ICS 27.180
CCS F 19

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 46813-2025

Guide for the calculation of the short-circuit ratio of multiple renewable energy stations

新能源多场站短路比计算导则

Issued on: December 31, 2025 **Implemented on: July 1, 2026**

Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC

Table of Contents

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 and is under the jurisdiction of the China Electricity Council. This document was drafted by: China Electric Power Research Institute Co., Ltd., State Grid Corporation of China, and the Northwest Branch of State Grid Corporation of China. State Grid Xinjiang Electric Power Company, State Grid Jiangsu Electric Power Company, State Grid Qinghai Electric Power Company, State Grid Shaanxi Electric Power Company State Grid Economic and Technological Research Institute Co., Ltd. The main drafters of this document are. Zhu Lingzhi, He Jingbo, Ge Luming, Xing Zhou, Chen Ning, Zhang Yi, Liu Chun, Cheng Lin, Zhang Jianyun, Zhang Hongying, and He Fei. Wang Haijiao, Liu Yanzhang, Kang Pengpeng, Xu Xian, Lu Guoqiang, Li Li, Jiang Weiyong, Zhang Lei, Ren Chong, Tao Yibin, Li Qiang, Jia Yichao, Tang Bingjie, Jia Xu Jiang Dajun. Guidelines for Calculating Short-Circuit Ratio of New Energy Multiple Power Stations

1 Scope

GB/T 46813-2025 is the Chinese national standard covering the short-circuit ratio when many wind and solar plants share one weak corner of the grid - the measure of how much system strength is available to each, and the number that predicts whether they will destabilise one another. This is the calculation behind the oscillation events that have taken renewable clusters off the system. First edition, with GB/T 46959-2025 on classical short-circuit power. It was issued on 31 December 2025 and has been in force since 1 July

2026, as a first edition. The document is under the responsibility of the China Electricity Council. This page is published from the official record of the 2025 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 requirements, basic data, and boundary conditions for calculating the short-circuit ratio of multiple new energy power stations, and describes the calculation method and system. System strength evaluation method. This document applies to the implementation of multi-site short circuit testing for new energy power plants connected to the public power grid at voltage levels of 10(6)kV and above. Compare calculations.

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 15544.1 Short-circuit current calculation for three-phase AC systems - Part

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Short circuit ratio The ratio of system short-circuit capacity to electrical equipment capacity. [Source: GB/T 40581-2021, 3.8]

3.2 The ratio of the short-circuit capacity of the grid connection point of a new energy power station to the equivalent power of new energy after considering the influence of other new energy power stations. [Source: GB/T 40581-2021, 3.8.4]

3.3 The ratio of the short-circuit capacity of the new energy unit to the equivalent apparent power of the new energy unit after considering the influence of other new energy units inside and outside the power station.

4 General Requirements

4.1 Short-circuit ratio calculations should be carried out during the planning, design, and operation phases of new energy power plants.

4.2 The short-circuit ratio calculation should be based on the power grid operation mode, determining the boundary conditions, and performing power flow calculation, short-circuit capacity calculation, and calculation of self-impedance and mutual impedance. Calculate the short-circuit ratio and, based on the calculation results, evaluate the strength level of the

connected AC system. If the system strength evaluation result is extremely weak, it should be opened. Research on measures to improve the short-circuit ratio; calculation process is shown in Appendix A.

4.3 The short-circuit ratio calculation should be carried out separately at the new energy unit side and at the grid connection point of the new energy power station.