TEXAS A&M UNIVERSITY
Department of Electrical & Computer Engineering

TRANSFORMING ENGINEERING EDUCATION

ENERGY & POWER GROUP SEMINAR

Resilience of Renewable Power Systems Under Climate Risks

Abstract

Climate change is expected to intensify the effects of extreme weather events on power systems and increase the frequency of severe power outages. From 2000 to 2021, over 80% of U.S. power outages were associated with extreme events such as hurricanes, wildfires, heatwaves, and flooding, with 2010–2020 witnessing a 78% increase in weather-associated power outages compared to 2000–2010. The large-scale integration of environment-dependent renewables during energy decarbonization could induce increased uncertainty in the supply-demand balance and climate vulnerability of power grids. This talk introduces superimposed risks of climate change, extreme weather events, and renewable energy integration, which collectively affect power system resilience. This talk then explores climate-resilient solutions towards a net-zero future.

Luo Xu
Postdoctoral Researcher
Civil and Environmental Engineering
Princeton University

Friday, March 22
11:30 am
241 ZACH

Biography

Dr. Luo Xu is an interdisciplinary scholar specializing in energy and the environment. He is currently a Postdoctoral Researcher in the Department of Civil and Environmental Engineering at Princeton University. He holds Ph.D. and B.S. degrees in Electrical Engineering from Tsinghua University and Wuhan University. His research bridges climate science and renewable energy systems, with a particular focus on energy system resilience under various climate extremes such as tropical cyclones, heatwaves, and wildfires. Dr. Luo Xu develops integrated climate-energy risk analysis frameworks and resilience enhancement strategies, supporting the climate-resilient energy transitions in a warming earth. His work was honored with the 2023 CIGRE Thesis Award, the Best Research Award from the IEEE PES PhD Dissertation Challenge 2023, the IET Premium Award in 2019. He is a Young Editorial Board member of Applied Energy, Secretary of the CIGRE Working Group D2.56, and a Member of the IEEE PES EICC Committee.

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