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CHINA ENERGY POLICY NEWSLETTER

China Energy Transformation Programme

1. China energy transition updates

China releases data set of power carbon footprint factors for the first time

The Ministry of Ecology and Environment (MEE), the National Bureau of Statistics (NBS) and the National Energy Administration (NEA) jointly issued the *Announcement on the Release of 2023 Power Carbon Footprint Factor Data* (CHN: 关于发布2023年电力碳足迹因子数据的公告). This is the first data on the carbon footprint factor of the power sector released by the Chinese government. The carbon dioxide emission factor of the power sector released in 2024 only considered the direct carbon dioxide emissions of power generation, which is part of the carbon footprint. The power carbon footprint factor refers to the life cycle carbon emissions of electricity consumption; that is, in addition to the power generation section, it also includes the acquisition of raw materials, equipment acquisition, construction engineering, and decommissioning disposal.

This indicator is significant in the product carbon footprint accounting. This is because power carbon footprint is mainly used to calculate the indirect carbon emissions of consumed electricity, which is the basis for calculating the carbon footprint of various mid- and downstream products. In the next step, MEE will work with the China Electricity Council (CEC) to normalise the power carbon footprint factor accounting, further expand the scope of measurement, and increase the variety of power carbon footprint factors.¹

¹“关于发布2023年电力碳足迹因子数据的公告, 公告 2025年 第3号,” Ministry of Ecology and Environment, National Bureau of Statistics, National Energy Administration, 17 January 2025, accessed at https://www.mee.gov.cn/xxgk2018/xxgk/xxgk01/202501/t20250123_1101226.html; “生态环境部气候司相关负责人就《关于发布2023年电力碳足迹因子数据的公告》答记者问,” Ministry of Ecology and Environment, 23 January 2025, accessed at https://www.mee.gov.cn/ywdt/zbft/202501/t20250123_1101258.shtml.

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National power carbon footprint factors in 2023 (kgCO₂e/kWh)

Average power carbon footprint factor	0.6205
Power carbon footprint factors by power generation technology	
▪ Coal	0.9440
▪ Gas	0.4792
▪ Nuclear	0.0065
▪ Hydro	0.0143
▪ Wind	0.0336
▪ Solar PV	0.0545
▪ CSP	0.0313
▪ Biomass	0.0457
Power transmission and distribution (excluding line losses)	0.0036

Source: Ministry of Ecology and Environment (MEE), January 2025

NEA revises the distributed PV project construction regulation

In 2013, the NEA issued the *Interim Measures for the Management of Distributed Solar PV Power Generation Projects* (CHN: 分布式光伏发电项目管理暂行办法). From 2013 to 2024, the proportion of distributed solar PV (DGPV) in the total installed solar PV capacity increased from 16% to 42%, and the proportion of DGPV in annual solar power generation has reached over 40%. With the explosive growth, consumption has become the main bottleneck restricting DGPV's development, especially for household PVs. In addition, the development characteristics, positioning, and policies of DGPVs have undergone significant changes. For this reason, the NEA has revised the *Management Measures (2025 Edition)*, redefined the definition, classification, and grid access mode of DGPV projects (see the table below), and proposed differentiated management regulations by project type.²

Comparison of DGPV Project Management Measures in 2013 and 2025

Policy	Classification	Management Measures (2025 Edition)				
		Management Measures (2013 Edition)	Household PV for natural person owners	Household PV for non-natural person owners	General commercial and Industrial DGPV	Large-scale industrial and commercial DGPV
Land requirements		Building roofs and attached grounds, agricultural greenhouses and other facilities without electricity consumption	Self-owned houses and courtyards	Utilise residential houses and courtyards	Public institutions, industrial and commercial buildings and their ancillary facilities	Buildings and their ancillary facilities
Total installation Capacity		≤ 20MW	N/A	≤ 6MW	≤ 6MW with exceptional cases	≤ 20MW (≤ 50 MW*) with exceptional cases
Grid-connected voltage level		≤ 35 kV (66kV*)	≤ 380V	≤ 10 kV (20 kV*)	≤ 10 kV (20 kV*)	≤ 35 kV for ≤ 20MW, ≤ 110 kV (66kV*) for ≤ 50 MW
Grid connection mode		<ul style="list-style-type: none"> Self-generation and self-use, surplus electricity connected to the grid Fully connected to the grid 	<ul style="list-style-type: none"> All self-generation and self-use Self-generation and self-use, surplus electricity connected to the grid Fully connected to the grid 	<ul style="list-style-type: none"> All self-generation and self-use Self-generation and self-use, surplus electricity connected to the grid 	<ul style="list-style-type: none"> All self-generation and self-use In areas with continuous operating power markets, self-generation and self-use, surplus electricity connected to the grid through the market 	

Notes: * Values in () refer to specific regions. Source: Shi Jingli, Energy Research Institute of Chinese Academy of Macroeconomic Research (ERI of AMR), January 2025

² “国家能源局关于印发《分布式光伏发电开发建设管理办法》的通知, 国能发新能规〔2025〕7号,” National Energy Administration, 17 January 2025, accessed at <https://www.nea.gov.cn/20250123/112c5b199c5f45dd8e7ac93c9f5e4eaf/c.html>.

