U.S. DEPARTMENT OF ENERGY | Office of Science

Office of Science Outreach

http://science.energy.gov/

Recorded Webinar

An Introduction to the Office of Science recorded webinar (6/11/2015), and a copy of the slides, are available at:

http://science.energy.gov/wdts/outreach/

- A guided tour of the Office of Science website
- Slides highlighting opportunities for undergraduate, graduate, and visiting faculty

Please address comments and questions to:

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U.S. DEPARTMENT OF ENERGY | Office of Science

Programs in the Office of Science / Office of Workforce Development for Teachers and Scientists (WDTS)

Opportunities for Undergraduates and Faculty at DOE Laboratories

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Why does the Office of Science (SC) sponsor internships?

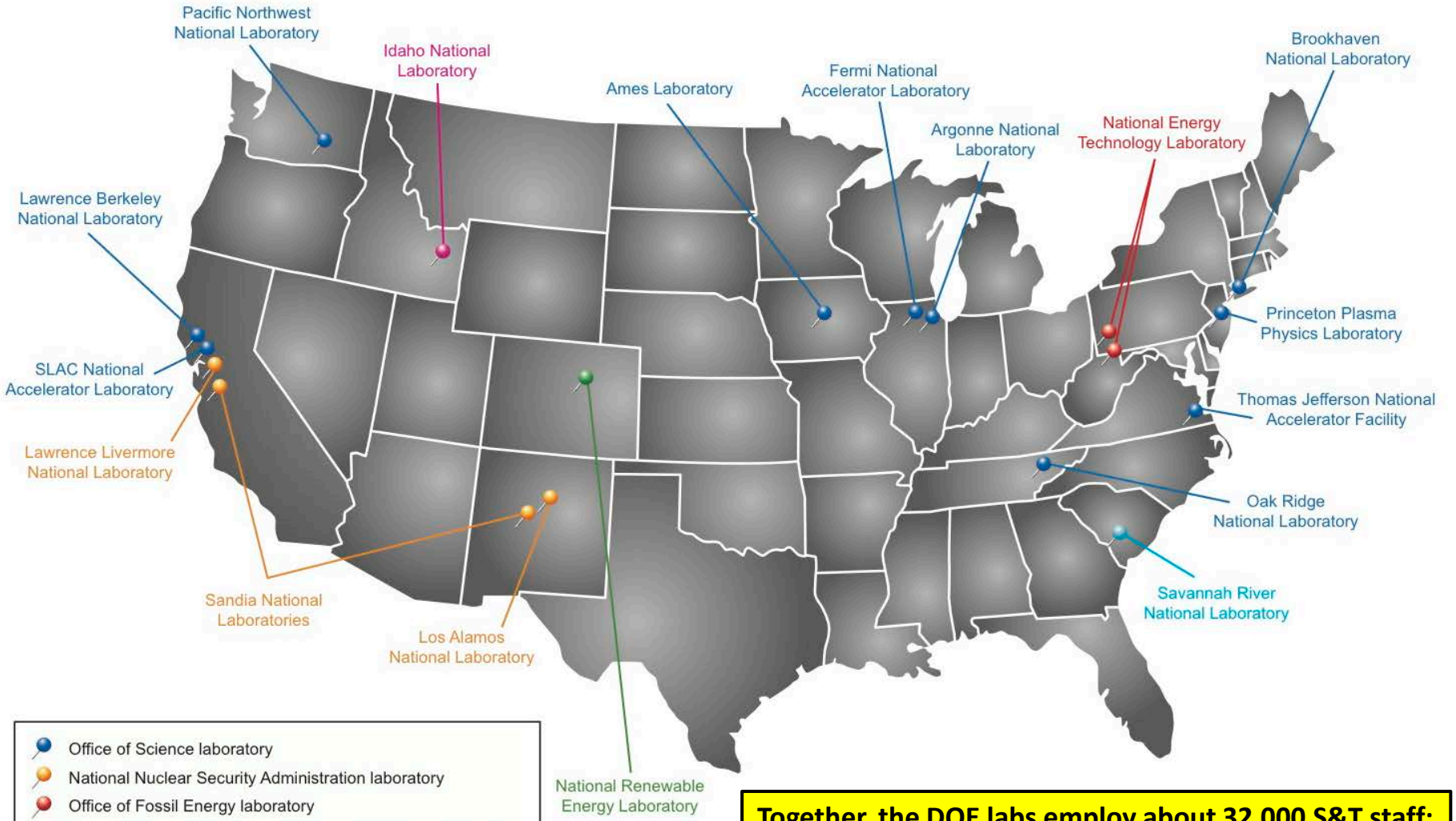
In a word… **WORKFORCE**

The Workforce Development for Teachers and Scientists (WDTS) program mission is to ensure that DOE has a sustained pipeline of science, technology, engineering, and mathematics (STEM) workers. This is accomplished, in part, through support of undergraduate internships and visiting faculty programs at the DOE laboratories, graduate student thesis research opportunities at DOE laboratories, all administered by WDTS for DOE; and Nation-wide, middle- and high-school science competitions that annually culminate in the National Science Bowl® in Washington D.C. These investments help develop the next generation of scientists and engineers required to execute the DOE mission, administer its programs, and conduct its research.

