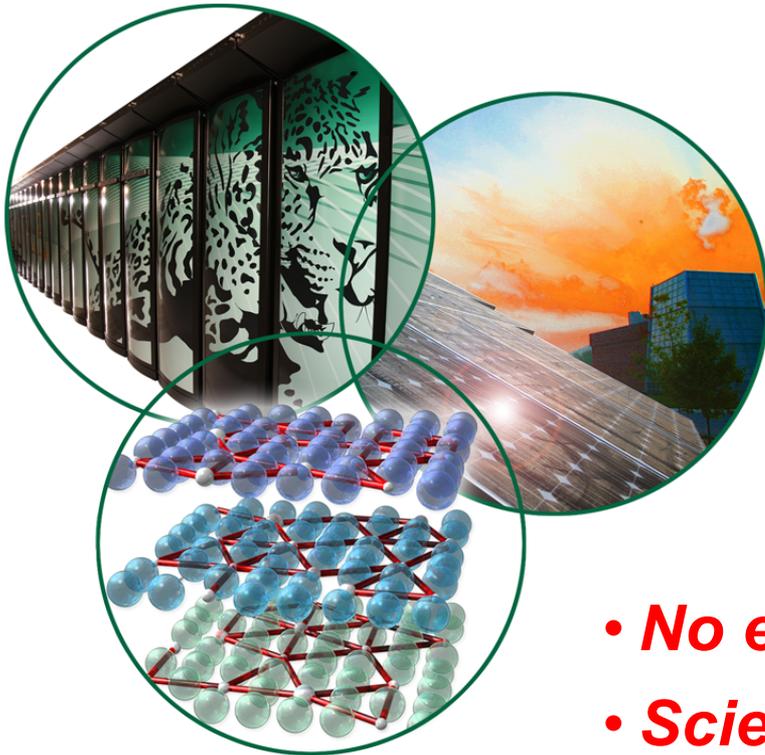


Neutron X-ray Scattering School, August 22, 2013

Proposal Writing: Hints for maximizing your chances for getting beam time

(Also general background on how DOE user facilities function)

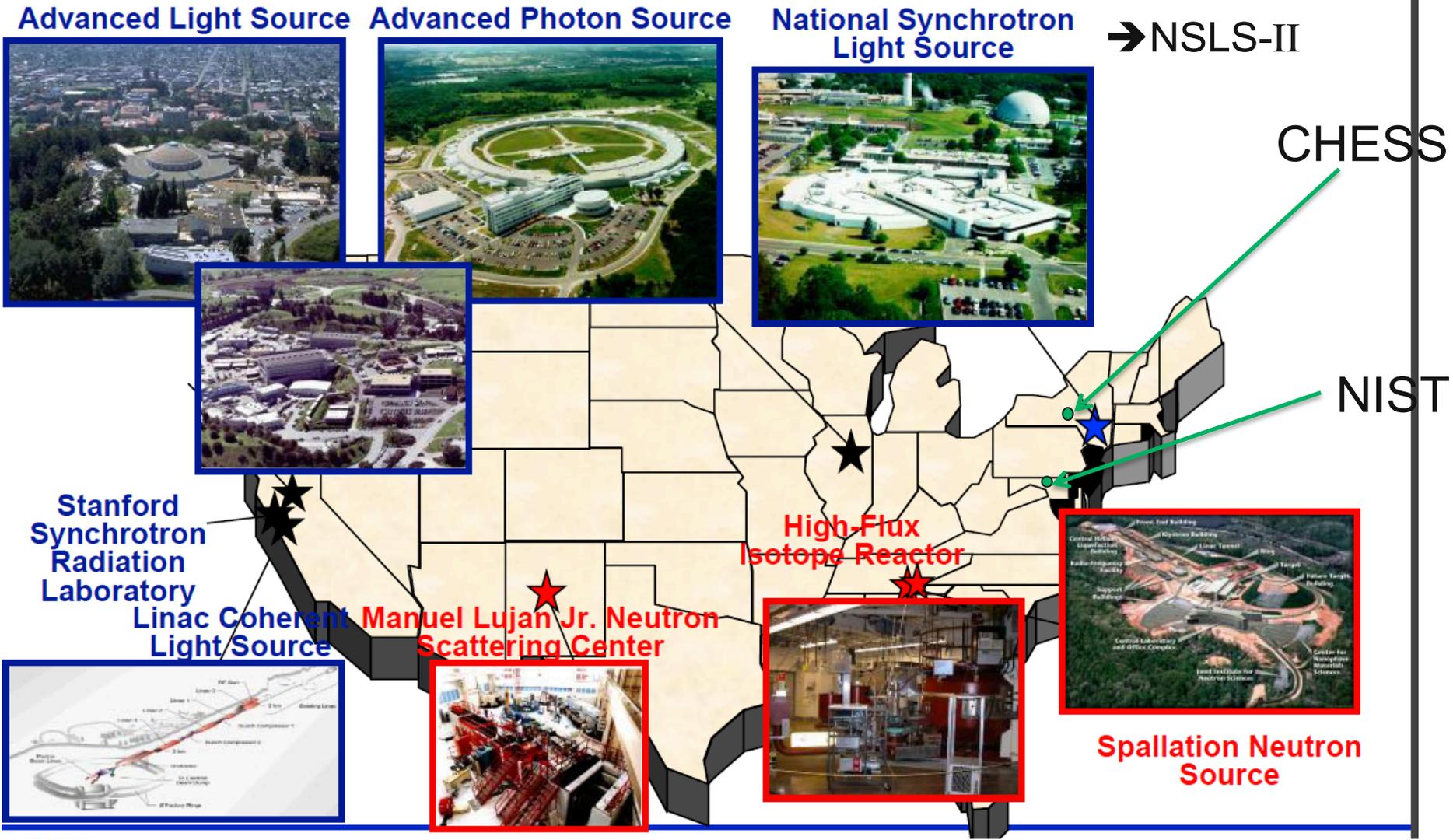


John Budai

***Materials Science and Technology Division
Oak Ridge National Laboratory***

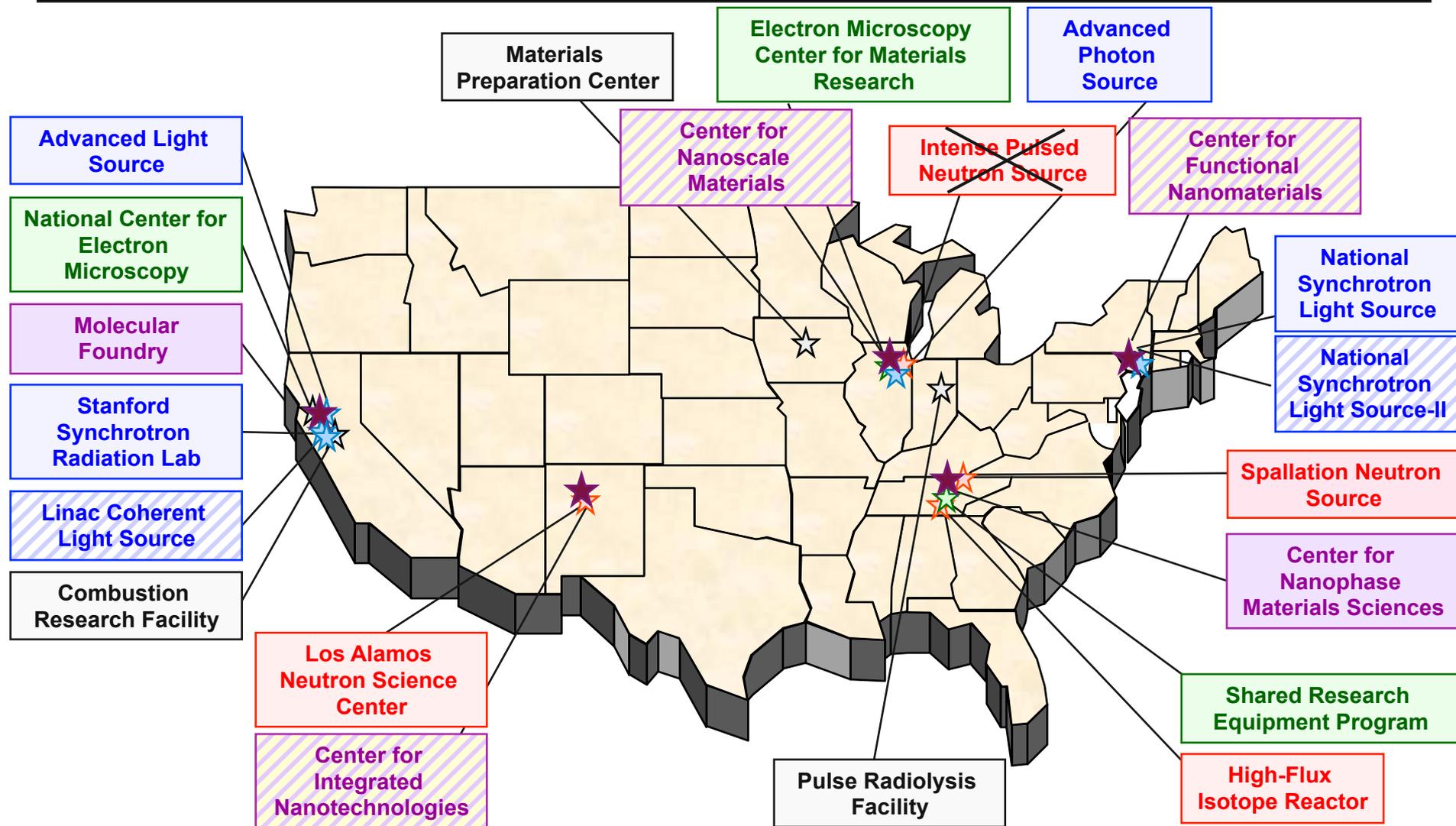
- ***No equations!***
- ***Scientists spend a lot of time writing proposals, reviewing proposals and giving presentations.***

