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Media Release

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Ohio State Awarded $3 Million NSF Grant for STEM Traineeship Program

Ohio State researchers received a $2.98 million National Science Foundation Research Traineeship (NRT) grant to develop and implement bold, transformative models for science, technology, engineering and mathematics (STEM) graduate education training. NSF's NRT program funds effective training of STEM graduate students in high priority interdisciplinary or convergent research areas.

Named "Convergent Graduate Training and EmPOWERment for a Sustainable Energy Future," this grant supports a new interdisciplinary graduate specialization in sustainable energy at Ohio State. During its first four years, the EmPOWERment program anticipates training 80 Ph.D. students, including 32 funded trainees from diverse fields including industrial and systems, environmental, and electrical and computer engineering; public policy; computer science; economics; materials science; and geography. Thereafter, the program anticipates training at least 20 Ph.D. students each year. Development of the program will begin immediately and launch in autumn 2020.

Ramteen Sioshansi, a professor and associate chair of the Department of Integrated Systems Engineering, is the principal investigator, leading a core team of faculty drawn from seven colleges across the university. EmPOWERment will develop a community of practice for students interested in sustainable energy; several new courses; a summer research program for targeted student recruitment; and multiple engagement opportunities with industry, and will create more than 32 one-year stipends for NRT fellows, targeted to female and underrepresented minority students.

"This NRT grant is a game-changer," says Sioshansi. "It recognizes that Ohio State has all of the requisite pieces to provide students with this type of training. However, the grant allows us to connect the pieces into a coherent and holistic student experience. The energy landscape is evolving rapidly and future leaders in the energy industry will need transdisciplinary training to be able to keep pace with and drive the necessary transformations to decarbonize energy production and use."

Ohio State has a strong commitment to the development and sustainability of new convergent approaches to graduate education that better serve the next generation of STEM researchers, engage industry partners, enhance our ability to attract and retain underrepresented minority students, and address the needs of the nation's future workforce. The university has invested heavily in both interdisciplinary research and sustainable energy.

"The NRT strengthens Ohio State's ability to create knowledge and educate students to be leaders in solving the societal challenges of sustainable energy systems," says Bruce McPheron, Ohio State Executive Vice-President and Provost. "We have invested heavily in convergent knowledge creation and training and in sustainable energy, and we are pleased that this program will increase the capacity and impact of both investments.

Multiple energy-sector partners will join faculty and graduate students to create a high-level innovation ecosystem using Ohio State's campus as a real-world test bed. Companies submitting letters of support for the program include American Electric Power, Cargill, ENGIE, First Solar, Huntington, Siemens, and Worthington Industries. In addition, Los Alamos National Laboratories, Ohio Energy Project, and the Public Utilities Commission of Ohio endorsed the program.

EmPOWERment brings together a core group of 16 Ohio State faculty from seven colleges (Arts and Sciences, Business, Education and Human Ecology, Engineering, Food, Agricultural and Environmental Sciences, Law, and Public Affairs) with the involvement of multiple centers and institutes (Sustainability Institute, Institute for Materials Research, and Battelle Center), university offices and programs (Graduate School and Office of Diversity and Inclusion), and over a dozen external industry partners, led by ENGIE, Ohio State's energy-management partner.

ENGIE will participate in the NRT by including Ohio State graduate students in projects that will aid in achieving the university's goal of a zero-carbon Columbus campus by 2050.

"I don't think the energy industry can respond fast enough to society's demand for a zero-carbon path with conventional on-the-job training," says Serdar Tufekci, Vice President, Business Development for ENGIE North America. "Where technical and financial expertise used to be sufficient, this is no longer the case. The ability to function across multi-disciplines is now a requirement for the digitalized distributed and renewable energy solutions."

The EmPOWERment program leverages Ohio State's 50-year partnership with ENGIE to support energy research, operations, and campus sustainability, by providing trainees with concrete opportunities to develop novel digital and physical components such as batteries, materials, and algorithms; integrated assessment, optimization, and predictive modeling capabilities for future scenarios; and new policies, educational mechanisms, and business strategies.

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Principal Investigator Contact: Ramteen Sioshansi, sioshansi.1@osu.edu

Ohio State Faculty engaged with the EmPOWERment Program

Principal Investigator:
Ramteen Sioshansi (Integrated Systems Engineering)

Co-Principal Investigators:
Jeff Bielicki (Civil, Environmental, Geodetic Engineering and Glenn College of Public Affairs)
Elena Irwin (Agricultural, Environmental and Development Economics and Sustainability Institute)
Matt Mayhew (Education and Human Ecology)
Rajiv Ramnath (Computer Science and Engineering)

Additional Core Team Members:
Anant Agarwal (Electrical and Computer Engineering)
Noah Dormady (Glenn College of Public Affairs)
Elizabeth Newton (Glenn College of Public Affairs, Battelle Center, Integrated Systems Engineering)
Steven Quiring (Geography and Translational Data Analytics Institute)
Jay Sayre (Institute for Materials Research Innovation Lab)

Additional Non-Core Faculty:
Christian Blanco (Fisher College of Business and Materials and Manufacturing for Sustainability)
Cinnamon Carlarne (Law)
Jeffrey Froyd (Engineering Education)
Jeffrey Jacquet (School of Environment and Natural Resources)
Ajay Shah (Food, Agricultural, Biological Engineering)
Nicole Sintov (School of Environment and Natural Resources and Sustainability Institute)

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