

## Special Session 14

### Market Supported Operation of Low-Carbon Power Systems

#### Introduction and Topics

The increasing integration of distributed energy resources has made power system operation significantly more complex, introducing a vast number of heterogeneous participating entities. Traditional centralized dispatch approaches that primarily focus on the supply side are increasingly struggling to maintain power balance under such conditions. This transition necessitates the development of hierarchical electricity markets, including wholesale, retail, and local electricity markets, to better incentivize demand-side entities (e.g., load aggregators, prosumers) to actively contribute to system balancing. Meanwhile, the transition toward low-carbon power systems also introduces new challenges for system stability and reliability. These emerging operational needs call for the coordinated development of ancillary service markets, capacity markets, and flexibility markets to ensure secure and resilient grid operation. This special session aims to provide market regulators and policy makers with insights on market mechanism design to support power system operation under high renewable penetration. It also seeks to offer decision-support tools to guide market participants capture multiple value streams across these markets.

Topics including but not limited to:

1. Design, clearing, and settlement of electricity markets
2. Ancillary service, flexibility, and capacity markets under high renewable penetration
3. Operation approaches for aggregators and virtual power plants
4. Bidding strategies for multi-market participation
5. Data-driven and AI-enabled approaches for market operations and participation
6. Assessment and enhancement of market efficiency
7. Forecasting of electricity demand, market prices and competitor behaviors
8. Detection and mitigation of market power

#### // Special Session Chairs //



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#### // Paper Submission //

##### Submission Method



- \* View paper submission instruction on website  
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- \* Submit your paper through the website or QR code  
<https://easychair.org/conferences/?conf=ieeEICPSAsia2026>

##### Important Dates

Submission Deadline	May 25, 2026
Notification Deadline	June 10, 2026
Early-bird Registration Deadline	June 15, 2026
Author Registration Due	June 15, 2026

##### Publication

Submissions to IEEE I&CPS 2026 will be peer reviewed on the basis of technical quality, relevance to conference topics, originality, significance, clarity, etc. Accepted papers will be submitted for inclusion into IEEE Xplore subject to meeting IEEE Xplore's scope and quality requirements. Excellent papers will be recommended for review by IEEE Trans on Industry Applications (proportion can reach up to 50%), Global Energy Interconnection and DeCarbon.