



TEXAS A&M UNIVERSITY

Department of Electrical
& Computer Engineering

TRANSFORMING ENGINEERING EDUCATION

ENERGY & POWER GROUP SEMINAR

Reliability and Economics of Distribution Systems with Edge-Level DERs

Abstract

Power systems are experiencing a pivotal transformation due to the increasing integration of edge-level, behind-the-meter Distributed Energy Resources. Bi-directional power flow in the presence of edge-level DERs impacts system reliability and poses unique challenges in the planning and operation



of the distribution system. On the other hand, utility operators face challenges concerning the financial viability of electricity delivery with the increasing proliferation of DERs. Therefore, it becomes crucial to quantify the impacts of edge-level DERs both from the reliability perspective and on the utility revenue. This talk will present a multi-level framework to assess system reliability that incorporates the complexities and stochastic nature of end-user DER adoption. Additionally, it will present an analysis of the cost-benefit dynamics and the influence of Net Energy Metering (NEM) policies on utility revenue, consumer costs, and overall system economics.

Arun Kumar Karngala

Ph.D. Student

Texas A&M University

Friday, February 23

11:30 am

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Biography

Arun completed his Ph.D. in Electrical Engineering at Texas A&M University in Jan 2024. He currently works as a graduate research assistant at TAMU. Before joining TAMU, he worked as a plant power distribution engineer with the National Mineral Development Corporation (NMDC) in India. Additionally, he is actively involved in the IEEE PES-PELS-IAS student branch chapter at TAMU. His primary research interests include power system reliability, DER integration, sustainable energy systems, and energy equity.

FACULTY CONTACT:

Adam Birchfield
abirchfield@tamu.edu

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