

Idaho National Laboratory

The First Five Years

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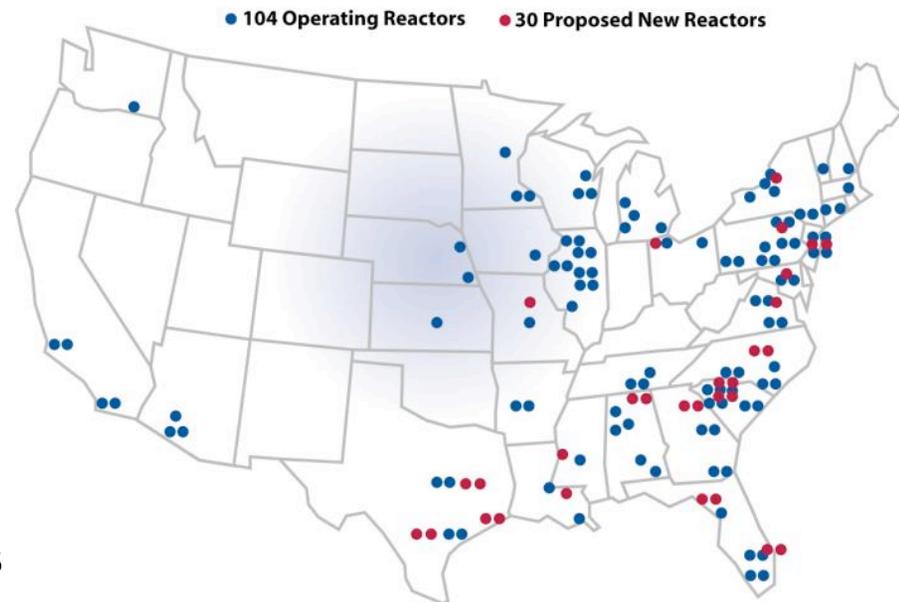


Idaho Legislative Interim Committee, Energy, Environment, and Technology

A National Nuclear Capability in Idaho

- **Recent resurgence of nuclear energy has led to the need for a national laboratory dedicated to nuclear energy RD&D based on:**
 - Anticipated new builds
 - Growing research needs
- **DOE selected Idaho for this new lab based on concentration of capabilities and expertise at former Argonne West and INEEL sites**
- **DOE established separate contracts for the lab and legacy cleanup, awarding the lab contract to Battelle Energy Alliance team**

Operating and Proposed New US Reactors



On February 1, 2005, the INL was launched

The Vision for the Idaho National Laboratory

- A preeminent NE RD&D laboratory within a decade
- A major center for national security technology RD&D
- A multi-program lab with world-class capabilities
- Academic, international, government, and industry collaborations to produce the best results for the nation



INL is on target to achieve this vision

A Solid Strategy Underpins the Vision

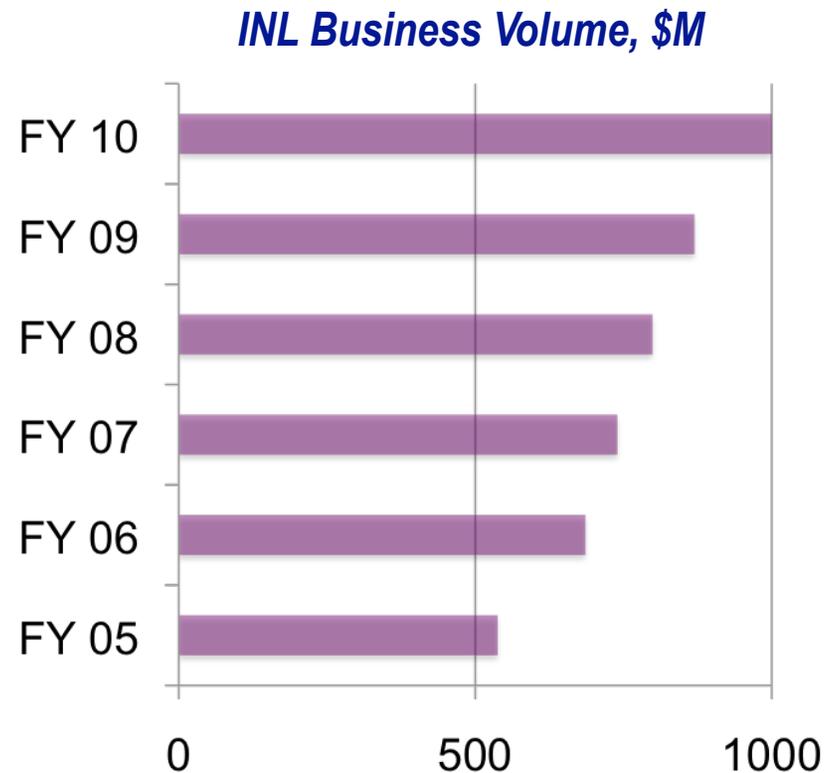
- **Mission Accomplishment**
 - Build a portfolio of relevant, impactful nuclear S&T programs
 - Complement this portfolio with synergistic national and homeland security, energy, and environmental programs
 - Establish a robust science base that provides the foundation for mission-enabling discoveries
- **Partnerships of Strategic Importance**
 - Extensive collaborations with the world's premier academic, government, and industrial nuclear organizations
 - A central role in revitalizing nuclear and engineering education and academic research in the U.S.
- **Research Capabilities**
 - Acquire forefront facilities, support infrastructure, and management systems essential to world-class research
 - Provide core capabilities as user facilities



