

## Center for Advanced Energy Studies (CAES)

The Center for Advanced Energy Studies (CAES) is a collaboration between the state of Idaho and its academic research institutions (Boise State University, Idaho State University and the University of Idaho), the federal government through the U.S. Department of Energy and Idaho National Laboratory managed by Battelle Energy Alliance, LLC.

CAES combines the efforts of these institutions to provide advanced energy and energy security research on technical and policy issues with two primary goals: providing secure, sustainable energy solutions for Idaho, the region and the nation, and increasing the number of students entering energy and energy security fields.

CAES' research is focused on nuclear science and engineering, advanced materials, geofluids energy science, bioenergy, energy policy, modeling and simulation, industrial control cyber security and energy efficiency. In addition, CAES is expanding its portfolio based on strategic partnerships with industry. These areas include human factors and instrumentation and resilient controls.



### History of CAES

The Center for Advanced Energy Studies was initiated in June 2005 and was formalized in December 2005 by the CAES collaborators: Boise State University, Idaho National Laboratory, Idaho State University and the University of Idaho. INL Laboratory Directed Research and Development funds were first awarded to CAES researchers in May 2006 and have been each year since. Between 2006 and 2010 a total of \$7.4 million in federal funds were provided to CAES, supporting the purchase of advanced research instruments and operations. Beginning in 2009 the state of Idaho has annually appropriated \$1.6 million to CAES to support university faculty and staff.

Ground was broken for the 55,000-square-foot CAES building in Idaho Falls on February 20, 2007. The building, which was dedicated on February 20, 2009, is owned by the state of Idaho and maintained and operated for the benefit of CAES by Idaho State University. It is one of the few Leadership in Energy and Environment Design (LEED) certified buildings in Idaho. The CAES building features half laboratory space and half office space and common areas and is approaching its personnel capacity with over 150 faculty, students, other researchers and support staff.

## Key Accomplishments

The Center for Advanced Energy Studies collaboration has resulted in more than 500 undergraduate and graduate students entering nuclear and other energy programs at Idaho's three universities. In addition, CAES researchers have won \$41.9 million competitive research and other funding since 2009.

CAES is making a difference to the citizens of Idaho and the country. For example, CAES is:

- Teaming with the U.S. dairy industry to turn cow manure into energy and reduce greenhouse gas emissions at the nation's 90,000 dairy farms. CAES signed a memorandum of understanding with the Innovation Center for U.S. Dairy to help develop sustainable farm practices, enhance manure management techniques, and improve methods for turning waste into energy and other valuable products.
- Working with Idaho Falls Power to help test and deploy hundreds of new residential and commercial meters as part of the utility's participation in a national smart grid project.
- Building modeling and simulation capabilities at the Idaho research universities. CAES deployed portable 3D visualization systems to Boise State University, Idaho State University and the University of Idaho. The INL-developed IQ Stations are aiding nuclear energy, geothermal, materials science and other research at the universities.
- Providing industry and others with access to unique capabilities and equipment. CAES operates its Microscopy and Characterization Suite (MaCS), which contains several high-end microscopes and an atom probe, and its Computer Assisted Virtual Environment (CAVE) as user facilities.

CAES attracts private industry from around the world. Corporate-sponsored research, technology commercialization and spin-off energy-related companies create jobs in Idaho as a result of CAES research. CAES also provides office space for the Advance Test Reactor National Scientific User Facility, serving as a gateway into the INL for academic visitors to the user facility.

For more information, please contact:

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