2015 NUCLEAR ENGINEERING STUDENT DELEGATION

WASHINGTON, D.C. JULY 5TH – 10TH

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POLICY STATEMENT

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2015 NESD Policy Statement

Investing in Education - The Delegation recommends that funding for Integrated University Programs (IUP) should be maintained at or above the FY2015 levels. We support the current independent structure of IUP which would be compromised under the proposed STEM consolidation.

Federal funding for nuclear education and research must continue for the United States to maintain its excellence in the development and application of nuclear technology. The federal government is the single largest employer of nuclear engineering graduates and has a vested interest in maintaining the number of qualified professionals in the field. The current structure of STEM education funding is necessary to prevent the loss of crucial expertise when faced with an aging nuclear workforce.

Nuclear Innovation - The Delegation recommends supporting American companies' development of advanced nuclear reactors by increasing federal funding and evolving the regulatory framework to promote commercialization.

In order for companies developing advanced nuclear reactors to flourish in the United States, they require an effective regulatory framework and public-private research partnerships. More than 40 U.S. companies, backed by $1.3 billion in private capital, are bringing advanced nuclear reactors to the global market [1]. These companies require collaboration between the Department of Energy and Nuclear Regulatory Commission to sponsor research and implement regulation for safer, more efficient advanced reactors. Evolving the regulatory framework is necessary for these innovative designs to contribute to American job creation and energy security. A contemporary framework should include funding to perform research into low-dose radiation effects on the human body, demonstrations of nuclear reactor technology, and advanced reactor design licensing.

Used Nuclear Fuel Management - The Delegation recommends passage of the Nuclear Waste Administration Act (NWAA) of 2015, S. 854, and that the Nuclear Regulatory Commission render a decision on the Yucca Mountain Repository License Application.

The Nuclear Waste Administration will pursue a consent-based approach for siting, licensing, and operating necessary storage facilities to expeditiously transfer ownership of used nuclear fuel from commercial reactor sites. Presently, used fuel is stored at commercial nuclear facilities across the country with no provision for its long-term management. In the near term, an interim facility will alleviate the accumulation of used fuel from decommissioned commercial nuclear facilities. Additionally, removing this used fuel will reduce the liability of the federal government in continuing Judgement Fund decisions. Separate from S. 854, the protracted Yucca Mountain Repository License Application should be resolved by the NRC. This would provide lessons learned from the application process which could be applied to future used nuclear fuel management.

About the NESD

The Delegation represents the student population on nuclear science, policy, and education. Each year, the Delegation comprises a diverse group of students from the nation's 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.

2015 NESD Additional Information

Investing in Education

Federal investment in nuclear education is essential for the United States to maintain its expertise and workforce. This federal funding assures the safe and reliable operation of our nuclear fleet. The nuclear energy industry provides over 60% of emissions-free electricity in the United States and employs over 100,000 professionals [1, 2]. However, over half of the workers in the nuclear energy industry will be eligible for retirement within the next decade. This presents a challenge for the federal government to maintain continuity of knowledge and augment the workforce [3].

The Integrated University Program (IUP) annually provides financial support for hundreds of undergraduate and graduate students. This money supports programs in the Department of Energy Office of Nuclear Energy (DOE-NE), National Nuclear Security Administration, and the Nuclear Regulatory Commission (NRC). One such program, Nuclear Energy University Programs, supported 59 scholarships and 32 graduate fellowships in FY2015 alone, equating to about $5.5 million of support for research ranging from reactor safety to next generation fuels [4].

The Delegation recommends keeping nuclear energy scholarships and fellowships independent from proposed STEM consolidation efforts. Consolidation would risk the loss of IUP student support which is key to maintaining the nuclear workforce pipeline. STEM consolidation would undermine the mission fulfilled by the IUP at a time when support for nuclear engineering education is increasingly essential. Declines in state funding for public universities have threatened the existence and advancement of some nuclear engineering departments [5]. It is essential that federal funding for nuclear engineering education continues to grow in order to replace an aging workforce.

[1] Environment: Emissions Prevented, Nuclear Energy Institute, 2015. http://www.nei.org/Knowledge-Center/Nuclear-Statistics/Environment-Emissions-Prevented
[2] Economic Growth & Job Creation, Nuclear Energy Institute, 2015. http://www.nei.org/Why-Nuclear-Energy/Economic-Growth-Job-Creation
[3] Help Wanted 25,000 Skilled Workers, Nuclear Energy Institute, 2015. http://www.nei.org/News-Media/News/News-Archives/help-wanted-25000-skilled-workers
[4] FY 2015 Scholarship & Fellowship Recipients (Schools), NEUP Department of Energy, May 2015. https://inlportal.inl.gov/portal/server.pt/community/neup_home/600/fy15_S&F_recipients
[5] State Funding: A Race to The Bottom, Mortenson, Thomas, Winter 2012. http://www.acenet.edu/the-presidency/columns-and-features/Pages/state-funding-a-race-to-the-bottom.aspx

2015 NESD Additional Information

Nuclear Innovation

Advanced nuclear reactors are the next step in the continuing evolution of safe reactors to meet domestic energy demand. These innovative technologies bring a wave of technical benefits to nuclear energy generation while continuing to build upon the existing safety priority. Advanced nuclear reactor designs are economical, minimize waste, and enhance proliferation resistance.

American companies developing advanced nuclear reactors need a way to demonstrate technology which addresses regulatory questions and attracts investors. Subject matter experts have recommended the creation of a national test bed to facilitate advanced nuclear reactor development [2, 3]. In order for these essential capabilities to be available, federal funds must continue to be allocated to DOE national laboratories for the development of advanced reactors. Inaction on the part of the federal government could result in the U.S. falling behind other countries in advanced nuclear technology and the failure of American companies.