How Are We Doing?

Nuclear Energy and Multi-Program Mission Accomplishment

- **Substantial, impactful nuclear energy RD&D (more than \$250M in NE RD&D, well above targets)**
- **A relevant multi-program laboratory portfolio, synergistic with the NE RD&D work**
 - National and Homeland Security (\$200M)
 - Energy and Environment (\$50M)
 - Achieving results in NE RD&D through INL leadership
 - Leading integration of federally sponsored nuclear energy research among universities and other labs, including international
 - Success in attracting best and brightest to Idaho



INL is an engine for high quality, impactful research and jobs in the region.

How Are We Doing?

INL's Contribution to the Idaho Economy

- **A major employer**
 - INL is responsible for a total of 24,000 jobs (direct & indirect) in Idaho
- **An engine of economic growth**
 - Total economic impact on the state of Idaho of \$3.5B
 - Responsible for increasing personal income in Idaho by \$2B
- **An economic stabilizer and major contributor to civic and charitable causes**
 - Directly and indirectly paid more than \$135M in taxes
 - Purchased more than \$296M in goods and services from Idaho companies
 - Employees donated more than 240,000 hours of their time to community groups and associations



“The stabilizing effects of INL ... allow for more effective functioning of state and local governmental services.” BSU Impacts Report, Fall 2010

Partnerships of Strategic Importance

- **Center for Advanced Energy Studies: a critical early step in establishing an effective partnership with Idaho universities**
- **Reinvigorating federal support for nuclear science and engineering education through:**
 - ATR National Scientific User Facility
 - Nuclear Energy University Program
 - Institute for Nuclear Energy, Science and Technology
 - Center for Advanced Energy Studies
- **Relevant industry and research partnerships**
 - Electric Power Research Institute
 - LWRS Program (\$25M/yr)
 - Next Generation Nuclear Plant
 - Lab-to-lab agreements (e.g., Japan)



Preparing a new generation of researchers and providing unique research capabilities to meet nuclear energy RD&D needs.

How Are We Doing?

Establishing World-Leading Research Capabilities

- **Consolidated around three main campuses; optimized and integrated Advanced Test Reactor and Materials and Fuels Complex capabilities**
- **National Scientific User Facility: the model for how to promote the best research in the best place and make the underlying investments that support that model**
- **Investing in advanced instruments and tools that support a science-based approach to R&D**
- **Building on existing capabilities with new facilities and infrastructure**
- **Sustained strong safety and environmental performance**

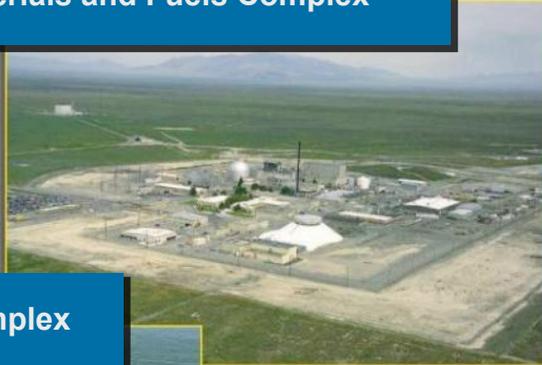
INL: National Nuclear Laboratory Ten-Year End-State Vision

- ATR meeting the neutron irradiation needs of the nation
- World-class fuel fabrication and characterization capabilities
- World-leading PIE capabilities
- TREAT meeting transient testing needs of U.S. and international research community
- Laboratory and integrated-laboratory scale testing of other advanced separations technologies, with planning for engineering scale demonstration
- Continued engineering scale electrochemical separations and waste form development
- Optimized infrastructure to support resident and visiting researchers.

