



SMART GRID CENTER
TEXAS A&M ENGINEERING EXPERIMENT STATION

SGC WEBINAR

Creating and Validating Dynamics Models for Synthetic Electric Grids

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Electric grid analysis and design relies on robust modeling and simulation capabilities, with time-domain dynamics and stability studies a key aspect. This webinar will focus on recent work done at Texas A&M on the topic of building synthetic datasets to spur innovation in this area. Actual electric grid models, particularly models with parameters for running stability studies, are considered Critical Energy Infrastructure Information (CEII); hence, we are developing synthetic grids, which are fictitious power system models that are realistic, large-scale, and do not contain CEII. Building dynamic models for synthetic grids involves selecting model types, setting reasonable values for model parameters, and tuning exciters and governors appropriately. At a system level, configuring the dynamic models for voltage and frequency stability, including inertia, primary frequency response, and droop, involves analyzing the complex interactions among network structure, generator dispatch, synchronous machine properties and controls, inverter-based generator modeling, and system stabilizers. This presentation will discuss recent developments for building these synthetic models, and also discuss related implications of this analysis for detecting and avoiding hidden failure modes in the decision-making for complex systems like the electric grid.

October 18, 2023 at 3:00 P.M. CDT

Register in advance [HERE](#)

After registering, the confirmation email contains information about joining the webinar.



Adam B. Birchfield, Ph.D. is an Assistant Professor in the Department of Electrical and Computer Engineering. Prior to this he was a research engineer at the Electric Power Research Institute (EPRI). He received the B.E.E. degree from Auburn University in 2014, M.S. in electrical and computer engineering from the University of Illinois at Urbana-Champaign in 2016, and Ph.D. in electrical engineering from Texas A&M University in 2018. Dr. Birchfield's research is in power system modeling, large system transient dynamics, applications of synthetic power grid datasets, and the resilience of power systems to high-impact, low-frequency events.