



U.S. DEPARTMENT OF
ENERGY

Office of
Science

Creating an Office of Science User Facilities User Projects/Experiments Database

NUFO Annual Meeting

April 21, 2015

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Senior Science and Technology Advisor

DOE Office of Science

Topics

- Creation of a projects/experiments database
- Updates to our website
- News of note from DOE HQ
- Future activities



Please ask
questions!



The DOE Office of Science Today

~\$5 billion per year

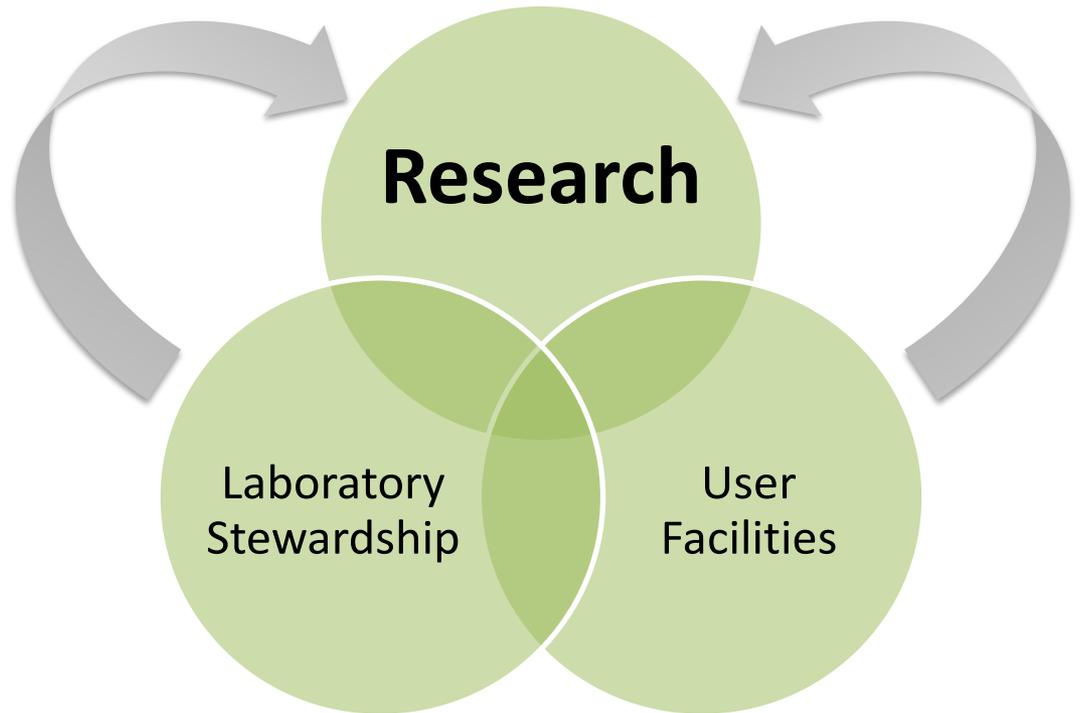
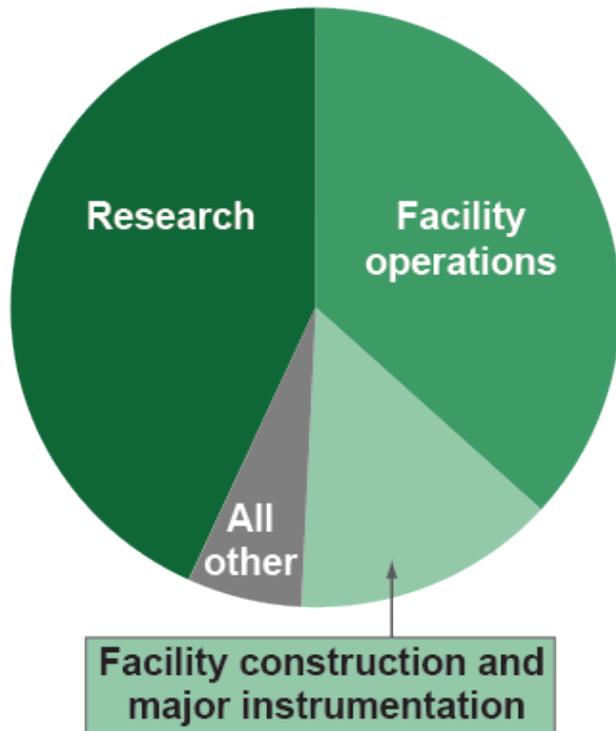


- **25,000** Ph.D. scientists, graduate students, undergraduates, engineers, and technical staff supported at more than **300** institutions in all 50 States and DC through competitive awards
- **27** scientific user facilities serving more than **33,000** users each year
- **100** Nobel Prizes during the past **6** decades—more than **20** in the past **10** years

The undulator hall at the Linac Coherent Light Source, SLAC, 2011.