WDTS activities rely significantly on DOE's 17 laboratories and facilities, which employ more than 30,000 workers with STEM backgrounds. The DOE laboratory system provides access to leading scientists; world-class scientific user facilities and instrumentation; and large-scale, multidisciplinary research programs unavailable in universities or industry. WDTS leverages these assets to develop and train post-secondary students and educators to enhance the DOE mission.

SC sponsors and operates these programs to help sustain the DOE's scientific and technical workforce pipeline.

DOE Labs Employ >30,000 Scientists and Engineers



Together, the DOE labs employ about 32,000 S&T staff; SC labs employ about 14,000 S&T staff; many at the Ph.D. level.

SC Workforce Programs

Managed by SC's Office of Workforce Development for Teachers and Scientists (WDTS)

Mission: WDTS program mission is to ensure that DOE has a sustained pipeline of highly skilled and diverse science, technology, engineering, and mathematics (STEM) workers.

Vision: To be the standard for workforce development programs in a mission agency where "Science and Technology lie at the heart of the mission."

Current WDTS programs:

- At the DOE laboratories: Undergraduate student intern programs (one for 2/4-yr institutions and one for community colleges) and a visiting faculty program:
  - Science Undergraduate Laboratory Internship (SULI) ~750/year
  - Community College Internship (CCI) ~90/year
  - Visiting Faculty Program (VFP) ~(55-Faculty / 30-Students)/year
- Also at the DOE laboratories:
  - Office of Science Graduate Student Research Program
    - Help prepare graduate students for science, technology, engineering, or mathematics (STEM) careers critically important to the DOE Office of Science mission, by providing graduate thesis research opportunities at DOE laboratories
- Albert Einstein Distinguished Educator Fellowship
- National Science Bowl®

2015 Summer Term Summary

- 10 weeks (Summer Term) or 16 weeks (Semester Term) at a DOE host Laboratory engaged in a *research project* under the guidance of a laboratory scientist or engineer (**2016 SULI & CCI (pilot semester) program Spring Term applications are now open through Oct. 9, 2015**).

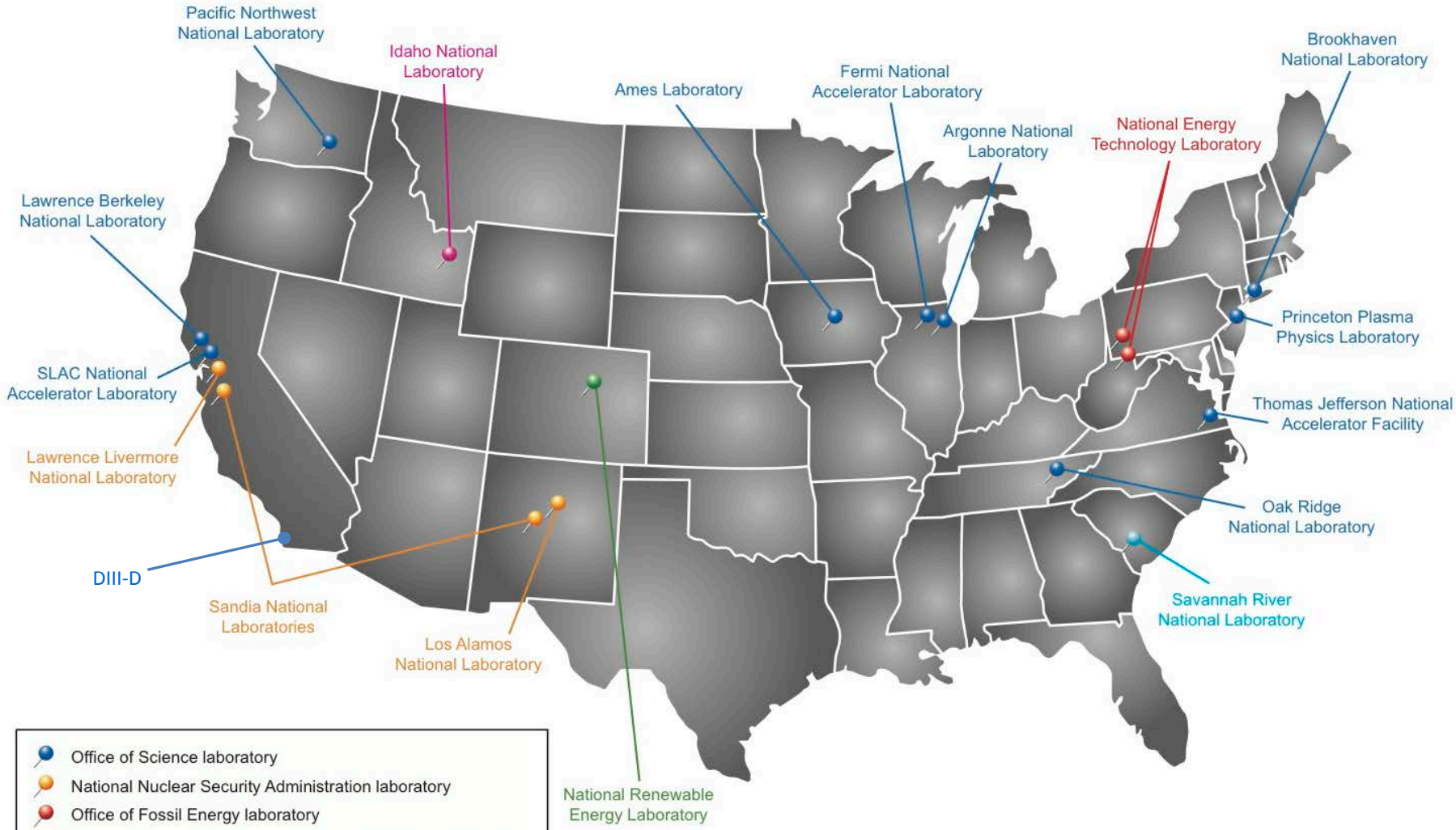
- CCI participants work on a *technical project* (10-week Summer Term & **pilot semester program at BNL, LBNL, & ORNL**) under the guidance of a laboratory scientist or engineer.

