Economic Outlook and Revenue Assessment Committee

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EORAC
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www.inl.gov

Idaho National Laboratory

Our Vision and Mission Positions INL to be Relevant to Tomorrow's Energy Future

INL Vision

INL will change the world's energy future and secure our critical infrastructure.

INL Mission

Discover, demonstrate, and secure innovative nuclear energy solutions, other clean energy options, and critical infrastructure.

Idaho National Laboratory

Three Pillars of Simultaneous Excellence Shape the Future of INL as a Research, Development, Demonstration, and Deployment (RDD&D) National Laboratory

The Idaho National Laboratory Site

Geography

- 890 square miles
- 177 miles of paved roads
- 21 miles of railroad lines
- 111 miles of electrical transmission and distribution lines
- Mass transit system

Infrastructure / Mission

- 579 buildings
- 3 fire stations
- 3 reactors
- Nuclear and radiological facilities
- 2 spent fuel pools
- 300 metric tons of used fuel
- Classified space
- Explosive range
- Landfills
- Significant security profile

4,211 Employees

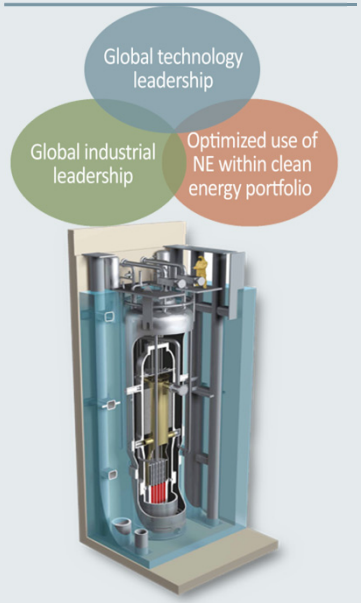
FY16 Business Volume
$1,034 M

…the Nation's Nuclear Laboratory

Enabling Science and Innovation through Partnerships and Collaboration

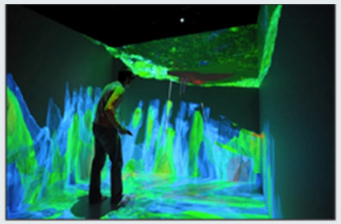
Enhance core capabilities, talent, S&T infrastructure, programs, and partnerships

Nuclear energy competitiveness and leadership



Integrated nuclear fuel cycle solutions

Regional clean energy systems

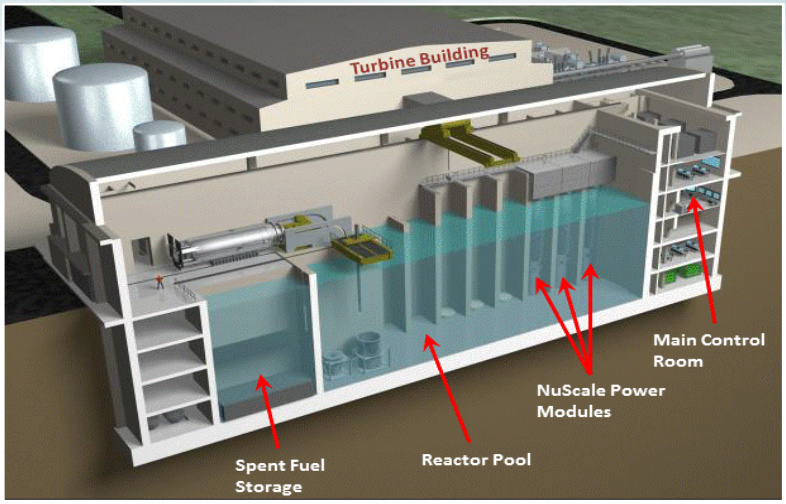


Cyber & physical security organized around Cybercore Integration Center

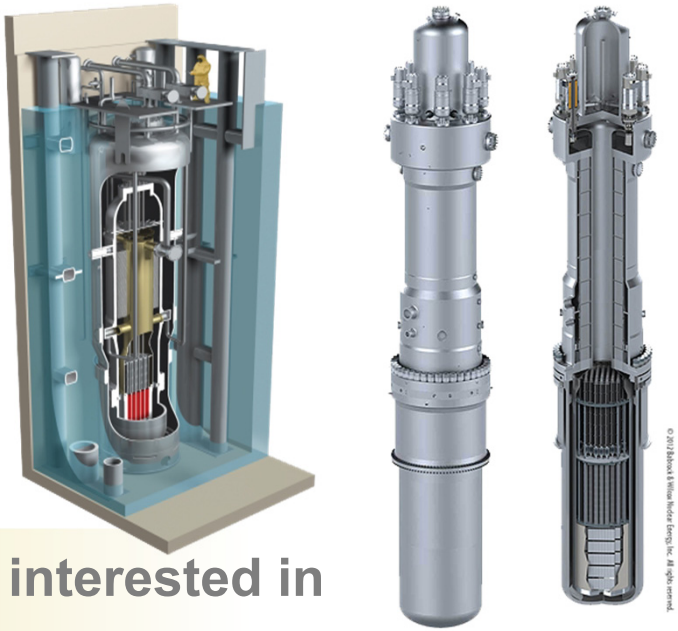
Research, Development, Demonstration, and Deployment

