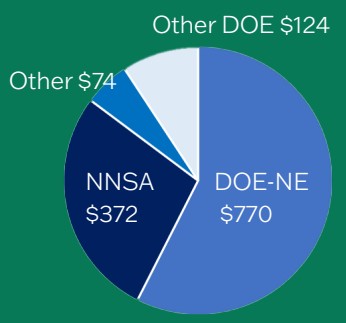
AT A GLANCE: IDAHO NATIONAL LABORATORY

Idaho National Laboratory (INL) serves as the U.S. leader for advanced nuclear energy R&D and is home to an unparalleled combination of nuclear energy test-bed facilities, including those that focus on fuel development and fabrication, steady-state and transient irradiation, and macro- and microscale post-irradiation examination. INL's applied science and engineering discipline and problem-solving approach helps the Departments of Defense and Homeland Security, as well as industry, solve significant national security challenges in critical infrastructure protection, cybersecurity, and nuclear nonproliferation. INL's strategic initiatives include research related to resilient cyber-physical security, integrated energy systems (including clean energy technologies) and advanced manufacturing.

Under the DOE Office of Nuclear Energy (DOE-NE)'s direction, INL leads multipe initiatives to provide the nuclear community with access to the technical, regulatory, and financial expertise necessary to move innovative nuclear energy technologies (e.g., microreactors) toward commercialization while ensuring the continued safe, economical operation of the existing nuclear fleet.

FUNDING BY SOURCE

FY 2019 Costs (in $M)
Total Laboratory Operating Costs: $1,349
DOE/NNSA Costs: $980
SPP (Non-DOE/Non-DHS) Costs: $300
SPP as % of Total Laboratory Operating Costs: 22%
CRADA: $9
DHS Costs: $61



HUMAN CAPITAL

4,888 FTE employees
36 joint faculty
68 postdoctoral researchers
20 high school student interns
265 undergraduate students
200 graduate students
691 facility users
12 visiting scientists

CORE CAPABILITIES

Advanced Computer Science, Visualization, and Data
Applied Materials Science and Engineering
Biological and Bioprocess Engineering
Chemical Engineering
Chemical and Molecular Science*
Condensed Matter Physics and Materials Science*
Cyber and Information Sciences
Decision Science
Environmental Subsurface Science and Analysis
Large-Scale User Facilities and Advanced Instrumentation
Mechanical Design and Engineering
Nuclear Engineering
Nuclear and Radiochemistry Power Systems and Electrical Engineering
Systems Engineering and Integration Physics
**Emerging Capabilities*

FACTS

Location: Idaho Falls, Idaho
Type: Multiprogram Laboratory
Contractor: Battelle Energy Alliance
Site Office: Idaho Operations Office (DOE-ID)
Website: inl.gov

PHYSICAL ASSETS

569,180 acres
540 buildings or real property assets (DOE-owned assets operating or on standby)
$5.6 billion replacement plant value
2.3 million GSF in owned operating buildings; 9,609 GSF in operational standby buildings
1 million GSF in leased facilities
20,363 GSF in three excess facilities

MISSION UNIQUE FACILITIES

Transient Reactor Test Facility
Irradiated Materials Characterization Laboratory
Fuel Manufacturing Facility
Experimental Fuels Facility
Space and Security Power Systems Facility
Critical Infrastructure Test Range Complex
Biomass Feedstock National User Facility
Wireless Security Institute
Cybercore Integration Center
Advanced Test Reactor
Specific Manufacturing Capability

U.S. DEPARTMENT OF ENERGY

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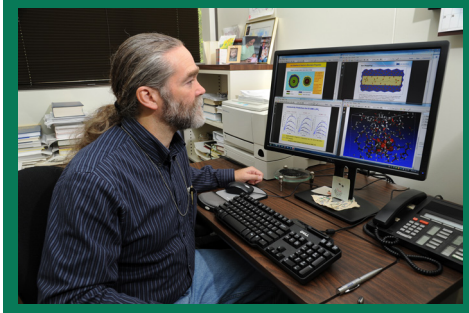
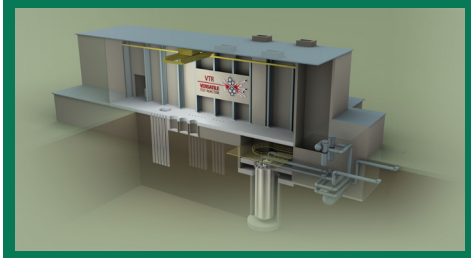
ACCOMPLISHMENTS

Unique Facilities: Nuclear Energy R&D - No other place in the nation hosts as many capabilities for assessing the technical and operational feasibility of new types of nuclear fuels and materials as INL. The Advanced Test Reactor is the only research reactor in the country capable of providing large-volume, high-flux neutron irradiation in a prototype environment. Its unique serpentine core allows its corner lobes to be operated at different power levels, meaning it can conduct multiple simultaneous experiments under different testing conditions. The Transient Reactor Test (TREAT) facility is helping to re-establish U.S. leadership in an essential nuclear research field, as TREAT's unique design monitors in real time a fuel or other material's behavior under postulated reactor accident conditions. Resources such as the Hot Fuel Examination Facility and the Irradiated Materials Characterization Laboratory provide state-of-the-art tools for microstructural and thermal characterization of irradiated materials. The results of these examinations are then used to advance fuel or material design and qualification.



Tech-to-Market Highlight: Advanced Electrolyte Model Computer Simulation Program - INL is well-known for its Battery Testing Center and research capabilities, which have yielded numerous innovations in battery testing and development. One such technology is INL's R&D 100 Award winning Advanced Electrolyte Model (AEM). This computer simulation program is designed to give fast information on the properties of complex electrolyte formulations and how they can influence battery performance. AEM accelerates the speed at which new cell designs with new electrolytes can be developed. Since its debut in 2010, AEM has been licensed broadly to universities, major consumer product companies and industrial users—including chemical and automotive companies as well as a major lithium-ion cell manufacturer.



Research Highlight: Digital Engineering - As a result of proven benefits in other industries, INL launched a digital engineering program to support new projects such as the Versatile Test Reactor (VTR). Digital engineering (DE) strategies can predict reactor performance and design issues early in the process, minimizing cascading risk. Numerous advances in the VTR design and engineering processes have already been achieved using DE. For example, a 3D model was developed in the first three months of the project—10 times faster than similar past efforts. The VTR is the first DOE nuclear program using cloud computing to reduce technical barriers such as computer performance—reducing latency by a factor of 100 during peak use.