In addition to the federal investment, BEA has invested over \$100M through efficiency gains and \$20M through fee reinvestment.

R&D Capabilities Focused on Three Primary Site Areas

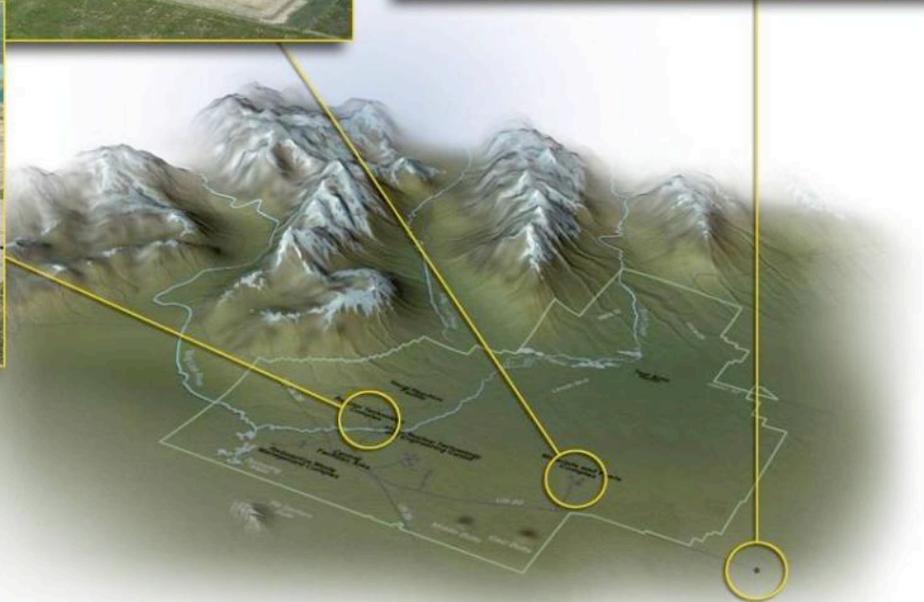
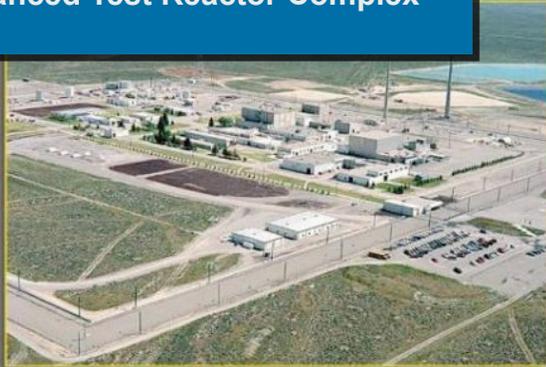
Materials and Fuels Complex



