U.S. DEPARTMENT OF ENERGY | Nuclear Energy

Current Issues
DOE's Nuclear Energy Programs

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President Obama's Energy Goals

"By 2035, 80 percent of America's electricity will come from clean energy sources. Some folks want wind and solar. Others want nuclear, clean coal and natural gas. To meet this goal, we will need them all."

President Obama's 2011 State of the Union Address

"Today, I'm announcing a new national climate action plan, and I'm here to enlist your generation's help in keeping the United States of America a leader -- a global leader -- in the fight against climate change."

June 25, 2013, Georgetown University

"…the debate is settled. Climate change is a fact. And when our children's children look us in the eye and ask if we did all we could to leave them a safer, more stable world, with new sources of energy, I want us to be able to say yes, we did."

President Obama's 2014 State of the Union Address

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Role of U.S. Department of Energy for Sustainable and Innovative Nuclear Energy

Conduct Research, Development, and Demonstration to:

- Reduce technical risk
- Reduce regulatory risk
- Reduce financial risk and improve economics
- Manage nuclear waste
- Minimize the risks of nuclear proliferation and terrorism
- Foster international and industry collaboration

Vogtle – October 2013
Source: Southern Co.

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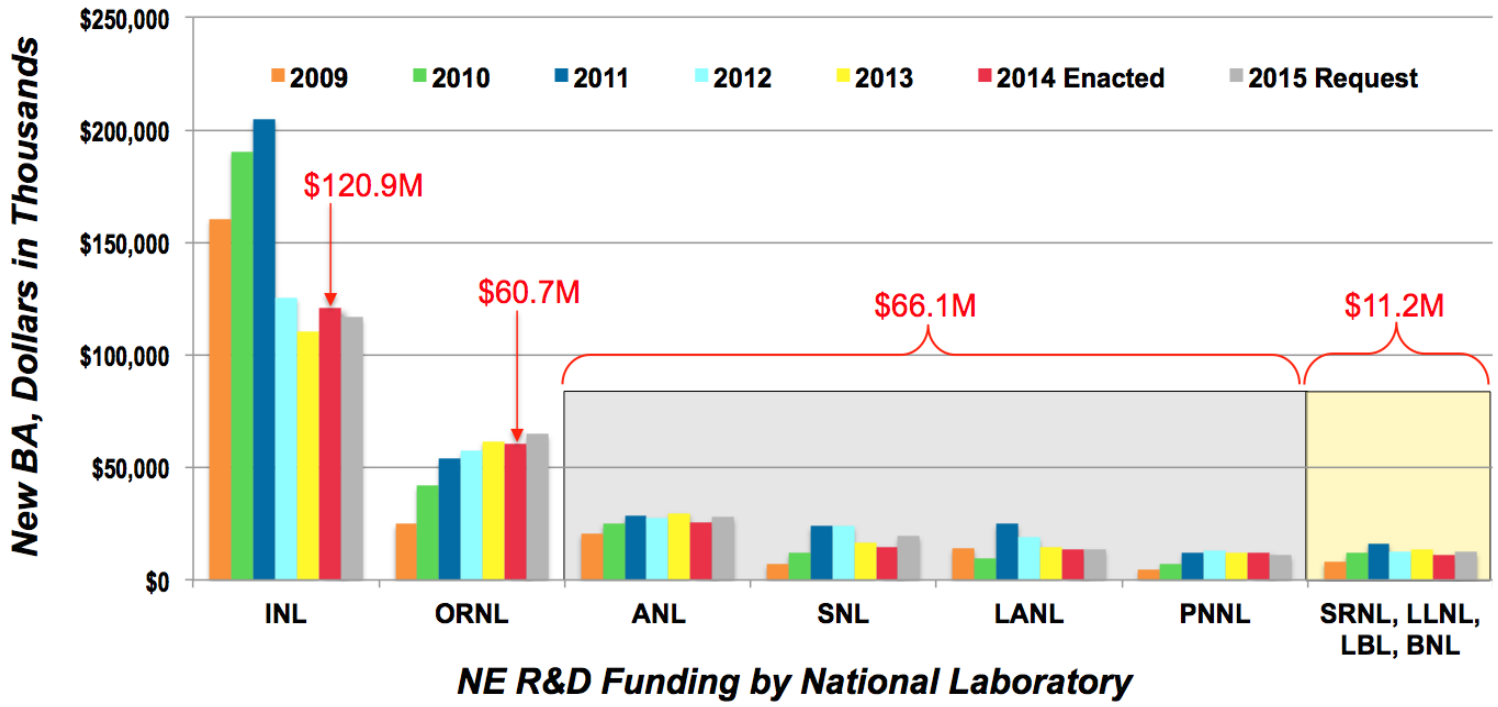
NE R&D Funding by National Laboratory

NE invests 20% of its R&D resources at universities. The remainder funds the national lab component of the national nuclear energy research enterprise



Reductions in NGNP R&D and Establishment of the SMR Licensing Technical Support Program are the **Primary Sources of the Significant Decline in INL NE R&D Funding**

Adjustments made for transfer of funds from INL and ORNL (e.g., NGNP, LWRS, NEUP, CASL). (%/% = percent of R&D directed to Labs, and percent of total NE R&D)

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Outline of the FY15 INL PEMP Compared to SC Labs