Delivering science to advance the DOE mission

FY 2014 appropriations
\$5.13 billion



Current picture:

We have data on our awards but nothing on our user facility projects/experiments

Programs Laboratories **User Facilities** Universities Funding Opportunities Discovery & Innovation News About

You are here: SC Home » Funding Opportunities » Award Search

Funding Opportunities

Funding Opportunities Home

Grants & Contracts Support

Award Search

Find Funding

Early Career Research Program

Statement on Digital Data Management

Acknowledgements of Federal Support

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Office of Science
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585
P: (202) 586-5430

Award Search

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Awards

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SC-21.1, ASCR Computational Science Research and ... provides 189 financial awards as of 10/14/2014

Register #	Title	Institution / Business	State	Amount	Start Date	End Date	Action	Principal Investigator	Program Manager
ER26153	Exascale Virtualized and Programmable Distributed Cyber Resource Control	Raytheon BBN Technologies Corporation	MA	\$1,199,870.00	9/1/2013	8/31/2016	New	Lauer, Gregory	Ndousse-Fetter, Thomas
ER26056	Institute for Sustained Performance, Energy and Resiliency	University of Southern California	CA	\$1,837,500.00	9/1/2011	8/31/2016	New	Lucas, Robert	Susut, Ceren
ER26070	Scalable Data Management, Analysis and Visualization (SDAV) Institute	Kitware Inc.	NY	\$1,250,000.00	2/15/2012	2/14/2017	New	Geveci, Berk	Susut, Ceren
ER26135	Combinatorial Algorithms to Enable Scientific Computing on Multithreaded Architectures	Purdue University	IN	\$451,534.00	7/1/2013	6/30/2016	New	Pothen, Alex	Pao, Karen
ER26090	DEGAS: Dynamic Exascale Global Address Space Programming Environments	The Regents of University of California	CA	\$1,050,000.00	9/1/2012	8/31/2015	New	Demmel, James	Sachs, Sonia

Possible future picture:

An integrated view of awards and user projects/experiments information

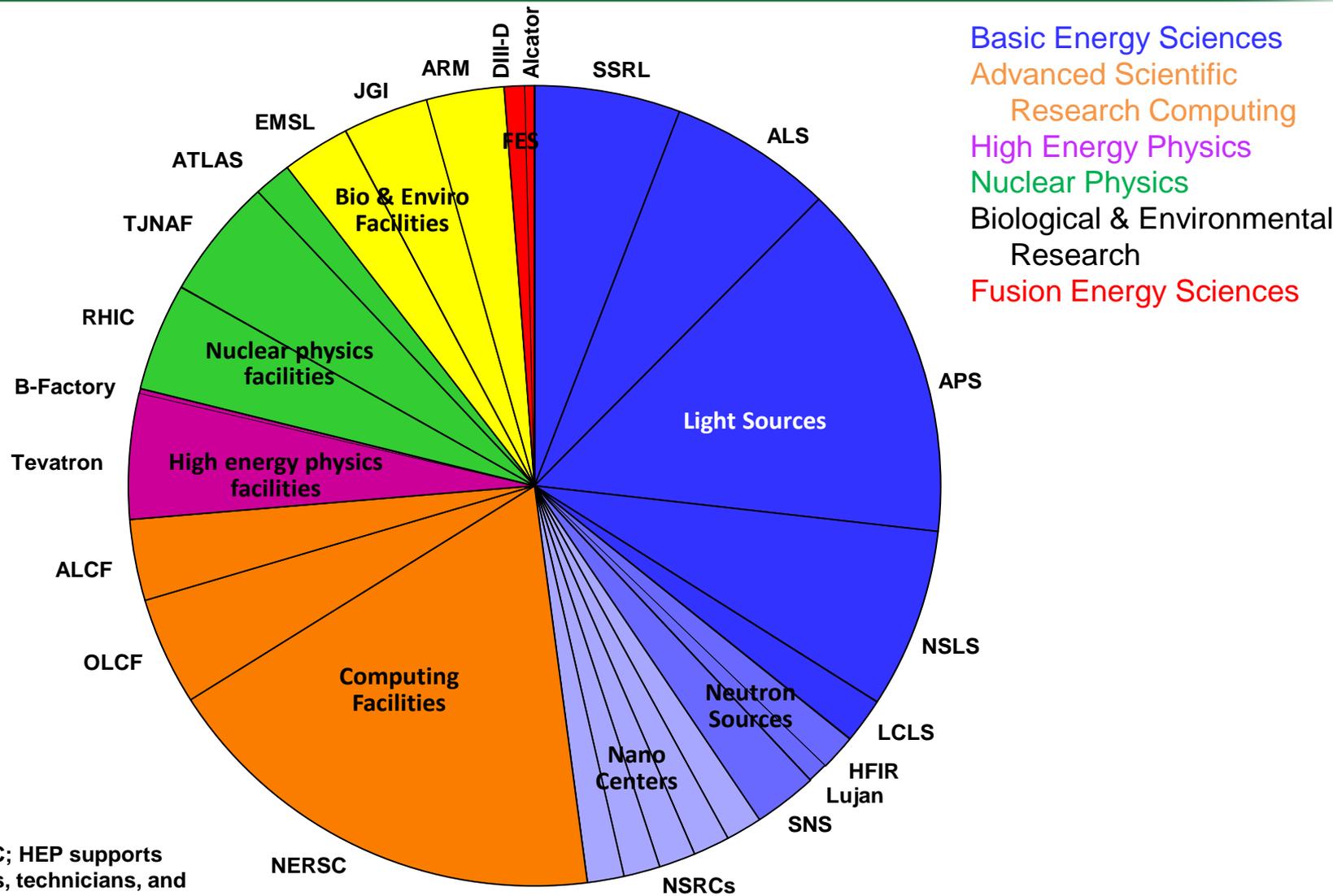
The screenshot displays a web interface for the SC Home User Facilities. At the top, a navigation bar includes links for Programs, Laboratories, User Facilities (selected), Universities, Funding Opportunities, Discovery & Innovation, News, and About. Below the navigation bar, a breadcrumb trail reads "You are here: SC Home » User Facilities »". The main content area features a large blue header for "User Facilities". On the left side, a vertical menu lists various facility categories: User Facilities Home, ASCR User Facilities (highlighted), BES User Facilities, BER User Facilities, FES User Facilities, HEP User Facilities, NP User Facilities, User Facilities Frequently Asked Questions, and Science Highlights. The main content area is titled "User Projects/Experiments Search" and includes a search form with a "Print" button, a "Text Size: A A A" option, a "Feedback [+]" button, and a "Share Page" dropdown menu. At the bottom left, a green box contains contact information for the Office of Science, U.S. Department of Energy, including the address (1000 Independence Ave., SW, Washington, DC 20585) and phone number (P: (202) 586-5430).