Small Modular Reactors (SMR)

- **INL responsible for siting, RD&D, and regulatory support for the first SMR anywhere in the world.**
- **DOE granted a site use permit to Utah Associated Municipal Power Systems (UAMPS) Carbon Free Power Project (CFPP) in February 2016 that enables UAMPS to study locating a NuScale-designed SMR at INL.**
- **UAMPS, NuScale, and INL proposing the Joint Use Module Plant (JUMP) concept to commercially demonstrate Hybrid Energy Systems (HES) and Secure Reliable Microgrid (SRM) applications.**



3-D view of Six NuScale Modules



Other advanced reactor companies also interested in siting in Idaho

Cybercore Integration Center – Integrated Missions, Assets, and R&D Focus

Virtual Research Park

Applying Multidisciplinary Teams Across Core Capabilities

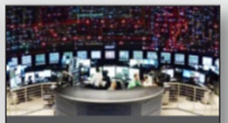
Urgent Mitigation REQUIRE ▶ **Large Scale Validation** ◀ REQUIRE **Long-Term R&D Challenges**

Emulations & Virtualization

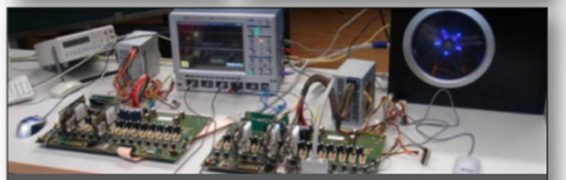
Wireless & Dynamic Spectrum

Military Subsystems

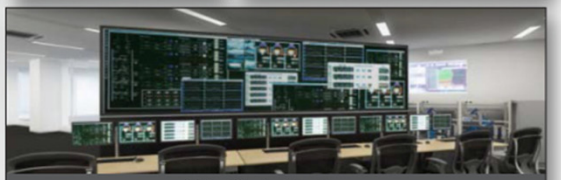
NOC, Demo Center


Energy Management Systems

Cyber/Physical Sandboxes

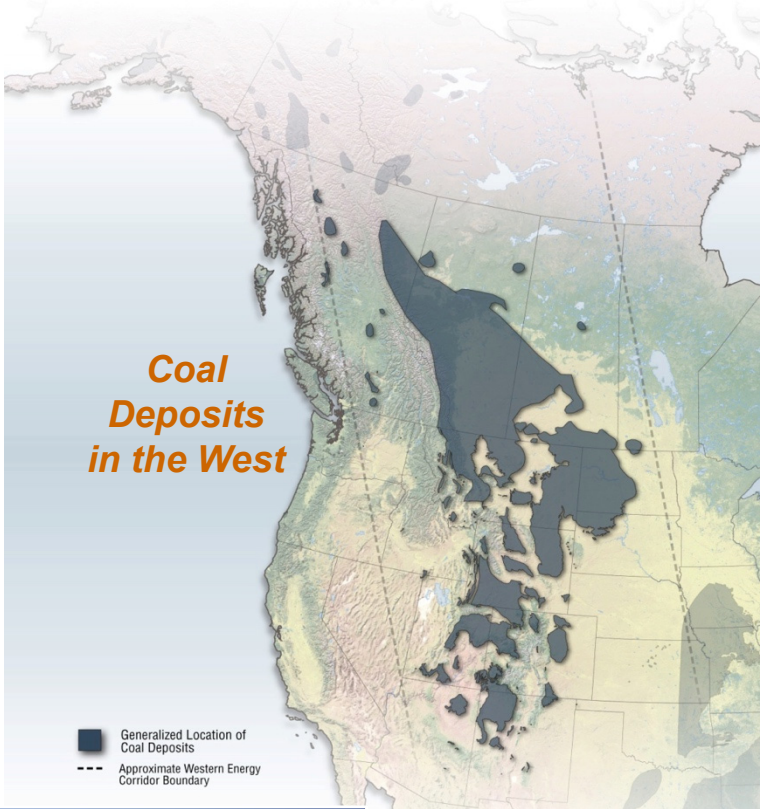

Controller Protocols, Embedded Systems Exploitation, RE

Full-Scale Critical Infrastructure Test Range Complex


Cyber/Physical Sandboxes

Regional Clean Energy Systems