DOE X-ray and Neutron Sources



Also 5 DOE Nanoscience Centers (BNL, SNL/LANL, ORNL, ANL, LBNL)
 3 DOE Electron Microscopy Centers (ANL, LBNL, ORNL)

BES Scientific User Facilities

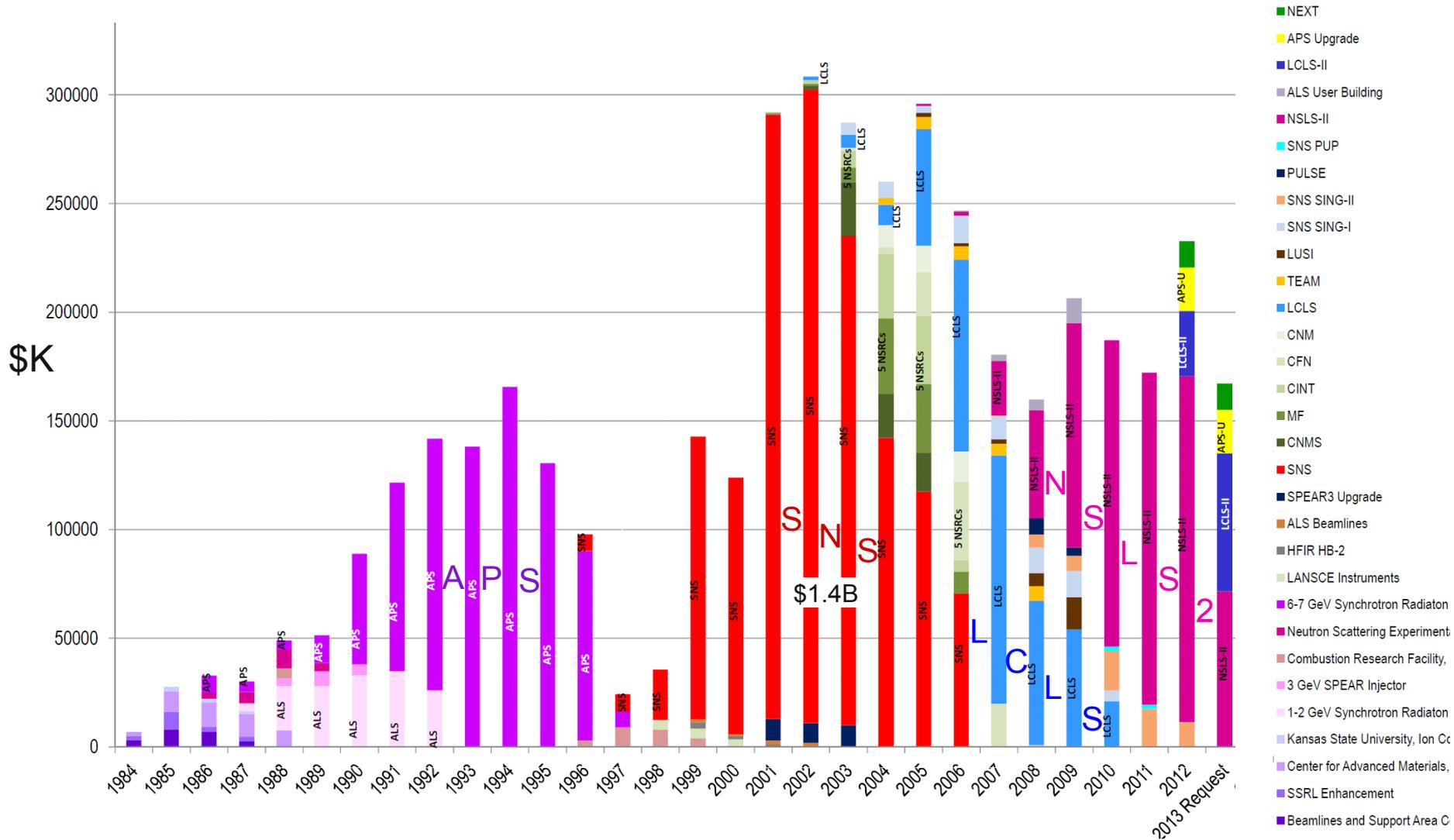


- 4 Synchrotron Radiation Light Sources
- Linac Coherent Light Source
- 4 Neutron Sources
- 3 Electron Beam Microcharacterization Centers
- 5 Nanoscale Science Research Centers
- 3 Special Purpose Centers

Also 4 Advanced Scientific Computing Centers

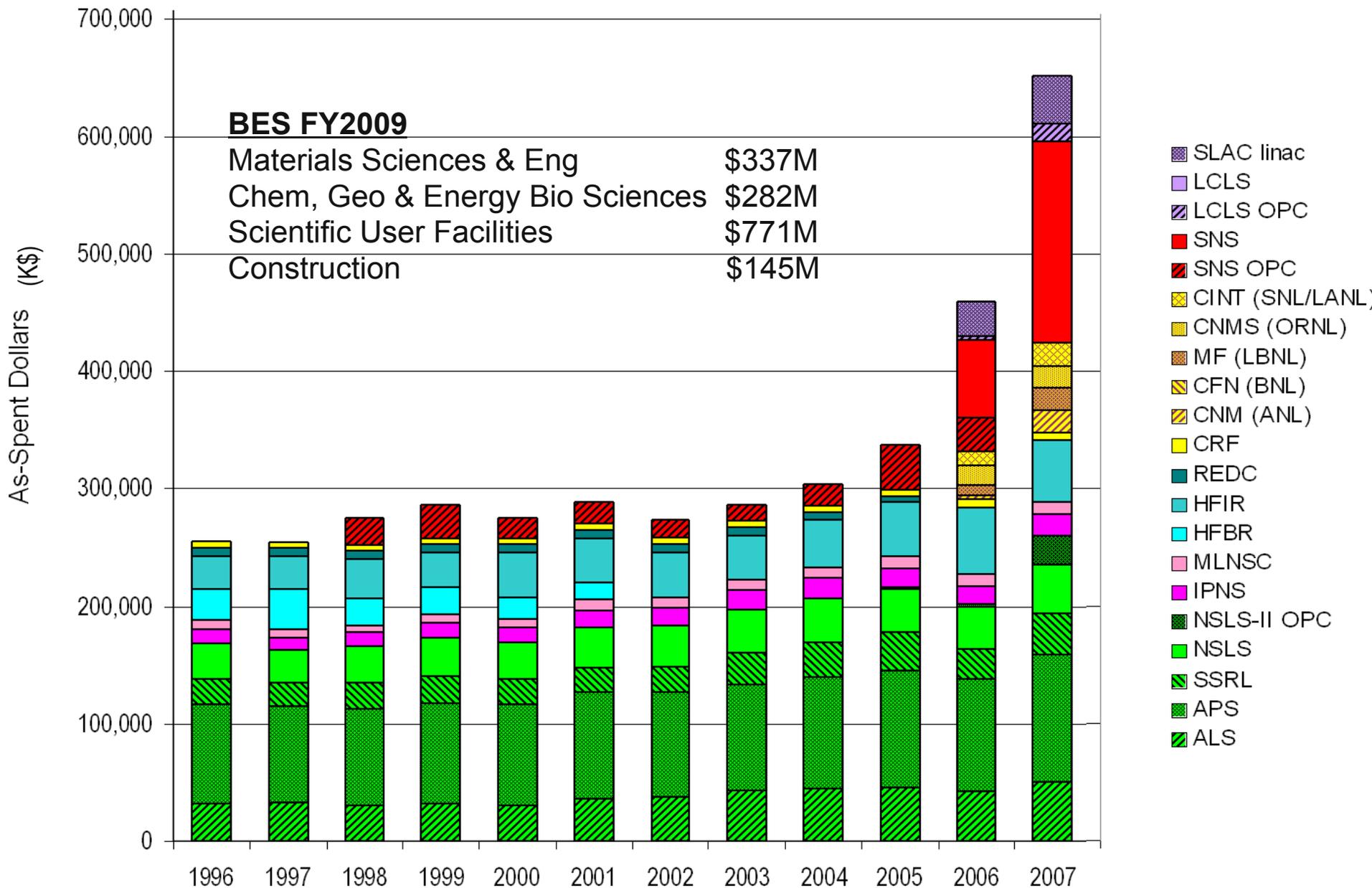
(from Pat Dehmer presentation)