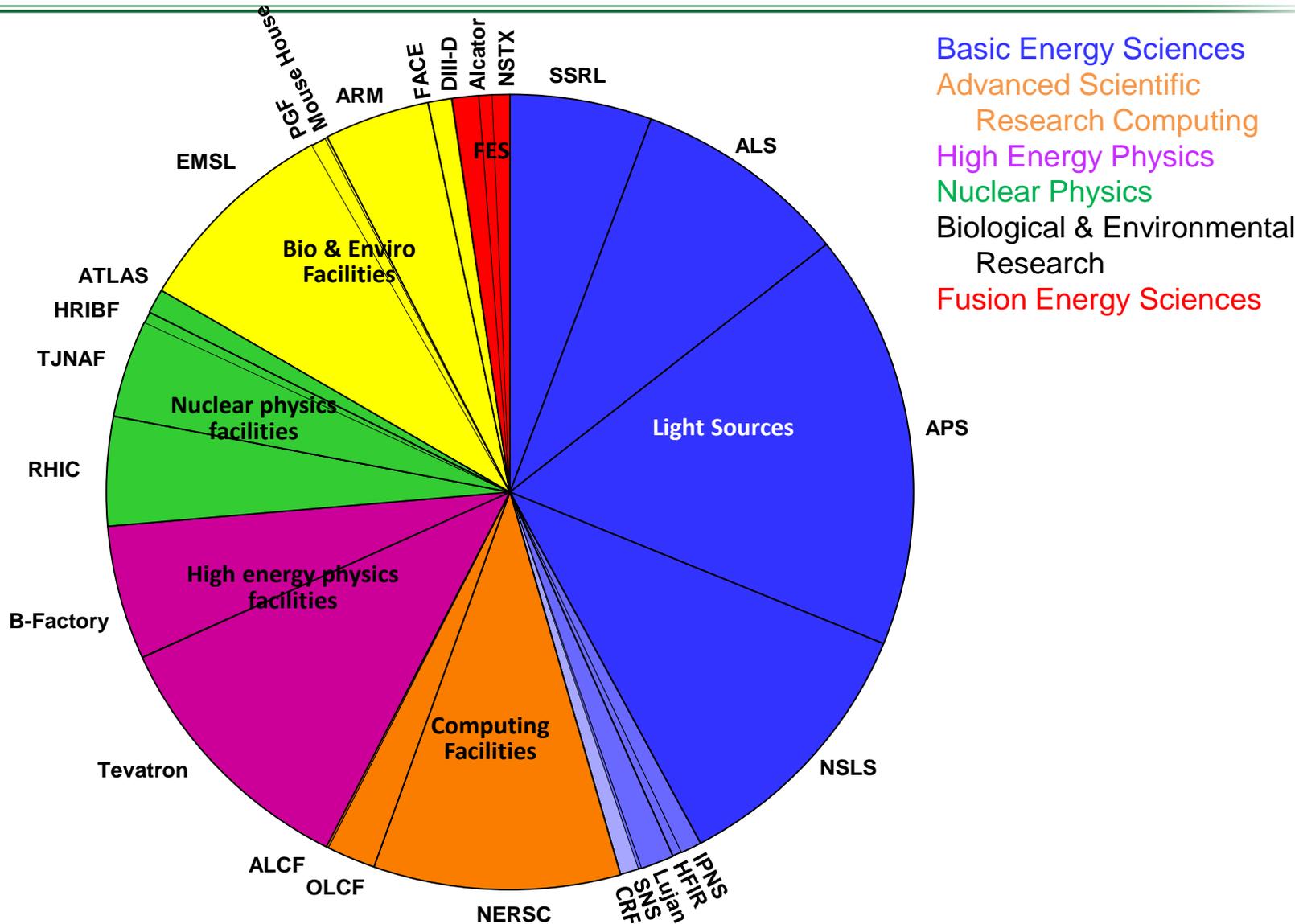
Why do this?

To take control of our story.