- **INL is located within a part of North America that contains abundant energy resources and critical energy infrastructure strategic to long-term U.S. energy security, economic competitiveness, and job growth.**
- **INL is working with its partners to address the many grand S&T challenges associated with development, delivery, and use of these energy resources.**
- **INL has been engaged in regional energy R&D for several years, including as a member of the Center for Advanced Energy Studies, which also includes BSU, ISU, UI, and UW as members.**
- **INL's Biomass Feedstock National User Facility is partnering with the State Department of Agriculture to address Methyl Bromide contamination of hay in eastern Idaho**



Significant regional energy transitions are in play given the changing regulatory, technological and economic landscape

Center for Advanced Energy Studies (CAES)

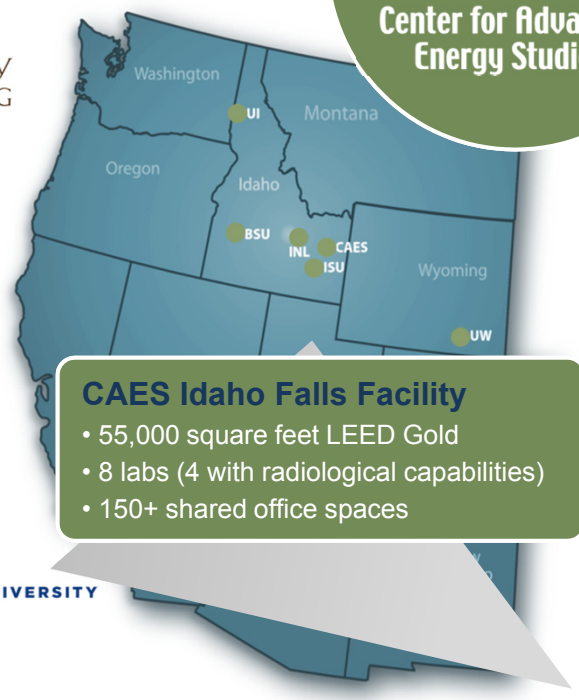
Collaborative Energy Research

Explore: Energy & Environmental Research

Educate: Energy & Environmental Education

Engage: Apply Knowledge to Industry

Enable: Energy Transitions and Economic Development



CAES Idaho Falls Facility
- 55,000 square feet LEED Gold
- 8 labs (4 with radiological capabilities)
- 150+ shared office spaces

Core Capabilities

- Energy Systems Design and Analyses
- Nuclear Science and Engineering
- Materials Science and Engineering
- Environmental and Resource Sustainability
- Fossil Carbon Conversion
- Geological Systems and Applications
- Energy Policy