- **INL PEMP structure is based on the Office of Science Model:**

SC PEMP Goals		INL PEMP Goals	
1.0	Provide for Efficient and Effective Mission Accomplishment	**1.0**	Efficient and Effective Mission Accomplishment
2.0	Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities	**2.0**	Efficient and Effective Stewardship and Operation of Research Facilities
3.0	Provide Effective and Efficient Science and Technology Program Management		NOTE: The components of Goal 3.0 in the SC PEMP are evaluated in Goals 1.0 and 3.0 of the INL PEMP.
4.0	Provide Sound and Competent Leadership and Stewardship of the Laboratory	**3.0**	Sound and Competent Leadership and Stewardship of the Laboratory
5.0	Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health and Environmental Protection	**4.0**	Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health and Environmental Protection
6.0	Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)	**5.0**	Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)
7.0	Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs	**6.0**	Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs
8.0	Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM) and Emergency Management System	**7.0**	Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM) and Emergency Management Systems

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Advanced Test Reactor National Scientific User Facility (ATR NSUF)

Provides the research community a means to conduct cutting edge nuclear energy R&D by providing access to existing irradiation and post-irradiation examination capabilities, located at INL and various partner facilities.

Reactor Facilities

- INL Advanced Test Reactor
- MIT Reactor
- NCSU PULSTAR Reactor
- ORNL High Flux Isotope Reactor

Beamline Facilities

- University of Wisconsin
- Illinois Institute of Technology
- University of Michigan
- NCSU PULSTAR Reactor

Post Irradiation Examination

- INL
- North Carolina State University
- University of Wisconsin
- University of Michigan
- UC Berkeley
- University of Nevada, Las Vegas
- Purdue University
- PNNL
- ORNL
- Westinghouse

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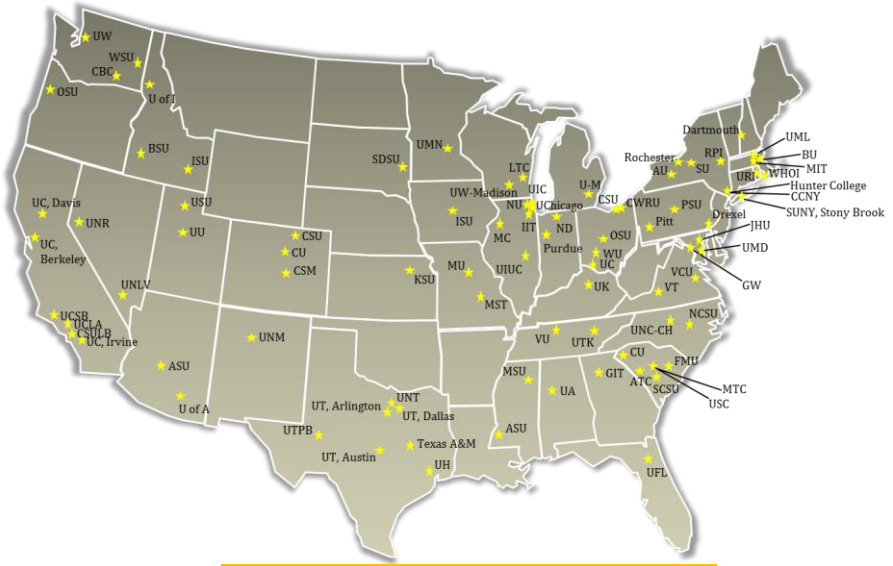
Nuclear Energy University Programs

- **The Nuclear Energy University Programs (NEUP) and the Integrated University Program (IUP) have a well established competitive process for awarding R&D, infrastructure and scholarships/fellowships.**
  - The Office of Science and Technology Innovation will continue implementing this competitive process and will expand to incorporate it into all competitive research.



Since FY09, NE has awarded $349M to 98 schools in 39 States and the District of Columbia.

- **The NE R&D Programs are the cognizant technical managers of these competitive R&D awards and therefore play in integral role in the success of each project.**
  - Universities, national laboratories, industry, and foreign research partners are strongly encouraged to actively engage and collaborate with the NE R&D programs.

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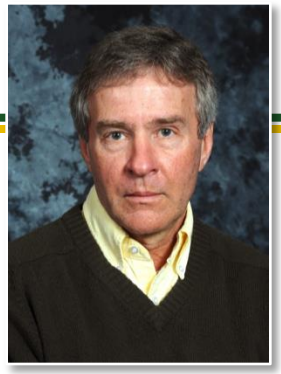
INL Awards and Achievements

Melissa Teague, Young Scientist Award from the European Materials Research Society

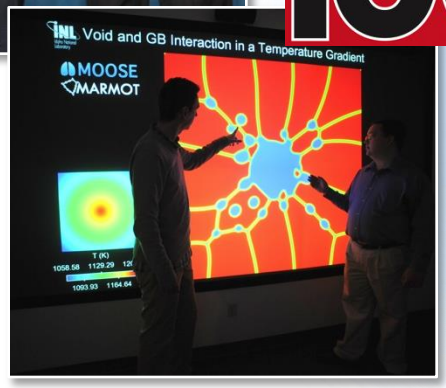
Derek Gaston, receives the Presidential Early Career Awards for Scientists and Engineers (PECASE) Award



Dave Nigg, named ANS Fellow

Mike Tonks, The Minerals, Metals & Materials Society (TMS) 2014 TMS Young Leader Professional Development Award

Piyush Sabharwall for the ANS Young Member Excellence Award



R&D100 for The Multiphysics Object Oriented Simulation Environment (MOOSE)

R&D100 for Advanced Electrolyte Model (AEM)

R&D100 for Switchable Polarity Solvent Forward Osmosis (SPS FO)