- Enrichment activities including career professional development workshops, writing and presentation skills development activities, laboratory tours, scientific lectures and seminars, *etc.*
  - *working side-by-side, you gain first-hand experience with our lab personnel, you participate in their research activities, gain valuable out-of-classroom professional skills, and heighten your interest to continue in STEM studies and pursue related careers (perhaps at a DOE lab)*

- Obligations/Deliverables include pre- and post- participation questionnaires, presentation of results, a written report (SULI and CCI have different specific requirement), *etc.*
  - *this is hard work with formalized/normalized requirements well beyond that of typical research experience opportunities*
  - *questionnaires inform us regarding what works and what does not (we do want to know)*
  - *we want to stay in touch with program participants - stay tuned*

- There are 709 2015 Summer Term SULI, CCI, & VFP internship participants (+54 faculty).

Where are undergraduate interns currently placed?



@ 16/17 DOE Laboratories (all but NETL)
& DIII-D (General Atomics, San Diego, CA)

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Office of Science Mission

The Office of Science's (SC) mission is to deliver scientific discoveries and major scientific tools to transform our understanding of nature and advance the energy, economic, and national security of the United States. SC is the Nation's largest Federal sponsor of basic research in the physical sciences and the lead Federal agency supporting fundamental scientific research for energy.

U.S. DEPARTMENT OF ENERGY | Office of Science

Office of Science Mission

The frontiers of science - discovering nature's mysteries from the study of subatomic particles, atoms, and molecules that are the building blocks of the materials of our everyday world to the DNA, proteins, and cells that are the building blocks of entire biological systems; each of the programs in the SC supports research to probe the most fundamental questions of its disciplines.

The 21st Century tools of science **-** providing the Nation's researchers with 26 state-of-the-art national scientific user facilities, the most advanced tools of modern science, enabling the U.S. to remain at the forefront of science, technology, and innovation.

Science for energy and the environment **-** advancing a clean energy agenda through fundamental research on energy production, conversion, storage, transmission, and use and through advancing our understanding of the earth and its climate; targeted investments include the three DOE Bioenergy Research Centers (BRCs), the Energy Frontier Research Centers (EFRCs), two Energy Innovation Hubs, and atmospheric process and climate modeling research.

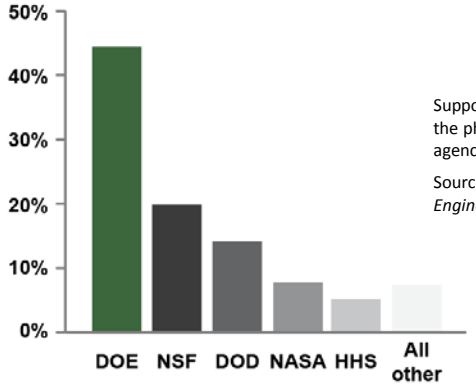
Office of Science
By the numbers

Shown is a portion of SLAC's two-mile-long linear accelerator (or linac), which provides the electron beam for the new Linac Coherent Light Source (LCLS) – the world's first hard x-ray, free-electron laser. For nearly 50 years, SLAC's linac had produced high-energy electrons for physics experiments. Now researchers use the very intense X-ray pulses (more than a billion times brighter than the most powerful existing sources) much like a high-speed camera to take stop-motion pictures of atoms and molecules in motion, examining fundamental processes on femtosecond timescales.