BES Facilities Construction ~30 Years



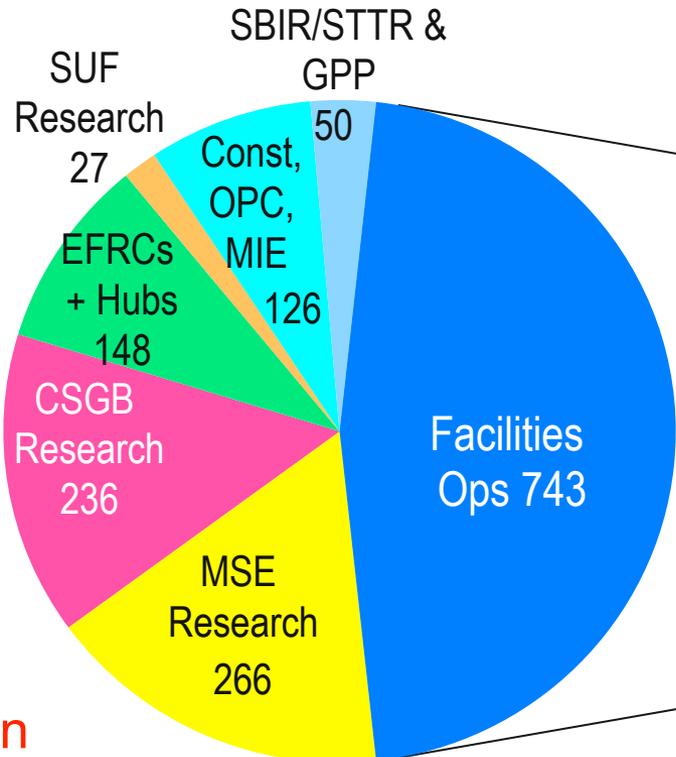
From P. Dehmer, Office of Science Update, Feb 28, 2013

Operating Budgets for the BES Scientific User Facilities



FY 2013 BES Budget Appropriation

FY 2013 Approp:
\$ 1,596M
(- \$92M from FY 2012)



Research programs

- Energy Innovation Hubs (+\$4.8M)
- Energy Frontier Research Centers
- Core Research (- \$5.5M)

Scientific user facilities

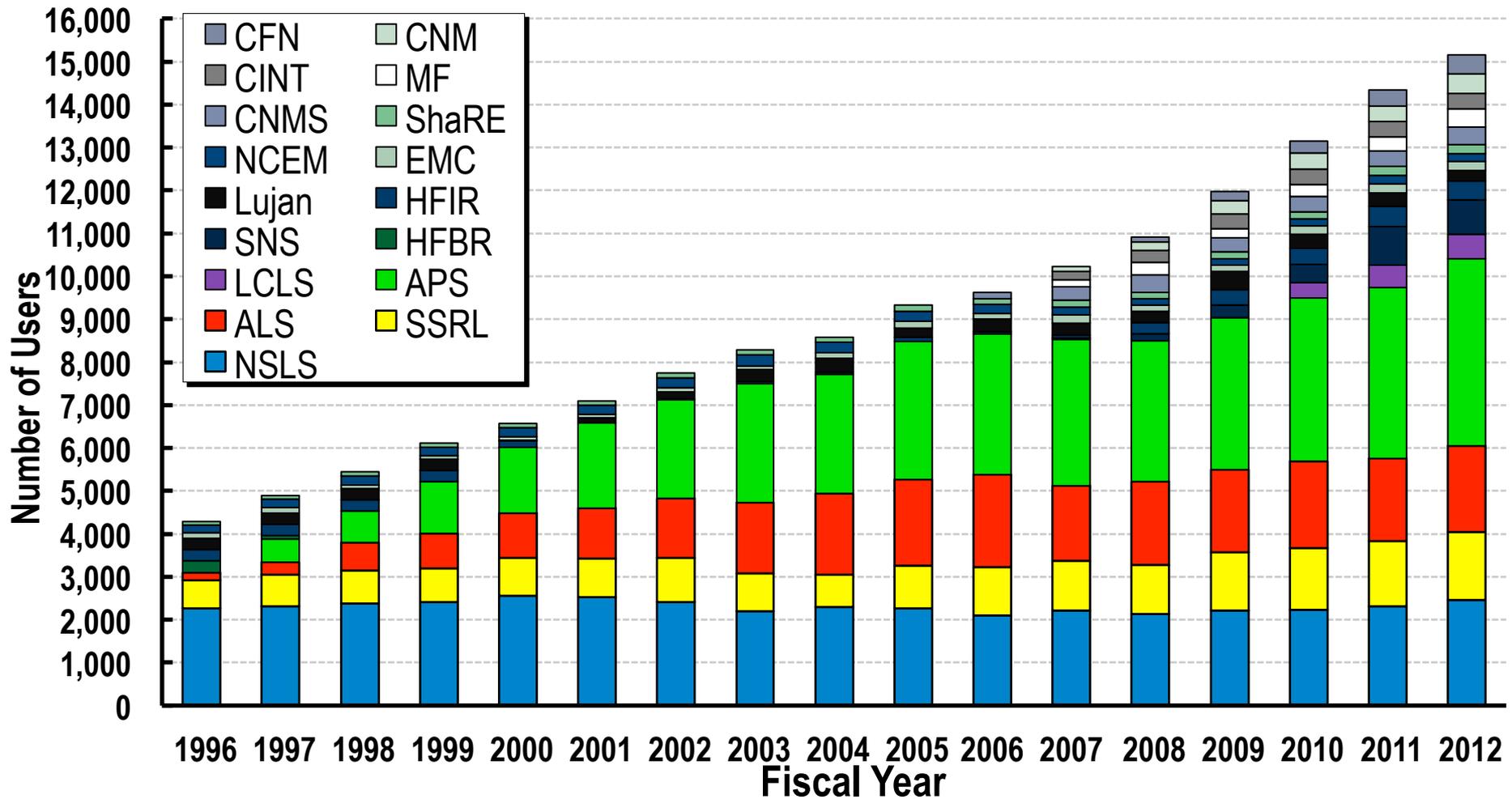
- Synchrotron light sources (-\$6.8M)
- Neutron scattering facilities (-\$3M)
- Nanoscale Science Research Centers (-\$2.3M)
- NSLS-II early ops (+\$22M)

Construction and instrumentation

- National Synchrotron Light Source-II (-\$87.5M) and NEXT instrumentation
- Spallation Neutron Source instruments (-\$11.5M)
- Advanced Photon Source upgrade
- Linac Coherent Light Source-II (+\$15M*)

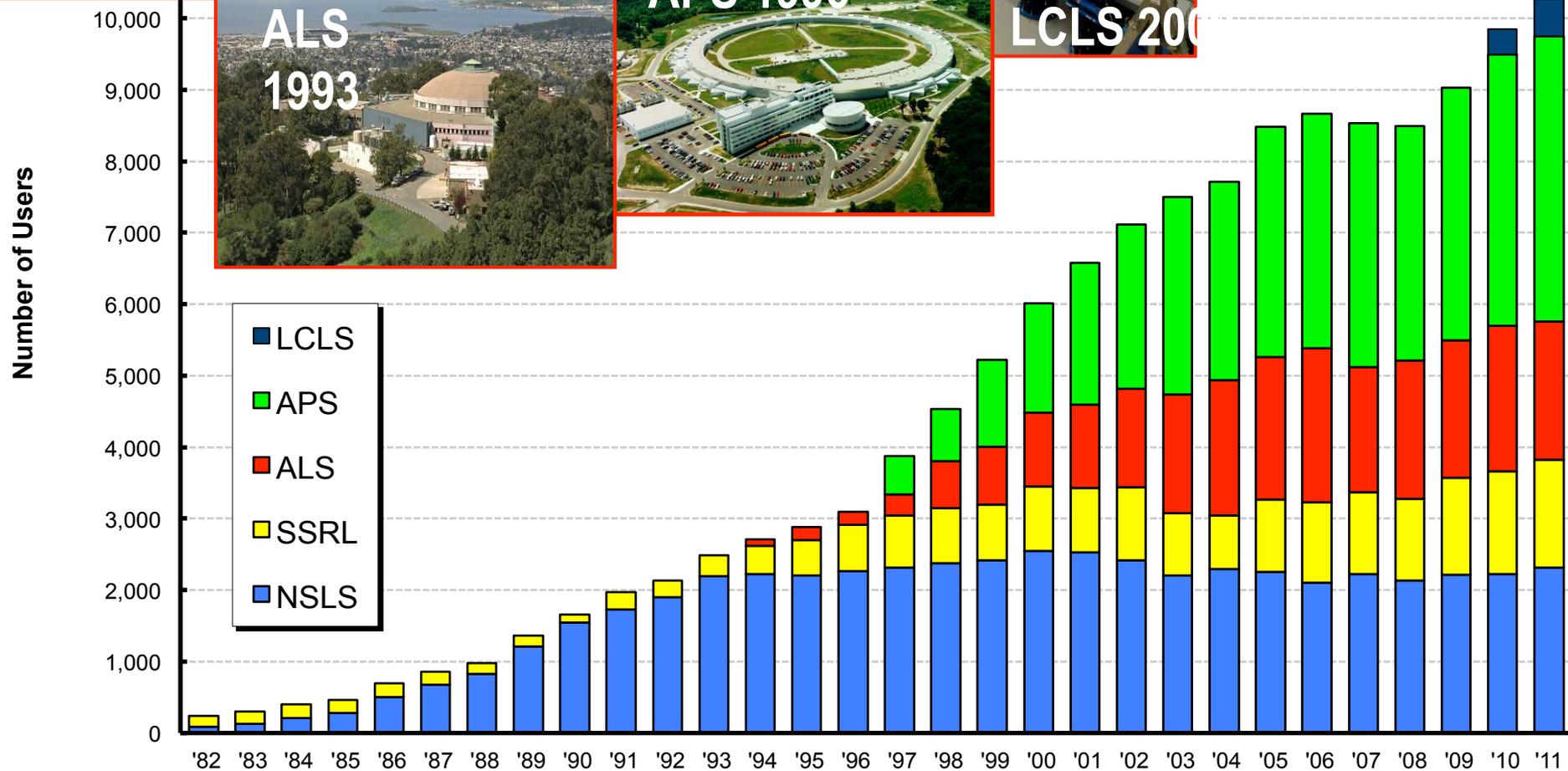
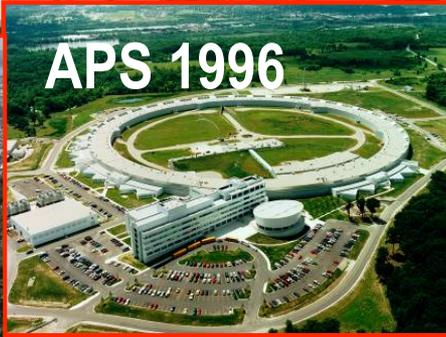
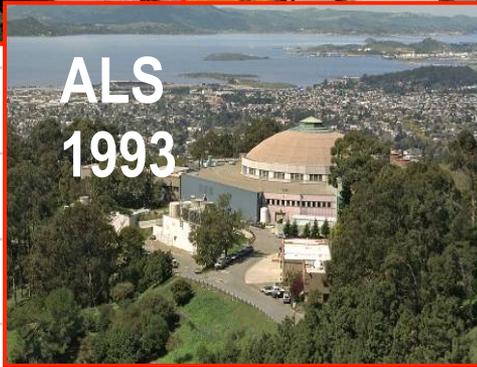
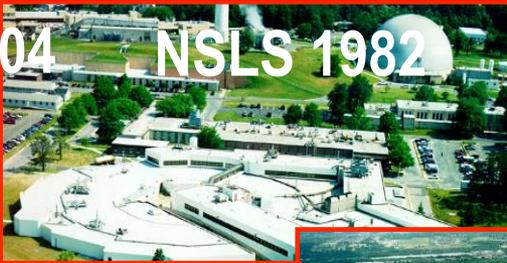
*Includes \$22.5M of prior year carryover

