

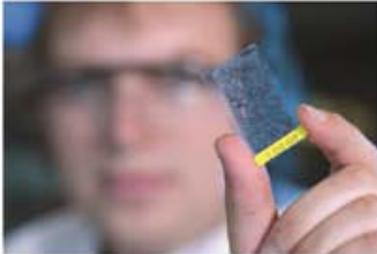


Collaboration



*Inspiring
Innovation*

Center for Advanced Energy Studies



J.W. Rogers, Jr., Ph.D.
Director

May 16, 2012

Vision: Develop Secure Sustainable Energy Solutions to 21st Century Challenges

Research

- Conduct meaningful research that leads to secure, sustainable energy solutions
- Expand research collaborations at the four partner institutions

Education

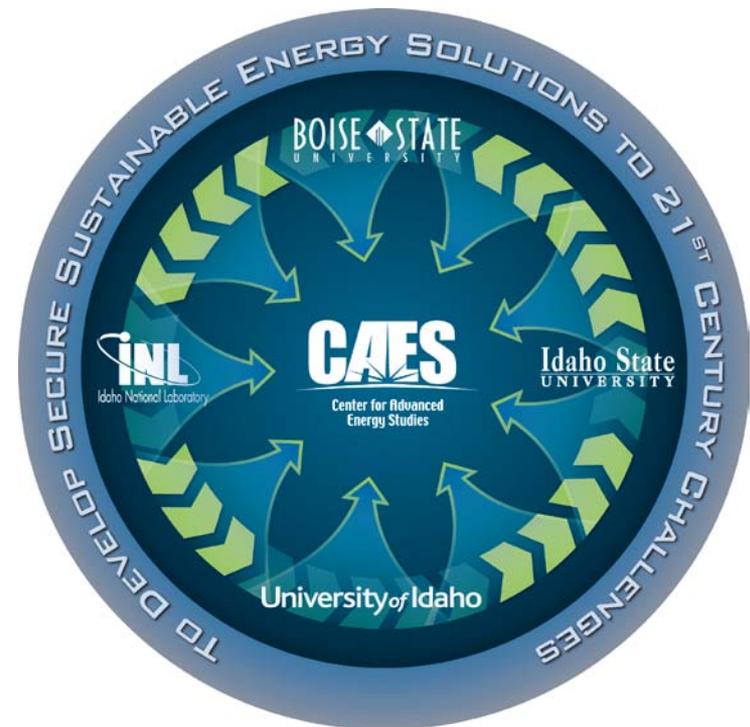
- Increase the number of students entering energy-related fields (particularly nuclear energy)
- Offer students hands-on research opportunities and experience

Economic Development

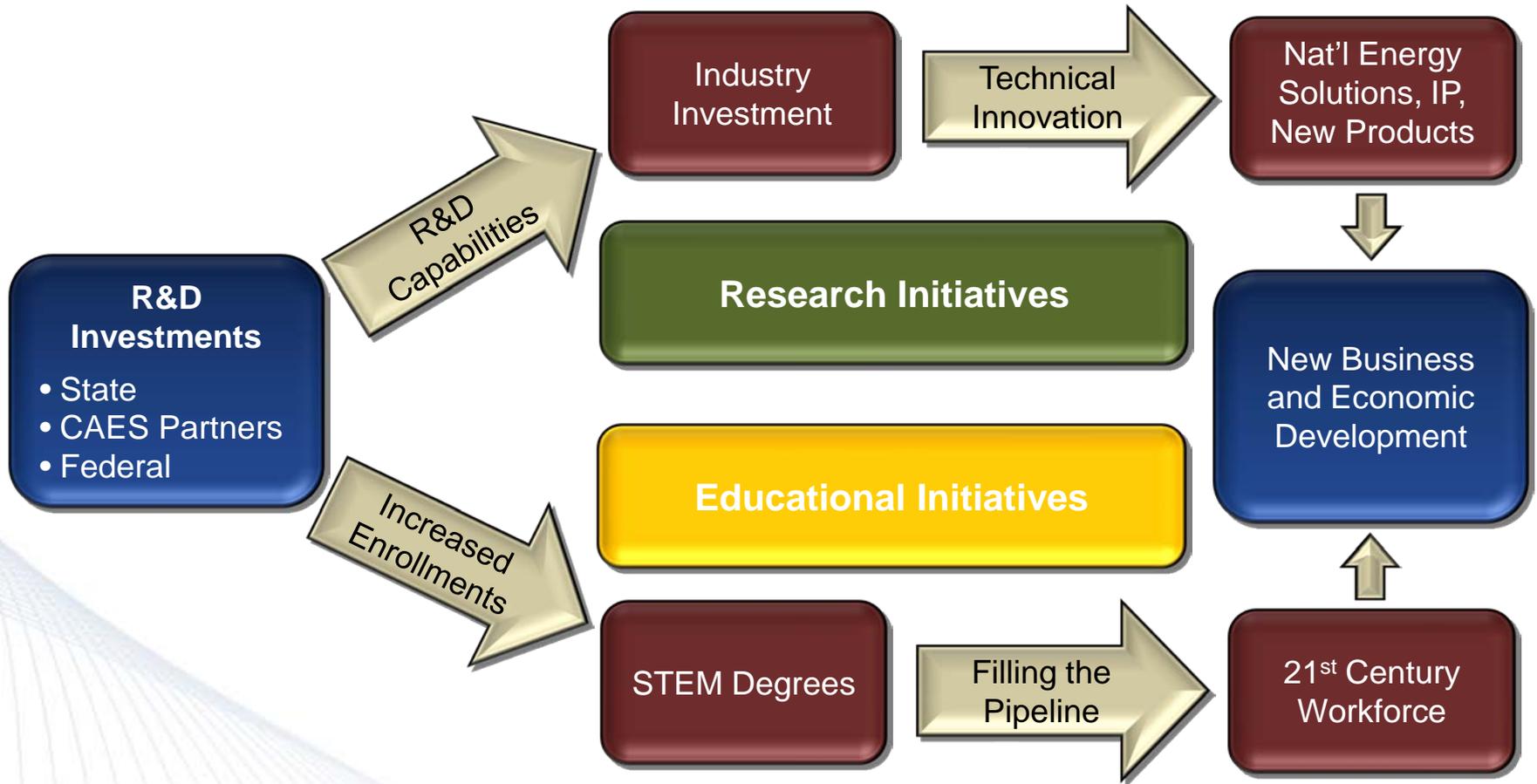
- Foster technology-based economic development by building partnerships with industry