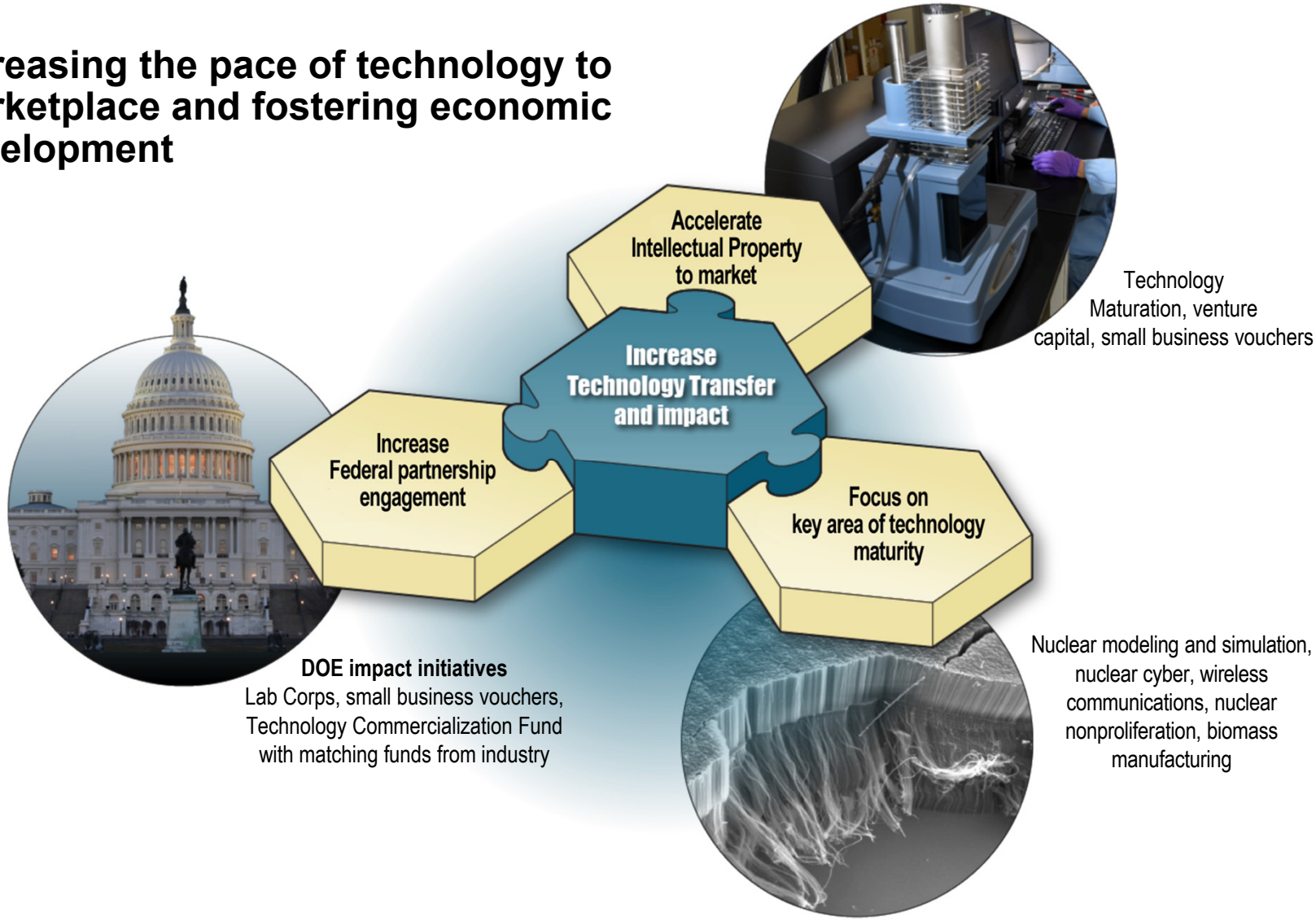
CAES by the Numbers

FY2016:

$24.6 M	Research and other funding won by CAES universities
2734	Number of visitors who experienced the 3-D Computer-Assisted Virtual Environment (CAVE)
215	Number of publications, presentations, and proceedings CAES researchers produced

Working Hand-in-hand with Industry

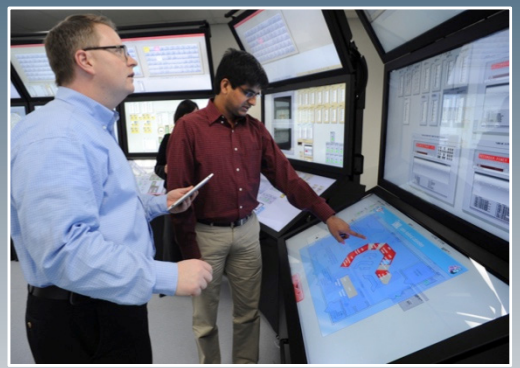
Increasing the pace of technology to marketplace and fostering economic development

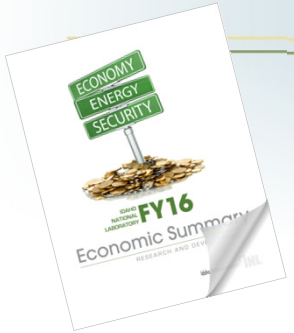


INL by the Numbers

- Average base salary of an INL employee in **FY 2016** was **$92,660 annually** *(FY'15 - $88,635)*
- INL **directly employed an average of 4,077 workers in Idaho**; secondary impacts in Idaho accounted for an additional 7,199 jobs for a total of 11,276 jobs – a **21.3% increase from FY 2015.**
- **482 new employees** *(FY'16)*
- **331 interns and 41 post docs** *(FY'16)*
- **13,000 visitors** to INL *(FY'16)*
- BEA subcontracted more than **$136 million to Idaho subcontractors**
- BEA corporate office contributed **$623,454 to charitable giving**