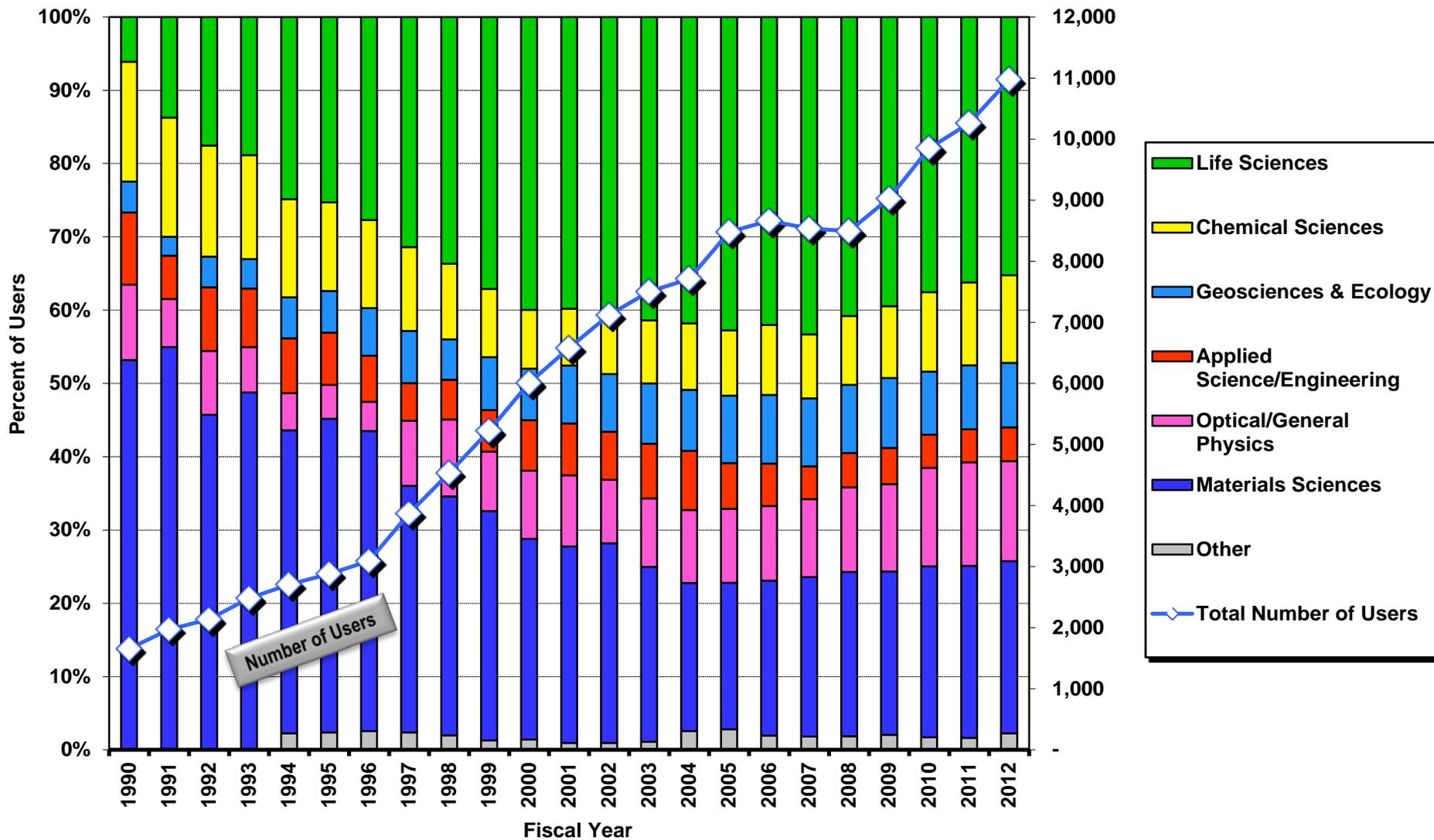
Distribution of Users at the SC Facilities 2013



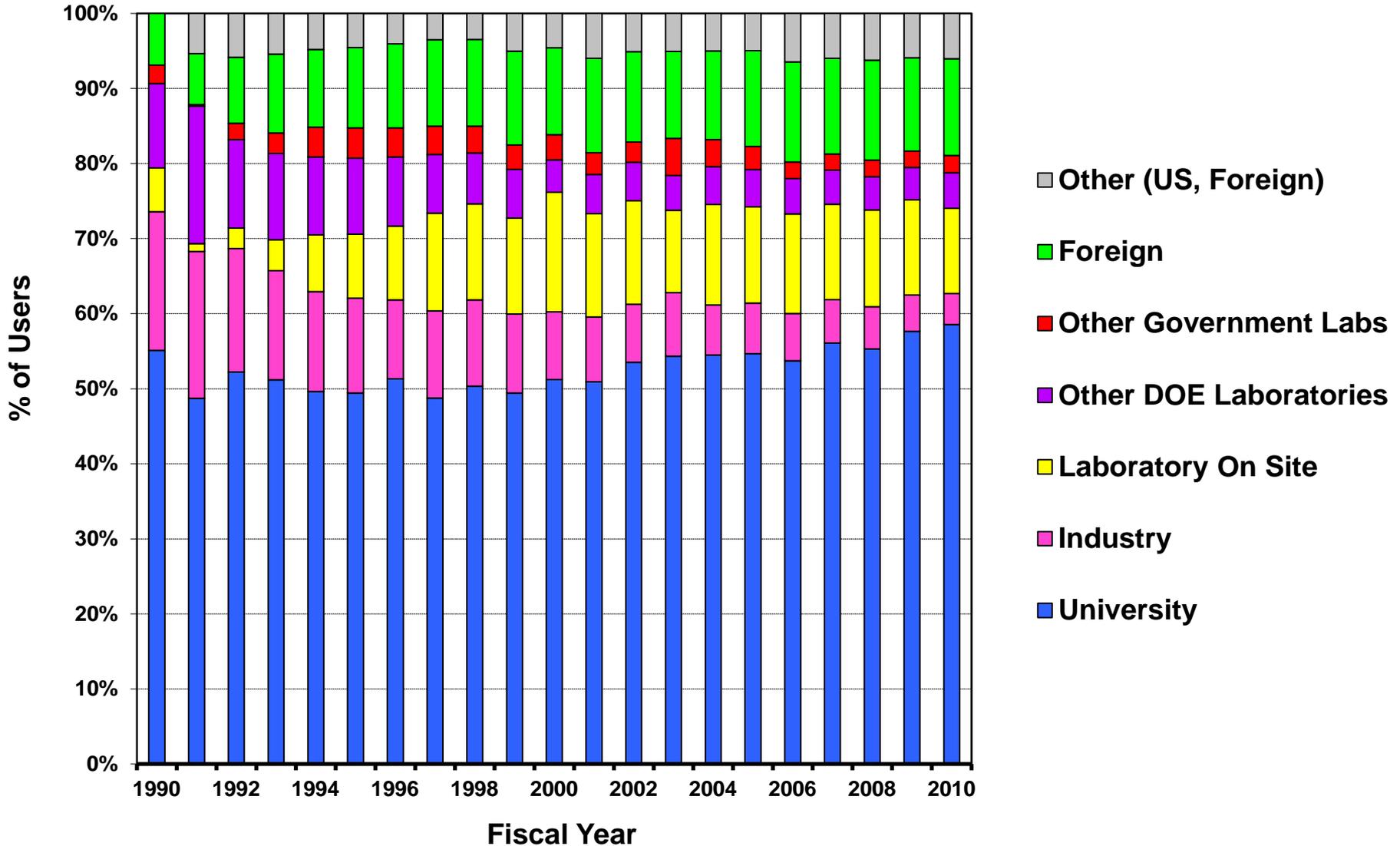
Distribution of Users at the SC Facilities 2007