Portal to INL

- Improve access to research facilities and equipment
- Provide access to academic and industrial partners both regionally and internationally

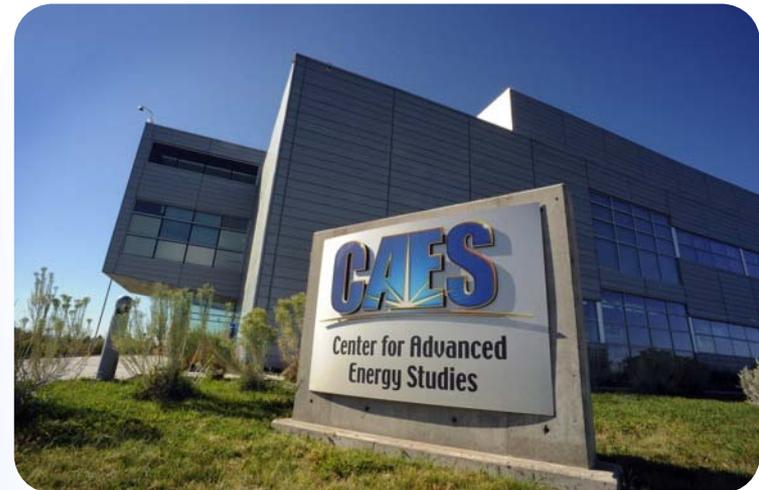


Our Strategy



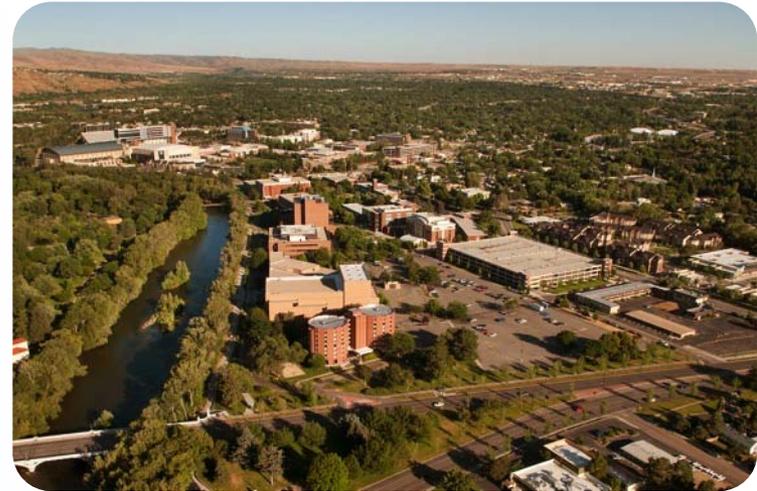
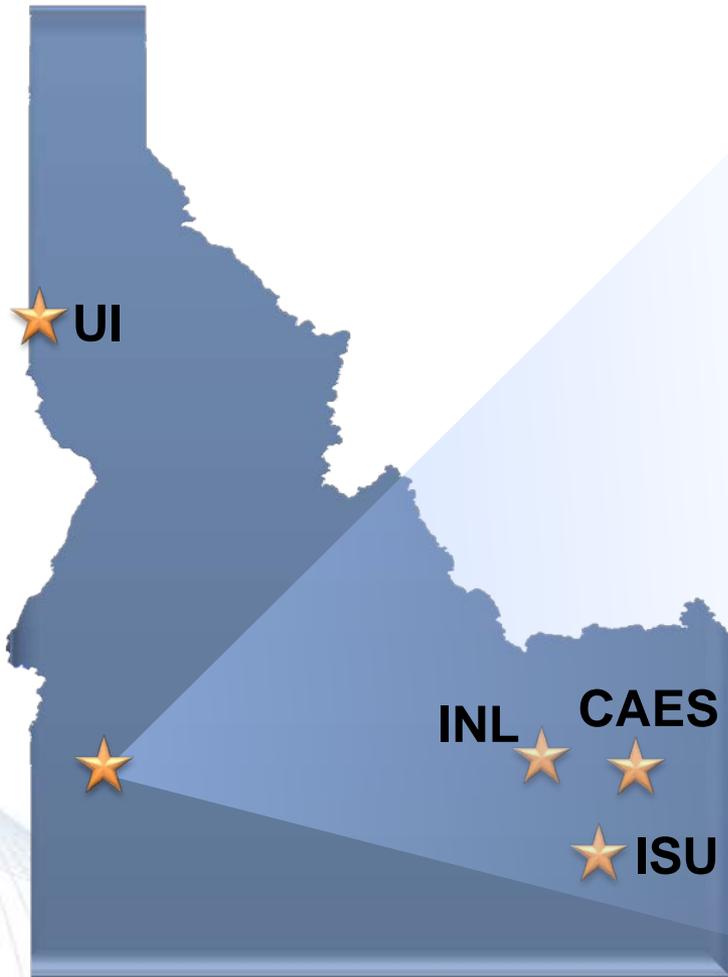


Mission: Grow partner's R&D portfolio; educate next generation of scientists, engineers, and technicians; and generate technology-based economic development



CAES

- 55,000 sq/ft LEED Gold
- 6 Labs (4 radiological capabilities)
- 150 research staff
