

Spring 2016 Seminar Series

Economic Analysis for Transmission Operation and Planning

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9:00 AM – HEC 356

The rapid growth of renewable energy imposes great challenges to the aging U.S. power grid. While accommodating the increasing renewable penetration, the limited capacity of existing transmission lines causes more congestions and highly volatile electricity prices. Though investing new transmission lines could solve the congestion problem, the cost allocation among investors is a major concern that impedes most renewable integration projects. The goal of this research is to enable more renewable energy utilization and integration by advancing real-time market operation and long-term transmission planning. Specifically, 1) for better market operations, a congesting and price forecasting algorithm is developed by pattern recognition using convex hull algorithms; 2) for better transmission planning, a decentralized Nash Bargaining approach is employed to allocate renewable integration costs. A policy implication is also obtained to provide guidance for policy makers on designing optimal renewable energy subsidies.



Dr. Qun Zhou
University of Central Florida

Dr. Qun Zhou is a Visiting Assistant Professor of Electrical Engineering at University of Central Florida. She received her B.S. from Huazhong University of Science and Technology, and Ph.D. from Iowa State University, both in Electrical Engineering. Dr. Zhou worked at Alstom Grid (Now GE) as a power system engineer and developed electricity market software for major U.S. transmission operators. Her research interests are power economics, big data analytics in power systems, and renewable energy integration.

