

# Power & Energy Seminar Series

Advancing Power System Innovation through Real-Time Simulations  
& Hardware-in-the-Loop Testing

## Seminar summary:

The evolution of the electric grid toward higher penetration of inverter-based resources (IBRs), renewable generation, and distributed assets has increased the need for accurate modeling and validation techniques. This presentation introduces the New York Power Authority's Advanced Grid Innovation Lab for Energy (AGILE) — a state-of-the-art facility enabling real-time simulation and testing of emerging grid technologies. The talk begins with an overview of NYPA's innovation initiatives and AGILE's mission, followed by a technical discussion of the foundations of electromagnetic transient (EMT) simulation, real-time simulation (RTS), and hardware-in-the-loop (HIL) testing. These methods bridge the gap between analytical models and field deployment, allowing utilities to evaluate control strategies, validate protection systems, and de-risk integration of new devices before they are connected to the actual grid. The session concludes with practical examples demonstrating how such advanced testing environments accelerate research, improve reliability, and support the transition toward a cleaner, more resilient power system.



**Reza Pourramezan, Ph.D.,**  
Senior Member IEEE  
Manager, Advanced Grid  
Innovation Lab for Energy  
(AGILE)  
New York Power Authority

## About the speaker:

Reza is a Manager at the Advanced Grid Innovation Laboratory for Energy (AGILE). He is a scientist and power systems engineer with extensive experience in power system simulation, smart grids, and renewable energy integration. He joined NYPA in February 2022. As a Manager, Reza leads a team that supports NYPA's operations, planning, and R&D by testing new technologies and solutions in AGILE's state-of-the-art facilities. His work includes modeling and simulation of advanced technologies for the New York State power grid, advancement of real-time hardware-in-the-loop simulations, measurement-based modeling, and data processing in power systems. Before joining NYPA, Reza held a Postdoctoral Research Fellow position at Polytechnique Montréal. He has a PhD in Electrical Engineering from Polytechnique Montréal, where his research focused on the interface of power systems, renewable energy systems, and smart grids. Recognized as an IEEE Senior Member, he has contributed to the engineering profession through publications in leading scientific journals and participation in invited talks and panels.

## Pizza will be provided

Registration is required  
Please scan the QR code  
to register:



**Date:** Nov. 25th, 2025

**Time:** 12:15 PM to 02:00 PM

**Location:**

Engineering and Science Building, Room: ES 2008  
85 Murray Hill Rd,  
Vestal, NY.

