

## **2020 NUCLEAR ENGINEERING STUDENT DELEGATION**

### **VIRTUAL, NOVEMBER 6TH-13TH**

The 2020 Nuclear Engineering Student Delegation supports federal policies and programs that ensure a sustainable future for nuclear science, technology, and energy in the United States. These policies will support the development of nuclear power, which currently supplies 20% of the nation's electricity and 55% of our low-carbon power, as well as benefit a range of additional industries that depend on nuclear science and technology.

**The Delegation endorses the University Nuclear Leadership Program, funding for which is included in Subtitle E of the American Energy Innovation Act of 2020 (S.2657) and Section 6705 of the National Defense Authorization Act for FY 2021 (S.4049). The Delegation also endorses the Low-Dose Radiation Research Act of 2019 (H.R.4733).**

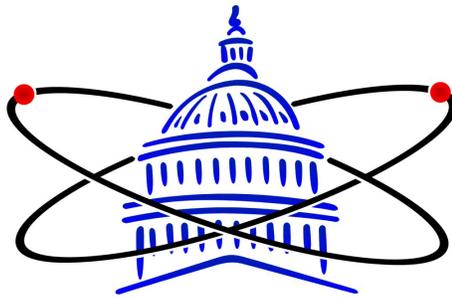
- Congress should fund student education in nuclear science and engineering because multiple important U.S industries rely on nuclear technology and the nuclear workforce is aging.
- Research on the biological effects of low-dose radiation is crucial considering the current lack of understanding of the effects and exposure among the American workforce.

**The Delegation supports Congressional funding of advanced reactor demonstrations and research, as authorized by Subtitle E of the American Energy Innovation Act (S. 2657), the Nuclear Reactor Demonstration Act (H.R. 8296), and Title LXVII of the National Defense Authorization Act (S. 4049).**

- Advanced nuclear reactor technologies offer innovations resulting in greater market opportunities, reduced waste, improved efficiency, and next-generation safety.
- The Versatile Test Reactor enhances domestic research capabilities, and the Advanced Reactor Demonstration Program accelerates the commercialization of advanced reactors.

**The Delegation advocates for decisive action towards solving the spent nuclear fuel (SNF) management challenge. There is currently no long term storage plan despite a range of possible technical solutions.**

- These solutions include allowing consolidated interim storage, commissioning innovative permanent repositories, and creating an independent organization to manage the SNF.
- Consent-based siting prioritizes community engagement, transparency, and education to gain local support.



## 2020 Nuclear Engineering Student Delegation

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Jillian Newmyer (Chair)	Oregon State University
Evan Gonzalez (Co-Vice Chair)	University of Michigan
W. Robb Stewart (Co-Vice Chair)	Massachusetts Institute of Technology
Samuel D'Amico	University of Wisconsin, Madison
Dinara Ermakova	University of California, Berkeley
Alyssa Hayes	University of Tennessee, Knoxville
Brent Hollrah	Texas A&M University
Peter Hotvedt	University of Wisconsin, Madison
Madeline Lockhart	North Carolina State University
Ralph Wiser	Massachusetts Institute of Technology

### About the NESD

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In 1994, the first Nuclear Engineering Student Delegation (NESD) convened in Washington, D.C. to reinstate funding for research reactors. Today, the Delegation continues to express the views of students on nuclear science, policy, and education issues. 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. Due to the coronavirus pandemic, this delegation met virtually during the week of November 9th-13th. The Delegation does not represent any organization or university; the views expressed in this policy document are strictly those of the 2020 Delegates.

For further information on the 2020 NESD or the policy recommendations in this document, please contact Jillian Newmyer at [jilnewmyer06@gmail.com](mailto:jilnewmyer06@gmail.com) or visit the NESD website at <http://www.nesd.org>.

## 2020 NESD Policy Statement

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The 2020 Nuclear Engineering Student Delegation supports federal policies and programs that ensure a future for nuclear science, technology, and energy in the United States by advocating for:

- Investments in the future workforce and research
- Development, commercialization, and licensing support for advanced nuclear reactors
- Sustainable approaches to spent nuclear fuel management.

### Investing in Education and Research

The nuclear industry is much more than nuclear power; it includes medicine, nonproliferation, workplace safety, and space exploration. Therefore, supporting education in nuclear science will benefit a range of industries across the U.S. With the aging nuclear workforce,<sup>1</sup> the federal government and Congress must continue to support education in nuclear science and technology.

The University Nuclear Leadership Program (UNLP) grants funds to support universities through scholarships and fellowships, faculty development assistance, and university infrastructure grants. Section 15.05 of the [American Energy Innovation Act \(AEIA\)](#) and Section 6705 of the [National Defense Authorization Act \(S.4049\)](#) appropriate funding for the UNLP.

