

The Honorable William Richardson
Secretary of Energy
United States Department of Energy
1000 Independence Avenue
Washington, DC 20585

Dear Secretary Richardson:

This letter provides a summary of the key issues, conclusions, and recommendations arising from the recent meeting of the Nuclear Energy Research Advisory Committee (NERAC) on May 23 and 24. As you know, NERAC was established to provide independent advice to the U.S. Department of Energy (DOE) on complex science and technical issues that arise in the planning, managing, and implementation of DOE's nuclear energy program. NERAC assists DOE by reviewing the research and development (R&D) activities of the Office of Nuclear Energy, Science and Technology (NE) and providing advice and recommendations on long-range plans, priorities, and strategies to effectively address the scientific and engineering aspects of these efforts. In addition, the committee provides advice on national policy and scientific aspects on nuclear energy research issues as requested by the Secretary of Energy or the Director, NE. The committee operates in accordance with the Federal Advisory Committee Act (FACA) and has a diverse membership with a balance of disciplines, interests, experiences, points of view, and geography from academia, industry, and national laboratory communities.

Last year DOE requested that NERAC assist the Department in developing a long-term nuclear energy R&D plan, identifying priorities and possible programs along with an assessment of funding and infrastructure needs. Furthermore, the Committee was also tasked to evaluate DOE's physical infrastructure for nuclear energy research (e.g., research reactors, hot cells, and accelerators) in light of the needs suggested by the long range nuclear energy R&D plan. In addition, NERAC was asked to assess the current crisis in university nuclear engineering programs and campus-based research facilities in light of the growing human resources needs of the nation.

During our May meeting, we received reports from the various NERAC subcommittees conducting these tasks:

- *Long-Range Nuclear Technology Research and Development Plan
- *NERAC Blue Ribbon Panel on the Future of University Nuclear Engineering Programs and University Research Reactors
- *Nuclear Science and Technology Infrastructure Roadmap Committee
- *Long Term Isotope Research and Production Plan Subcommittee
- Technology Opportunities for Increasing the Proliferation Resistance For Civilian Nuclear Power Systems (TOPS) Task Force
- Accelerator Transmutation of Waste Subcommittee
- Operating Nuclear Power Plant Research, Coordination, and Planning Subcommittee

In particular, those subcommittees indicated by asterisk presented the final conclusions and recommendations from extensive studies concerning the future of the Department of

Energy R&D effort in the area of nuclear energy. Although the final publication of these reports will occur later this summer, we believed their conclusions were important enough to your ongoing budget planning process that we have included their executive summaries as an attachment to this letter.

Although these planning efforts are intended to be ongoing and evolutionary, they do provide a strong sense of priorities for DOE/NE in the years ahead. Put simply, the reports stress the importance of adequate investment in ideas (research), people (education), and tools (facilities):

Ideas: There is an urgent sense that the nation must rapidly restore an adequate investment in basic and applied research in nuclear energy if it is to sustain a viable United States capability in the 21st Century. The Long Range Planning Study has recommended a set of program and funding priorities ramping to a level of \$240 million by FY2005, including a growth in funding of the Nuclear Energy Research Initiative (NERI) to achieve the goals set by PCAST. NERAC believes that such funding levels are not only necessary but realistic in view of the funding provided other DOE research programs such as fossil energy (\$293 M), renewable energy (\$410 M), nuclear physics (\$370 M), and high energy physics (\$715). It is also recommended that at least a part of this program accommodate investigator-initiated basic research projects, selected on the basis of scientific merit rather than confined to DOE programmatic needs.

People: The report of the Long Range Planning Subcommittee reflects the views both of the other committees and NERAC membership when it states: "Perhaps the most important role for DOE/NE in the nuclear energy area at the present time is to insure that the education system and its facility infrastructure are in good shape." It is clear that United States nuclear engineering programs and university reactor facilities are at great risk and require immediate and concerted attention in DOE funding priorities. The NERAC Blue Ribbon Panel has made a number of important recommendations concerning the nature of DOE programs and support necessary to preserve and strengthen these important national resources. In particular, the Panel recommends an increase of the Nuclear Engineering Educational Research (NEER) program to \$20 M/y, a new competitive research grant aimed at sustaining university research reactors at a level of \$15 M/y, and a graduate fellowship/traineeship program at \$5 M/y. The Panel believes that the plight of nuclear engineering education in this nation is sufficiently serious that the Department should take substantial steps in its FY2002 budget request to move toward these targets.

Tools: Finally, the Long Range Planning subcommittee, Infrastructure Roadmapping Subcommittee, and the Isotope Subcommittee stress the need for DOE facilities to sustain the nuclear energy research mission in the years ahead. Of particular need over the longer term are dependable sources of research isotopes and reactor facilities providing high volume flux irradiation for nuclear fuels and materials testing. NERAC recognizes the serious funding and policy issues associated with such facilities (including the use of existing facilities such as FFTF). However it is also important to state NERAC's view that without an adequate investment in basic and applied research programs and in human resource development, such expensive facilities will be useless. Again put most simply, the *tools* are useless without the *people* and *ideas* to make use of them. NERAC believes that these priorities should—indeed, must—guide the Department of Energy's and Administration's funding requests for DOE/NE.

It is important to recognize that these reports represent the efforts, consideration, and wisdom not only of NERAC committee members but as well of the hundreds of members of the broader scientific and engineering community who participated in the various workshops and drafting sessions associated with these studies. As such we believe that the Department of Energy, the Administration and Congress should give careful consideration and significant weight to the recommendations in these reports as they frame the programmatic planning and funding requests for DOE/NE.

The full reports will be provided to you during the next several months. Both NERAC and its various subcommittees will continue our efforts to refine these plans. In the interim, key members will seek meetings with appropriate officials in Government to discuss the results of these considerations. We appreciate your strong support of these efforts.

Sincerely,

A black and white image of a handwritten signature in white ink on a black background. The signature is cursive and appears to read "James J. Duderstadt".

James J. Duderstadt, Chair
Nuclear Energy Research Advisory
Committee

Enclosures (Executive Summaries)

cc:

T.J. Glauthier, Deputy Secretary

E.P. Moniz, Under Secretary

W.D. Magwood, Director, Office of Nuclear Energy, Science and Technology