Users by Discipline at the X-Ray Light Sources



Users by Employer at the Light Sources

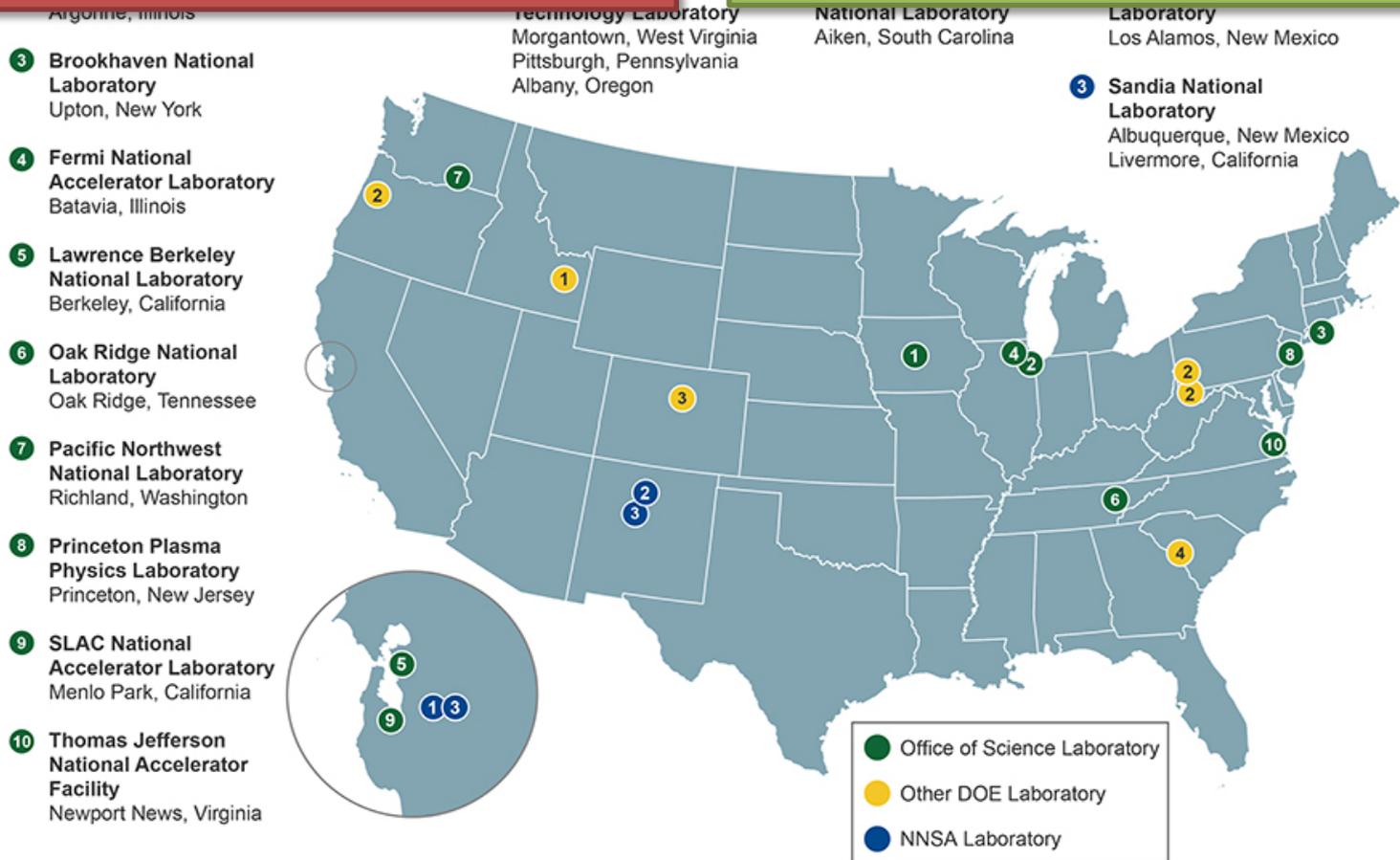


Change perception of the national laboratories

“You have a national laboratory and we don’t.”