Research in nuclear science and engineering supplements student education and helps maintain U.S. academic leadership. Sections 15.02 and 15.04 of the AEIA appropriate funding to support student research and education. Furthermore, workers in medicine, mining, drilling, and space exploration regularly receive low-dose radiation, but the effects of low-dose radiation are not well understood. The Delegation supports the [Low-Dose Radiation Research Act](#), which provides research funding to reduce uncertainty and better understand radiation health effects.

**The Delegation endorses funding for the University Nuclear Leadership Program, which is included in Subtitle E of the American Energy Innovation Act of 2020 (S.2657) and Section 6705 of the National Defense Authorization Act for FY 2021 (S.4049). The Delegation also endorses the Low-Dose Radiation Research Act of 2019 (H.R.4733).**

### American Leadership in Advanced Reactor Technologies

Advanced reactor technologies offer innovations resulting in greater market opportunities, reduced waste, improved efficiency, and next-generation safety.<sup>2</sup> With Russia and China actively developing competing reactors, the U.S. must maintain its status as a global leader in nuclear technology.<sup>3</sup>

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<sup>1</sup> [Nuclear Grand Challenges: Knowledge Transfer -- ANS / Nuclear Grand Challenges](#)

<sup>2</sup> <https://www.energy.gov/ne/nuclear-reactor-technologies/advanced-reactor-demonstration-program>

<sup>3</sup> [https://www.atlanticcouncil.org/wp-content/uploads/2019/05/US\\_Nuclear\\_Energy\\_Leadership-pdf](https://www.atlanticcouncil.org/wp-content/uploads/2019/05/US_Nuclear_Energy_Leadership-pdf)

U.S. companies currently rely on foreign countries to test fuels and materials used in advanced reactors.<sup>4</sup> The [Versatile Test Reactor](#) (VTR) will enable domestic testing of reactor components to ensure their safety and effectiveness. Domestic access for the U.S. nuclear industry would increase its competitiveness on the global market and accelerate advanced reactor development timelines. The delegation supports appropriations for the completion of the VTR by 2026 as outlined in the [Nuclear Energy Innovation Capabilities Act of 2017](#).

Multiple U.S. companies are designing and demonstrating commercial advanced reactors. Support from the Department of Energy (DOE) will help vendors overcome the technical challenges and financial risks they face in bringing their designs to market. Recently, the DOE selected a TerraPower-GE Hitachi joint venture and X-Energy for private-public partnerships as part of the [Advanced Reactor Demonstration Program](#). The Delegation recommends that the funding for this program increase from FY2020 levels to allow for the completion of the demonstration projects.

**The Delegation supports further Congressional funding of advanced reactor demonstrations and research, as authorized by Subtitle E of the American Energy Innovation Act (S. 2657), the Nuclear Reactor Demonstration Act (H.R. 8296), and Title LXVII of the National Defense Authorization Act (S. 4049).**

## **Decisive Action On Spent Fuel**

Without a permanent storage facility, spent nuclear fuel (SNF) remains at 24 active U.S. decommissioning sites in addition to 95 operating nuclear power plants.<sup>5</sup> While there is a range of technical solutions, their implementation has been delayed by legislative inaction. The Delegation recommends the following possible actions:

- Create an independent agency or federal corporation with a clear charter to site, license, build, and operate a permanent repository, such as proposed in the [Nuclear Waste Administration Act \(S.1234\)](#) and by the [Blue Ribbon Commission](#)
- Establish a permanent repository, as required by the [Nuclear Waste Policy Act \(NWPA\)](#), with an option to retrieve the waste
- Open pathways to allow for an NRC licensed consolidated [interim storage solution](#) such as proposed in the [Interim Consolidated Storage Act \(H.R.474\)](#)
- Support solutions from private companies such as [Deep Isolation](#).

Consent-based siting prioritizes community engagement, transparency, and education to gain local support. The Delegation supports consent-based siting, which has proven successful in establishing the Waste Isolation Pilot Plant<sup>6</sup> and in other industries.

**The Delegation advocates for decisive action towards solving the spent nuclear fuel management challenge.**

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<sup>4</sup> <https://www.nrc.gov/docs/ML1616/ML16168A405.pdf>

<sup>5</sup> <https://www.nrc.gov/info-finder/decommissioning/power-reactor/>

<sup>6</sup> <https://bipartisanpolicy.org/wp-content/uploads/2019/03/BPC-Nuclear-Consent-Based-Siting-Summary.pdf>