

WHY LABS

Labs account for approximately 3% of energy use nationally and the U.S. Department of Energy (DOE) estimates there is a potential savings of \$1 to 2 billion nationwide.

A Smart Lab program employs a combination of techniques to assess, optimize, manage and maintain high performance laboratories. Smart Labs are designed to control hazards and mitigate exposure through air ventilation management best practices. Other components of a Smart Lab include:



- Dynamic digital control systems
- Exhaust fan discharge velocity optimization
- Low power density lighting
- Fume hood optimization
- Low pressure drop ventilation design optimization
- Consider Demand-based ventilation

Better Buildings Smart Labs Accelerator

Starting in 2016, DOE has challenged leading laboratories to work with DOE and other stakeholders to demonstrate the energy efficiency opportunities in labs and share their success with others.

As an Accelerator partner, organizations establish a 10-year energy reduction target of at least 20%, across their portfolio of laboratory buildings. Partners also commit to identifying and implementing no- and low-cost savings measures at one laboratory to achieve a near-term target of at least 5% prior to the end of the 3-year Accelerator period.

To assist, the U.S. Department of Energy provides expertise and training, facilitates networking and technical peer exchange opportunities, helps promote partner successes, and develops technical resources and tools necessary to meet the goals of the Accelerator.

By the Numbers

Smart Lab Accelerator partners include universities and federal agencies with the following characteristics:

- ▶ 17 partners
- ▶ Over 9 million square feet

Accelerator partners represent different stages of progress

In 2019, Smart Labs Accelerator partners fall into approximately three categories:

1. Starting a Smart Labs Program:

Partners at the beginning stages of a Smart Labs program are developing interdepartmental relationships between facilities, safety and health, and other lab support staff, and drafting a Smart Labs plan.

General Services Administration — Food & Drug Administration, NASA Jet Propulsion Laboratory, United States Department of Agriculture, University of California Irvine Health, Wesleyan University

2. Executing Smart Labs and Retro-commissioning

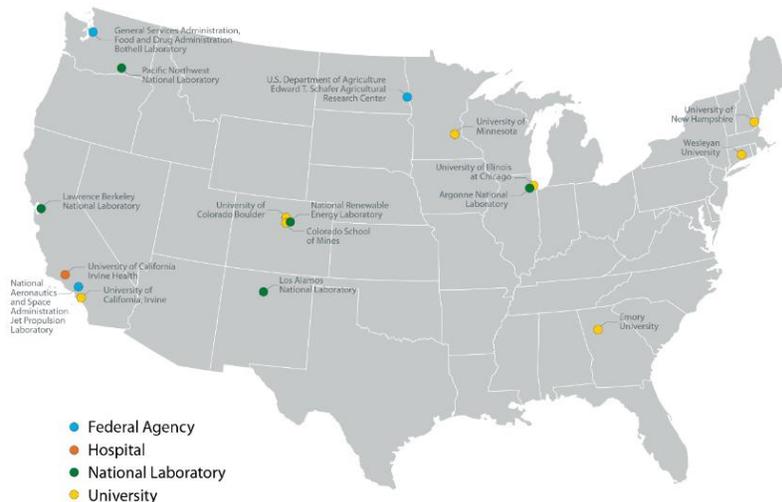
Partners are incorporating Smart Labs principles into their existing processes and completing retro commissioning. This effective coordination allows partners to leverage funding and resources for Smart Labs.

Argonne National Laboratory, Colorado School of Mines, Emory University, Los Alamos National Laboratory, National Renewable Energy Laboratory, Pacific Northwest National Laboratory, University of Illinois at Chicago, University of New Hampshire

3. Long-standing Programs

Partners are incorporating Smart Labs into ongoing energy efficiency programs, sustainability goals, and other efforts. These partners serve as examples and inspiration for newer partners.

Lawrence Berkeley National Laboratory, University of California Irvine, University of Colorado Boulder, University of Minnesota



Smart Labs Toolkit

A Smart Labs Toolkit is being developed to assist partners and organizations in meeting their safety and energy reduction goals. This toolkit follows distinct phases and tasks that include: Plan, Assess, Optimize, and Manage.

This toolkit describes a proven approach to help optimize performance of laboratories and critical control environments in new or existing facilities. Although applicable to any building or critical control environment, the guide focuses primarily on optimizing performance of laboratories in new or existing buildings. The phases and tasks described herein can be undertaken to mitigate risk, reduce waste and provide safe and productive workplaces. The Smart Labs toolkit describes the following:

- Forming a Smart Labs team comprised of lab stakeholders, contractors and vendors,
- Developing a strategic plan for cost-effective implementation,
- Profiling buildings to rank opportunities and prioritize efforts,
- Evaluating risk, determining occupant needs and specifying design and operational requirements,
- Executing meaningful projects with demonstrable paybacks, and
- Implementing a lifecycle performance management plan to enhance resilience and sustainability.

Expected toolkit, training, and other resources will be published in 2020.