SC delivers scientific discoveries and tools to transform our understanding of nature and advance the energy, economic, and national security of the U.S.

Research

- Support for 47% of the U.S. Federal support of basic research in the physical sciences;
- ~22,000 Ph.D. scientists, grad students, engineers, and support staff at >300 institutions, including all 17 DOE labs;
- U.S. and world leadership in high-performance computing and computational sciences for open research;
- Major U.S. supporter of physics, chemistry, materials sciences, and biology for discovery and for energy sciences.



Support for basic research in the physical sciences by agency.

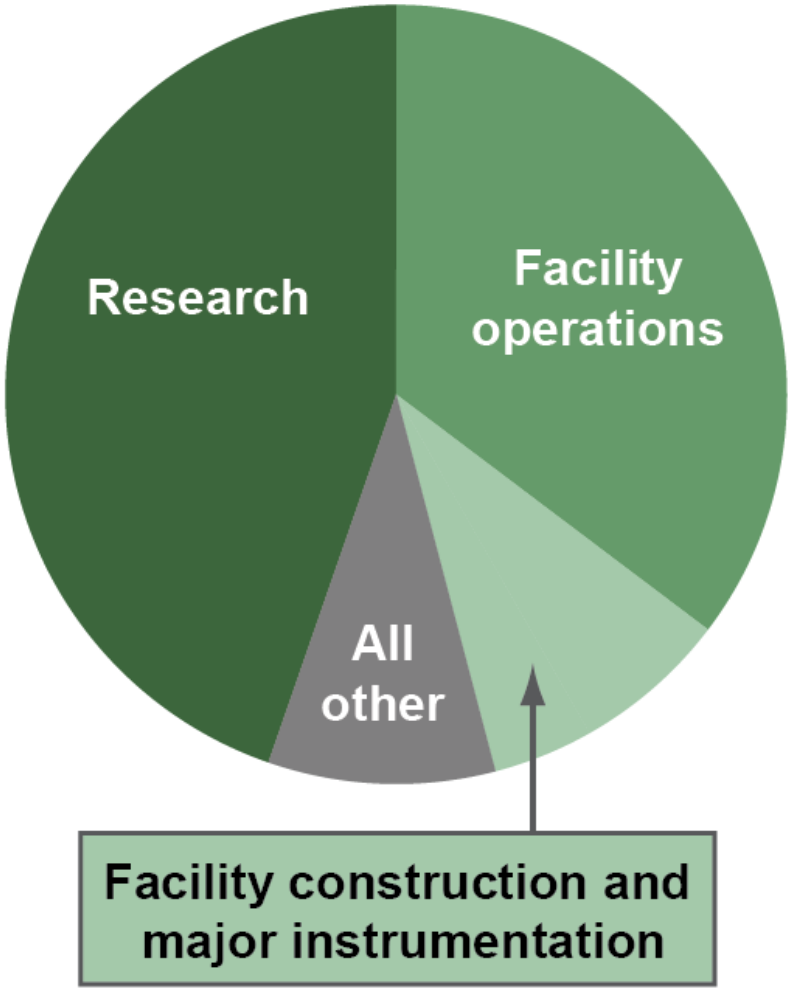
Source: *NSF Science and Engineering Indicators 2012*