Research and Education Campus



Advanced Test Reactor Complex



Recent Progress and Accomplishments at the INL

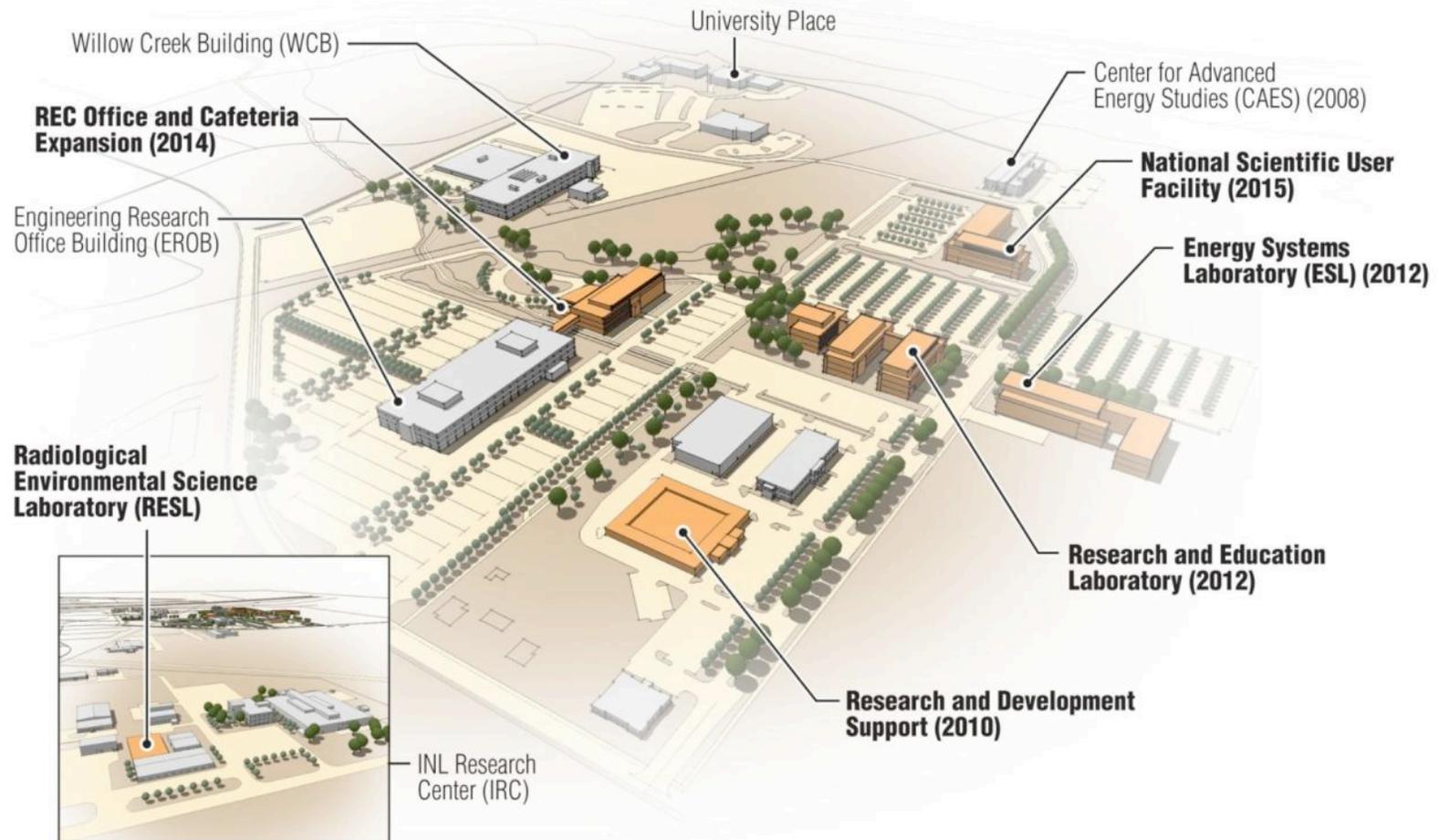
The central map shows the INL campus layout with the following highlighted areas:

- Advanced Test Reactor Complex** (Southwest)
- Materials and Fuels Complex** (Center)
- Research and Education Campus** (East)

Callout boxes provide details on specific buildings:

- 2009 Technical Support Building** (Yellow building, top left)
- 2009 Radiation Measurement Laboratory** (White building, middle left)
- 2009 Test Train Assembly Facility** (Orange building, bottom left)
- 2010 Radio-analytical Chemistry Laboratory (under construction)** (Yellow building, bottom left)
- 2009 Vehicle Test Station** (White building, top right)
- 2009 Radiochemistry Laboratory** (White building, middle right)
- 2008 Center for Advanced Energy Studies** (Blue building, bottom row, left)
- 2008 National & Homeland Security High Bay** (White building, bottom row, second from left)
- 2008 Supply Chain Management Offices** (White building, bottom row, third from left)
- 2008 National & Homeland Security Offices** (White building, bottom row, right)

Research and Education Campus



Front door to the laboratory, providing offices, general purpose laboratories, and data links to facilitate collaboration among visiting and resident researchers