BES User Facilities Hosted Over 15,000 Users in FY 2012

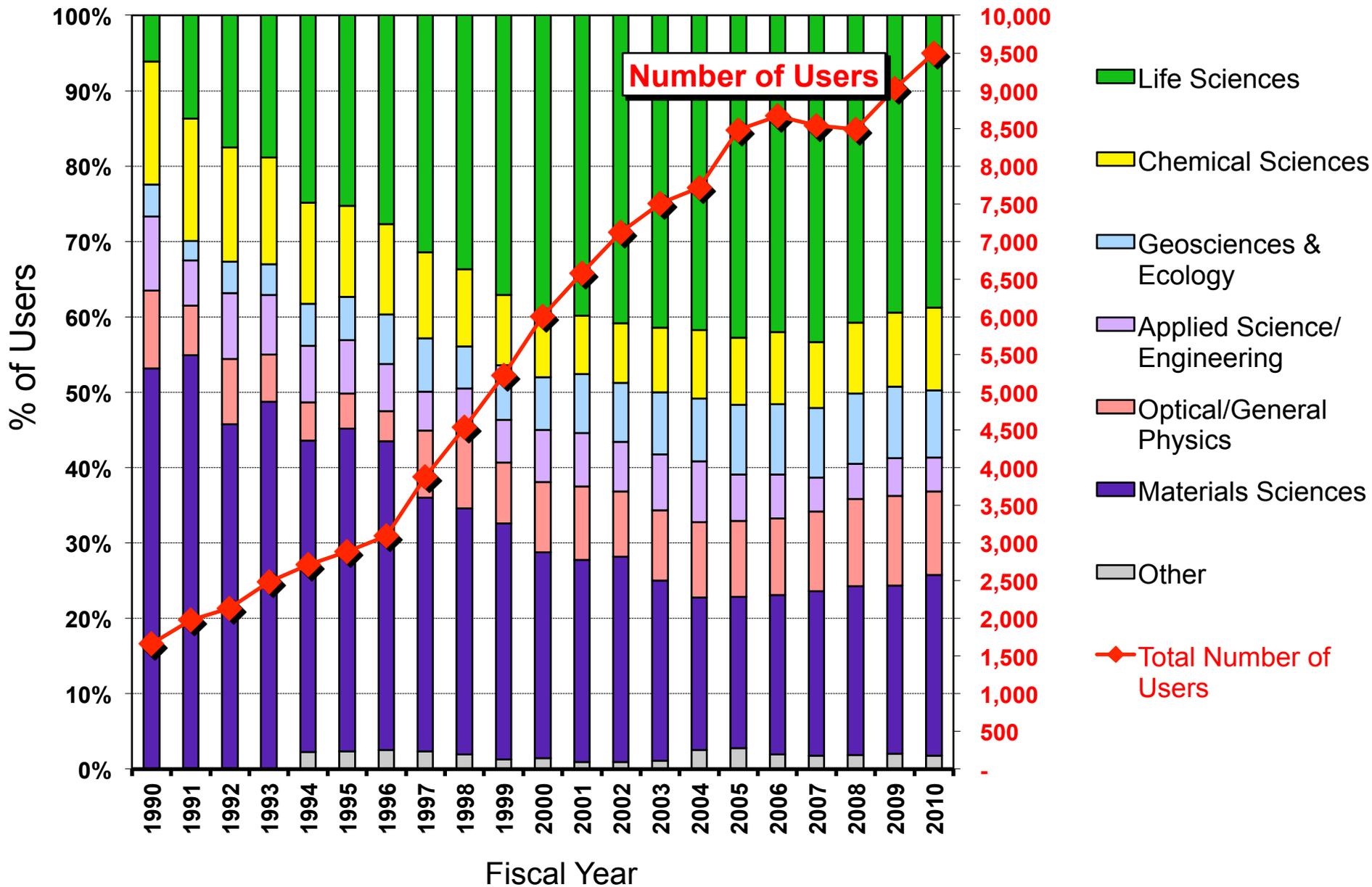


More than 300 companies from various sectors of the manufacturing, chemical, and pharmaceutical industries conducted research at BES scientific user facilities. Over 30 companies were Fortune 500 companies.

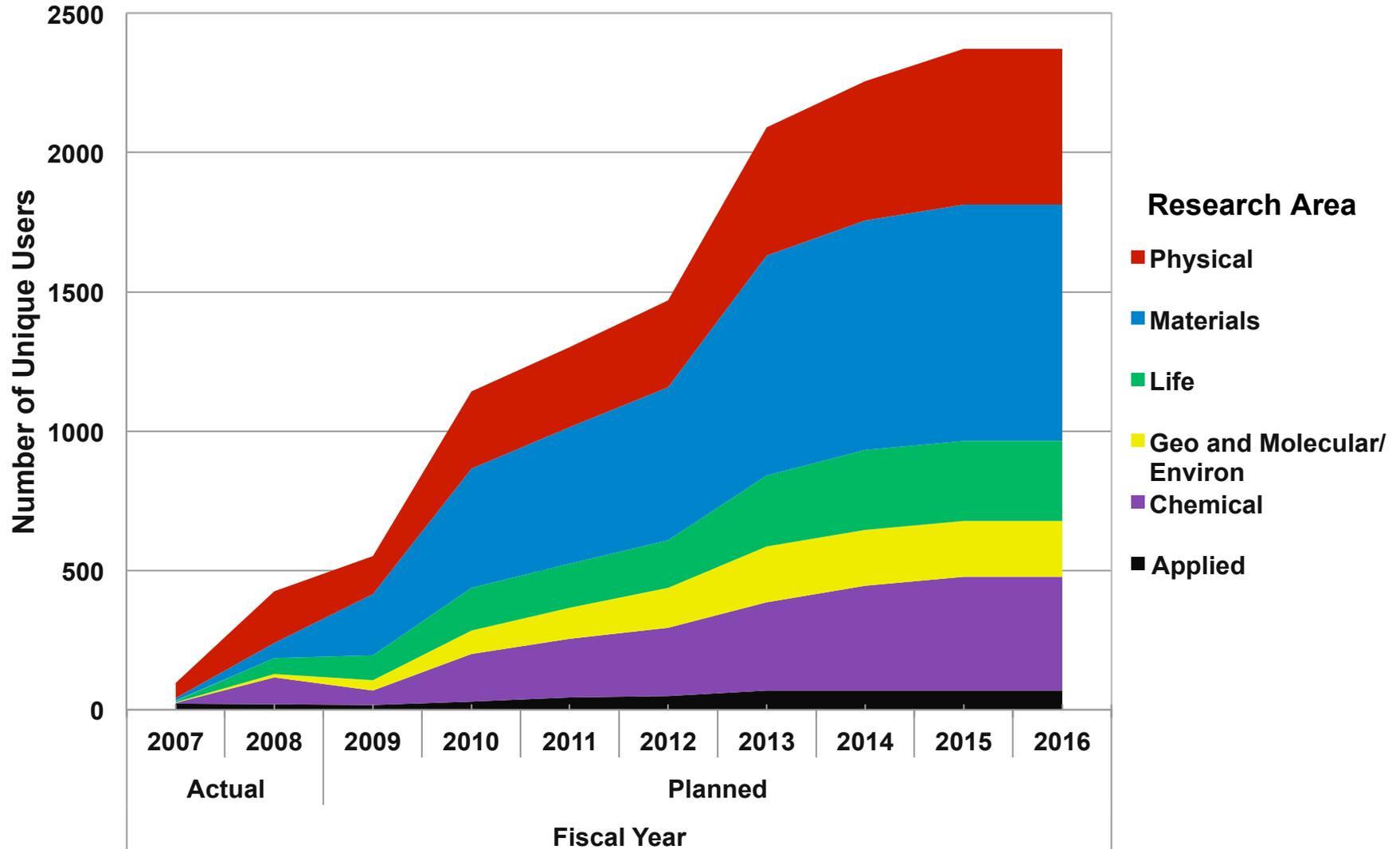
Synchrotron Light Sources Serve ~10,000 Users/Year



Users by Discipline at the Synchrotron Light Sources



Neutron User Community and Research Growing



ORNL Home to many User Facilities (acronym required)

- BTRIC - Building Technologies Research and Integration Center
- CNMS - Center for Nanophase Materials Sciences
- CSMB - Center for Structural Molecular Biology (Bio-SANS)
- CFTF - Carbon Fiber Technology Facility
- **HFIR - High Flux Isotope Reactor**
- MDF – Manufacturing Demonstration Facility
- NTRC - National Transportation Research Center
- OLCF - Oak Ridge Leadership Computing Facility
- Safeguards Laboratory (SL)
- SHaRE - Shared Research Equipment (TEM, merging in CNMS)
- **SNS - Spallation Neutron Source**

Also, 2 EFRC's (Energy Frontier Research Centers), 1 Energy Hub (Nuclear Modeling and Simulation)

Basics of the facility proposal systems

- All the DOE (NIST & NSF) neutron and x-ray sources offer access to beam time through an experimental proposal system. “General Users (GU)”.
- Proposal submission is done through a web-based application. When and how often proposals are submitted varies by facility.
 - APS and NSLS three times (“cycles”) per year.
 - SNS/HFIR and ALS two times per year
- All proposals are peer-reviewed and rated, and beam time is allocated using the scores of these reviews. Once time has been allocated, the beamline staff schedule the proposals.

