

Center for Advanced Energy Studies

*"Preserving Worldwide Nuclear Competency -
Where Education, Institutional Knowledge and Industry Meet"*

Waste Management 2007

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Idaho State University
University of Idaho
Boise State University
Massachusetts Institute of Technology
Oregon State University
North Carolina State University
Ohio State University
University of New Mexico
Idaho National Laboratory
Battelle Energy Alliance
Department of Energy

CAES

**Center for Advanced
Energy Studies**



Energy Workforce Challenge: The Need for People

Human Capital

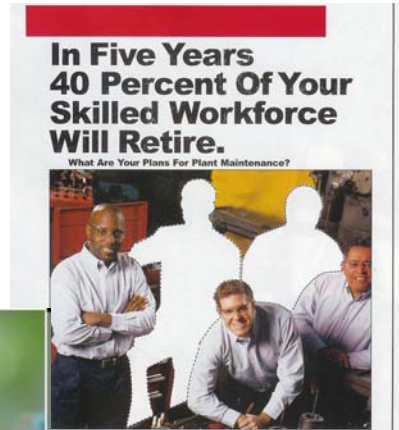
- Aging workforce
- Shrinking pool of potential workers
- Fewer Sci/Eng students
- Foreign competition

Technological Sophistication

- Multiple generation sources;
i.e. nuclear, renewable, fossil
- Reduce environmental impacts/carbon footprint
- Increasing application of sophisticated systems

Sustainability

- Long-range energy policies
- Consumer acceptance of various sources;
i.e. nuclear, renewable, fossil



What We Are Doing at INL – Priming the Pipeline

University Programs - A National Network

- Academic Centers of Excellence
- Faculty/Staff Exchange Program
- Student Fellowships/Internships



Pre-College/K-12 Programs – A Regional Network

- Modern educational materials/workshops
 - The Harnessed Atom (DOE-NE)
 - Think Energy Idaho (NEF)
- Student Opportunities
 - Scholastic Tournaments
 - Student Internships



Center for Advanced Energy Studies (CAES)



Center for Advanced Energy Studies

An academic and research institute

- Facilitate government, university and industry collaboration
 - Energy Research
 - Policy Conceptualization
 - Education & Training

Maximize the utilization of resources

- Expand researcher-to-researcher collaborations
- Improved access to research facilities & equipment
- Enhance student educational opportunities

Create a network of networks

- Universities, Industry, Laboratories



**Bringing together resources,
capabilities and expertise for
energy self-reliance**

Advance Energy Research

Integrated research agenda

- **Nuclear Energy**
 - Advanced Fuel Cycle
 - Material Sciences
- **Fossil Energy**
 - Carbon Management
- **Renewable Energy**
 - Biofuels
- **Energy/Environmental Policy**
 - Energy/Water Nexus
 - Public Values/Dialogue



Enhanced technical collaboration

- **Multi-organizational involvement**
- **Joint Appointments**
 - Recruit/retain outstanding scientists
- **Graduate students integrate universities & laboratory**

Enhance Educational Opportunities

Establish a network of networks

- Academic Centers of Excellence
- Expand researcher-to-researcher collaborations
 - Idaho-Affiliated Universities
 - National University Consortium
 - World Nuclear University

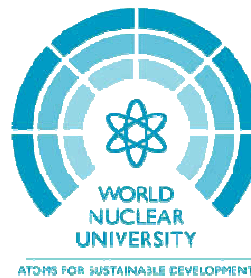


Enhanced Educational Programs

- Enriched Curriculum
- Hands on practical work experience
 - Scholarships, Internships, etc.

Professional/Educational exchanges

- Visiting scientists, staff, faculty, students



Economic Development Opportunities

- Create an atmosphere that fosters government-university-industry collaboration
- Economic Development
 - Industrial Partnerships, Consortia
 - Regional and State economic development
- Technology Transfer/Commercialization
 - Partnerships
 - Contract Research
 - Technical Assistance
 - Cooperative Research & Development (CRADA)
 - Patent process
 - Licensing



Technology Transfer and Commercialization

Bridging the Gap Between Research and Commercialization

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Closing Thoughts

To meet global energy demand we will need **ALL available technologies and energy sources**

- Secure, sustainable, affordable, environmentally sensitive

To prepare the next generation of energy experts

- Maximize the utilization of government, academic, and industrial resources
- Create premier user-facilities to promote collaboration
- Revitalize energy-related (S&E) education
 - Increase student enrollment/graduates (BS/MS/PhD)
 - Enhanced education with practical research experience
- Disseminate research results through seminar series, workshops, short courses, conferences and publications



Center for Advanced Energy Studies





Greater
Yellowstone
Ecosystem

IDAHO

★ Boise

Ketchum/
Sun Valley

Craters of the Moon
Nat'l Monument

Idaho Falls

Yellowstone
Nat'l Park

Grand
Teton
Nat'l Park

Jackson, WY

WYOMING

Salt Lake City ★

CAES

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<http://CAESenergy.org>



University of Idaho

BOISE STATE
UNIVERSITY

