

THE 8TH IEEE CONFERENCE ON ENERGY INTERNET AND ENERGY SYSTEM INTEGRATION

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//// Special Session 13 ////

Data-Driven Modeling and Optimization Techniques for Low-Carbon Integrated Energy Systems

◦ INTRODUCTION AND TOPICS ◦

This special session delves into the data-driven modeling and optimization strategies crucial for the development and operation of low-carbon Integrated Energy Systems (IES). As the energy sector evolves towards more sustainable operations, utilizing big data and analytics is crucial for integrating low-carbon technologies effectively. This session will highlight the latest advancements in simulation and optimization tools that support the efficient design, planning, and operation of the IES, ensuring they are both sustainable and capable of meeting the evolving demands of energy markets.

- **Advanced Simulation Models of Low-Carbon IESs:** Leveraging big data and machine learning to develop next-generation simulation models that accurately represent the dynamics of low-carbon technologies within integrated systems.
- **Uncertainty Modeling:** Focusing on characterizing the uncertainties of massive new energy sources like solar and wind power, and their impact on the stability and reliability of IES.
- **Optimization Techniques for Energy Efficiency:** Exploring cutting-edge optimization algorithms that aim to maximize energy efficiency and minimize carbon emissions.
- **Data-Enhanced Decision-Making Support:** Covers the incorporation of data analytics into decision support tools to facilitate informed decision-making under uncertainty.
- **Coupling of Heterogeneous Energy Sources:** Analyzing and optimizing the synergistic operations of various energy types within an IES to enhance overall system performance and energy efficiency.
- **Multi-Market Mechanism Design:** Designing coupling mechanisms between different markets (e.g., electricity and carbon markets) to enhance the consumption rate of new energy sources and align with low-carbon goals.

◦ SPECIAL SESSION CHAIRS ◦



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◦ PUBLICATION & SUBMISSION ◦

Submissions will be reviewed by the conference technical committees, and accepted papers will be published in IEEE EI² 2024 International Conference Proceedings, which will be submitted for inclusion in the **IEEE Xplore Digital Library**, and submitted for indexing by **El compendex** and **Scopus**.



Scan the QR code on the left or open the submission link to submit your paper.

• Submission link: <https://easychair.org/conferences/?conf=ei22024>

Submission Deadline: 31 October, 2024

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