



# University Reactor Fuel Assistance Support

Office of Nuclear Energy, Science and Technology  
U. S. Department of Energy

March 2003

To help U.S. university and colleges stay at the forefront of science education and research, the Office of Nuclear Energy, Science and Technology University Program assists universities in the operation of research reactors and in the performance of other educational activities. Direct support is provided to educational institutions in 27 states. The program includes the following elements:

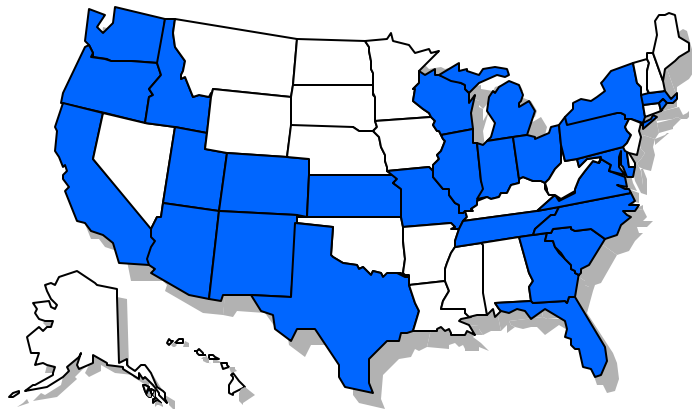
**University Nuclear Infrastructure (UNI).** This program, newly formed for FY 2003, brings together several program elements, including the new Innovations in Nuclear Infrastructure and Education Initiative, supporting the increasingly vital university nuclear engineering infrastructure; program elements include:

- **Innovations in Nuclear Infrastructure and Education (INIE).** This program, established in FY 2002, strengthens the Nation's university nuclear engineering education programs through innovative use of the university research and training reactors and encouraging strategic partnerships between the universities, the DOE national laboratories, and U.S. industry.
- **Reactor Fuel Assistance.** The Department provides fresh fuel to, and takes back spent fuel from, university research reactors. There are currently 28 operating university

research reactors at 27 institutions in the United States. Many of these facilities have permanent fuel cores and therefore do not require regular fuel shipments. However, DOE supplies approximately a dozen universities with fresh fuel and shipments of spent fuel as needed. These reactors are unique and irreplaceable assets for technical education, and are used for a variety of research, educational and training purposes.

- **Reactor Upgrades.** The Department provides assistance to universities to improve the operational and experimental capabilities of their research reactors. Grants are provided to the universities to purchase equipment and services necessary to upgrade the reactor facilities, such as reactor instrumentation and control equipment, data recording devices, radiation, security and air monitoring equipment, and gamma spectroscopy hardware and software. Each year up to 25 universities receive this assistance.
- **Reactor Sharing.** Through this assistance effort, the Department enables universities with reactors to "share" access to their facilities with students and faculty at other institutions who lack such a facility. The reactors are made available for use in research, experiments, material irradiations, neutron activation analysis and training, and for facility tours and other educational activities.

States  
With  
Participating  
Universities



## Program Participants

Clemson University  
Colorado State University  
Cornell University  
Georgia Institute of Technology  
Howard University\*  
Idaho State University  
Kansas State University  
Massachusetts Institute of Technology  
Morgan State University\*  
New Mexico State University\*\*  
North Carolina State University  
North Carolina A&T University\*  
Ohio State University  
Oregon State University  
Pennsylvania State University

Prairie View A&M University\*  
Purdue University  
Reed College  
Rensselaer Polytechnic Institute  
Rhode Island Nuclear Science Center  
South Carolina State University\*  
Tennessee State University\*  
Texas A&M University  
Texas A&M Kingsville  
Tuskegee Institute\*  
University of Arizona  
University of California-Berkeley  
University of Cincinnati  
University of Florida

University of Illinois  
University of Maryland  
University of Massachusetts-Lowell  
University of Michigan  
University of Missouri-Columbia  
University of Missouri-Rolla  
University of New Mexico\*\*  
University of Tennessee  
University of Texas  
University of Utah  
University of Virginia  
University of Wisconsin  
Washington State University  
Worcester Polytechnic Institute