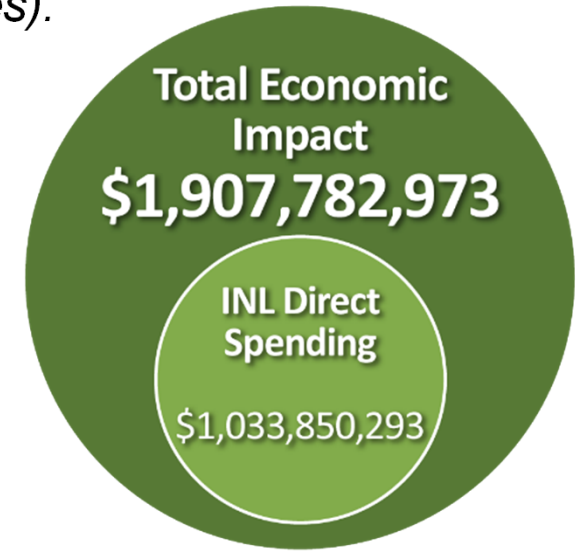
INL is the 6th largest private employer in Idaho – providing high-tech, high paying jobs



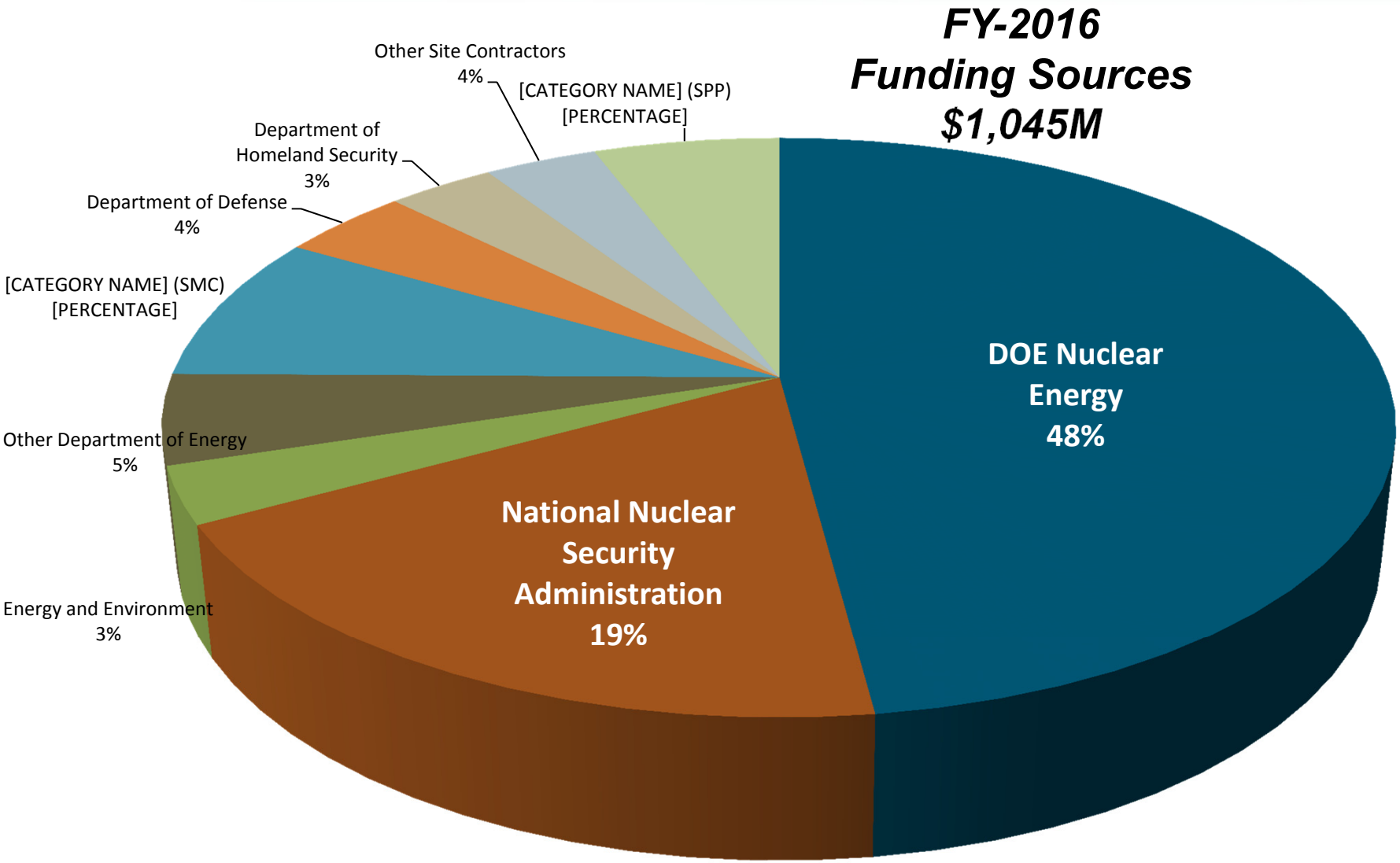


INL FY16 Economic Summary

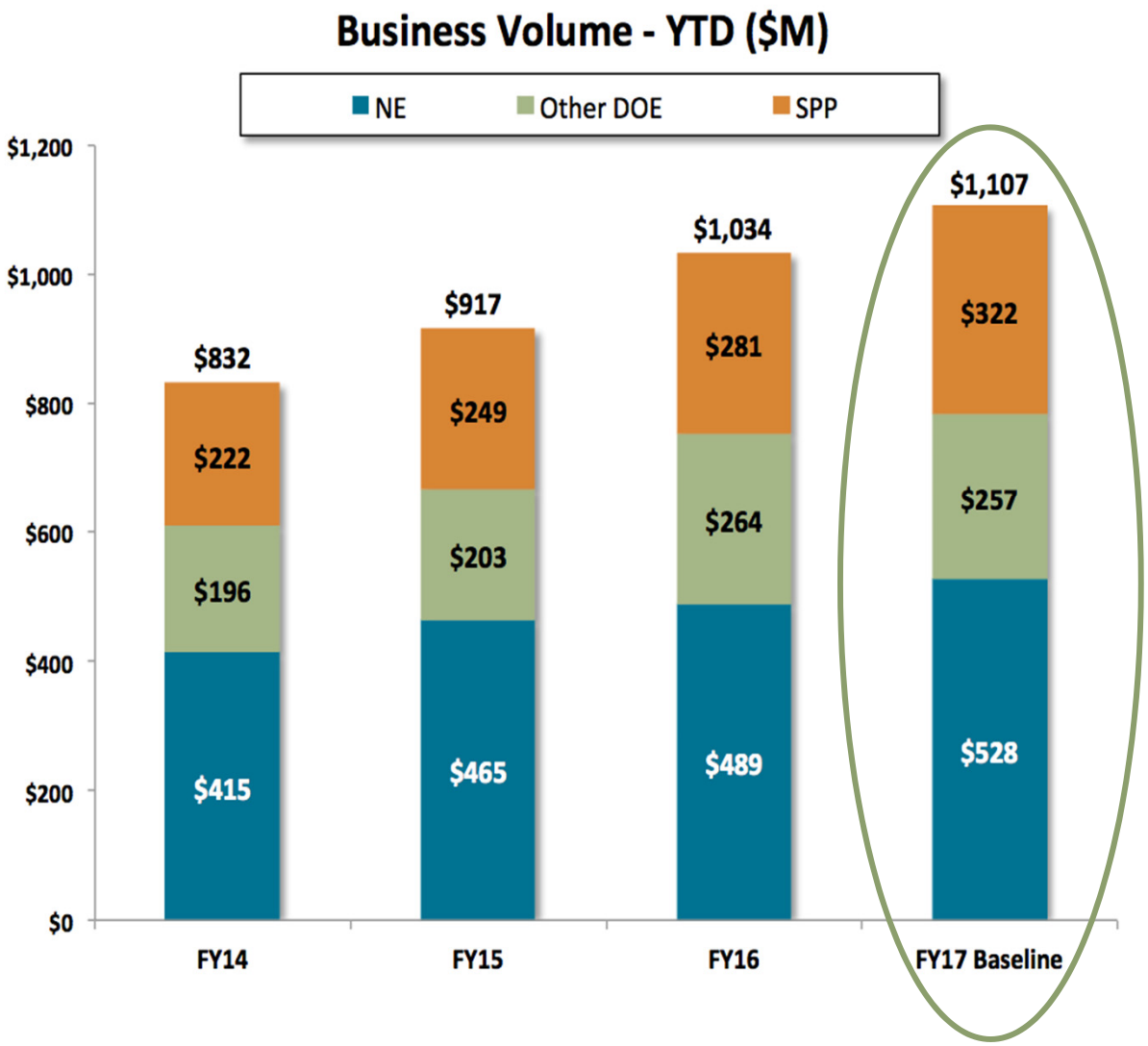
- When combined with indirect and induced impacts, INL operations add **$1.9 billion** to Idaho's total output.
- INL's total output impact increased by nearly $324 million between FY 2015 and FY 2016 – a **20.4% increase**.
- The total employment impact of INL operations accounts for **1.5% of Idaho's employment.**
- INL brought money into Idaho and generated **value-added output** of more than **$1.08 billion**.
- INL accounted for more than **2.9% of statewide economic output**, up from 2.5% in FY 2015.
- More than **$874 million of economic output** was generated through INL suppliers and employee household spending.
- INL **increased personal income** in the state by **$795 million**.
- INL economic impacts accounted for **1.3% of all personal income** in the state.
- INL impacts resulted in an estimated **$65 million in state and local tax** revenues.
- Taxes generated by INL operations account for **1.7% of total state and local tax revenue** *(based on FY 2015 state tax revenues).*



