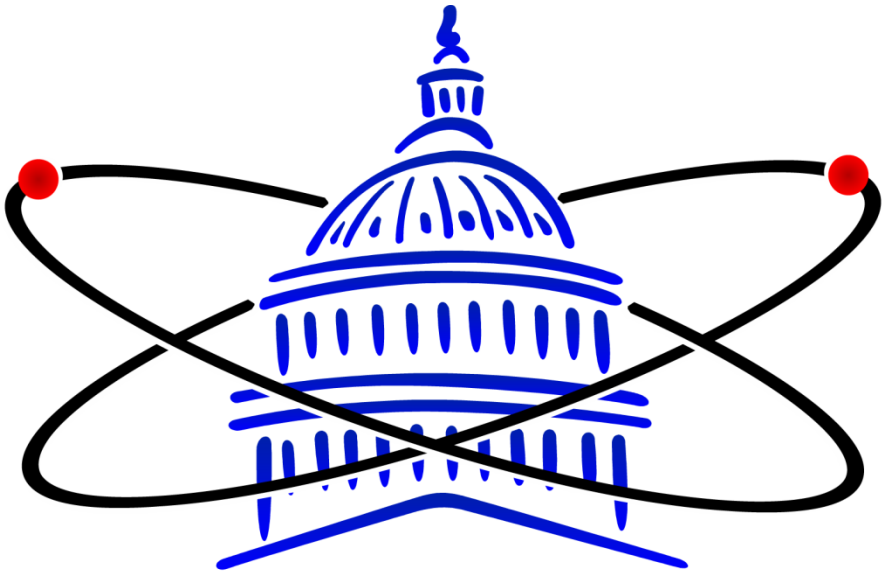

2013 NUCLEAR ENGINEERING STUDENT DELEGATION

WASHINGTON, D.C. JULY 7TH – 12TH

WWW.NESD.ORG

POLICY STATEMENT

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Ekaterina Paramonova	Massachusetts Institute of Technology
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Executive Summary

- The federal government is the single largest employer of nuclear engineering graduates and has a vested interest in maintaining high quality professionals in nuclear science and technology.

- The Integrated University Program (IUP) is the only source of funding specifically targeted at nuclear science and technology students, and maintaining its FY2013 funding level is vital to the continuation of nuclear education programs. **The House of Representatives has appropriated $5.5M for the Department of Energy Office of Nuclear Energy (DOE-NE) and $15M for the US Nuclear Regulatory Commission (NRC) in its 2013 Energy and Water Bill. The Delegation strongly urges the Senate to do the same.**

- To conduct innovative research and educate the next generation of nuclear scientists and engineers, US universities require continued investment in existing equipment and modern research infrastructure.

- The US requires a coherent, long term energy policy and any such policy should incentivize scalable, carbon neutral sources of power.

- The US would greatly benefit from a coherent used nuclear fuel disposition policy as outlined in the Nuclear Waste Administration Act of 2013.

- The US should implement export policies that facilitate innovation, while funding and fielding detection capabilities to ensure border security.

About the NESD

In 1994, the first Nuclear Engineering Student Delegation (NESD) to Washington, D.C. convened to reinstate funding for research reactors. Today, the Delegation continues to express the views of the student population on nuclear science, policy, and education. Each year, the Delegation comprises a diverse group of students from the nation's most prestigious nuclear engineering programs, representing various disciplines within the nuclear sciences. The students independently organize and run this trip to Washington, D.C. The Delegation does not represent any organization or university; the views expressed in this policy document are strictly those of the delegates.

For further information, please contact Matthew Gidden at gidden@wisc.edu or visit the NESD website at www.nesd.org.

2013 NESD Policy Statement

Investing in Education

The United States has long demonstrated its proud commitment to nuclear science and education through investment in both intellectual and educational infrastructure. As the single largest employer of graduating nuclear engineers [1], the federal government not only has a vested interest, but also a responsibility to provide the nation with an educated nuclear science workforce. In order to ensure that nuclear energy continues to be a viable option, we must maintain appropriate investments in nuclear science and technology education. The primary vehicles through which these investments reach students and universities is the Integrated University Program (IUP) as well as infrastructure investments through the Department of Energy.

The Integrated University Program (IUP) provides the sole source of funding specifically targeted at nuclear science and technology students and their education. This competitive program supports undergraduate scholarships, graduate fellowships, curriculum development, and junior professor development. The IUP was established in the Energy and Water Appropriations Act of 2009 due to the "Committee's concern for lack of stable support" [2] for such research, in accordance with the requirement of federal funding of nuclear science and technology programs as mandated by the Atomic Energy Act of 1946 (Sec.8A). Although the IUP was authorized $450M over 10 years to achieve this legislative goal, neither the Department of Energy Office of Nuclear Energy (DOE-NE) nor the US Nuclear Regulatory Commission (NRC) has requested funding for the IUP in the Administration's FY2014 budget. The Delegation endorses the House of Representative's actions to reinstate the IUP at appropriate levels, echoing testimony of the Nuclear Engineering Department Heads Organization (NEDHO).