\*U.S. Historically Black Colleges and Universities; \*\*Hispanic Serving Institution

**Nuclear Engineering Education Research (NEER) Grants.**

The Department re-established, in FY 1998, a competitive peer-reviewed program to provide grants allowing nuclear engineering faculty and students to conduct innovative research in nuclear engineering and related areas. The awards run from one to three years and are granted in eight separate technical areas related to nuclear engineering: reactor physics, reactor engineering, reactor materials, radiological engineering, radioactive waste management, applied radiation science, nuclear safety and risk analysis, and innovative technologies for next generation reactors, space power and propulsion, or radiation sources. This type of research is vital to the academic community to help promote excellence in nuclear engineering and provide resolution to issues confronting nuclear engineering in general. In FY 2002 the Department announced 20 new awards. In its first five years this program has awarded 91 grants

**DOE/Industry Matching Grants.** The Department of Energy and participating companies provide matching funds, up to \$60,000 from each side, to universities for use in funding scholarships, improving nuclear engineering and science curricula, and modernizing experimental and instructional facilities. Currently, 35 utilities and private companies match DOE's funds. Typically 20-25 universities receive funding each year.

**Nuclear Engineering/Health Physics Fellowships and Scholarships to Nuclear Science and Engineering Programs at Universities.** The Department provides tuition, stipends, and practicums to outstanding graduate students studying nuclear engineering and health physics and undergraduate scholarships and practicums to students pursuing a nuclear engineering course of study to ensure that our country will have an adequate supply of trained nuclear scientists and engineers. As an element of this activity, the University Partnership Program pairs minority institutions with institutions offering a nuclear engineering degree to enable more minorities to enter the field of nuclear engineering. To date, 11 institutions have partnered in this innovative program with several more anticipated during FY 2003.

**Radiochemistry.** The Department awards grants to support education activities in the field of radiochemistry in the United States. Radiochemistry is linked to several national priorities including medicine, energy and national defense. Three new awards were made in FY 2002.

**Nuclear Engineering and Science Education Recruitment Program.** This program is designed to increase the number of university students entering a nuclear engineering course

of study by developing a core curriculum to instruct science teachers in nuclear science and engineering topics.

**Summer Internships at National Laboratories.** The Office of Nuclear Energy, Science and Technology offers summer internships in technical areas related to nuclear engineering through the University Reactor Fuel Assistance and Support program at the Idaho National Engineering and Environmental Laboratory, the Argonne National Laboratory-East and West and the Oak Ridge National Laboratory to undergraduate and graduate students. Each student works with a mentor and receives living expenses and a salary for the 10-12 week program.

**International Student Exchange Program (ISEP).** The ISEP sponsors U.S. students studying nuclear engineering to spend 3-4 months abroad doing research at nuclear facilities in Germany, France, and Japan. During FY 2002-2003, this program plans to expand to include Argentina, Brazil, and Russia. These six countries will send their students to the U.S. for reciprocal internships at DOE national laboratories.

**FY 2003 Planned Accomplishments:**

- Continue Innovations in Nuclear Infrastructure and Education awards from FY 2002, and award one new grant.
- Provide fresh fuel to and ship spent fuel from all university research reactors requiring these services.
- Award approximately 6 new Nuclear Engineering Education Research grants, bringing the total of existing and new grants to about 37.
- Award approximately 18 fellowships to outstanding nuclear engineering M.S. and Ph.D. students.
- Fund upgrades and improvements at approximately 20 research reactors.
- Continue reactor sharing with up to 28 institutions having university research reactors.
- Award approximately 50 scholarships to outstanding undergraduates at majority and minority institutions pursuing a nuclear engineering degree.
- Partner with industry to provide 20-25 matching grant awards.

<b>Program Budget</b>		
<b>University Reactor Fuel Assistance and Support</b>		
(\$ in Millions)		
<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>
<u>Appropriation</u>	<u>Appropriation</u>	<u>Request</u>
\$17.5	\$18.5	\$18.5

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