INL Funding


FY-2016
Funding Sources
$1,045M
Other Site Contractors
4%
[CATEGORY NAME] (SPP)
[PERCENTAGE]
Department of
Homeland Security
3%
Department of Defense
4%
[CATEGORY NAME] (SMC)
[PERCENTAGE]
Other Department of Energy
5%
Energy and Environment
3%
DOE Nuclear
Energy
48%
National Nuclear
Security
Administration
19%

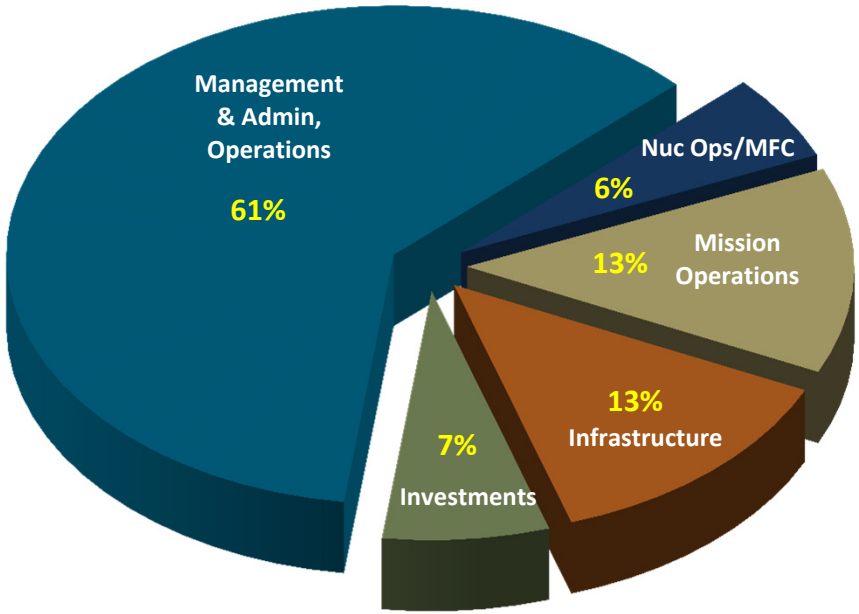
FY-2017 Funding Projections



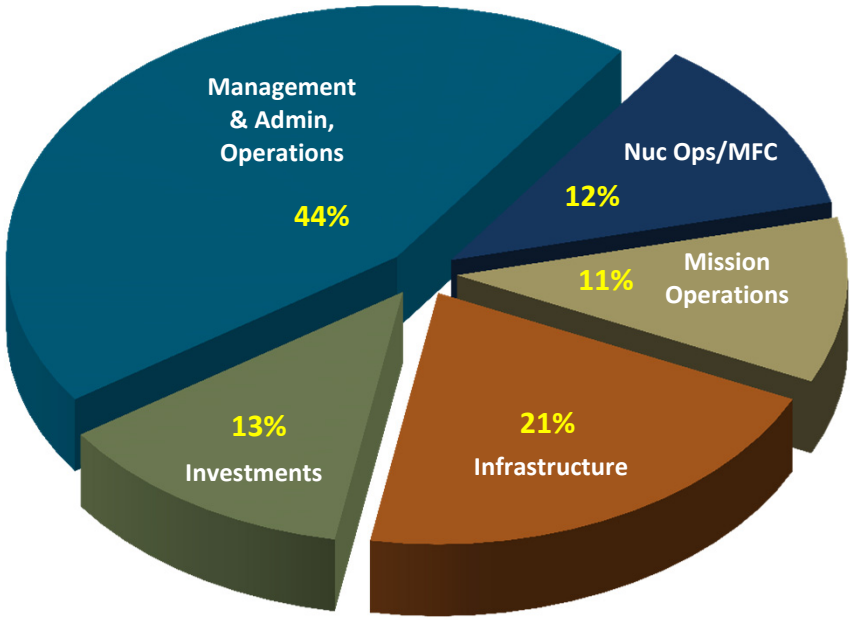
- **FY16 BV: $41M above target and $117M above FY15**
- **Exceeding $1B for first time since FY10**
- **Growth across the board, with notable increases in:**
  - NE Infrastructure (+$28M);
  - NNSA Materials Management Minimization program (+$43M);
  - DoD Specific Manufacturing Capability (SMC) program (+$16M)
- **Forecasting $73M increase in FY17, including:**
  - NE Infrastructure (+$29M);
  - NE Enabling Technologies (+$26M);
  - SMC (+$10M)