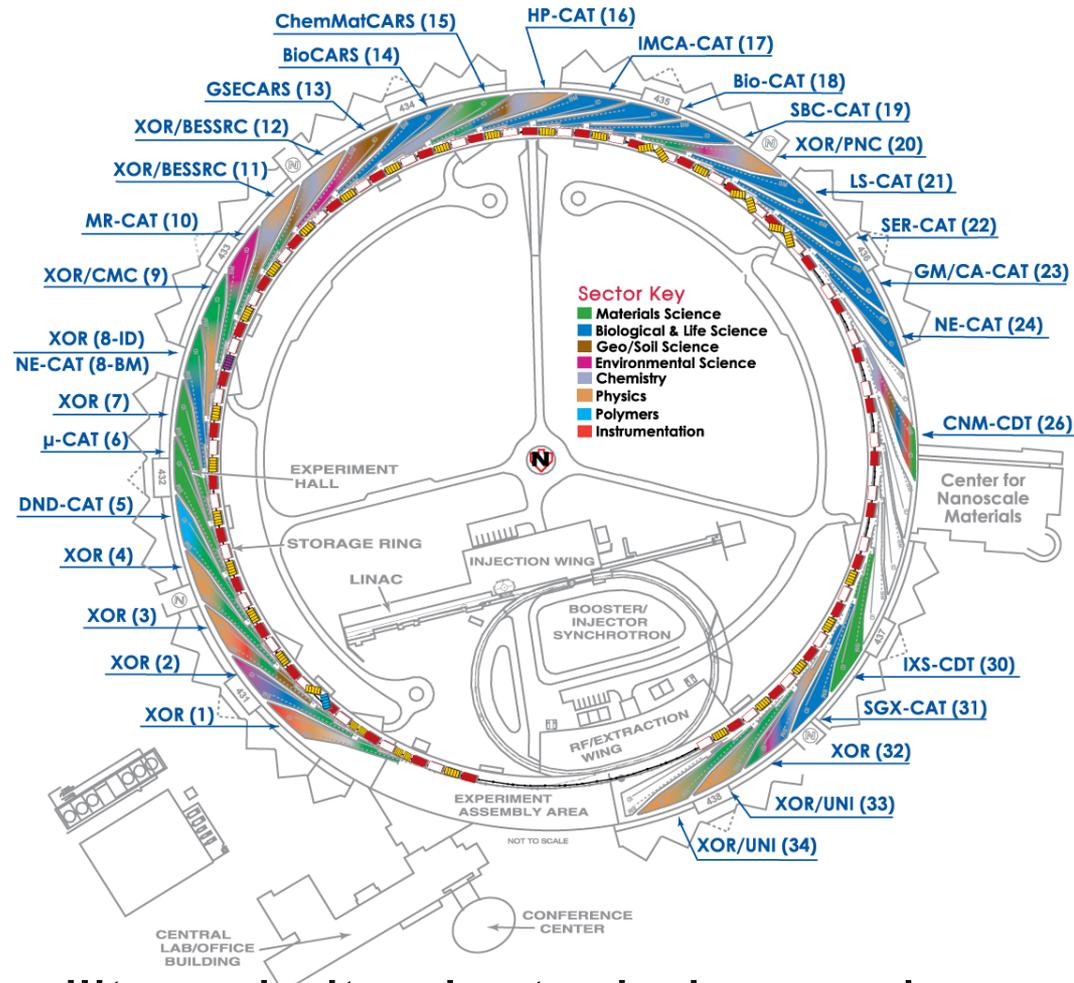
Amount of general user time available

APS/NSLS/SSRL/ALS

- ✓ All beamlines offer GU beam time.
- ✓ Most DOE/NSF funded beamlines provide 80-100% of their time to general users.

SNS/HFIR

- ✓ Amount varies by instrument.
- ✓ ~75% of time will be for general users.



For most, you can search facility websites by technique or by beamline. Quality of proposal websites varies.

Upcoming Proposal Deadlines: www.lightsources.org/deadlines

X-ray sources

APS

November 1, 2013

ALS

September 4, 2013

NSLS

Sept 30, 2013; → NSLSII (2015)

LCLS

February 11, 2014

Deadlines

Neutron sources

HFIR/SNS

Sept 11, 2013

LANSCÉ

contact user office?

NIST-NCNR

contact user office?

- At most facilities, these are hard deadlines:
- APS always at Friday midnight (12:05 → next cycle)
- Tip: Starting APS application process (without submitting) gives you a lower ID #.

Users Get Started with Assistance of the Instrument Scientists

- Study instrument web pages
- Contact an Instrument Scientist to discuss your research
 - What is the research problem?
 - Which instrument(s) are appropriate?
 - How mature is the research project (risk, size)?
 - What is the material – sample composition, form, size, availability?
 - What are the experimental conditions (temperature, pressure, magnetic field, etc)?
 - What will be measured?
 - Probability of success? Impact? Significance?
 - How will results be presented and to whom?
 - What is the timeline?



Instrument Scientists Assist First-time and Returning Users

- **Provide technical advice, guidance, and assistance**
 - Instrument options
 - Sample and experiment preparation
 - Number of experiment days
 - Logistics (scheduling, transporting and storing samples)
 - Proposal preparation tips and assistance
 - Experiment team members
 - Data analysis
 - Publication considerations

Submitting a proposal

Facilities have link on home page

NLSLS

National Synchrotron Light Source

NSLS Synchrotron Catalysis Consortium Receives 3-Year Funding Renewal

Next general user proposal deadline: January 31, 2009.

Call for Proposals

Recent News

Call for Publication Citations, Recent Invited Lectures

Facility Updates

Ch-Chang's Corner: DOE Grant Boosts NSLS Advanced Detector Development

Safety Update: Fiscal Year 2008 Injuries

Notes from the UEC: Past and Present

Science Highlights

Slippery Customer: A Greener Anticancer Additive for Engine Oils

Cracking the Structure of a Key Cancer-Related Protein

Creating an Electron Avalanche without Electronics

Upcoming Seminars

Upcoming Meetings & Workshops

APS

Advanced Photon Source | Argonne National Laboratory

U.S. DEPARTMENT OF ENERGY

Argonne National Laboratory

Science & Education

Media Center

Beamlines

Divisions

Search APS ...

Welcome

Visitor Information

Job Openings

Apply for Beam Time

Machine Status | Schedule

Conferences

Seminars

Publications

Safety and Training

Organization Charts

Phonebook

Email Portal | Intranet

Suggestion Box

Document Centre

Argonne Guest House

Argonne Accelerator Inst. | National User Facility Org. | lightsources.org

The Advanced Photon Source (APS) provides the brightest x-ray beams in the Western Hemisphere for more than 5,000 scientists worldwide.

LEARN about x-ray research

START becoming an APS user

WORK resources for users

EVENTS AND ANNOUNCEMENTS

June 25 : Friday

User Science Seminar

APS Seminar | 1401-A1100 @ 12:00 PM

Superconducting Niobium Accelerator Cavity Defect Localization and Repair

APS Seminar | 203-R150 @ 1:30 PM

Reminders

SRI2010 Abstract Submission Deadline: June 28, 2010

Information for Industrial Users

Next GUP Deadline: July 9, 2010

XSD Visitor Program

APS Upgrade Project

Project Home

User Input Invited

Upgrade News

NIST

NIST Center for Neutron Research

— a national resource for industry, universities, and government agencies

Coming to the NCNR? Click Here.

Visa question? Logon to your NCNR-IMS account

NCNR SiteMap

About the NCNR

What We Do

Staff

Annual Report

Summer School

Working at the NCNR

Facility Information

Live Data

Instrumentation

Instrument Contacts

Schedules

Center for High Resolution Neutron Scattering (CHRRNS)

Sample Environment

Sample Prep Labs

Lab Safety

User Information

Planning Your Experiment

Obtaining BeamTime

Data Reduction/Analysis

Publishing Your Results

Financial Assistance

Travel & Lodging

NCNR User Group

Other Sites

RECENT RESEARCH HIGHLIGHTS

Neutron reflection studies of tethered membranes give insight on Alzheimer's disease.

Restacking organic semiconductors may lead to cheap and flexible electronics.

