

Data Centers 101

Information for planners and policymakers



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1 - 2:30 PM



Join energy experts from Lehigh University's **Center for Advancing Community Electrification Solutions** to learn about the infrastructure and impact of data centers. We'll explore the logistics of data centers and associated energy and water challenges, cooling technologies, economic development implications, and other considerations.

Designed for planning directors, municipal leaders, and stakeholders, this session features three brief research presentations followed by a live audience Q&A to help you navigate the rapidly evolving data center landscape.



Center for
Advancing Community
Electrification Solutions

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About the Center for Advancing Community Electrification Solutions

ACES transforms how communities power their futures through affordable, reliable electrification. With an emphasis on energy independence, ACES convenes experts and stakeholders in industry and academia to develop practical, scalable solutions tailored to local community needs and national goals. ACES brings together Lehigh's interdisciplinary expertise to develop the technology and policy solutions needed to address the unique energy challenges and goals in a range of communities. Whether integrating electric fleets, data centers, or manufacturing facilities, communities face challenges in ensuring affordable, reliable electricity delivery. What sets ACES apart is its focus on the real-world interdependencies in electrifying building, water, and transportation systems, systems which are common to all communities.

Dr. Shalinee Kishore is the Iacocca Chair and Professor of Electrical and Computer Engineering at Lehigh University in Bethlehem, Pennsylvania. She obtained the Ph.D. and M.A. degrees in Electrical Engineering from Princeton University in 2003 and 2001, respectively, and the M.S. and B.S. degrees in Electrical Engineering from Rutgers University in 1999 and 1996, respectively. Prof. Kishore is the recipient of the Presidential Early Career Award for Scientists and Engineers, the National Science Foundation CAREER Award, and the AT&T Labs Fellowship Award. She has also served as a Kavli Fellow for the National Academy of the Sciences. Her research interests are in electrification and cyber-physical systems. More recently, she is investigating the impact of large loads like data centers on the electricity grid. Prof. Kishore is the Director of Lehigh's Center for Advancing Community Electrification Solutions (ACES).

With over 40 years of experience in higher education and research, **Dr. Carlos E. Romero** is a leading researcher and technology developer in energy and power generation systems. Dr. Romero has been at Lehigh since 1995, he is a Research Full Professor in the Mechanical Engineering and Mechanics Department, and he is currently the Director of the Energy Research Center and Associate Director of the Institute for Cyber Physical Infrastructure & Energy (I-CPIE). His technical specialties include thermodynamics, combustion, thermal energy storage, energy efficiency, energy systems and environmental science. Dr. Romero is a Fellow of The American Society of Mechanical Engineers, a Senior Member of the National Academy of Inventors, and a Distinguished Researcher at Lehigh University. He has contributed to numerous publications and written more than 500 journal and conference papers, technical reports, patents, and book contributions. Professor Romero teaches courses at Lehigh on Power Generation and Renewable Energy.

Dr. Alberto Lamadrid is an associate professor in the Economics Department, part of the Integrated Networks for Electricity Research Cluster, and the Power from Ocean, Rivers, and Tides (PORT) Laboratory at Lehigh University. His interests lie at the intersections of energy and electricity economics, complex stochastic dynamic systems, and mechanism design. In his work so far he has focused on the development of methodologies and tools that allow to study the economic decision making processes in the electrical network for operations, planning and regulation with large scale penetration of renewable energy sources; and the analysis and design of resilient interdependent systems, and the recovery for communities post extreme disruption events, considering the interactions among electrical and transportation infrastructure, communications systems, and social structures in a probabilistic way. His methods use continuous and discrete optimization, geographic information systems, statistical analysis and engineering models that reflect the physical behavior of the system.



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