



EI² 2023 Special Session 04

Coordination in operating high-penetration renewable power systems

Introduction and topics

In the past decades, the burning of fossil fuels has sparked worldwide apprehension regarding climate change, with carbon emissions from the electricity sector which reached approximately 14.6 Gt in 2021. Numerous countries have put forth national strategies to decarbonize power systems by promoting high-penetration energy shares of renewable resources.

Establishing high-penetration renewable power systems brings significant changes in the electricity sector. For example, the device level observed more and more diversified inverter-based resources (e.g., electric vehicles and hydrogen) had been incorporated, and the system level observed the structure of long-distance renewable power delivery and regional receiving-end power systems. These changes open up more opportunities for coordination in operating high-penetration renewable power systems at different levels (particularly at device-device levels, device-system levels, and system-system levels). Such coordination facilitates making full use of different resources and systems to promote renewable accommodations. However, the implementation of the coordinated operation should be careful and efficient to ensure operational security and economy of high-penetration renewable power systems. Unfortunately, the coordination task is essentially complex, particularly with the significant renewable uncertainties, the computation challenge of the increasing heterogeneous coordination participants, and the deregulation of the electricity sector. To this end, this special session will focus on advanced techniques for coordination in operating high-penetration renewable power systems.

Topics of interests(including but not limited to):

- \\ Coordinated techniques to integrate diversified inverter-based resources
- \\ Operational analysis of regional receiving-end power systems
- \\ Coordinated strategies for hydrogen-assisted renewable accommodations
- \\ Advanced AI techniques applied in operational coordination
- \\ Market equilibrium in renewable energy trading

Special Session Chairs

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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. 31h, 2023

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