TEXAS A&M UNIVERSITY
Department of Electrical & Computer Engineering

TRANSFORMING ENGINEERING EDUCATION

ENERGY & POWER GROUP SEMINAR

Towards Zero-Carbon Power Grids: Navigating Renewables' Complexities and Constraints

Abstract

The global priority to combat climate change has led to a focus on decarbonizing power systems. However, the variability and intermittency of renewable energy sources pose several challenges for power systems operations, including energy curtailment and price volatility. In this work, we analyze these challenges while accurately characterizing the co-variability between renewable energy supply and electricity load and the interplay between these resources and the operational constraints of the power grid. Our results show that integrating renewable energy can cause big and heterogenous changes in energy prices. Also, increasing wind and solar energy without considering the power grid specifications can result in an inefficient use of energy and significant energy curtailment. This work emphasizes the importance of considering the spatiotemporal dynamics and operational constraints when making decisions regarding additional investments in renewable resources.

Elnaz Kabir
Assistant Professor
Engineering Technology & Industrial Distribution
Texas A&M University

Friday, March 1
11:30 am
241 ZACH

Biography

Elnaz Kabir is an Assistant Professor in the Department of Engineering Technology & Industrial Distribution (ETID) at Texas A&M University. Prior to her current position, she was a Postdoctoral Research Fellow at Cornell University. Dr. kabir received her Ph.D. degree in Industrial and Operations Engineering and her M.S. degree in Statistics, both from the University of Michigan, Ann Arbor. Her research revolves around designing data-driven frameworks that can thrive in uncertain environments, tackling issues in energy system decarbonization and power outage management. She has made several contributions to power system risk analysis, as recognized by various recognitions in the best paper and poster competitions from Society for Risk Analysis.

FACULTY CONTACT:
Adam Birchfield
abirchfield@tamu.edu