered in this context.

The work of the BESAC subcommittee should be reported to BESAC at its summer 2008 meeting.

Inelastic and X-ray Nuclear Resonant Scattering Group

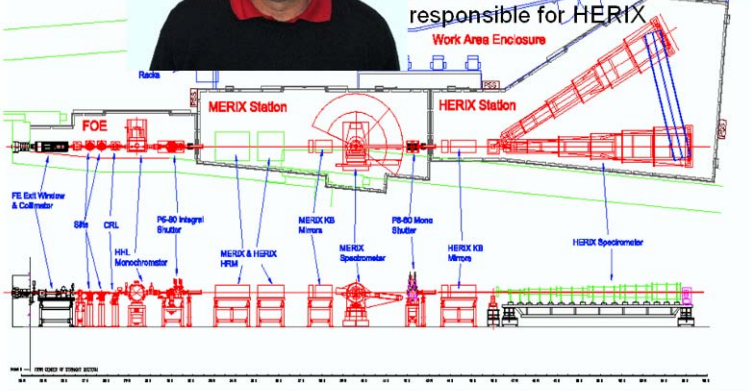


Thomas Gog
Group Leader

Sector 30

Yuri Shvydko
Lead Scientist on 30-ID
and responsible for MERIX

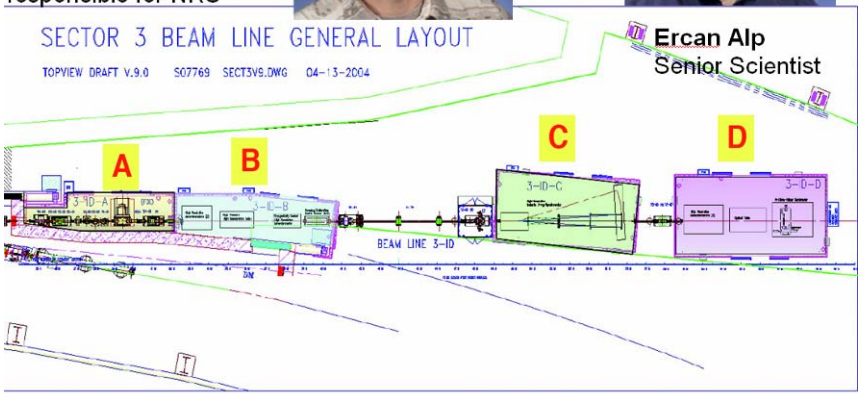
Ayman Said
responsible for HERIX



Sector 3

Wolfgang Sturhahn
Lead Scientist on 3-ID and
responsible for NRS

Ercan Alp
Senior Scientist



Pacesetter – Kevin Beyer (X-ray Science Division)

Deficiencies in the safe storage of compressed gas cylinders at the APS has been a long standing safety issue. Kevin has demonstrated outstanding effort and diligence in sharply reducing the number of deficiencies.

Pacesetter – Cindy Chaffee (Engineering Support Division)

Cindy Chaffee has provided a safer machine shop environment due to the machine shop certification process. This is largely due to her oversight of access to the LOM machine shops by only allowing certified competent machine shop personnel to gain access to the shops via a badge and card key system.