



# EI<sup>2</sup> 2023 Special Session 06

## Situation Awareness of Renewables Dominated Power Distribution Systems

### Introduction and topics

The energy transition towards clean and low carbon has resulted in the rapid development of renewable energy. However, high proportional connections of renewable energy sources and flexible loads in the power distribution system will increase the uncertainties of electric generation and load demand, and further lead to difficulties of operation and control. Therefore, it is urgent to have real-time operational insights to ensure seamless and efficient grid operation of power distribution systems with high proportional distributed controllable resources, such as winds, PVs, storages, flexible loads including EVs and air conditioning, etc.

Given this background, this session intends to shed light on the significance, challenges, and strategies associated with operation situation awareness and flexible coordinated interaction control in renewable dominated power distribution systems. Meanwhile, it aims to provide a platform for experts, researchers, and industry practitioners to share recent advancements and methodologies surrounding situation awareness to provide essential support for system operators to monitor the real-time operation status, predict the future development trend, and formulate the operational control strategy for renewable dominated power distribution systems.

Topics of interests(including but not limited to):

- \\ 1. Operation Situation awareness of power distribution systems:
  - Data-driven situational elements extraction of power distribution systems
  - Real-time operation state sensing of power distribution systems
  - Future operational trends forecast of power distribution systems
- \\ 2. Decentralization-autonomy coordinated interaction control of power distribution systems:
  - Generalized control strategy for multi-type distributed converters
  - Decentralized control of resources within the power distribution system
  - Coordinated interaction control between power distribution systems
- \\ 3. Energy management and resilience enhancement of power distribution systems:
  - Autonomous scheduling of power distribution systems
  - Energy management of power distribution systems
  - Resilience enhancement strategies for ex-ante prevention of extreme events

### Special Session Chairs



**Zhenzhi Lin**  
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### Publication



Website

The conference papers will be published by the IEEEExplore website and indexed by EI, and high-quality papers will be recommended to Energy Conversion and Economics, Energy Internet, Journal of Modern Power Systems and Clean Energy (MPCE), CSEE Journal of Power and Energy Systems (CSEE JPES), Applied Energy, and others.

Submission Link: <https://easychair.org/conferences/?conf=ei22023>

Full Paper Submission Deadline: Oct. 31th, 2023

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