SECRETARY OF ENERGY ADVISORY BOARD

June 12, 2015

Mr. Shaun Donovan
Director
The Office of Management and Budget
725 17th Street, NW
Washington, DC 20503

Dear Mr. Donovan:

The Secretary of Energy Advisory Board (SEAB) has reviewed the modest but effective graduate research and trainee fellowship programs sponsored by the Department of Energy. The board wants to bring to your attention the valuable nature of these programs to the U.S. scientific community. We write to urge continuing support for these few, tailored graduate student initiatives that are closely tied to the DOE mission, particularly related to the nuclear and security aspects of that mission and protecting the nation in the years ahead, and emphasize the use of specialized facilities at the national laboratories as part of both a research and education experience.

The SEAB believes the nation will continue to need science and technology advances to meet our energy, economic, environmental, and security future wellbeing. This requires that the next generation have a research and education experience at the graduate level focused on these areas. Historically, the United States has been successful in providing government support that intentionally integrates the efforts of our federal research facilities with our leading universities. The nation must generate sufficient Ph.D.s in the disciplines to support the DOE mission in the future and replace the large number of scientific researchers nearing retirement. If this Ph.D. supply is not maintained, gaps will open in critical areas.

For decades the United States' approach to graduate technical education has been to rely on multiple sources of research and education support by different federal agencies. This approach has proven enormously successful and its success universally admired by other countries. The diversity of perspectives has served the nation well. However, an

understandable search for efficiency has led to consideration of centralization of all graduate education activities.

An inventory of federally sponsored STEM graduate education programs under the America COMPETES Act reauthorization of 2010, has led to examination of how these programs might be integrated and managed across the government. One of the five priorities of this analysis was to "Design graduate education for tomorrow's STEM workforce," and to consolidate these programs under the National Science Foundation. We believe such total consolidation does not serve the specific needs of developing a STEM workforce for DOE, its national laboratories, and supporting industry, which risks losing the diversity in graduate education and research experience that has been the hallmark of past success.

In order to meet the DOE's mission and national security objectives, the nation will require Ph.D.s with expertise in nuclear physics and radiation chemistry, and power electronics and engineering in such national security areas as cyber and electric grid security and the protection of critical infrastructure. These are all central to the work of DOE and its national laboratories. We see importance in having these graduate programs include the possibility of doing thesis work at the national laboratories.

DOE has successfully designed and managed its modest graduate education programs using two mechanisms, graduate research fellowships and traineeships, to meet unique department needs and capabilities. DOE graduate fellowship programs include the Office of Science Graduate Fellowship Program, the Computational Science Graduate Fellowship, the Office of Nuclear Energy Fellowship, and the National Nuclear Security Administration Stewardship Science Graduate Fellowship. DOE traineeship programs focus on particular scientific areas in which DOE has a unique interest, such as radiochemistry, subsurface migration and containment, and wide gap power electronics.

These programs have provided students pursuing a STEM Ph.D. an essential fellowship that exposes the individual to research at DOE national laboratories (the single largest employer of scientists in the world), to DOE mission areas, and both motivation and expertise need for the DOE's and the nation's future work force. This outcome would be

most difficult to accomplish through a STEM graduate program managed by the NSF or any other government agency and could lead to important gaps in security-related research and integrity of DOE's programs and their ability to meet the security needs of the United States.

The SEAB urges OMB to support DOE's effort to develop six or fewer graduate research/education fellowship or trainee programs under a $25 million annual cost cap designed to support graduate student research in selected areas of critical importance to carrying out DOE's mission. This program can be capped for a period of 5 years and then should be rigorously reviewed. This small investment in focused technical education can have outsized return, especially in the security-related areas that are central to DOE's mandate.

We would be pleased to meet with you and others at OMB to go into the values of these particular fellowship programs in greater detail.

Respectfully,

John M. Deutch, Chair
On behalf of the Secretary of Energy Advisory Board

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