Hot PAPER! New materials for hydrogen storage undergo intense scrutiny with NCNR instruments

NEWS FOR NCNR USERS

NCNR Seminar Schedule

Pat Gallagher named NIST Deputy Director

Pat Gallagher, NCNR Director for the past four years, has been appointed NIST Deputy Director, assuming until further notice the responsibilities and duties of NIST Director. Rob Dimeo has assumed the responsibilities of NCNR Director.

CALL FOR PROPOSALS - NEW!

The next proposal deadline is November 3, 2008. Successful proposals will be allocated instrument time from January 2009 through August 2009.

We have posted some proposal statistics summarizing the last five calls.

NCNR Expansion Initiatives

A significant expansion of the NCNR is underway. The project comprises development of a new cold neutron moderator, and a new guide hall with five state-of-the-art instruments. A workshop was held on July 17-19, 2006.

Major Upgrade to SANS Analysis Software

With a new user interface and calculations on the fly factor, this release will

SNS
HFIR

ORNL Neutron Sciences

Home | Find People | Contact Us | Site Map | Search

STAFF | STUDENTS | INDUSTRY | COMMUNITY | VISITORS

OAK RIDGE NATIONAL LABORATORY

NEUTRON SCIENCES

About Us | Why Neutrons? | Research | Facilities | Instruments | Users | Jobs | News & Media | Calendar

Researching a cure for Huntington's Disease

Oak Ridge National Laboratory is home to two of the most advanced neutron science research facilities in the world, the Spallation Neutron Source and the High Flux Isotope Reactor.

OPERATING STATUS

SNS Beam on target at ~870kW. The plan for Tuesday is Neutron Production without any interruption.

HFIR is operating at 85MW for fuel cycle 429

UPCOMING EVENTS

13 JUN Goldschmidt™ Conference Knoxville, TN, USA

19 JUN National School on Neutron and X-Ray Scattering Oak Ridge, TN, USA

NEWS & UPDATES

USER INFO

EDUCATION

PUBLICATIONS

Neutron Scattering Science Call for Proposals

Thank you for submitting more than 670 proposals for the current call. The next call deadline is August 25, 2010.

Call for Proposals

Let us know what capabilities would you like to see at SNS and HFIR.

More User Information

News Feed

Different types of proposals allow facility flexibility

Each facility has particular systems or proposal modes:

APS

GUP - General User Proposal. A "rapid-access beamtime request" against a submitted proposal can be considered for any unallocated general user time during the current run.

PUP – Partner User Proposal - Groups whose work involves a greater degree of collaboration with the APS. (e.g. major new instrumentation).

11-BM User Program – Accepts user proposals for both on-site experiments and for the rapid-access mail-in service (~60% of user beamtime reserved for mail-in samples). Very easy – they send you capillary tubes. This capability is not obvious on the GUP website.

CHESS - Cornell

Express-Mode proposals are for a single visit of limited duration to CHESS to perform a straight-forward experiment. Express-Mode proposals undergo a rapid on-line review process to enable users to quickly gain access to beam time.

Feasibility Study proposals are to test an idea or procedure at one of the CHESS stations.

NSLS

MAIL-IN EXAFS Service at Beamline X18B

Prepare your samples according to their thickness guide and mount on standard holder.

Transmission mode. Charges are ~\$100/hr.

Different types of proposals allow facility flexibility – cont.

NIST NCNR

MAIL-IN SAMPLES FOR POWDER DIFFRACTION

We will accept proposals for experiments on the BT1 powder diffractometer on "mail-in" samples. That is, samples may be mailed to NCNR staff, who will execute the data collection.

QUICK ACCESS PROPOSALS

If a user feels that beam time is required very soon to carry out important measurements that cannot be delayed, a proposal may be submitted requesting expedited access. The proposal will be reviewed by the BTAC, and held to a substantially higher standard than regular proposals.

Crystallography is somewhat a separate, self-contained community

- A separate proposal system at APS.
- Highly automated for mail-in measurements.
- Beamtime relatively available.

Proposal forms at SNS and APS

SNS/HFIR

The screenshot shows the 'Create a New Proposal' form in the SNS/HFIR iPTS. The form is titled 'Create Proposal - Mozilla Firefox' and is located at 'https://insapp1.sns.ornl.gov/pls/prod/tp=100-49:3910448804620322:1NO'. The main heading is 'Integrated Proposal Tracking System'. Below the heading, there are navigation tabs: 'Home', 'Create a New Proposal', 'Create a Proposal From an Existing Proposal', 'My Proposals', and 'All Proposals'. The 'Create a New Proposal' tab is active. The form is divided into sections: 'Base Proposal Information', 'User Institution', 'Proposal Title', 'Proposal Type', and 'Abstract'. The 'Base Proposal Information' section includes fields for 'Proposal Number', 'Name', 'Date', and 'Email'. The 'User Institution' section has a search box. The 'Proposal Title' section has a text input field. The 'Proposal Type' section has a dropdown menu. The 'Abstract' section has a large text area. The form also includes several radio button questions regarding data collection, safety, and student thesis requirements. At the bottom, there are 'Cancel' and 'Save and Continue' buttons.

APS

The screenshot shows the 'General User Proposal' form in the APS system. The form is titled 'APS - General User Proposal - Mozilla Firefox' and is located at 'https://beam.aps.anl.gov/pls/apweb/gup0001.display_exp?pid=792659010841428&page_num=1&gup_id=10'. The main heading is 'APS - General User Proposal'. Below the heading, there are navigation tabs: 'General', 'Experimenters', 'Abstract', 'Beamtime Request', 'Questions', and 'Review Panel'. The 'General' tab is active. The form is divided into sections: 'Proposal Title', 'Shifts Recommended by PRP', 'Shifts Allocated by BAC or Scheduled by Beamline in current cycle', 'Shifts Used to date', 'Shifts Remaining', 'Do you want this proposal to be considered for project status?', 'Does this proposal require mail-in service?', 'Does this research involve macromolecular crystallography (single crystals)?', 'Will the data collected be considered proprietary?', 'Will the data collected be considered classified?', 'Does this research involve human subjects or materials?', 'Does this research involve live animals?', 'Are there known safety hazards associated with the proposed experimental procedures or your samples?', 'Is this research required for a student's thesis?', 'Is this proposal related to another general user proposal? If so, which one(s) and how?', 'Subject of Research', and 'Specify Other'. The form also includes several radio button questions regarding data collection, safety, and student thesis requirements. At the bottom, there are 'Generate Report' and 'Copy Proposal' buttons, and a 'Next Page' button. A yellow banner at the bottom states: 'Pressing SAVE will allow you to save this proposal and continue to make changes. Notifications will not be sent. Pressing SUBMIT will save this proposal AND notifications will be sent to the APS. No changes can be made thereafter.' Below the banner, there are 'Save' and 'Submit' buttons. The 'Proposal #' is 10325.

Each proposal system will ask very similar questions

Questions asked

- Proposal Title
- General Info (Title, Experimenters, Funding source, etc.)
- Abstract - What is the scientific importance of the proposed research?
- Why do you need the facility to do this research?
 - Neutron vs. X-rays
 - Why do you need an insertion device beamline instead of a bending magnet?
 - Spallation source vs. reactor source
 - Hard X-rays vs. Soft X-rays
- Why do you need the beam line (and/or instrument)?
 - Particular technique or sample environment
- What previous experience / results do you have (pubs important)?
- Describe the proposed experiment(s), including samples and procedures.
- Justification of the amount of time requested.

General Information

Edit Proposal - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://snsapp1.sns.ornl.gov/pls/xprod/f?p=100:11:3910448804620322::NO::P11_PRP5L_ID:1498&cs=379C651964E7D8D6B013400184A7F54

Most Visited Getting Started Latest Headlines Hotmail NetZero E-mail Argonne National Lab...

Integrated Proposal Tracking System PDF of IPTS-1498 Home Feedback FAQ Logout

Home Proposal Details Funding/Research Areas Facilities/Instruments Team Members Samples Scheduling Submit for Review

My Proposals > **Edit Proposal IPTS-1498**

Help

Edit Proposal Cancel Apply Changes

Proposal Number	IPTS-1498
Status	Saved for Further Editing by Applicant
Name	Suzanne Te Velthuis
Email	tevelthuis@anl.gov
* Proposal Date	23-SEP-2008 15:23
* User Institution	US - Argonne National Laboratory <input type="button" value="Search"/>
* Proposal Title	test
* Proposal Type	General User
* Will the data collected be considered proprietary?	<input type="radio"/> Yes <input checked="" type="radio"/> No
* Will the data collected be considered classified?	<input type="radio"/> Yes <input checked="" type="radio"/> No
* Is this research required for a student's thesis?	<input checked="" type="radio"/> Yes <input type="radio"/> No
* Does this experiment involve exposure to, or use of, biological materials? Such as recombinant DNA, virus or components of a virus, a biological toxin, exposure or handling of risk group 1 or 2 microorganisms (dead or alive), select agents or toxins (dead or alive) or any other sort of biologically hazardous material, to either plants or animals.	<input type="radio"/> Yes <input checked="" type="radio"/> No
* Will human subjects or laboratory animals be used in this experiment, or does this operation involve exposure to, or handling of, human tissue or body fluids, human cells in culture or animal matter?	<input type="radio"/> Yes <input checked="" type="radio"/> No
* Will Hazardous substances, equipment, or procedure be brought to ORNL as part of this proposed experiment? If Yes, provide detailed safety procedures in proposal text.	<input type="radio"/> Yes <input checked="" type="radio"/> No
* Abstract	<div>This is the abstract</div> <div>20 or 4000</div> <div><input type="button" value="Download Template"/> <input type="button" value="Attach Statement of Research (.pdf)"/></div> <div>Please use the Template Provided to Prepare your Proposal.</div> <div>23-SEP-2008 15:23</div>
Last Modified Date	

Done snsapp1.sns.ornl.gov

Proposal: General information

- Pick a good title. Specific and to the point is better than spectacular and vague.
 - Good: “XAS study of Fe valence in CaFe_2As_2 under pressure ”
 - Bad: “Understanding superconductivity in superconductors”

- Is it thesis related? Is there a deadline?
 - Will push your proposal up if scores are close

- Fill in the abstract. Do not just upload a PDF document!
 - More work for reviewer.

