CSEE Journal of
Power and Energy Systems

# Call for Papers

## Special Issue on "Methodology and Application of Explainable Artificial Intelligence in Smart Grid Operation and Planning"

**Important Dates**

**Full Paper Submission:** September 30, 2024

**Final Decision Notification:** January 31, 2025

**Publication of Special Issue:** March 31, 2025

Artificial Intelligence (AI) and its associate machine learning theories have been widely investigated in smart grids, along with electricity generation, transmission, consumption and storage. However, significant concerns are being raised regarding the explainability and accountability of AI. Currently, most AI systems are treated as "black boxes" that are difficult to comprehend especially for practical grid reliability-related scenarios. These issues pose great challenges to the application of AI in smart grids, including real-time grid control, security-constrained power dispatch, spot market clearing and settlement, renewable power planning, etc. Explainability of AI enables reliable knowledge discovery from big data and trustworthy decision-making. In this instance, there is an urgent need to incorporate explainable artificial intelligence (XAI) into smart grid operation and planning for the next-generation of decarbonization.

This special issue aims to solicit original research on XAI in smart grid operation and planning, as well as an review of state-of-the-art academic research, industrial practice and international experiences. Topics of interest include, but are not limited to:

- The methodology and architecture design of XAI in smart grid operation and planning
- Modeling and analysis of XAI systems integrated into smart grids
- Applications of XAI in smart grid modeling and operation
- Deployment of XAI in energy markets and electricity-carbon coupling
- Impact analysis of XAI on situational awareness, knowledge discovery and planning
- Detection and prevention of deceptive XAI in smart grid operation and planning
- Policy design and practical experiences of XAI in smart grid operation and planning
- Ethics and regulations of XAI in smart grid operation and planning

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