

# Nuclear Energy: Revitalizing Domestic Energy Supply

There is a renewed global focus on nuclear energy as a critical solution for meeting the world's growing demand for clean, reliable, and secure power. Accelerating the deployment of next-generation nuclear technologies is crucial in addressing the rapid growth of new energy use cases, such as data centers, and reducing reliance on foreign sources of nuclear fuel.

Reviving the domestic supply of nuclear energy requires robust supply chains, streamlined regulatory pathways, and deep technical expertise. Battelle is uniquely positioned to help both government agencies and commercial partners navigate these challenges and realize the promise of next-generation nuclear energy.

## End-to-end Nuclear Capabilities

- Nuclear RDT&E
- Technology demonstration
- Supply chain and logistics support
- Installation and operation oversight and consulting
- Regulatory compliance
- Program and project management
- Nuclear waste management, storage and disposal
- Preparedness and training

## DIFFERENTIATORS

### Risk Reduction

Our National Laboratory leadership and decades of DOE experience bring proven credibility to de-risk complex nuclear investments. Deep regulatory fluency, disciplined governance, and an embedded safety culture reduce execution risk from day one. Established accountability and personnel reliability programs—backed by an excellent safety and security record—give partners confidence that high-hazard work will proceed predictably, safely, and on schedule.

### Advance Technology Readiness

We help accelerate technological readiness through deep scientific and engineering expertise. Licensed radiological facilities, extensive lab and shop space, available expansion land and nimble testing capabilities enable rapid iteration, testing and scale-up. Commercial-friendly contracting and IP terms further reduce friction, shortening timelines from concept to deployment.

### Accelerate Deployment






End-to-end program management, engineering, procurement, and construction oversight, and proactive safety and regulatory planning keep projects moving from demonstration through commissioning. Workforce development and stakeholder engagement ensure operational readiness and long term success. The result is faster deployment, fewer surprises, and nuclear solutions delivered at the pace required to meet energy and security goals.

# A Legacy of Nuclear Innovation

For decades, Battelle's advanced research and expertise have helped shape the landscape of nuclear energy, from top-secret defense projects to commercial R&D.

<p><b>1943</b></p> <p>Battelle's atomic research program leads to uranium fuel rod production for the Manhattan Project</p>	<p><b>1945</b></p> <p>Battelle scientists played a critical role in the top-secret Manhattan Project, fabricating plutonium from uranium used in the nuclear core of atomic weapons.</p>	<p><b>1946</b></p> <p>Battelle is recognized for "Unique and meritorious contributions to the Atomic Bomb Project."</p>	<p><b>1948</b></p> <p>Battelle begins the development of nuclear fuel for the USS Nautilus, the Navy's first atomic-powered submarine.</p>	<p><b>1954</b></p> <p>Built and operated the first privately-owned large-scale nuclear research reactor in West Jefferson, Ohio (decommissioned 1998-2003)</p>
<p><b>1955</b></p> <p>Developed Hot Isostatic Pressing technique, now a worldwide commercial method to improve material mechanical properties and workability</p>	<p><b>1955-1976</b></p> <p>Operated first privately-owned Hot Cell facility in U.S.</p>	<p><b>1956</b></p> <p>Battelle's privately financed atomic research center is used by the industry in the development of reactors for power production and propulsion.</p>	<p><b>1980</b></p> <p>Managed the Office of Nuclear Waste Isolation (ONWI) under a DOE contract, conducting site characterization and feasibility studies for deep geologic repositories and supporting the DOE's efforts under the Nuclear Waste Policy Act to identify suitable HLW disposal sites</p>	

## PRESENT DAY | Battelle manages and operates multiple DOE premier nuclear laboratories

 <p><b>Pacific Northwest</b> NATIONAL LABORATORY</p> <p>(1965)</p>	 <p><b>OAK RIDGE</b> National Laboratory</p> <p>(1999)</p>	 <p><b>INL</b> Idaho National Laboratory</p> <p>(2004)</p>	 <p><b>Los Alamos</b> NATIONAL LABORATORY</p> <p>(2018)</p>	 <p><b>Savannah River</b> National Laboratory</p> <p>(2021)</p>
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## Turning Innovation into Impact