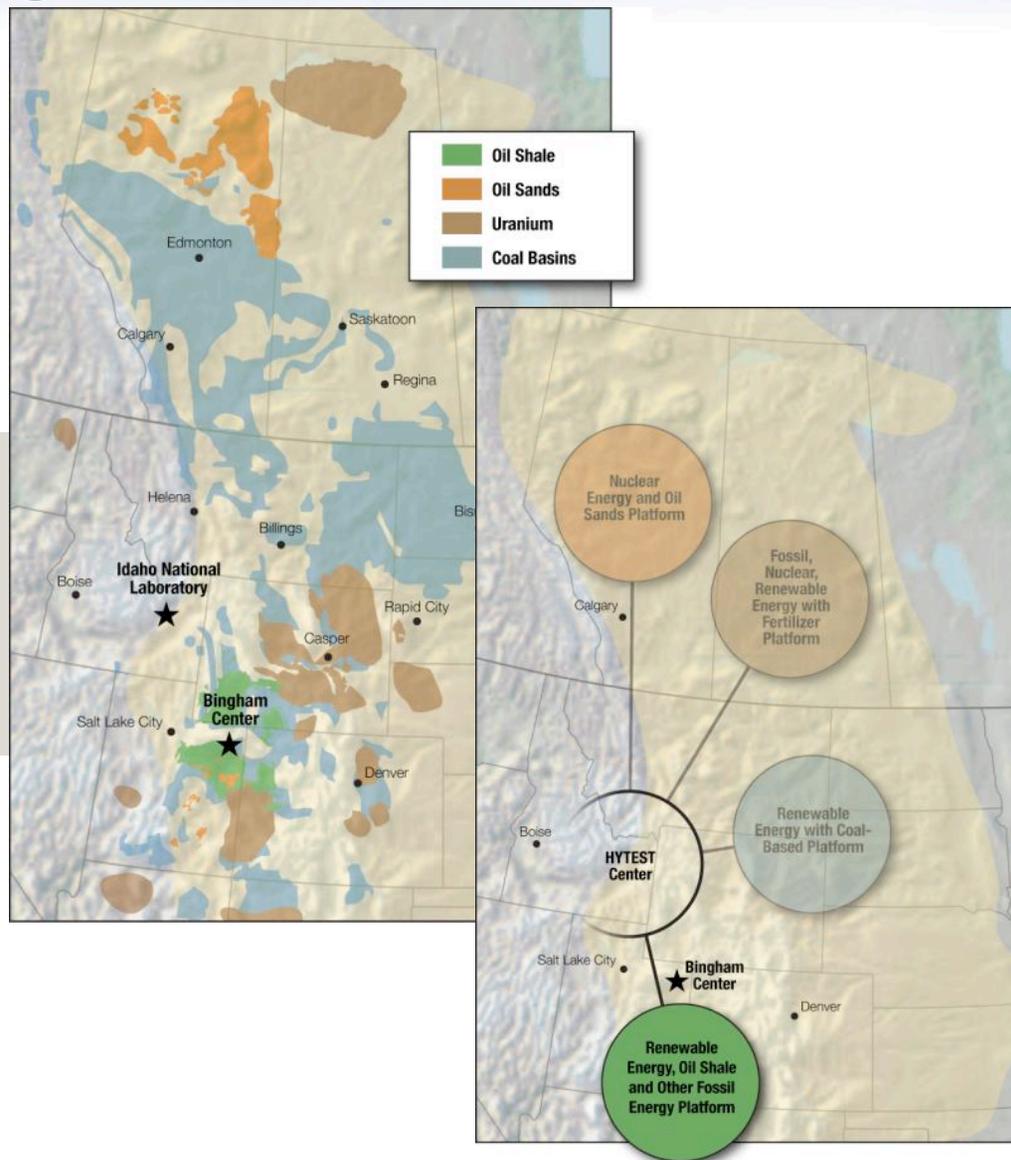
INL's Role in Idaho

- **INL chairs the Idaho Strategic Energy Alliance (ISEA) and provides technical support to several task forces**
- **INL provided the Idaho Legislature with annual report on state energy strategy and hosted a workshop on industrial energy efficiency**
- **INL is working on geothermal energy research projects at Malta (U.S. Geothermal) and Mountain Home Air Force Base.**
- **INL introduced waste-grease biodiesel technology in a start-up plant located in American Falls, which gets its feedstock from a waste water treatment plant.**
- **Will participate with Idaho Falls Power (IFP) in assessing performance and role of utility-scale batteries, as part of an IFP smart grid grant from DOE**



INL's Role in the Region

- **Unlocking vast energy resources within the Western Energy Corridor will require integration, optimization of the diverse set of resources and delivery infrastructure.**
- **INL is developing report for regional governors and premiers on the Corridor, with a Summit expected in January 2011.**
- **INL with its regional partners are creating a regional hybrid energy systems testing program, with the first partnership formed with Utah.**



Final Thoughts

- **The foundation for the INL as the National Nuclear Lab is in place**
- **INL has an enduring mission and vision that does not hinge on specific programs or projects**
- **The laboratory must be flexible as US energy and national security policies evolve**
- **The challenge for the next five years is execution**



BEA has successfully transformed the laboratory and the lab is on track to achieve the 10-year vision



Idaho National Laboratory

The National Nuclear Laboratory