

Special Session VI

Special Session Basic Information:

专栏题目

中文：全国统一电力市场体系构建的理论逻辑与实践路径

Session Title

英文：Theory and Practical Path of Building a Unified National Electricity Market System

专栏介绍和征稿主题

Introduction and topics

中文：全国统一电力市场体系构建的理论逻辑与实践路径，是当前我国电力体制改革的核心命题。从理论逻辑看，其本质是在电力商品特殊属性与市场效率追求之间寻求最优均衡，通过多层次市场（省间-省内）的时序协同、多品种市场（中长期-现货-辅助服务-容量）的功能耦合，以及电-碳-绿证市场的机制衔接，实现电力资源在更大范围内的优化配置。从实践路径看，我国遵循“统一市场、两级运作”的总体框架，采取“省间+省内”协同推进的策略：优先构建省间市场以打破省际壁垒，同步培育省级现货市场探索价格信号，再通过市场耦合机制实现两级市场的协调运作。当前正处于从试点探索向体系集成过渡的关键阶段，面临的主要挑战包括：市场力监管、阻塞盈余分配、可再生能源消纳责任衔接、以及计划与市场的双轨制过渡等。解决之道在于坚持“先建机制、后推范围”的原则，在完善规则体系、强化监管能力、提升技术支持系统的同时，稳步扩大市场主体范围与交易品种，最终建成规则统一、公开透明、竞争充分、开放有序的统一全国电力市场体系。以此为专栏，展开如下主题的研究：

征稿主题

- (1)省间-省内市场协同运行的耦合机制研究
- (2)电力现货市场的中国道路：试点经验、问题诊断与深化方向
- (3)电力市场价格形成机制的微观结构与效率评估
- (4)适应高比例可再生能源的市场机制创新
- (5)绿色电力交易与碳市场的协同机制
- (6)波动性电源的预测偏差考核机制优化
- (7)人工智能在电力市场交易中的应用前沿
- (8)发电企业参与电力市场的交易策略优化研究

英文：The theoretical logic and practical path of constructing a unified national electricity market system is the core proposition of China's current electricity system reform. From a theoretical logic perspective, its essence is to seek the optimal balance between the special attributes of electricity commodities and the pursuit of market efficiency. Through the temporal coordination of multi-level markets (inter provincial intra provincial), the functional coupling of multi variety markets (medium and long-term spot auxiliary services capacity), and the mechanism connection of electricity carbon green certificate markets, the optimization allocation of electricity resources on a larger scale can be achieved. From a practical perspective, China follows the overall framework of "unified market, two-level operation" and adopts a strategy of "inter provincial+intra provincial" collaborative promotion: prioritizing the construction of inter provincial markets to break down inter provincial barriers, synchronously cultivating provincial-level spot markets to explore price signals, and then achieving coordinated operation of the two-level markets through market coupling mechanisms. We are currently in a critical stage of transitioning from pilot exploration to system integration, facing major challenges such as market power regulation, blocking surplus distribution, linking renewable energy consumption responsibilities,

and transitioning to a dual track system of planning and market. The solution lies in adhering to the principle of "establishing mechanisms first, expanding scope later", while improving the rule system, strengthening regulatory capabilities, and enhancing technical support systems, steadily expanding the scope of market entities and trading varieties, and ultimately building a unified national electricity market system with unified rules, openness, transparency, full competition, and open order. Using this as a column, conduct research on the following topics:

Call for Papers Theme

- (1) Research on the coupling mechanism of inter provincial intra provincial market synergy operation
- (2) The Chinese path of electricity spot market: pilot experience, problem diagnosis and deepening direction
- (3) Microstructure and Efficiency Evaluation of Price Formation Mechanism in Electricity Market
- (4) Innovation of market mechanism to adapt to high proportion of renewable energy
- (5) The collaborative mechanism between green electricity trading and carbon market
- (6) Optimization of prediction bias assessment mechanism for fluctuating power sources
- (7) The cutting-edge application of artificial intelligence in electricity market trading
- (8) Research on the Optimization of Trading Strategies for Power Generation Enterprises to Participate in the Electricity Market

Special Session Chair(s):


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Organizer's Brief Biography

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英文：Guoxing Zhang is a professor, doctoral supervisor, and second level professor at the School of Management of Lanzhou University. He is also one of the first batch of fourth level and third level Cuiying scholars at Lanzhou

University. PhD in Management and Postdoctoral Fellow in Management Science and Engineering at Xi'an Jiaotong University. Leading Talent of Gansu Province (2023), Distinguished Professor of Flying Scholars of Gansu Province (2022), Recipient of the New Century Excellent Talents Support Program of the Ministry of Education (2013). Serving as an editorial board member for the Nature sub journal Scientific Data, editorial board member for Systems Engineering Theory and Practice, and academic editor for China Population Resources and Environment. Multiple papers have been selected as top 1% highly cited papers by ESI, and 17 papers have been selected as highly cited and downloaded papers by CNKI. I have presided over one key project, one special project, one general project, one youth project, and one sub project of the National Natural Science Foundation of China. I have also led over ten key projects of the National Social Science Foundation of China, sub projects of major projects of the National Social Science Foundation of China, projects funded by the Ministry of Education's Humanities and Social Sciences Fund, and postdoctoral special grants. I have participated in over ten scientific research projects, including major projects of the National Social Science Foundation of China, major issues in the early stage of the 12th Five Year Plan, and projects funded by the National Natural Science Foundation of China. Hosted over 10 major, key, general management, and development projects of State Grid Corporation of China. Director of the Chinese Society of Systems Engineering; Executive Committee Member and Deputy Secretary General of the Youth Work Committee of the China Association for the Promotion of Law and Economic Mathematics; Executive Director of China Logistics Society; Executive Director and Deputy Secretary General of the Fourth Council of the Decision Science Branch of the China Operations Research Society.

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Organizer's Brief Biography

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英文：Nie Yan, Professor at the School of Economics, Lanzhou University. My main research areas are energy economic management, low-carbon development of power systems, and environmental economics. More than 20 academic papers have been accepted and published, including 10 SCI/SSCI papers and 7 CSSCI papers. Hosted one National Natural Science Foundation Youth Project and one National Natural Science Foundation General Project. Served as a member of the Youth Working Committee of the China Optimal Law System Planning and Economic Mathematics Research Association.