TEXAS A&M UNIVERSITY
Department of Electrical & Computer Engineering

Friday, October 15, 2021 | 11:30 – 12:30 p.m. CST

Location: ETB 1020

Towards Reliable Hybrid Data-Driven and Physics-Based Optimal Power Flow

Abstract

Recent advancements in machine learning (ML) based solutions for solving optimal power flow show outstanding results – near-optimal and feasible solutions orders of magnitude faster than conventional physics-based approaches. However, it is challenging to practically use these solutions, as many models are only trained on data corresponding to typical operating conditions, and existing operator workflows are typically not incorporated. In this talk, we discuss some recent research that attempts to close the gap between academic developments and more realistic power systems operations. First, we discuss recent developments in academic research in this field and why ML solutions can provide valuable to power systems operations. Then, we discuss the development of our recent publicly available datasets for training machine learning based models that span a significantly wider range of operating conditions. Lastly, we discuss other applications where ML can help solve OPF.

Dr. Kyri Baker

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Dr. Kyri Baker received her B.S., M.S., and Ph.D. in Electrical and Computer Engineering from Carnegie Mellon University in 2009, 2010, and 2014, respectively. From 2015 to 2017, she worked at the National Renewable Energy Laboratory. Since Fall 2017, she has been an Assistant Professor at the University of Colorado Boulder and is a Fellow of the Renewable and Sustainable Energy Institute (RASEI). She received the NSF CAREER award in 2021 and led a top performing team in the ARPA-E Grid Optimization competition. She develops computationally efficient optimization and learning algorithms for energy systems ranging from building-level assets to transmission grids.