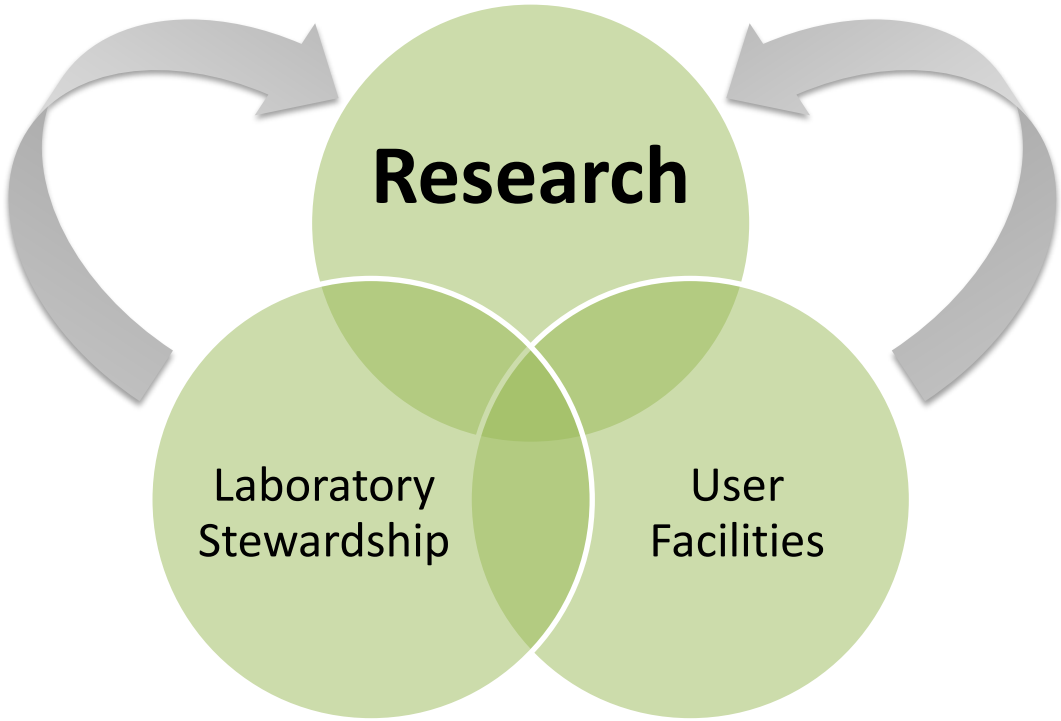
Scientific User Facilities

- The world's largest collection of scientific user facilities (aka research infrastructure) operated by a single organization in the world, used by 31,000 researchers each year.

Delivering science to advance DOE's mission

FY2015 ~$5B





The Office of Science research portfolio

Advanced Scientific Computing Research	• **Computational and networking capabilities to extend the frontiers of science and technology**
Basic Energy Sciences	• **Understanding, predicting, and controlling matter and energy at the electronic, atomic, and molecular levels**
Biological and Environmental Research	• **Understanding complex biological, climatic, and environmental systems**
Fusion Energy Sciences	• **Matter at very high temperatures and densities and the scientific foundations for fusion**
High Energy Physics	• **Understanding how the universe works at its most fundamental level**
Nuclear Physics	• **Discovering, exploring, and understanding all forms of nuclear matter**

SC Has Stewardship Responsibility for Ten DOE Laboratories

Berkeley, California
202 acres and 97 buildings
3,396 FTEs
950 students & postdocs
9,320 facility users
www.lbl.gov

Richland, Washington
346 acres and 19 buildings
4,344 FTEs
550 students & postdocs
1,733 facility users
www.pnnl.gov

Ames, Iowa
8 acres and 12 buildings
308 FTEs
158 students & postdocs
www.ameslab.gov

Wilson Hall

Batavia, Illinois
6,800 acres and 354 buildings
1,720 FTEs
55 students & postdocs
2,097 facility users
www.fnal.gov

Advanced Photon Source

Argonne, Illinois
1,517 acres and 100 buildings
3,460 FTEs
1,054 students & postdocs
6,547 facility users
www.anl.gov

Menlo Park, California
426 acres and 151 buildings
1,596 FTEs
213 students & postdocs
4,474 facility users
www.slac.stanford.edu

Spallation Neutron Source

Oak Ridge, Tennessee
4,421 acres and 194 buildings
4,586 FTEs
1,080 students & postdocs
3,215 facility users
www.ornl.gov

Newport News, Virginia
169 acres and 72 buildings
729 FTEs
60 students & postdocs
1,261 facility users
www.jlab.org

NSTX Spherical Tokamak

Princeton, New Jersey
89 acres and 34 buildings
429 FTEs
54 students & postdocs
290 facility users
www.pppl.gov