“I have constituents who depend on your lab.”



An email of note

From: Julie Groeninger
Sent: Thursday, July 31, 2014 10:22 AM
To: Brown, Benjamin
Subject: DOE Facilities - University user list?

Hi Ben,

I don't think we've had the opportunity to meet, but **I am the Associate Director of Government Affairs for Princeton University and the "Department of Energy Lead" at the Association of American Universities this year** (I work closely with Toby Smith). One of my goals for this year was/is to put together some data on the usage of DOE scientific facilities by university-based researchers and disseminate that information to AAU (and probably APLU) member universities.

I have found that a lot of my government affairs colleagues zone out when discussion turns to the national labs/user facilities because they don't realize how much their faculty members rely on/utilize them for their research.

A comprehensive list of users would (hopefully) help get that message across. I don't really know where to start when it comes to this project. . . but I understand you've been working to put together a more comprehensive list of users, so I thought checking in with you might be a good start.

I would be happy to chat on the phone or meet to discuss further. . . but in the meantime, an update on your efforts would be helpful and much appreciated. I would be happy to help in any way I can. I look forward to hearing from you!

Julie M. Groeninger
Associate Director of Government Affairs
Princeton University

Database policy consideration process

Aug 2013 Memorandum: Defining and counting users for the SC user facilities

Sep 2013 – Mar 2014 SC User Facilities Working Group held discussions about a corporate database and developed a strawman proposal

Apr 2014 SC sought formal feedback from the user facilities via data call

- Solicited feedback on the potential for a corporate database and a notional set of reporting categories
- All 31 SC user facilities responded to the call.

May – Aug 2014 Analyzed the responses and wrote a summary report with recommendations

Sep 2014 Briefings to SC working group and SC Acting Director

Oct 2014 Final vetting

Nov 2014 **Guidance and data call issued**

Jan 2015 Data call responses received



Proposal for an Office of Science User Facility Users/Projects Database

Summary Report on the Data Call, "Corporate Reporting of User Statistics and Promoting User Acknowledgement of User Facilities," Issued April 2014



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Proposed reporting categories

Reporting category	Viability	Determination
user name	Viable	Include.
user type (On-site, Remote, Data)	Viable	Include. Defined in August 2013 memorandum.
home institution name	Viable	Include. Standardized list in development
employment level	Viable	Include. Will use taxonomy currently used by BES.
project type (proprietary, non-proprietary)	Viable	Include.
project title	Potentially viable	Include.
primary source(s) of project support	Potentially viable	Include.
project primary scientific discipline	Potentially viable	Exclude.
home <u>institution</u> street address, including 5-digit ZIP code	Potentially viable	Include.
home <u>institution</u> ZIP+4	Not viable	Exclude. Code-based solutions exist to determine ZIP+4 from street address.
user is a U.S. citizen (yes/no)	Viability TBD	Include. Inclusion will not trigger privacy policy concerns.
country of citizenship	Viability TBD	Exclude. Inclusion will trigger privacy policy concerns.
user gender	Viability TBD	Exclude.
user age or age range	Viability TBD	Exclude.
user ethnicity	Viability TBD	Exclude.



Findings from the April 2014 info call to the user facilities

- Overall, the results of the data call indicate that a database of users and user projects is viable; selection of specific data categories requires forethought.
- The most straightforward categories to collect relate to the user's basic professional information; somewhat less straightforward categories relate to the projects themselves.
- Many facilities are uncomfortable collecting user demographic information, even on a voluntary basis.
- The facilities' estimates of the human resource burden to implement a database is modest.

Project/experiments records vs. user records

- **Finding:** At several facilities, the information system used to manage proposal intake/review and project approval is separate from that for user administration; under these circumstances connecting project records to user records is not necessarily straightforward.
- **Recommendation:** SC should articulate best practices regarding traceability between proposals, approved projects, and user records.



Privacy policy

- **Finding:** Several responses spoke to the principle that users' information should not be disclosed without notice.
- **Recommendation:** Prospective users should be informed at the time of proposal submission of the manner in which their information will be used and made public.
- **Recommendation:** Headquarters should collect only information that it intends for public dissemination, and should avoid the collection, even unintentionally, of any information that, alone or in aggregate, is Personally Identifiable Information.
- **Finding:** Creation of a user projects/experiments database will not require filing of a new Privacy Impact Assessment.

Proprietary projects/experiments

- **Finding:** The responses revealed significant concern by some facilities at the prospect of required public disclosure of information related to proprietary projects.
- **Recommendation:** SC should require users to provide a project title and/or project description suitable for public dissemination.



Standardized Lists of Institution Names

- **Finding:** The responses revealed that several of the multi-purpose SC Laboratories maintain their own standardized list of institution names.
 - NUFO has interest in creating a standardized list.
 - PAMS is also building a standardized list.
- **Recommendation:** SC should participate in continued conversations with the user facilities regarding development of a shared, standardized, and curated list of institution names.