- Do upload a publication from previous work (include previous proposals).
 - Shows you made good use of beam time. Becoming more important.
 - Do not upload a 20 pages of supplemental information (figures often help, couple of plots with text OK)

Proposal: Experimenters page

General Experimenters Abstract Beamtime Request Questions Review Panel

Proposal : GUP-10325

Spoke person: [Find](#)

First Name : Last Name

Phone: Email Badge

Institution:

Mailing Address:

Experimenters Coming to APS:

Badge	First Name	Last Name	Affiliation	Phone	Email	Delete
Find						
Find						
Find						
Find						

Experimenters Not Coming to APS:

Badge	First Name	Last Name	Affiliation	Phone	Email	Delete
Find						
Find						
Find						
Find						

Previous Page Next Page

Pressing SAVE will allow you to save this proposal and continue to make changes. Notifications will not be sent.

Pressing SUBMIT will save this proposal AND notifications will be sent to the APS. No changes can be made thereafter.

Proposal # : 10325

- Use the “find” feature
- List everyone involved in experiment
- Even theorists are useful

Experiment Description

General Experimenters Abstract Beamtime Request **Questions** Review Panel

Proposal : GUP-10325

Please specify the funding source(s) for your proposed research:

<input type="checkbox"/> DOD (specify)	<input type="checkbox"/> DOE, Office of Basic Energy Sciences	<input type="checkbox"/> DOE, Office of Biological and Environmental Research
<input type="checkbox"/> DOE, Other (specify)	<input type="checkbox"/> Foreign (specify)	<input type="checkbox"/> HHIH
<input type="checkbox"/> Howard Hughes Medical Institute (HHMI)	<input type="checkbox"/> Industry	<input type="checkbox"/> NASA
<input type="checkbox"/> NIH	<input type="checkbox"/> NSF	<input type="checkbox"/> Other U.S. Government
<input type="checkbox"/> USDA	<input type="checkbox"/> Other (specify)	Specify Other: <input type="text"/>

What is the scientific or technical purpose and importance of the proposed research? (limit : 500 words) ←

Why do you need the APS for this research? (limit : 100 words)

Why do you need the beamline you have chosen? (limit : 100 words)

**Note
guidance!**
Don't write one
sentence or
1000 words.

Experimental Details

- Give background information why it is important.
 - Science at facilities is very diverse. Reviewer is not necessarily an expert on your subject.
 - @ APS each committee gets ~60 proposals each cycle (~700 total/cycle)
- Clearly state what you want to measure and how
 - Give details. Temperature range, X-ray Energy, Sample geometry
 - What sample characterization has been done already? (XRD, SEM, etc.)
 - Reviewer needs to judge if experiment is feasible
 - *Does x-ray energy match laser penetration depth*
 - *% of dilute atoms OK for fluorescence measurements*
- Why use x-rays or neutrons?
 - Neutron vs. X-rays
 - TEM, Mössbauer, Laser Raman, etc.
- Justify the amount of beam time requested (ask instrument scientist!)

Beamtime Request

General Experimenters Abstract **Beamtime Request** Questions Review Panel

Proposal : GUP-10325

Rapid Access Description Make New Request 3rd

Total 8-hour shifts requested for the LIFE OF THE PROPOSAL

Total 8-hour shifts recommended by the Proposal Review Panel for the LIFE OF THE PROPOSAL : not available

Total shifts used to date: 0

Number of the shifts remaining: not available

For which scheduling period are you applying? Status :

Techniques Required:

Choice Of Beamline:

Please select the instrument based on your beamline selection:

- For 1st beamline
- For 2nd beamline
- For 3rd beamline

Any appropriate beamline

Number of 8-hour shifts requested for THIS scheduling period

Minimum number of usable shifts per visit:

Do you have specific scheduling requirements ?

What equipment is required ?
What equipment will you bring ?

Please list any new publications resulting from your work at the APS.

Describe the progress made during your most recent beamtime. (2000 characters including spaces)

Unacceptable Dates (MM/DD/YYYY)

From	To
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

Previous Page Generate Report Next Page

Pressing SAVE will allow you to save this proposal and continue to make changes. Notifications will not be sent. Save

Pressing SUBMIT will save this proposal AND notifications will be sent to the APS. No changes can be made thereafter. Submit

Proposal #: 10325

- Proposals are valid for two years, but need to put in beamtime request each cycle.
- Chose multiple beamlines.
 - SAXS (12-ID, 5-ID, 15-ID)
 - XAFS (20-BM, 10-ID, 12-BM)
 - General Diffraction
- Don't list only one week that you can come. Holidays?
- Special sample environment / detectors will place more constraints on schedule.
 - GE amorphous Si detector
 - Magnet
 -

Ratings for APS Proposals

Table 1. Definition of Ratings Used in Reviewing General User Proposals

1 - Extraordinary	The proposal involves highly innovative research of great scientific importance. Proposed research will significantly advance knowledge in a specific field or scientific discipline. Considerable societal relevance is demonstrated. The radiation characteristics of the APS are highly desirable for the success of the proposed work.
2 - Excellent	The proposed research is of high quality and has potential for making an important contribution to a specific field or scientific discipline. The work is cutting edge and is likely to be published in a leading scientific journal. The radiation characteristics of the APS are important to the success of the proposed work.
3 - Good	The proposed research is near cutting-edge and likely to produce publishable results. Impact on a specific field or scientific discipline is likely. Synchrotron radiation is essential to accomplish the intended goals of the research. The proposed work will greatly benefit from access to the APS.
4 - Fair	The proposed research is interesting but may not significantly impact a specific field or scientific discipline. Publication may or may not result from this research. Synchrotron radiation is required, but the proposed work could be performed at other facilities.
5 - Poor	The proposed research is not well planned or is not feasible. Results would not make important contributions to fundamental or applied understanding, and work is not likely to result in publication. The need for synchrotron radiation is not clear.

APS proposals are rated on a scale from 1 to 5

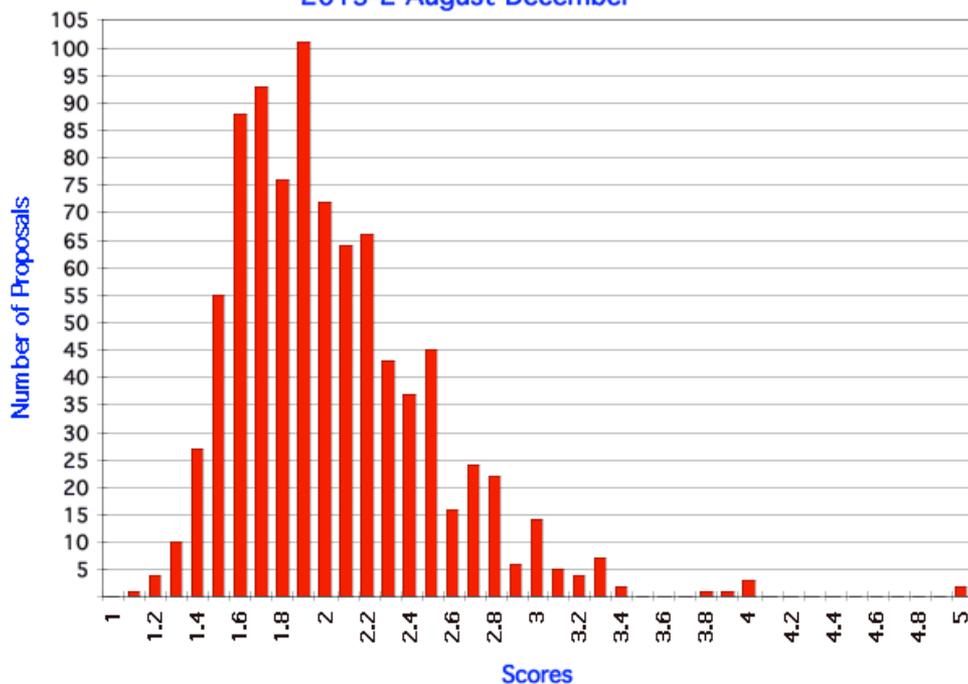
Average score is ~2.2

Cut off score for receiving beam time varies by beamline (1.5 - 2.2)

Proposal “**ageing**” (score improves by 0.2 each cycle it does not receive time). This is needed for getting time at some oversubscribed beamlines, so long-term planning is needed. But you have to remember to request beamtime again for every cycle.

