Special Session VII

Special Session Basic Information:

专栏题目 **Session Title**	储能及虚拟电厂等灵活性资源参与新型电力系统运行调控及商业机制关键技术 Key Technologies for Energy Storage and Virtual Power Plants Flexibility Resources to Participate in Power System Operations and Commercial Mechanisms

专栏介绍和征稿主题
Introduction and topics

新能源消纳是实现“双碳”国家战略目标的主力支撑。然而，随着新能源渗透率的不断提升，作为电网灵活性调节资源主要来源的常规火电机组逐步退出，导致系统安全运行无法保障，且极大制约了新能源消纳。储能与虚拟电厂等灵活性调节资源在电网运行控制中可发挥重要作用，合理应用有助于更好地保障电力系统的安全、优质、经济与低碳运行。然而，上述灵活性资源参与电力系统调控运行方案及相关市场机制需要深入研究与探索，以适应新型电力系统建设与发展。本专题面向储能及虚拟电厂等灵活资源参与电力系统运行调控及商业机制关键技术开展广泛征稿，旨在促进灵活性调节资源充分发挥运行优势，解决新型电力系统对灵活性资源的迫切需要等诸多理论问题。

The consumption of new energy is the main support for achieving the dual-carbon national strategic goal. However, with the continuous increase in the penetration rate of new energy, conventional generation units as the main flexibility regulation resources in power grids are gradually being phased out, which results in the inability to guarantee the secure operations for power systems and greatly restricting the consumption of new energy. Flexible regulation resources including energy storage and virtual power plants can play an important role in power grid operations, and reasonable application them can help better ensure the secure, high-quality, economic, and low-carbon operations for power systems. However, the participation of the flexible resources in the regulation and operation and related market mechanisms require research and exploration to adapt to the construction and development of new power systems. This subject is to conduct extensive solicitation for key technologies related to the participation of flexible resources such as energy storage and virtual power plants in the operations and regulation of power systems, as well as commercial mechanisms, to promote the full utilization of flexible regulation resources and solve theoretical problems for flexible resources in new power systems.

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Zhang Yuchen, a member of the Communist Party of China, holds a Ph.D. and has postdoctoral research experience. He is currently a Lecturer and Master's Supervisor at the School of Electrical and Electronic Engineering, Harbin University of Science and Technology. He received his Ph.D. degree in Power System and Its Automation from Harbin University of Science and Technology in 2025.

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