The US has historically assisted nuclear science and university programs through infrastructure maintenance grants. Research reactors within the university infrastructure provide nuclear engineering students practical exposure to industrial practices and cutting edge experimental techniques. The delegation finds recent lack of commitment to such programs, such as the MIT Alcator C-Mod tokamak fusion reactor, deeply troubling. Research reactors form the core basis by which students gain first-hand experience in the design and operation of sophisticated fission and fusion reactor systems, and their continued federal support is critical to maintaining the high quality of nuclear engineers produced by the United States.

Recommendation: The Delegation recommends that Congress maintain the IUP at or above its FY2013 level and reinstate critical educational infrastructure funding.

Domestic Energy Policy

The United States needs a sustainable, coherent, and effective national energy policy. Previous attempts have been made, exemplified by Carter's "Crisis of Confidence" speech and Nixon's 1974 State of the Union address. While short-term goals may have been met, the nation still lacks long-term, effective action. The current administration has begun a new discussion, placing climate change mitigation and long-term energy security as primary objectives of the nation's proposed energy policy.

[1] "Nuclear Engineering Enrollments and Degrees Survey, 2010 Data," Oak Ridge Institute for Science and Education.
[2] "Integrated University Program", Ingrid Milton, DOE-NE. August 14, 2009.

Meeting these proposed goals will require an increase in market share from many energy sources. Natural gas, which emits approximately half the amount of greenhouse gases as coal, is scalable but prone to price volatility, requiring diversity in national energy production. Wind and solar provide carbon-neutral power but struggle to gain market penetration due to their intermittency and transmission requirements. As a stable, scalable source of carbon-neutral baseload power, nuclear energy can replace dirtier forms of baseload power. Incentivizing a robust clean energy portfolio (including nuclear, wind, and solar power) allows us, as a nation, to focus on both nascent and existing technologies to tackle the nation's energy objectives.

The U.S. can take a number of positive policy actions. Foremost is the Nuclear Waste Administration Act (NWAA) of 2013 (S. 1240). Structured on recommendations provided by the Blue Ribbon Commission on America's Nuclear Future, the NWAA is a bipartisan plan to address the critical concerns of used nuclear fuel disposition and should be enacted with continued academic, industrial, and popular support. Another positive policy action includes the Department of Energy's (DOE) loan guarantee program assisting new nuclear reactor projects. Current projects are on time and have maintained modest cost increases of less than 3%. Congress should remain committed to loan guarantees for existing nuclear builds. The DOE's support for Small Modular Reactor licensing is another effective policy initiative. This nascent technology provides a new and grid-appropriate way to replace aging, low-capacity coal-fueled power plants. Congress should continue to support this job-creating initiative.

Recommendation: The U.S. should define and commit to a stable and coherent energy policy, including incentivizing a clean energy portfolio, passing the NWAA, and continuing federal support for carbon-neutral, scalable power technologies.

Nuclear Exports and Safeguards

As the originators of nuclear technology, we Americans have an obligation and a vested interest to continue leading the world in its responsible management. This includes both export control and curtailment of nuclear proliferation.

Currently, American industry exports nuclear technology to foreign markets, providing jobs to Americans at home and stimulating foreign investment. In order to remain a world leader, we must invest in advanced nuclear technologies such as fast reactors, small modular reactors (SMRs), and reprocessing. If we do not innovate and export, our status as a global leader will diminish - we will cede our influence and expertise with respect to security and nonproliferation. Such expertise allows us to support critical international governance institutions, such as the International Atomic Energy Agency.

Responsible management of nuclear technology also includes its transport across international borders. More than 90% of the world's commerce moves via large cargo containers, in which one could conceal illicit or proliferative nuclear material. As the world's leading maritime trading nation, we must lead in bolstering port security. This requires investment in advanced detectors - innovative nuclear devices that routinely screen incoming cargo. Increased investment can prevent illegal diversion of nuclear materials, improve port security, and enhance response to radiological threats against the U.S. More efficient and economic detectors could be developed through novel funding opportunities that bring together universities, national labs, and industry to ensure technology transfer to field applications.

Recommendation: The U.S. should implement export policies that facilitate innovation and allow American industry to thrive on the global stage, while funding and fielding detection capabilities to ensure border security and safeguard nuclear materials.