Guidance issued November 2014

- Requested FY 2013 and FY 2014 user projects/experiments data aggregated by institution
- Issued guidance for creation of a full projects/experiments database starting with FY 2015 data



Department of Energy
Office of Science
Washington, DC 20585

November 18, 2014

TO: OFFICE OF SCIENCE ASSOCIATE DIRECTORS

FROM: PATRICIA M. DEHMER *Patricia M. Dehmer*
DEPUTY DIRECTOR FOR SCIENCE PROGRAMS
OFFICE OF SCIENCE

SUBJECT: USER PROJECTS/EXPERIMENTS DATABASE FOR THE
OFFICE OF SCIENCE USER FACILITIES

In FY 2015, the DOE Office of Science (SC) is creating a database of users and user projects/experiments¹ at SC user facilities, to be updated annually. An accompanying document provides guidance to the user facilities in their preparation of their submissions to this database.

In August 2013, SC issued the policy memorandum "Defining and Counting Users for the Office of Science User Facilities," which created a consistent framework for the collection of user statistics across the SC user facilities. In April 2014, following an informal study of the SC User Facilities Working Group, we issued a data call to all SC user facilities in order to understand the implications of collecting information from each user facility to create a merged SC-wide corporate user statistics database. The April 2014 data call asked each facility to consider the ease/difficulty of reporting specific categories of information on each user project/experiment, to estimate the human resources required for such an undertaking, and to provide general feedback on the



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FY 2015 users/projects data collection categories

- Home institution name, street address, ZIP/postal code
 - Industrial entity?
 - A small business?
- User name
- User primary source(s) of project/experiment support
- User type: [On-site or remote or data]
- User employment level [Undergrad or Grad student or Postdoc or Faculty/Professional staff/Research scientist or Retired/Self-employed]
- User is a U.S. citizen? (This information will not be made public)
- Project/experiment title
 - Proprietary?
 - [DOE industrial activity taxonomy]



**Thank you for providing
your user statistics!**

I have a surprise for you.

Summary statistics for the FY 2013/2014 data call

	FY 2013 (excluding Lujan and Fermilab)	FY 2014 (excluding Lujan)
Users	30,463	33,671
Entries	5,520	6,023
Institutions	2,196	2,306
U.S. Institutions	1,013 (46.1%)	1,020 (44.2%)
Users from U.S. Institutions	25,108 (82.4%)	27,162 (80.7%)
Industrial Institutions	391 (17.8%)	421 (18.3%)
Users from Industry	1,449 (4.8%)	1,664 (5.0%)
Small Business Institutions	147	151
Users from Small Businesses	384	393

Percentages are with respect to the total number of users or institutions.

Industrial taxonomy

Primary Category	Secondary Category
Energy - Fuels	Fossil fuels - upstream
	Fossil fuels - downstream
	Biofuels
	Distribution of Fuels
Energy Storage	Other (please insert category)
	Batteries
Energy Efficiency	Other (please insert category)
	Manufacturing
Energy - Transportation	Buildings
	Other (please insert category)
	Engines
	Aerodynamics
Power-Thermo-electric (non-nuclear)	Other (please insert category)
	Turbines
	Emissions reduction
	Sensors & Controls
Power-Nuclear	Other (please insert category)
	Light water reactor
	Small modular reactor
	Materials and components
Power-Low Carbon (non-nuclear)	Other (please insert category)
	Solar
	Wind
	Geothermal
	Hydro
	Fuel Cells
Power Distribution (grid)	Carbon Capture Utilization & Storage
	Other (please insert category)
	Transmission & Distribution Components
	Sensors and System Control
	Architecture
	Security
Biotechnology	Other (please insert category)
	Bioenergy related
Bioscience Applications	Other (please insert category)
	Biomedical instrumentation
	Pharmaceuticals
	Radiation exposure
Advanced Manufacturing	Other (please insert category)
	Systems integration
	New products for energy efficiency
	New processes for energy efficiency
	Other (please insert category)

Advanced Materials	Structural materials
	Damage resistance
	Superconductors
	Semiconductors/PV
Physics Applications	Materials characterization
	Energetic Materials
	Other (please insert category)
	Accelerators
Electrical Systems and Engineering	Detectors
	Semiconductors/Microelectronics
	Lasers & Optics
	Nuclear Engineering
	Plasma Physics
	System Performance Evaluation
Advanced Computation	Other (please insert category)
	Sensors and Systems
	Communications
	Industrial Controls and Systems
	Robotics & Intelligent systems
	Radiation Hardening
National Security	Other (please insert category)
	HPC – design and methods
	Modeling & Simulation Applications
	Data Analytics
	Other (please insert category)
	Cybersecurity
Earth and Environmental	Aerospace
	Defense Systems
	Rad/Chem/Bio sensors
	Imaging
	Geo-location
	Other (please insert category)
Chemical Science and Technology	Remediation
	Waste management
	Atmosphere/Climate
	Geophysics & seismology
	Water resources
	Other (please insert category)
Technical Systems Analysis	Chemical synthesis
	Catalysts
	Chemical processes
	Nuclear Chemistry
	Other (please insert category)
	Market analyses
	Systems cost analyses
	Other (please insert category)

FY 2014 category breakdown

Primary Category	Number of Entries with Primary Category Identified	Number of Entries with Secondary Category Identified	Number of Entries with Other Category Identified	Number of Users within Primary Category
Advanced Computation	66	66	7	145
Advanced Manufacturing	5	5	2	14
Advanced Materials	41	32	2	79
Bioscience Applications	42	32	1	138
Biotechnology	18	17	1	31
Chemical Science and Technology	8	6	1	10
Earth and Environment	5	4	0	5
Electrical Systems and Engineering	3	2	0	5
Energy - Fuels	2	1	0	6
Energy - Transportation	2	2	0	2
Energy Efficiency	1	1	0	2
Energy Storage	7	7	0	12
National Security	5	5	3	6
Other	2	2	1	5
Physics Applications	46	41	7	105
Power-Low Carbon (Non-Nuclear)	2	2	0	2
Grand Total	255	225	25	567



News of Note

New DOE Office of Science User Facilities Webpages

<http://science.energy.gov/user-facilities/>

A lot of credit is owed to our SC-2 intern, Mariam Elsayed!

