



IEEE Northern Australia Section  
PES Chapter



The IEEE Northern Australia Section and the IEEE Power & Energy Society Chapter invite you to attend two insightful seminars on


 Tuesday, 25th March 2025


 2:00 PM - 3:30 PM

 EIP Building 506-103, James Cook University, Townsville

### Seminar 1


 **Topic:** Data-based Scenario Generation of Bidding Curves of the Power Plants

 **Abstract:** This report presents scenario generation methods of bidding curves based on the bidding data in AEMO, which can help the ISO to analyse the possible scenarios of the electricity market operation. Generally, we apply Transformer and GAN to fulfill this task. Specifically, soft constraints for bidding curve generation are applied to guarantee monotonicity in the generated bidding curves. Meanwhile, we use deep inverse reinforcement learning to identify generators' implicit risk preferences, which can help to represent diverse bidding behaviours.

 **Speaker Bio:** Dr. Ying Wang is currently an Associate Professor at School of Automation, Southeast University, Nanjing, China. Her research interests are power system optimization, electricity market, and AI applications in the power systems.

### Seminar 2

 **Topic:** Identification of Critical Weak Points and Pre-Disaster Protection Optimization in Integrated Energy Systems Based on Complex Network Theory

 **Abstract:** This report presents research on integrated energy systems (IES) from the perspective of complex network theory (CNT), focusing on three key aspects. Part one combines statistical metrics (betweenness centrality) and higher-order structures (cycle structures) in CNT with operational characteristics of IES to identify critical weak points in the system. Building on the aforementioned research, part two proposes a pre-disaster protection optimization model that generates protective strategies and designs algorithms to optimize the allocation of protective resources, thereby minimizing the system's exposure to risks during catastrophic events. Part three explores the impact of topological changes in IES on risk causation and cascading failures, demonstrating the potential of various structural modifications to enhance the system's robustness.

 **Speaker Bio:** Chenwei Zhang, a third-year PhD candidate at the School of Automation, Southeast University. Her research focuses on protection analysis for integrated energy systems.

RSVP for attendance before **24 March 2025**

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