

Project Title: The Great Lakes Partnership to Enhance the Nuclear Workforce	
Co-PIs: Drs. Nikolas Podraza & Mohammad Elahinia The University of Toledo (UToledo)	Collaborators: University of Michigan (T. Allen); University of Illinois (K. Huff); Owens Community College (D. Burklo); North Dakota State University (A. Kallmeyer); Idaho National Laboratory (A. Epiney); Electric Power Research Institute (C. Lease); American Nuclear Society (D. Goldberg); Pittsburgh-Technical (S. Talabi); and Westinghouse (P. Terry).
Program: Nuclear Reactor Safety Training and Workforce Development Program	Other partners: Monroe County Community College, Lakeland Community College, Excelsior University, Vistra, Centrus Energy, Xcel Energy, Constellation Energy, International Brotherhood of Electrical Workers, Nuclear Energy Institute, Center for Energy Workforce Development, DTE and Nuclear Talent Scout.

The *Great Lakes Partnership to Enhance the Nuclear Workforce* is a regional consortium with national reach that brings together nuclear power station operators (representing almost one-third of the nation’s nuclear generating capacity), a nuclear fuel provider, a major nuclear power plant manufacturer, higher education institutions, union representatives, a national laboratory, and national nuclear and workforce organizations dedicated to the enhancement of the nuclear workforce. The Partnership includes national organizations to ensure the project supports nuclear workforce needs and credentialing across the nation for the breadth of current and future nuclear power plants, utilities, and its unique supply, maintenance, and construction requirements. In addition, assets created in the Partnership will be made available to international partners to support the nation’s leadership in safety training for nuclear energy as appropriate.

Led by UToledo, located 29 miles from the Davis-Besse nuclear power station—a station that experienced significant safety issues (reactor vessel head corrosion in 2002)—the Partnership includes leaders in the nuclear energy industry and a national Advisory Board who are deeply engaged in safety and workforce training programs. Partners have been identifying gaps in the training of new and current workers in the industry, and in the availability of workers needed for anticipated facilities growth and retirements due to an aging workforce. Goals and deliverables include: (1) enhancement of existing training pipelines and programs; (2) the modernization of training programs to take advantage of new learning approaches to address needs for emerging advanced reactor concepts; (3) modernizing facilities and educational laboratories to provide the highest quality training; (4) an increase and broadening of entry points for workers at all needed skill and educational levels and for positions (including uranium enrichment facilities) to meet national goals for nuclear energy growth; (5) development of nationally recognized nuclear reactor safety credentials; (6) an increase in the amount and diversity of talent coming into the workforce through efforts directed toward young adults and the general public; (7) engage local communities with nuclear facilities; (8) ensure USA leadership in the global commercial nuclear industry; and (9) through our Advisory Board and nationally engaged partners bring successful outcomes to the entire nation.

A strong safety culture in the industry exists, and many training programs by different institutions currently deliver courses and programs to the incoming and current workforce. However, it is critical to expand the current reach to broader groups to meet the DOE’s projection of the need for an additional 375,000 trained workers in the industry by 2050. Our plan is to enhance, modernize and

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standardize training programs and build connections across different providers to create courses and course modules leading to *industry recognized safety credentials accepted nationally* to build a deep talent pipeline of people prepared for nuclear energy careers. Project activities and outcomes include education and training programs for targeting categories of workers already employed at nuclear sites and those preparing for employment:

- *Skilled Tradespeople*: Training for the skilled tradespeople will continue and be enhanced in vocational training centers, through union apprenticeships programs, community/technical colleges, and at industry sites.
- *Non-Licensed Operators*: The preferred pathway for non-licensed operators is through associate degree programs in Nuclear Engineering Technology (NUET) in community colleges by implementing uniform programming in this area as devised by NEI. These programs will be enhanced by expanding internships and cooperative education (co-op) opportunities at nuclear facilities with our educational and industry partners.
- *Licensed Operators*: The training and licensing process for operators is strictly controlled by the Nuclear Regulatory Commission (NRC). The Partnership's role will be to ensure that non-licensed operators and nuclear engineers meet NRC minimum requirements to qualify for the training.
- *B.S. Level Nuclear Engineers*: The universities in the partnership offer B.S. degree programs, with UM and UIUC offering degrees in nuclear engineering. UToledo and NDSU will begin offering a B.S. in mechanical engineering, with specialization in nuclear engineering including co-op employment at nuclear facilities.
- *Nuclear Engineering and Physics Graduate Engineers and Scientists*: Master's and doctoral degrees in nuclear engineering will play a critical role in training students for future developments in the field, such as talent needed for future reactors and in health physics. These universities have an important role in "train-the-trainer" programs to provide needed instructors nationwide.

New courses and programs will emphasize nuclear safety, health physics and take advantage of AI, virtual reality, extended reality, and gamification to reach a broader audience. We plan to increase and enhance onsite workforce training at nuclear facilities by upgrading plant simulators and enhancing training to workers who lack formal nuclear degrees. Our plan is to develop new micro-credentials and badges to be offered by universities, community colleges, high schools, and other providers that are accepted by industry to reduce the cost and time of on-board training for new nuclear employees and develop campus-based simulators using advanced educational approaches, such as an AI-Powered incident response simulator to provide students with reactor working experience. A significant enhancement will be the implementation of an outcomes-based assessment of the Nuclear Plant Safety Certificate and the NUET programs.

Building the talent pipeline also requires attention to new training, certificates, outreach and summer camp programs for K-12 and underserved populations through a communication plan for public school and community organizations, such as the *ANS Pathways to Nuclear Program*.

Our consortium includes an experienced community benefits team who will work with industry and union partners to create opportunities in disadvantaged and other communities serving nuclear power industry sites. Projects will target Chicago, Cleveland, Detroit, and Toledo metropolitan areas, as well as underserved rural and Appalachian areas in Ohio and tribal communities in Minnesota and North Dakota.