

Special Session 2
Stochastic and Robust Optimization for Power System with High-Level Uncertain
Renewable Energy Resources

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Scope of the Session:

Intermittent renewable energy resources such as solar PV and wind power have been increasingly penetrated in modern power systems. In the meantime, new loads such as electric vehicles (EVs) are also rapidly integrated into power systems. While these new resources have various advantages, their uncertain power output and load demand would introduce tremendous difficulties for the planning and operation of the power systems.

To address the high uncertainties from the renewable energy resources, various optimization methodologies such as stochastic programming, interval optimization, robust optimization, etc. have received significant research interests in solving power system planning and operation problems.

This special session aims to present the state-of-the-art research works on Robust/Stochastic planning and operation of power system with high-level intermittent renewable energies. Topics of presentations and research papers include but are not limited to:

- Robust optimization, stochastic programming, and interval optimization techniques applications to power system planning and operation
- Optimal sizing and locating of renewable energy resources
- Optimal placement of new facilities such as energy storage systems, EV charging facilities, etc.
- Advanced solution algorithms for stochastic and robust optimization problems
- Distributed optimization methods for large-scale optimization problems in power system operation
- Advanced forecasting techniques for predicting renewable power generation, residential load, etc.