# Argonne National Laboratory
## At a Glance

U.S. DEPARTMENT OF ENERGY

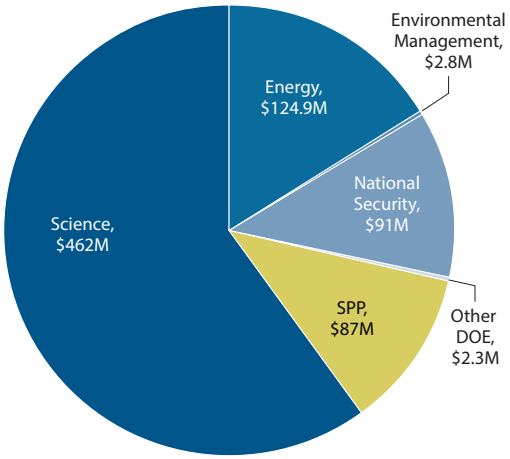
Argonne was founded as a chemistry, materials and nuclear engineering laboratory in 1946. Today, Argonne serves America as a science and energy laboratory distinguished by the breadth of its research and development capabilities combined with a unique portfolio of experimental and computational user facilities. Argonne has been managed since its founding by The University of Chicago, one of the world's preeminent research universities.

In its science program, Argonne delivers new knowledge not only in chemistry and materials, but also in nuclear and particle physics, mathematics, and earth science. This work is enriched by collaborations with University of Chicago researchers, reflected in joint efforts in fields such as cosmological physics and computational materials.

Argonne's early-stage R&D in energy encompasses nuclear, chemical, materials, bioprocess and systems engineering and drives advances in reactors, energy generation and storage, electricity distribution, and transportation systems. The Laboratory nurtures strong connections with industry to support transfer of new technology concepts to the private sector.

The Laboratory's science and energy programs both support and benefit from Argonne's integrated user facilities. Each year, Argonne is a nexus of research for 8000+ scientists and engineers from other institutions, whose work is advanced by access to the Laboratory's research centers and user facilities and by collaborations with Argonne's staff.

## FY 2016 Funding by Source




Lab operating costs: **$770M**
DOE/NNSA costs: **$655M**
SPP costs (non-DOE/non-DHS): **$87M**
SPP as % total Lab operating costs: **11.3%**
DHS costs: **$28M**

## Facts

**Location:** DuPage County, Illinois
**Type:** Multiprogram Laboratory
**Year Founded:** 1946
**Director:** Paul Kearns (interim)
**Contractor:** UChicago Argonne, LLC
**Responsible Site Office:** Argonne Site Office

## Physical Assets

**1,517** acres and **157** buildings
**5.0** million GSF in buildings
Replacement plant value: **$3.29B**
**56,656** GSF in **20** excess facilities
**339,673** GSF in leased facilities

## Human Capital

**3,206** full-time equivalent employees (FTEs)
**256** joint faculty
**268** postdoctoral researchers
**260** undergraduate students
**322** graduate students
**7,422** facility users
**1,005** visiting scientists

## Core Capabilities

- Accelerator Science and Technology
- Advanced Computer Science, Visualization, and Data
- Applied Materials Science and Engineering
- Applied Mathematics
- Biological and Bioprocess Engineering
- Chemical Engineering
- Chemical and Molecular Science
- Climate Change Science and Atmospheric Science
- Computational Science
- Condensed Matter Physics and Materials Science
- Cyber and Information Sciences
- Decision Science and Analysis
- Large Scale User Facilities/ Advanced Instrumentation
- Nuclear Engineering
- Nuclear Physics
- Nuclear and Radio Chemistry
- Particle Physics
- Systems Engineering and Integration

## Mission Unique Facilities

- Advanced Photon Source
- Argonne Leadership Computing Facility
- Argonne Tandem Linear Accelerator System
- Center for Nanoscale Materials
- Transportation Research and Analysis Computing Center

Argonne NATIONAL LABORATORY

# Argonne National Laboratory
Accomplishments

U.S. DEPARTMENT OF ENERGY

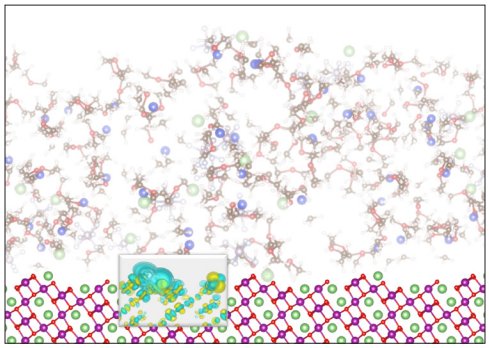
## Unique Facility
## Advanced Photon Source

The Advanced Photon Source (APS) serves as the Nation's highest energy synchrotron light source and is used for studies in nearly every scientific discipline. It houses several unique beamlines and the Nation's premier consortium for high pressure studies. More than 5,500 researchers use the APS annually, making it the most frequented DOE user facility. The winners of the 2009 and 2012 Nobel Prizes in Chemistry used the APS for their research. Numerous drug discoveries and products have grown from work at the APS, including the 2016-approved leukemia drug Venclexta developed by AbbVie and Genetech. Plans for an upgrade of the APS in the early part of the next decade will make the APS four hundred times brighter and vastly expand the available research opportunities.

## Unique Facility
## Argonne Leadership Computing Facility


The Argonne Leadership Computing Facility (ALCF) designs and provides world-leading computing facilities in partnership with the computational science community. Research in biology has identified the molecular basis of Parkinson's disease and identified how bacteria quickly become drug resistant. Engineering breakthroughs have included designs of cleaner, quieter, and less expensive engines and wind turbines. Simulations have explained how materials breakdown under extreme stress and identified a process to purifying otherwise unusable natural gas. Supercomputing has guided the design of materials and is being used to explore the algorithmic requirements to bring quantum computing to reality. The ALCF is also a planned site for a DOE exascale system in 2021, which will fuel a vast range of breakthroughs and accelerate discoveries using simulation, big data and deep learning applications across a wide array of disciplines.

## Technology to Market Highlight
## Argonne materials help power Chevy Volt



Batteries power the world, enhance our security and drive industrial opportunities. Argonne develops energy storage technologies that dramatically increase energy and power densities. Argonne researchers, along with other collaborators, are paving the way for batteries with increased lifetimes, safety and range by developing strategies to select electrolytes for specific functionality using computer simulations. Argonne's all-encompassing battery research program spans the continuum from basic materials research and diagnostics to scale-up processes and can be found in real world applications, like the Chevy Volt, which leverages an Argonne battery chemistry breakthrough. Scientists also use our unique facilities like the APS and ALCF, above, as part of their toolkit to better understand the reactions that happen inside a battery thru simulations and in real time.