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Technical guidelines for virtual power plants

虚拟电厂技术导则

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the China Electricity Council. This document is under the jurisdiction of the National Technical Committee on Standardization of Electricity Demand-Side Management (SAC/TC575). This document was drafted by: China Southern Power Grid Science Research Institute Co., Ltd., China Southern Power Grid Co., Ltd., and State Grid Corporation of China. The company, China Electricity Council, China Electric Power Research Institute Co., Ltd., Southeast University, Guangdong Power Grid Co., Ltd., Jinan University Tsinghua University, Guangzhou Power Supply Bureau of Guangdong Power Grid Co., Ltd., Economic and Technological Research Institute of State Grid Shanghai Electric Power Company, Nanjing Guodian Nanzhi Automation Co., Ltd., Marketing and Service Center of State Grid Jiangsu Electric Power Co., Ltd., Inner Mongolia Electric Power (Group) Co., Ltd., Shenzhen Power Supply Co., Ltd. State Grid Corporation of China

Limited, State Grid (Jiangsu) Electricity Demand-Side Management Guidance Center Co., Ltd., State Grid Shanghai Energy Internet Research Institute Co., Ltd. Southern Power Grid Peak Shaving and Frequency Regulation (Guangdong) Energy Storage Technology Co., Ltd., and Nanjing Chunxing Power Technology Co., Ltd. The main drafters of this document are. Huang Huishan, Gao Ciwei, Li Yan, Cao Wangzhang, Guo Tao, Jin Xin, Wang Yi, He Sheng, Zheng Xiaoyu, Wang Zongyi, and Tian Shiming. Liu Min, Deng Weisi, Liu Yanxing, Gao Hongchao, Chen Tunan, Yu Zhiwen, Guo Mingxing, Ye Jun, Yang Shihai, Zhou Jue, Zhao Wenmeng, Huang Youpeng, Ji Ling, Song Kun. Virtual Power Plant Technical Guidelines

1 Scope

GB/T 47241-2026 is the Chinese national standard covering the virtual power plant - the aggregation of scattered generation, storage, and controllable load into a single resource the grid can dispatch as if it were one station, with the architecture, the communication, the control and the metering that make the aggregate answerable for what it promises. First edition, and it is the piece that makes distributed resources useful to a system operator rather than merely tolerated by one. It was issued on 27 February 2026 and has been in force since 1 September 2026, as a first edition. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document specifies the general principles, overall framework, resources and access, systems and terminals, information and communication, security protection, and design verification of virtual power plants. Requirements for receipt and testing, operation and management, benefits and evaluation. This document applies to the construction, connection, operation, and management of virtual power plants.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 22239 Information Security Technology - Basic Requirements for Network Security Level Protection

GB/T 36572 Guidelines for Network Security Protection of Power Monitoring Systems

GB/T 44241 Virtual Power Plant Management Standard

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Virtual power plant (VPP) Based on the power system architecture, and utilizing modern information and communication, system integration and control technologies, it integrates distributed power sources, adjustable loads, and energy storage. Various decentralized resources, as new types of business entities, collaboratively participate in power system optimization and power market transactions, forming a power operation organization model and system.

3.2 Virtual power plant resources VPPresources Distributed power sources, adjustable loads, energy storage, and combinations thereof that have the ability to output electrical energy or provide power regulation. [Source: GB/T 44260-2024, 3.2, with modifications]

3.3 Virtual Power Plant Operator (VPPoperator) Operating entities that aggregate, regulate, control, and trade virtual power plant resources.

3.4 It provides technical support for virtual power plant operators to implement control strategies and trading decisions, enabling resource monitoring, aggregated control, and energy regulation. A hardware and software system with functions such as performance evaluation, market decision-making, information exchange, and operations management.

3.5 Virtual Power Plant Terminal (VPPterminal) Installed on the resource side, it can communicate with virtual power plant resources to realize functions such as data acquisition, information reception, and control execution, and communicate with the virtual power plant. Equipment used for information exchange in the operator's technical support system.

Note. This includes data acquisition and monitoring devices installed by virtual power plant operators. [Source: GB/T 44241-2024, 3.5, with modifications]