We are Using the Taxpayers Dollars Wisely

FY07 Actual



FY16 Actual



Indirect budgets reflect two primary drivers: market forces influencing fringe benefit costs, and the need to build intellectual and physical mission-related capability

Initiatives to Increase Talent Attraction and Engagement

- **Increased pace of hiring and recruiting**
  - Recruiting and staffing team has doubled in past two years
- **Partnering with universities, community colleges, and technical colleges for talent and research collaboration**
- **Partnered with Idaho STEM Action Center (AC)**
  - Aligned INL K-12 STEM Program strategy to STEM AC
    - Transforming K-12 STEM into a driver for science and innovation in eastern Idaho
  - Investing INL resources to match STEM AC goals
    - Empowering *teachers through professional development* – **Reached 8,000 teachers in FY2016**
    - Motivating *students* through STEM outreach – **Reached 70,000 students in FY 2016**
    - Collaborating with *families* and *communities* to explore STEM careers and develop STEM Literacy
    - Providing *STEM grants* – **Grants over $300,000 on annual basis**
  - Targeted rural and underrepresented, underserved, first generation populations

Planned Campus/Complex Modifications

REC

CyberCore Integration Center

Collaborative Computational Center (C3)

IRC Repurpose

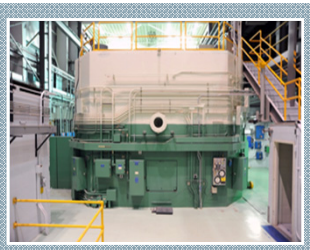
ATR

Maintenance Support Building

RHLLW Facility

ATR Five-Year Plan

MFC

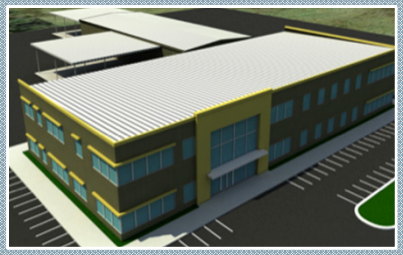


TREAT Restart

Research Collaboration Facility

MFC Five-Year Plan

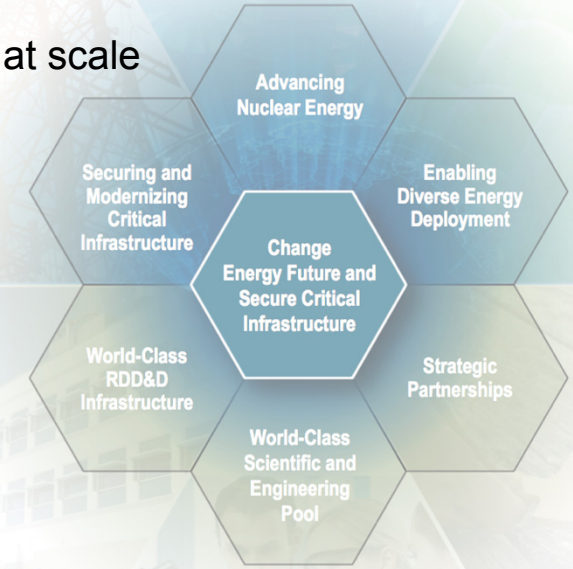
Utility Corridor



Sample Preparation Laboratory

INL has an Important Mission and a Grand Vision – Our Sound Strategic Plan Drives us to Reach our Goals

- **Enhance and build our broad core capabilities to deliver our mission and achieve our vision**
- **Focus on four critical outcomes**
  - Ensuring nuclear energy leadership and competitiveness by expanding research and development testbed capabilities at MFC and ATR, serve as a demonstration platform in partnership with industry
  - Partner with industry to deliver a domestic first-of-a-kind SMR and continue to pave way for innovative advanced reactors
  - Advance and demonstrate energy and environmental systems at scale through regional innovation and demonstration
  - Develop cyber-physical innovation capabilities, advance cyber-science and engineering, and establish Cybercore Integration Center
- **Achieve excellence in safety, security, and operations**
  - Develop our talent pipeline
  - Cultivate positive and enduring partnerships at all levels with industry, national laboratories, universities, policymakers
  - Operate reliably, efficiently, and effectively – protect environment, ensure safety and health of staff, visitors, public



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