User Facilities

[User Facilities Home](#)

User Facilities at a Glance

[All User Facilities](#)

[ASCR User Facilities](#)

[BES User Facilities](#)

[BER User Facilities](#)

[FES User Facilities](#)

[HEP User Facilities](#)

[NP User Facilities](#)

[User Resources](#)

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User Facilities at a Glance

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Each Office of Science user facility exists through investment by a program “owner” – the Office of Science program that provides funds through congressional appropriations for construction and operations. The decision to invest in a user facility emerges through long term strategic planning with the scientific community to identify the research tools that will deliver the greatest scientific impact to advance the DOE mission.

Each user facility represents a substantial commitment on the part of its sponsoring program, which provides oversight and works closely with the facility management to maximize scientific impact and productivity.



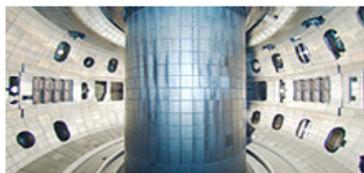
ASCR User Facilities



BES User Facilities



BER User Facilities



FES User Facilities



HEP User Facilities



NP User Facilities



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FY 2014 user statistics are now available!

<http://science.energy.gov/user-facilities/user-statistics/>

User Facilities

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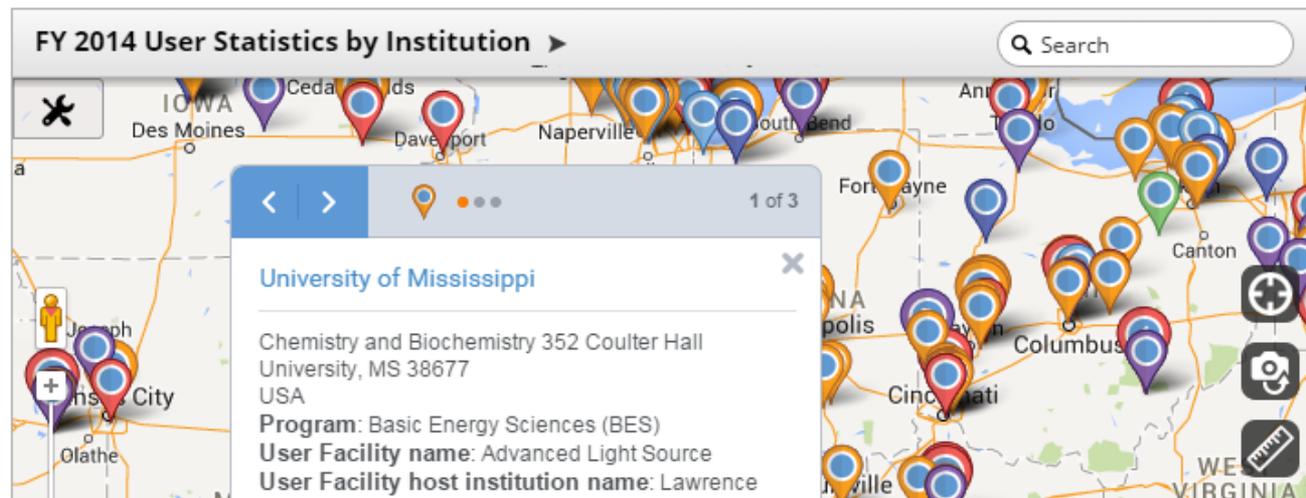
User Statistics

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The map and source data below contain information regarding FY 2014 user projects at the Office of Science User Facilities, summarized at the institutional level. For example, one may explore the data to reveal the number of users from a particular institution that used a particular user facility.

- In desktop environments, it is advised to [view the map in full screen mode in a separate browser window](#).
- The data can be grouped and filtered to narrow the displayed results. See below for usage tips and additional data resources.



Other news of note

- We have a newly designated user facility: Brookhaven National Laboratory's Accelerator Test Facility
- We are exploring the potential for newly designated HEP user facilities in FY 2016
- We have introduced new acknowledgements guidance (<http://science.energy.gov/funding-opportunities/acknowledgements/>):
For work done at an Office of Science User Facility:
The acknowledgments should include the name of the user facility and should identify the facility as “a DOE Office of Science User Facility.”
example: “This research used resources of the Oak Ridge Leadership Computing Facility, which is a DOE Office of Science User Facility.”
- DOE has a new Office of Technology Transitions

Future directions

- FY 2015 projects/experiments database
- Improving articulation of facility operations budget scenarios to OMB and the Congress
- Industrial users
- Data challenge

Questions for you:

- Do you have interest in receiving HQ policy e-bulletins listserv?
- Through how many different channels do you receive data call requests?