# GRID ENHANCING TECHNOLOGIES IN TRANSMISSION OPERATIONS AND PLANNING: OPPORTUNITIES & CHALLENGES

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### OVERVIEW


In recent years, grid enhancing technologies (GETs) have garnered significant attention as utilities and system operators strive to address mounting challenges in transmission operations and planning. The emergence of renewable energy sources, the rising demand for electricity, and the imperative for grid reliability and flexibility have spurred rapid innovation and investment in GETs. This talk will provide a brief introduction to GETs, exploring the suite of solutions currently being coined as GETs including dynamic line rating, topology optimization, advanced power flow controllers, and advanced conductors. Present recent progress and highlight areas where further research may be pursued.


### BIO

**Dr. Swaroop S. Guggilam** earned his Bachelor's degree in Electrical Engineering from Veermata Jijabai Technological Institute, Mumbai, Maharashtra, India, in 2013. He subsequently completed his M.S. and Ph.D. degrees in Electrical Engineering at the University of Minnesota Twin Cities, Minneapolis, MN, USA, in 2014 and 2019, respectively. Dr. Guggilam currently serves as Technical Leader within the Grid Operations and Planning Group at the Electric Power Research Institute (EPRI), Knoxville, TN, USA. His responsibilities at EPRI encompass power system modeling, optimization, transmission planning and operations, grid-enhancing technologies, and transmission hosting capacity analysis. He has been recognized with the Best Paper Award from IEEE Transactions on Power Systems and the IEEE PES Prize Paper Award in 2021. Additionally, Dr. Guggilam is co-author of the book "Electric Power Systems with Renewables: Simulations Using PSSE," written in collaboration with Dr. Ned Mohan, which offers comprehensive insights into integrating renewable energy resources into electric power systems through advanced simulation tools.