Relativistic Heavy Ion Collider

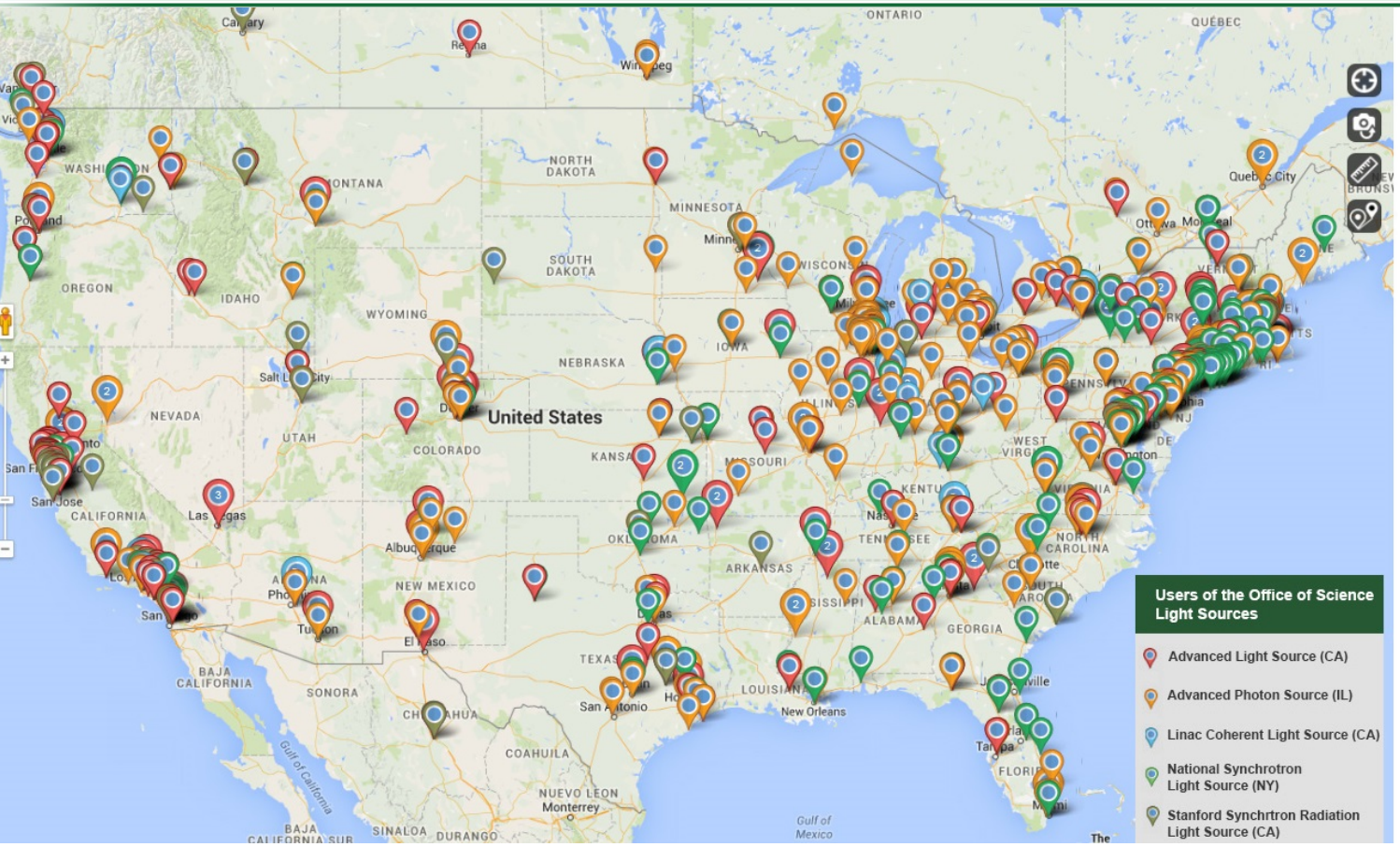
Upton, New York
5,322 acres and 310 buildings
2,882 FTEs
642 students & postdocs
4,134 facility users
www.bnl.gov

Where the user facilities are: DOE Laboratories (mostly)

★ SC is the steward of these ten DOE laboratories

Where Do the U.S. Light Source Users Come From*?

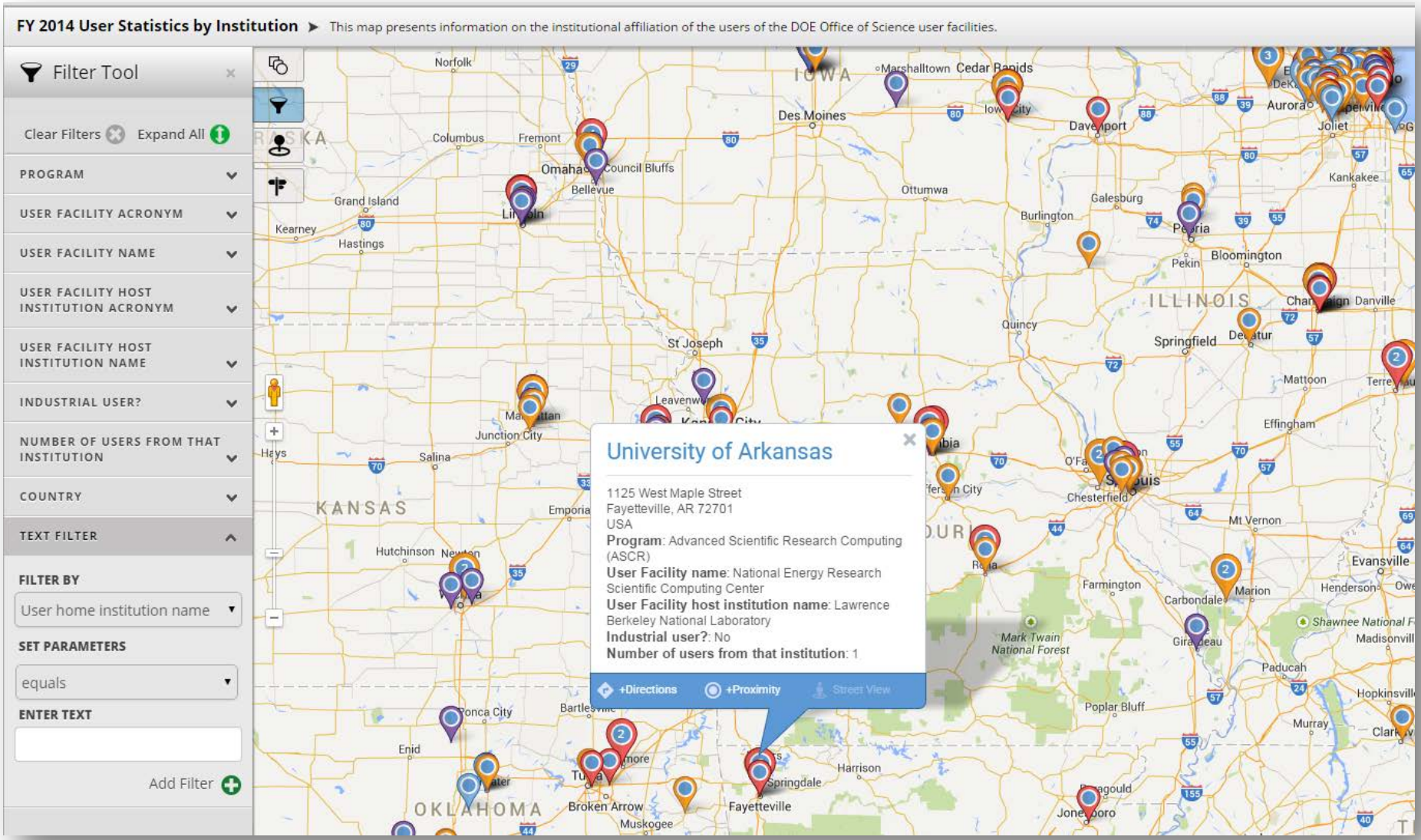
http://science.energy.gov/user-facilities/user-statistics/