- 4-wall virtual reality CAVE
- Advanced Modeling, Simulation and Visualization



Boise State University

Leads Materials, Energy Policy and Energy Efficiency initiatives

Key Infrastructure

- Advanced material fabrication and testing
- Center for Materials Characterization
- New Product Development Laboratory

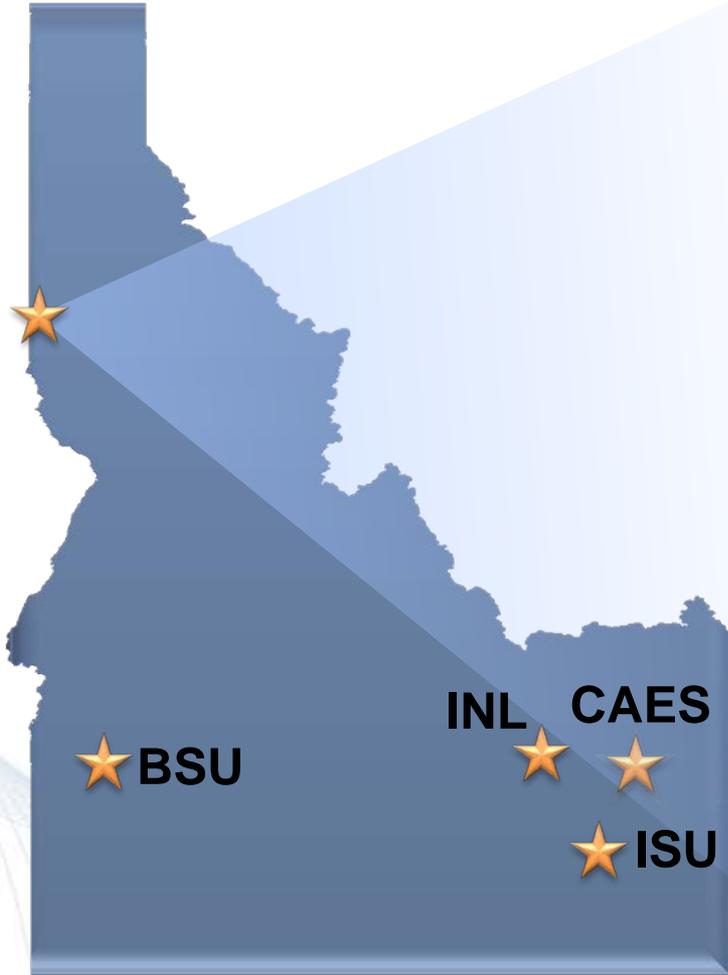


Idaho State University

Leads Nuclear Science and Engineering Initiative

Key Infrastructure

- Research Reactor/Health Physics
- Accelerator Center
- Nuclear Engineering Laboratory
- IJRF (Idaho Joint Research Facility)