ALS provides cutoff scores – Helps you know what to expect

Distribution of Proposal Scores for General Science Proposals
All Beamlines
2013-2 August-December



Beamline cutoff scores

Beamline	% Beam Time Allocated / Requested	Cutoff Score
1.4 (IR)	47	1.97
2.1 (NCXT)	0	--
4.0.2 (EPU)	24	1.73
4.0.3 (Merlin)	100	2.15
5.3.2.2 (Polymers XAFS)	34	1.80
5.4 (IR)	52	2.20
6.0.1 (Femtosecond)	78	1.96
6.0.2 (Femtosecond)	41	1.64 harder
6.1.2 (Soft X-Ray Microscopy)	46	2.13
6.3.1 (Materials Sciences)	23	1.80
6.3.2 (Calibration and Standards)	100	--
7.0.1 (XPS, SXF, SPEM)	--	--
7.3.3 (SAXS)	48	1.87
8.0.1 (SXF)	22	1.70
8.3.2 (Tomography)	50	2.16 easier
9.0.2 (Chemical Dynamics, Coherent Imaging)	55	2.32
9.3.2 (APSD/AMC, High-Pressure XPS)	47	2.08
10.0.1. (HERS/AMO)	27	2.08
10.3.2 (Micro XAFS)	45	2.05
11.0.1 (Magnetic Microscopy, Spectromicroscopy; PEEM3)	23	1.94
11.0.2 (Molecular Environmental Sciences, STXM, ambient pressure XPS)	17	1.63 harder
11.3.1 (Small Molecule Crystallography)	55	1.91
12.0 (ARPES)	15	1.85
12.2.2 (High Pressure)	43	1.94
12.3.2 (Microdiffraction)	51	2.18 easier
**Total allocation	37.4	

**Total number of beam time shifts, for all beamlines, requested by general users: 11531
Total number of beam time shifts, for all beamlines, allocated to general users: 4307.

Tips

- Give a concise explanation of this specific proposal
 - Provide background on importance (i.e., “bigger picture”)
 - State clearly and exactly what you are going to measure and why.
 - *Reviewer want so assess likelihood of success.*
- Include relevant details to experiment but do not get too verbose
 - Reviewer needs to judge not only scientific importance, but also if the experiment is feasible and if you are asking for the right instrument.
- If you are a first time user, talk to the local contact/instrument scientist.
 - Find out about details of the instrument, typical measuring times...
 - Over-subscription rate? Can a less popular instrument do the same measurements?
 - Send them the proposal ahead of time and ask for advice.
Collaborate?
- If you have previous results from other experiments include them!
 - Home, other institution, previous experiment.
 - Sample characterization.
- Take advantage of proposal ageing. **Plan ahead!**

Several common pitfalls

- Proposer assumes committee is familiar with their specialty.
- Proposer writes large general vague proposal asking for multiple weeks of time. Better to write a shorter proposal with a well defined objective. Be realistic with beam time request.
- Proposer submits 2 (or more) similar proposals for related materials thinking that multiple proposals increases chances.
- Proposal deadline (for next cycle) is before scheduled beam time this cycle.

Common Reviewer comments:

- “Proposers could improve their score by including more experimental details, attaching previous results and expanding on the purpose and importance of the research.”
- “Hasn't the proposed research been published previously?”
- “We do not feel that granting 20 shifts/cycle for 2 years is consistent with the history of publication of this work.”
- “Proposer should perform initial characterization with lab sources or TEM.”

After submission

- Allow time for review and revisions
- Expect feedback several weeks from the call close
- Be ready to schedule experiment if approved
 - Identify participating team members
 - Respond to facility access approval information
 - Facilitate execution of user agreements
 - Complete required training
 - Confirm sample availability and description and laboratory needs
- Consider reviewer comments if not approved and plan to resubmit this proposal or a new proposal in the next call. Opportunities (# of facilities and beamlines/facility) continue to grow.

Join SNS HFIR User Group (SHUG)

- Chartered 1998
- Open to individuals interested in using SNS and HFIR
- Provides input to management on user concerns
- Serves as a forum for keeping the user community informed
- Acts as an advocacy group for neutron scattering science



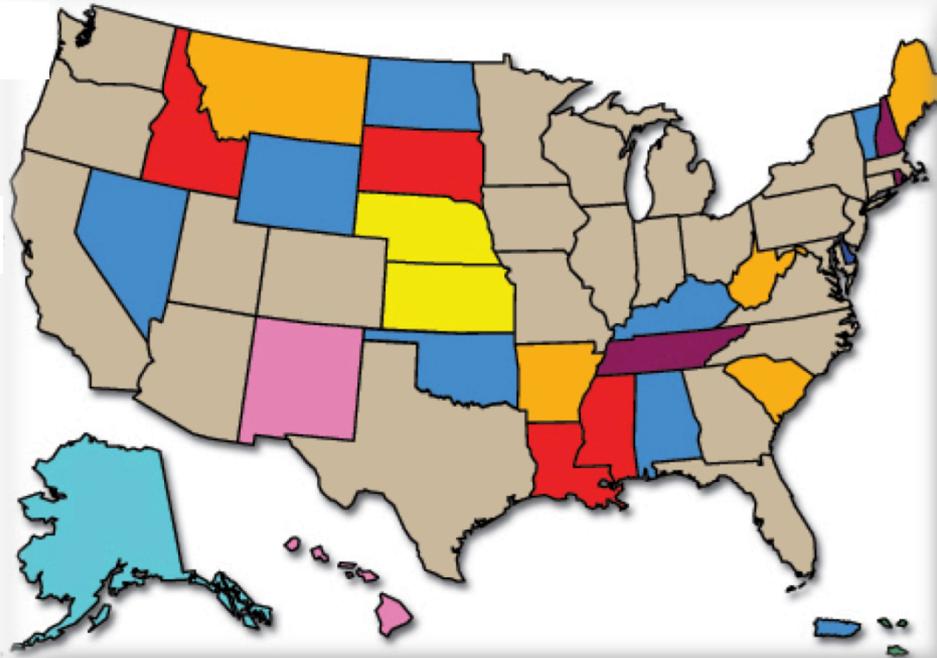
ORNL's Neutron Scattering Facilities

HFIR and SNS

- Numerous opportunities for collaboration
 - Become a user
 - Join SNS/HFIR User Group (SHUG)
 - Have your friends and colleagues apply to the National School on Neutron and X-ray Scattering
 - Attend workshops and conferences
 - Seek EPSCoR grants
 - <http://www.nsf.gov/div/index.jsp?org=EPSC> and
 - <http://www.sc.doe.gov/BES/EPSCoR/about.html>
 - Promote ORISE internships, fellowships, and research participation programs <http://orise.ornl.gov/sep/index.htm>
 - Bring student groups to ORNL
 - Invite ORNL scientists to your campus

Seek EPSCoR Grants

- EPSCoR State Institutions are eligible for grants to support research
 - <http://www.nsf.gov/div/index.jsp?org=EPSC>
 - <http://www.sc.doe.gov/BES/EPSCoR/about.html>
- Travel support for users from UT-ORNL Joint Institute for Neutron Sciences (JINS). Contact Takeshi Egami at egami@utk.edu



Office of Science Early Career Research Program ***(for your future consideration – very good for tenure)***

- **Purpose:** To support individual research programs of outstanding scientists early in their careers and to stimulate research careers in the disciplines supported by the Office of Science
- **Eligibility:** Within 10 years of receiving a Ph.D., either untenured academic assistant professors on the tenure track or full-time DOE national lab employees (no postdocs)
- **Award Size:**
 - University grants \$150,000 per year for 5 years to cover summer salary and expenses
 - National lab awards \$500,000 per year for five years to cover full salary and expenses
- **FY 2010 (Inaugural Year) Results:**
 - 69 awards funded via the American Recovery and Reinvestment Act
 - 1,750 proposals peer reviewed to select the awardees
 - 47 university grants and 22 DOE national laboratory awards
 - Awardees are from 44 separate institutions in 20 states
- **FY 2014 Application Process:**
 - Mandatory pre-applications due September 5, 2013.
 - Full applications from those encouraged to submit are due November 19, 2013.

<http://science.energy.gov/early-career/>

Scientific User Facilities – (mostly from Pat Dehmer presentation)



BESAC evaluation February 2003
Report released late 2003

Available at
www.science.energy.gov/bes/archives/plans/FFS_10NOV03.pdf

- Under construction at the time of the evaluation
 - Spallation Neutron Source operating
 - 5 Nanoscale Science Research Centers operating
 - SSRL (SPEAR3) upgrade operating

- Facilities underway since the evaluation
 - Transmission Electron Aberration Corrected Microscope operating
 - Linac Coherent Light Source operating
 - National Synchrotron Light Source - II construction

- Facilities rated longer-term priority at the time of the evaluation
 - Spallation Neutron Source power upgrade (CD-0 signed)

 - Spallation Neutron Source 2nd target station
 - Advanced Light Source upgrade
 - Advanced Photon Source upgrade CD-? signed

- What's next in our planning?
 - Ongoing BESAC Future Science Needs and Opportunities Evaluations

Next Generation Light Source is being Debated

BESAC = Basic Energy Sciences Advisory Committee

<http://science.energy.gov/bes/besac/reports/>

Report of the BESAC Subcommittee on Future X-ray Light Sources

Approved by the Basic Energy Sciences Advisory Committee on July 25, 2013

Grand Challenge Science Opportunities

An exciting window of opportunity exists for the U.S. to provide a revolutionary advance in x-ray science by developing and constructing an unprecedented x-ray light source. **This new light source should provide high repetition rate, ultra-bright, transform limited, femtosecond x-ray pulses over a broad photon energy range with full spatial and temporal coherence. Stability and precision timing will be critical characteristics of the new light source.**

- **Free Electron Laser (FEL)?**
- **“Ultimate” storage ring?**
- **Energy Recovery Linac (ERL)?**

Next Big Machine – Soft XFEL?

APS/ESRF Upgrades
MAX IV Low-emittance lattice

Continue research development?

Impact of large Scientific User Facilities has grown significantly in the past ~25 yrs. They now represent more than 50% of BES budget and growth will likely continue. They enable powerful new techniques, but researchers (you) have to do the science.