~11,400 users; ~50% funded by non-SC/DOE resources

*for all facilities, >31,000 researchers each year; ~1/2 of the facility users come from universities; ~1/3 of the users come from DOE national laboratories; the remaining come from industry, other agencies, and international entities.

Explore interactive maps of SC grantees and facility users



Science Undergraduate Laboratory Internship (SULI)

The SULI program places undergraduate students(from 2 or 4 year institutions) in paid internships in science and engineering research activities at 16/17 DOE Laboratories, and one National User Facility. Students work with laboratory staff scientists or engineers on projects related to ongoing research programs. This, or its predecessor programs, have been in operation since the early '90s.

- Appointments are for:
  - 10 weeks during the Summer Term (May through August) or 16 weeks during the Fall Term (August through December) and Spring Term (January through May).
  - Application process for the 2015 Fall Terms is closed – The 2016 Spring Term application is open until 10/09/2015, and the 2016 Summer Term planned opening is mid-October.
- All interns have defined research projects that must be within the DOE mission space.
- All interns have required deliverables: A research report, an oral or poster presentation, a peer review, a general audience abstract, and pre- and post- participation surveys.
- Interns receive a $500 weekly stipend, travel to and from the laboratory, and possibility for a housing allowance.
- Laboratories also provide an array of seminars and professional development opportunities.
- Undergraduates from 2 or 4 year colleges, in their sophomore through senior year, or recent graduates, are eligible to apply.
- Must be at least 18 years old at the time of application; and a U.S. citizen or PRA.
- Must have a minimum cumulative GPA of 3.0.
- May participate as an intern a maximum of two times; May apply a maximum of three times.
- WDTS sponsors ~700 participants per year, majority (~535) in the Summer Term.

Please visit http://science.energy.gov/wdts/suli/ for full details and how to apply.

Community College Internship (CCI)

The Community College Internship (CCI) places students from community colleges in paid internships in technology based projects supporting laboratory work under the supervision of a laboratory technician or researcher. This, or its predecessor program, have been in operation since 1999.

- Operates primarily during a 10-week Summer Term (May through August), and a new semester term opportunity pilot is now open for the 2016 Spring Term.
  - Application process for the 2015 Summer Term is closed – The 2016 Spring Term pilot program application is open until 10/09/2015, and the 2016 Summer Term planned opening is mid-October.
- All interns have defined technical projects that are within the DOE mission space.
- All interns have required deliverables: A research report, an oral or poster presentation, and pre- and post- participation surveys.
- Interns are compensated as follows: $500 weekly stipend, travel to and from the laboratory, and a housing allowance.
- Laboratories also provide an array of seminars and professional development opportunities.
- Must be at least 18 years old; and a U.S. citizen or PRA.
- May participate as an intern a maximum of two times; May apply a maximum of three times.
- Must have a minimum cumulative GPA of 3.0.
- WDTS supports ~70 participants each Summer Term, and 15 in a new 2016 Spring Term.

Please visit http://science.energy.gov/wdts/cci/ for full details and how to apply.

Visiting Faculty Program (VFP)

Opportunities for faculty from academic institutions that are typically underrepresented in the DOE research community to engage in a jointly developed research project at a DOE laboratory during the Summer Term. The scope of the projects should be robustly connected to ongoing host lab research project activities. This, or its predecessor program, have been in operation since 2003.