University of Idaho

Leads Geofluids Energy Science initiative, biodiesel, radiochemistry capabilities

Key Infrastructure

- Agriculture Research and Extension Centers
- Integrated Design Laboratory
- Idaho Water Research Institute



Idaho National Laboratory

Leads Bioenergy and Modeling and Simulation initiatives

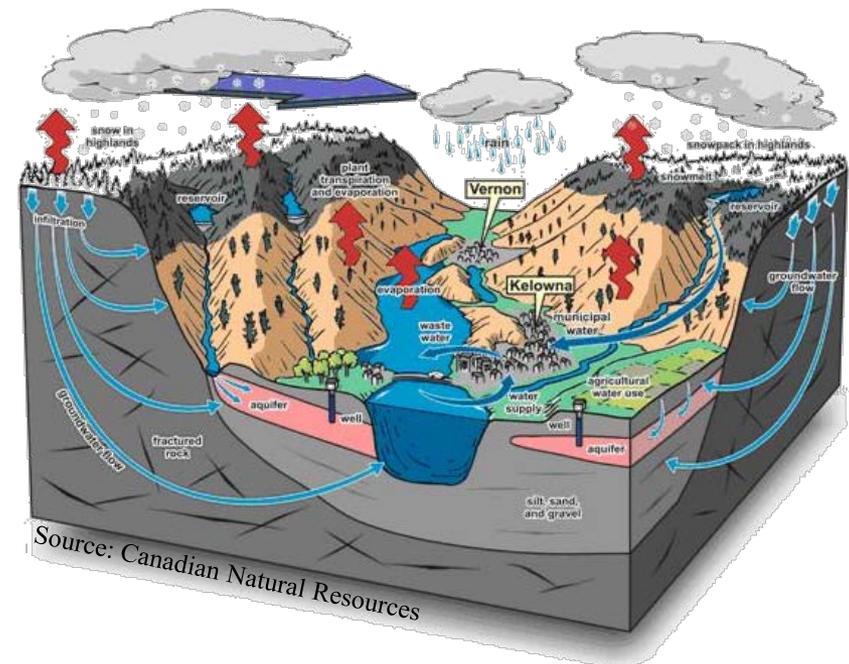
Key Infrastructure

- Advanced Test Reactor
- World class energy research facilities
- One of a kind radiological research facilities
- “Fission” Supercomputing facilities

Water: The Challenge

Competing interests face decreasing water availability due to population growth and large scale climate variability. Serious constraints on the quantity and quality of water availability with impacts for:

- Energy
- Agriculture
- Public health
- Ecosystem integrity
- Economic development
- Regional vulnerability of water & energy infrastructure



Advances in science and technology can play a major role in meeting these challenges.

Research Initiatives



Geofluids Energy Science

- Carbon sequestration
- Geothermal
- Groundwater resources



Energy Efficiency

- Industrial assessment centers
- INL bus fleet efficiency
- Energy management toolsets



Advanced Materials

- Advanced nuclear fuels
- Advanced alloys
- Radiation /corrosion sensors



Bioenergy

- Life cycle analyses
- Agriculture (dairy) and forest waste to energy, fuels and products
- Oilseeds



Nuclear Science & Engineering

- Ion beam production of radionuclides
- Waste separation
- Life extension of current reactors
- Recovery of uranium from seawater

Geofluids Energy Science Initiative

Hydrogeology and biogeochemistry of subsurface non-hydrocarbon geofluids relevant to energy production and utilization

- ***Carbon Sequestration*** – characterizing interactions between carbon dioxide and geologic reservoirs
- ***Geothermal Resources*** - developing new cost effective tools and approaches for identifying and characterizing potential geothermal resources
- ***Groundwater Resources*** – understanding and mitigating the impact of energy activities on groundwater supplies

Significant Activities

- Big Sky Carbon Sequestration Partnership (DOE-FE)
- CO₂ mineralization of reservoirs rocks (Shell International)
- Improved geothermometry (DOE-EERE)
- Enhance Geothermal (DOE-EERE)
- Clean up of radionuclide contaminated aquifers (DOE-BER)

Mountain West Water Institute

A regional resource for addressing the science and engineering challenges of water management in the Mountain West

- Apply capabilities and technology developed under Federal (DOE+) programs to distributed water data to provide new information, applications and insight for water resources
- Provide scientific basis for improved water management and energy resource development
- Enhance Federal/State collaborative R&D in the Mountain West