<p><b>TRL 1</b></p>	<p><b>TRL 2</b></p>	<p><b>TRL 3</b></p>	<p><b>TRL 4</b></p>	<p><b>TRL 5</b></p>	<p><b>TRL 6</b></p>	<p><b>TRL 7</b></p>	<p><b>TRL 8</b></p>	<p><b>TRL 9</b></p>
<p>Provide scientific and engineering expertise along with facilities, equipment and radioactive material licensure (TRL &lt;7, in cooperation with labs) to de-risk technology development.</p>						<p>Lead technology demonstrations and FOAK deployment programs (TRL 7+).</p>		

Battelle manages and operates eight national laboratories, giving us a front-row seat to the most advanced nuclear R&D in the country. Battelle bridges the gap between lab and industry, leveraging our deep expertise, facilities, and regulatory know-how to scale and translate advanced research into operational solutions. Our proven track record in leading technology demonstrations and first-of-a-kind deployments ensures that the promise of next-generation nuclear technology becomes a reality.

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### Brookhaven National Laboratory

- Nuclear Physics and Particle Science
- Medical Isotope Research
- Hydrogen and Cryogenic Testing
- NASA Space Radiation Lab
- National Synchrotron Light Source II

### Idaho National Laboratory

- Advanced nuclear R&D
- Fission Surface Power Systems
- Advanced Test Reactor (ATR)
- Fuel Conditioning Facility and Hot Fuel Examination Facilities
- Human Systems Simulation Lab

### Los Alamos National Laboratory

- 13 Nuclear Facilities And 143 Radiological Facilities
- Nuclear and particle futures
- Radioisotope Power Systems
- Los Alamos Neutron Science Center
- Dual-Axis Radiographic Hydrotest

### National Laboratory of the Rockies

- Nuclear Electricity Research
- Advanced Nuclear Cost Modeling
- Lithium Batteries for Space Suits

### Oak Ridge National Laboratory

- Isotope Science and Enrichment
- Fusion and Fission Reactor Technology
- Nonproliferation and National Security
- High Flux Isotope Reactor
- Spallation Neutron Source
- Radiochemical Engineering Development Center

### Pacific Northwest National Laboratory

- Nuclear Materials Behavior and Processing
- Atmospheric Radiation Measurement (ARM) Facility
- Nuclear Nonproliferation Research
- Radiochemical Processing Laboratory (RPL)

### Savannah River National Laboratory

- Production of High-Assay Low Enriched Uranium
- Weapons Production Technology
- Radiological Evidence Examination Facility
- Advanced Technology Proving Ground

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## Battelle

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### Radioactive Material Licensure

NRC Agreement State licenses in 3 states:

Type A broad scope license at our Ohio headquarters

- Up to 18 curies of byproduct material
- Small quantities of SNM, source material, and transuranics
- Limited scope licenses in California and Maryland
- No major Notices of Violation (NOVs) on record

### Facilities and Equipment

- Over 122,000 sq. ft. of laboratory and shop space approved for radiological operations
- Space dedicated to containing and controlling high-hazard CBRNE materials
- Flexible use acreage available
- Analytical equipment (e.g., Liquid scintillation counters, Gamma spectroscopy (mid-resolution), Liquid chromatography, Oxidizers, count and dose rate instruments)

# Offerings in Support of New Nuclear Deployment

## Planning and Program Management

- Define goals and objectives
- Develop program plans
- Conduct stakeholder mapping
- Risk Management
- Siting Assessments

## Financing and Partnerships

- Conduct economic analysis
- Perform risk management
- Define requirements, criteria for agreements

## Regulatory and Permit Support

- Assess regulatory readiness
- Adopt safety standards
- Environment Impact Statement (EIS)
- Safety Analysis Report (SAR)
- Support permitting

## Public Engagement and Communication

- Develop engagement and comm strategy
- Develop and implement comm plan
- Develop and execute education campaigns

## Workforce Development

- Develop and implement training programs
- Ensure qualification compliance
- Support knowledge transfer

## Supply Chain Enablement

- Conduct supply chain assessment
- Materials development and testing
- Standards and validation

## Technology Selection

- Evaluate reactor technology
  - Safety features
  - Fuel cycle
  - Timeline, cost and scalability
- Advise on deployment model
- Support plant engineering/design

## Waste Management

- Develop spent fuel and waste management strategy
- Develop and oversee waste management plan/execution

## Construction and Commissioning

- Provide project management oversight
- Develop and apply QA program
- Plan and oversee commissioning activities

## Operations and Monitoring

- Develop operational protocols
- Conduct operational performance monitoring
- Maintain ongoing regulatory compliance

## Decommissioning

- Establish decommissioning plan
- Address environmental restoration