- Faculty may optionally invite up to two students to participate, one of whom may be a graduate student. VFP- Students must meet SULI requirements, apply separately, and only if invited.
  - Students must have a minimum cumulative GPA of 3.0.
  - Student interns have required deliverables matching those for SULI: A research report, an oral or poster presentation, a peer review, general audience abstract, and pre- and post- participation surveys.
- Operates during a 10-week Summer Term (May through August) - Application process for the 2015 Summer Term is closed; reopens for 2016 in mid-October 2015.
- Faculty receive stipend of $13,000 for 10 week term, undergraduates receive stipend of $500/week; all participants are provided travel to and from the laboratory, and possibility for a housing allowance.

Please visit http://science.energy.gov/wdts/vfp/ for full details and how to apply.

Visiting Faculty Program (VFP), *cont.*

- Must be a full-time faculty member at an accredited U.S. degree granting, postsecondary, institution of higher education historically underrepresented in the U.S. research community, in an area of physics, chemistry, biology (non-medical), mathematics, engineering, environmental sciences, materials sciences, or computer / computational sciences (link to list of ineligible institutions from VFP webpages).
- Must be a U.S. citizen or LPR. Faculty may participate up to three terms.
- Faculty must, through their own efforts, establish a collaboration with a laboratory scientist to co-develop a 6-page research project proposal prior to applying to the program.
  - Faculty can contact host labs by using the POCs listed at: http://science.energy.gov/wdts/vfp/how-to-apply/selecting-a-host-doe-laboratory/
  - Proposal requirements are posted at: http://science.energy.gov/wdts/vfp/how-to-apply/submitting-a-proposal-to-doe/
- Students may only apply after receiving an invitation through the online system
  - Faculty, in their application, must list student(s) to receive system-generated invitation(s)
  - If a student had already applied to CCI or SULI, they must first "un-submit" this application
- WDTS supports ~ 55 faculty and ~30 students each Summer Term (this ratio is not prescribed).

Please visit http://science.energy.gov/wdts/vfp/ for full details and how to apply.

Navigating the Online Application System

- Applications, and all required materials, must be submitted using the WDTS online application system:
  - Account creation is required for access (links are on WDTS website program pages)
  - When completing (student, not faculty applicants) an application, have available pdf copies of your most recent transcripts (and from all other institutions attended)
  - Have available names and email addresses for at least 2, but no more than 3, individuals able to complete a recommendation form on your behalf (the first two received recommendations by the online system fulfill this requirement)
    - The system sends a recommendation request email to your recommender proving them a link to its form
- The application, in addition to general information, includes:
  - Numerous elements that tie directly to the eligibility requirements
  - A cumulative GPA calculator
  - Inquires about your areas of STEM studies, specialization, and interests
  - Inquires about your skills and experience
  - Four short essay questions
- **Applicants** select a 1st and 2nd choice host DOE lab
  - Only these labs will view your application
  - Host labs do not all offer the same STEM specialization areas
  - Information on specific project opportunities may be available from host labs
  - Host labs do all offer similar professional development activities

SULI, CCI, and VFP Information Resources

- Review the WDTS program web pages, including the FAQs:
  - The left-hand navigation items provide links to information related to eligibility, compensation, obligation, applying, selecting a host lab, recommendations, key dates, notification, and FAQs

    Science Undergraduate Laboratory Internships (SULI)
    http://science.energy.gov/wdts/suli/

    Community College Internships (CCI)
    http://science.energy.gov/wdts/cci/

    Visiting Faculty Program (VFP)
    http://science.energy.gov/wdts/vfp/

- Visit the WDTS Outreach page for additional presentations and recorded webinars:

  http://science.energy.gov/wdts/outreach/

SC/WDTS Points-of-Contact

Jim Glownia – james.glownia@science.doe.gov; (301) 903 2411

http://www.science.energy.gov/wdts

- SULI, CCI, & VFP:
  - **Cindy White** - Program Manager: cindy.white@science.doe.gov

    - http://science.energy.gov/wdts/suli/contact/
    - http://science.energy.gov/wdts/cci/contact/
    - http://science.energy.gov/wdts/vfp/contact/
    - sc.suli@science.doe.gov
    - sc.cci@science.doe.gov
    - sc.vfp@science.doe.gov

Closing Words and Tips for Applicants

Application deadlines and requirements are firm, including receipt of recommendations (**no exceptions!**)

- Don’t wait until the last minute, especially for requesting recommendations
- Host labs offer additional information resources regarding their programs and opportunities - visit their websites listed on our program pages or ask us for their contact information
- Ask us any questions using the provided resources
- Technical support for the online system is available during regular business hours
- One application per program, per term (see eligibility information for other limitations)
- When determining the SULI one-year completion requirement, we only count credits earned *while enrolled as a matriculating student*
- Only complete, compliant, and eligible applications are released to host labs
- One offer per term only, independent of acceptance or declination