To prepare for these advanced nuclear reactor designs, an augmentation of the current regulatory framework is recommended. It is necessary for U.S. companies to see that the NRC is preparing regulation for advanced reactor designs. Progress on the framework before a company submits a license application will save time and money when trying to bring advanced designs to the global market. The Delegation is confident that the NRC, given the right resources, can adapt the regulatory framework to streamline the advanced reactor licensing process.

Policy on low-dose radiation affects all aspects of nuclear science from reactor siting to medical imaging. Enforcing current regulations on low-dose radiation is costly for both the NRC and the licensees [4]. The current model used to account for the risk of low-dose radiation, linear no-threshold, is the subject of significant ongoing scientific debate [5]. It is recommended that the Low-Dose Radiation Research Act of 2015 be passed into law so that a research plan for low-dose radiation within the U.S. universities and national laboratories can be established. New standards based on low-dose radiation research may save unnecessary expenditures for American companies without compromising the health of workers or the public.

[1] The Advanced Nuclear Industry Samuel Brinton, June 15, 2015. http://www.thirdway.org/report/the-advanced-nuclear-industry
[2] A path towards innovating nuclear energy, 31 March 2015 Todd Allen
http://www.world-nuclear-news.org/V-A-path-towards-innovating-nuclear-energy-31031501.html
[3] Scientists Outline Research Wish List for Nuclear Energy March 5, 2015,www.nytimes.com/aponline/2015/03/05/us/ap-us-nuclear-future.html
[4] Is ALARA Reform needed? May 2011, ANS Local Section Address-Dr.Loewen
http://www.ans.org/about/officers/docs/alara-reform-rev-9.pdf
[5] The Linear No-Threshold Relationship Is Inconsistent with Radiation Biologic and Experimental Data, April 2009, National Center for Biotechnology, http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2663584/.

2015 NESD Additional Information

Used Nuclear Fuel Management

The political tension surrounding the sole used nuclear fuel repository under the Nuclear Waste Policy Act (NWPA), Yucca Mountain Project, has impeded any possibility of implementation. Without a permanent repository, utilities have been burdened with increased on-site storage costs. Failure of the federal government to remove used fuel in a timely manner has resulted in the generating utilities continuing to win numerous Judgment Fund decisions. These decisions have awarded utilities over $4.5 billion in damages, with future liabilities projected to exceed $22.6 billion [1]. For failing to make demonstrable progress on the Yucca Mountain Repository License Application, the DOE was forced to halt collection of the Nuclear Waste Fee, which has funded all Yucca Mountain licensing work and construction [2].

Used fuel disposal necessitates a dedicated organization that can focus on a long term solution. The Nuclear Waste Administration Act (NWAA) establishes the Nuclear Waste Administration as a separate entity within DOE tasked with the sole responsibility of disposing used nuclear fuel. The NWAA would re-establish collection of the Nuclear Waste Fee into a separate treasury account in the form of the Working Capital Fund. These funds will allow the NWA to be funded independent of congressional appropriations, and to be deficit neutral with all costs borne by generators and owners of used nuclear fuel.

The NWAA allows for the creation of an interim storage site to secure used nuclear fuel and transfer ownership from commercial generators. Interim storage accomplishes three objectives: it is a step toward establishing a domestic repository infrastructure, it decouples the removal of used fuel at nuclear energy facilities from siting a geologic repository, and it allows for the near-term removal of used fuel from high priority sites. Despite the provisions in the amended NWPA, a number of non-federal entities have expressed interest in hosting an interim storage facility, and have received support at many levels [3 - 5]. The Blue Ribbon Commission recommends that a consent-based process is most conducive to interim storage siting [6]. The Delegation recommends that an actionable definition of consent-based storage be defined explicitly for implementation by the Nuclear Waste Administration.

The lack of resolution on Yucca Mountain has prevented the U.S. from moving forward on long-term storage options. Used fuel storage is a key component of the fuel cycle but has yet to be addressed. Whether or not Yucca Mountain is pursued as a long-term repository, a resolution by the NRC on the Application would be valuable. An approval of the license would demonstrate the regulatory process for a deep geological repository while a rejection would allow for pursuit of alternative sites.

Lack of action on used fuel management is not an option. Without federal action, used nuclear fuel will remain stored across the country while the federal government remains liable for billions of dollars in temporary storage costs. The NWAA is the most direct, focused, and actionable path toward a solution and should be passed as soon as possible.

[1] SPENT NUCLEAR FUEL MANAGEMENT: Outreach Needed to Help Gain Public Acceptance for Federal Activities That Address Liability, U.S. Government Accountability Office, October 2014.
[2] Nuclear Waste Fund Fee Adequacy Assessment Report, U.S. Department of Energy, January 2013.
[3] Valhi's WCS Subsidiary to Apply for License to Store Used Nuclear Fuel, VALHI, February 7, 2015. http://www.wcstexas.com/wp-content/uploads/2015/04/WCS_Press_Release.pdf
[4] Perry letter on nuclear waste storage, Gov. Rick Perry, March 28, 2014. http://www.statesman.com/documents/2014/apr/01/perry-letter-nuclear-waste-storage/
[5] Holtec Partners with ELEA, LLC in New Mexico to Build Consolidated Interim Storage Facility, Holtec Press Release, April 30, 2015. http://www.holtecinternational.com/2015/04/holtec-partners-with-elea-llc-in-new-mexico-to-build-consolidated-interim-storage-facility/
[6] Report to the Secretary of Energy. Blue Ribbon Commission on America's Nuclear Future, 2012.