



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 51077-2024

Replacing GB/T 51077-2015

Standard for the design of electric vehicle battery swap stations

电动汽车电池更换站设计标准

Issued on: November 12, 2024

Implemented on: May 1, 2025

Issued by: Ministry of Housing and Urban-Rural Development of the PRC

Table of Contents

Foreword

1 General provisions

2 Terms

3 Site selection

4 Station area planning and general layout

5 Power supply and distribution system

6 Charging system

7 Battery swap system

8 Power quality

9 Secondary systems

10 System communication

11 Civil works

12 Fire protection

13 Energy saving

Explanation of wording in this standard

List of quoted standards

Foreword

This document was issued on 12 November 2024 by the Ministry of Housing and Urban-Rural Development of the PRC and takes effect on 1 May 2025.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies.

The document runs to 70 pages. The identification, the dates, the classification and the table of contents on this page are taken from the cover and the printed contents of the standard itself.

This standard was approved and issued by the Ministry of Housing and Urban-Rural Development of the People's Republic of China as Announcement No. 231 of 2024 and takes effect on 1 May 2025. On that date it supersedes the earlier national standard GB/T 51077-2015 "Code for design of electric vehicle battery swap stations".

The document follows the order in which such a station is designed: the site, the layout, the electrical supply, the charging and the swapping systems, the power quality, the secondary

and communication systems, and then the civil, fire protection and energy conservation design.

1 Scope

GB/T 51077-2024 is the Chinese design standard for electric vehicle battery swap stations. Swapping has reached a scale in China it has reached nowhere else, driven by taxi and heavy truck fleets for which charging time is lost revenue, and a swap station is an unusual thing to design: it handles several tonnes of live high voltage batteries a day with a robot, it charges dozens of packs simultaneously behind the swap bay, and it does so on a forecourt open to the public. The standard covers the whole design: the site selection, the station area planning and general layout, the power supply and distribution system, the charging system, the battery swap system itself, the power quality, the secondary systems, the system communication, and the civil, fire protection and energy conservation design. It is the design counterpart of GB/T 29772 on the general requirements for such stations and GB/T 45098 on the service. The 2024 edition replaces GB/T 51077-2015. For a station developer, a design institute or a planning authority in China, this is the governing text.