

# America's National Laboratory System

## A Powerhouse of Science, Engineering, and Technology



The 17 U.S. Department of Energy (DOE) National Laboratories are a cornerstone of the United States' innovation ecosystem, performing leading-edge research in the public interest. Launched as part of a wave of federal investment in science around World War II, the DOE National Laboratories have evolved into one of the world's most productive and sophisticated research systems. Over this time, DOE National Laboratory scientists have won 80 Nobel Prizes in the sciences. Today, this system maintains one-of-a-kind multidisciplinary research capabilities, large-scale scientific tools, and teams of experts focused on the Department's and the nation's most important priorities in science, energy, and national security.

### NATIONAL LABORATORY MISSIONS

#### DISCOVERY SCIENCE

The Department of Energy is the nation's largest funder of the physical sciences. Every day, researchers at the National Laboratories make discoveries in basic science that advance knowledge and provide the foundation for American innovation. From unlocking atomic energy to mapping the human genome and pushing the frontiers of nanotechnology, National Lab scientists have led the way in making breakthrough discoveries and are recognized by their peers as global leaders.

#### ENERGY SECURITY AND INDEPENDENCE

With research under way on a host of next-generation energy technologies, the National Labs are key to an all-of-the-above

strategy that includes all forms of energy and advances U.S. energy independence. From developing much of the horizontal drilling and drill bit technology that helped spark today's domestic oil and gas boom, to developing critical technology behind many of today's electric vehicles, solar panels, and wind turbines, the National Labs have pushed the boundaries of the nation's energy technology frontier.

#### NATIONAL SECURITY

With origins in the Manhattan Project, an enduring mission of the National Labs has been to enhance national security by ensuring the safety and reliability of the U.S. nuclear deterrent, helping prevent the proliferation of weapons of mass destruction, and securing the nation's borders. The National Labs also play a central role in homeland security, the development of advanced technologies for counterterrorism, the detection of nuclear and biological weapons, and cybersecurity.

#### ECONOMIC PROSPERITY AND GLOBAL COMPETITIVENESS

Through scientific discovery and technology innovation, the National Laboratories advance U.S. economic competitiveness and contribute to our nation's prosperity. The National Labs' unique ability to partner with private industry and academia—through research agreements, national User Facilities, and technology transfer programs—drives technology solutions to the marketplace, creates jobs, and spurs economic growth.

## The National Laboratory System

- **Ames Laboratory**  
Ames, Iowa
- **Argonne National Laboratory**  
Argonne, Illinois
- **Brookhaven National Laboratory**  
Upton, New York
- **Fermi National Accelerator Laboratory**  
Batavia, Illinois
- **Idaho National Laboratory**  
Idaho Falls, Idaho
- **Lawrence Berkeley National Laboratory**  
Berkeley, California
- **Lawrence Livermore National Laboratory**  
Livermore, California
- **Los Alamos National Laboratory**  
Los Alamos, New Mexico
- **National Energy Technology Laboratory**  
Morgantown, West Virginia  
Pittsburgh, Pennsylvania  
Albany, Oregon
- **National Renewable Energy Laboratory**  
Golden, Colorado
- **Oak Ridge National Laboratory**  
Oak Ridge, Tennessee
- **Pacific Northwest National Laboratory**  
Richland, Washington
- **Princeton Plasma Physics Laboratory**  
Princeton, New Jersey
- **Sandia National Laboratories**  
Albuquerque, New Mexico  
Livermore, California
- **Savannah River National Laboratory**  
Aiken, South Carolina
- **SLAC National Accelerator Laboratory**  
Menlo Park, California
- **Thomas Jefferson National Accelerator Facility**  
Newport News, Virginia



An Investment in  
Innovation and Prosperity

## NATIONAL LABORATORY CAPABILITIES

### UNIQUE SCIENTIFIC USER FACILITIES

The National Laboratories are stewards of a network of 30 unique scientific instrumentation and research facilities that are available to the public and private sector. Last year alone, nearly 30,000 researchers from academia, government, and industry at large took advantage of these world-class facilities, which are staffed by recognized leaders in their fields. Since User Facilities house specialized and large-scale instruments that require major investments beyond the means of individual universities and firms (examples include some of the world's

most powerful supercomputers, x-ray light sources, and particle accelerators), they play an indispensable role as engines of innovation and scientific discovery.

### BIG-TEAM SCIENCE FOCUSED ON NATIONAL ISSUES

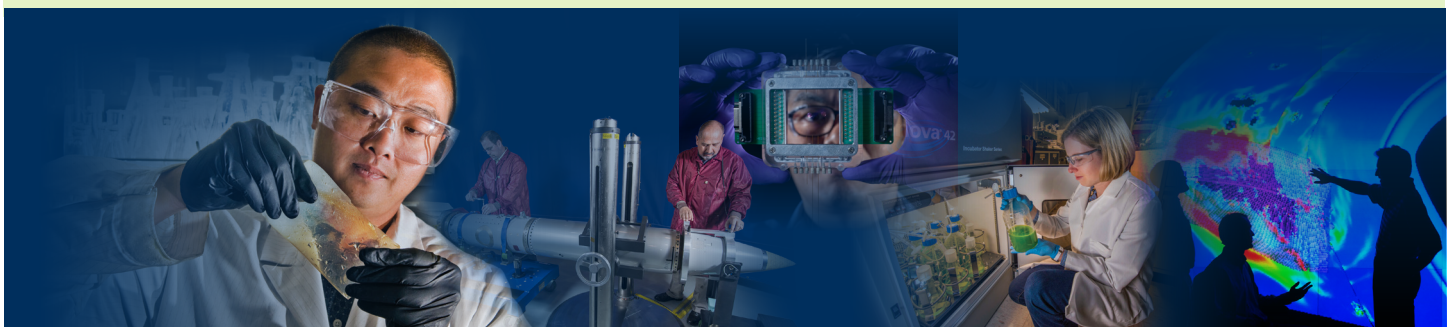
With their ability to quickly assemble large multidisciplinary teams of scientists and engineers, the National Laboratories bring an unusually integrated, focused approach to solving tough problems. This capability enables Lab researchers and their partners to develop and deploy scientific and technological solutions in support of national needs quickly and efficiently.

## A History of Innovation

With roots going back to the 1930s, the National Laboratory System has a long record of advancing basic science and applied technology to serve America's economic, energy, environmental, and national security interests. Research at the National Labs has:

- Increased the efficiency of wind-turbines, helping to reduce the cost of wind power by more than 80% over the past 30 years.
- Developed optical digital recording, the basic technology behind CDs and DVDs.
- Created the toughest and lightest ceramics and the smallest synthetic robots in the world.
- Explained the biological process of photosynthesis, laying the groundwork for new bio-based technologies.
- Confirmed the Big Bang, and discovered dark energy in collaboration with NASA.
- Applied nuclear capabilities to the understanding and production of isotopes for medicine and industry.
- Revolutionized materials with widespread applications in medicine, manufacturing, and transportation.
- Greatly improved our ability to detect explosives and weapons, including nuclear and biological agents and plastic devices.
- Assured the safety, security, and reliability of the nation's nuclear stockpile, without testing.

Through these and countless other achievements, the National Laboratories have saved lives, generated new products, spawned new industries, uncovered secrets of the universe, and helped establish and sustain U.S. global preeminence in science and technology.



For more information about our National Laboratory System:

DOE Website: [energy.gov/science-innovation/national-labs](http://energy.gov/science-innovation/national-labs)



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**ENERGY**