According to the *Management Measures (2025 Edition)*, DGPV refers to solar PV power generation facilities developed on the demand side, connected to the distribution grid, and balanced and regulated locally within the distribution grid system. The *Management Measures (2025 Edition)* has several significant changes ³:

1. **Expand the scope of application:** The maximum single unit scale of DGPV projects is increased from 20 MW to 50 MW, and the upper limit of grid-connected voltage level is increased from 35 kV to 110 kV;
2. **Highlight the requirements for self- and nearby consumption:** The "full grid-connection" model has been cancelled for general and large-scale industrial and commercial DGPVs, and the government determines the upper limit of the grid-connection ratio; priority and support are given to the consumption of small-scale, low-voltage DGPV projects.
3. **Focus on the carrying capacity of the distribution grid:** Establish a quarterly early warning mechanism for the carrying capacity of the distribution grid based on factors such as the load level and regulation capacity. Based on the early warning results, DGPV developers and DSOs should adjust the pace of project development and grid connection.
4. **Improve the distribution grid's consumption capacity:** New DGPVs should have observable, measurable, flexible and controllable functions, which will help improve the accuracy and rationality of grid dispatch and avoid "direct cut off by the grid" when a fault occurs; existing projects should be retrofitted to improve their digitalisation level.
5. **Greater flexibility for large-scale industrial and commercial projects:** Qualified electricity users (e.g. industrial parks) can achieve direct green electricity supply by building large-scale industrial and commercial DGPV projects and/or dedicated point-to-point transmission lines; in areas where the spot power market constantly operates, these projects can sell electricity beyond self-demand directly to the market.

China completes first cross-operating area green power transaction

Since 2021, State Grid, China Southern Grid, and Inner Mongolia Electric Power Group (i.e. China's three major TSOs) have successively carried out green power market pilots in their respective operating areas. In March 2025, Guangzhou Power Exchange Center (China Southern Grid) and Beijing Power Exchange Center (State Grid) jointly completed the intra-month green power transaction between Guangxi/Yunnan and Shanghai (China Southern Grid->State Grid). This is the first cross-operating area green power transaction in China. The two trading centres adopted a joint clearing method, and the transaction volume reached 527 TWh, with wind power and solar energy accounting for 78% and 22%, respectively. Dozens of enterprises, such as Shanghai Petrochemical, Shanghai Tobacco, BASF, and Tencent, participated in the transaction. Cross-operating area green power trading will effectively promote a bigger area of renewable power consumption.⁴

CfD-based wind and solar power market transaction mechanism launched

In February 2025, the NDRC and the NEA issued a new policy requiring all power generation from existing and newly built wind power and solar PV projects to be connected to the grid through participation in the power market latest since the beginning of 2026. To this end, the government proposed a supporting sustainable price settlement mechanism, i.e., the contract for difference (CfD)-based price settlement mechanism. The detailed provisions are shown in the table below. This new mechanism uses the "reference (strike) price + refund or repays" method to determine the final feed-in power price. Existing wind and solar power projects can smoothly transition from the current "guaranteed purchase of certain amount + fixed feed-in price" to the "fully participating in the power market + strike price with a refund or repay" mechanism; the income is guaranteed on a certain level. The new mechanism also provides stable medium- and long-term income expectations for new projects, conducive to sustainable new investment in the industry. It is also worth noting that 1) the amount of CfD-based wind and solar power transaction volume will no longer receive the premium of the green certificate; 2) the policy cancels the mandatory requirement that renewable power projects be equipped with a certain proportion of energy storage capacity. This change lowers the project costs for renewable power projects but also lowers the demand for batteries, which brings uncertainties to the development of the energy storage industry.⁵

³ "推动分布式光伏发电科学有序健康发展," Shi Jingli, National Energy Administration, 25 January 2025, accessed at <https://msolar.in-en.com/html/solar-2446862.shtml>.

⁴ "南方绿电送入上海 全国首笔跨经营区绿色电力交易达成," people.cn, 11 March 2025, accessed at <http://sh.people.com.cn/n2/2025/0311/c134768-41160100.html>.

⁵ "关于深化新能源上网电价市场化改革 促进新能源高质量发展的通知(发改价格〔2025〕136号)," National Development and Reform Commission, National Energy Administration, 9 February 2025, accessed at https://www.ndrc.gov.cn/xxgk/zcfb/tz/202502/t20250209_1396066.html.



Principles and relevant regulations of CfD-based price settlement mechanism

Principles of CfD-based price settlement mechanism

Case 1 (RMB/kWh)					
Project	Power market transaction price	Strike price	Weighted average power market price	CfD adjusted price	Final power price
A	0.15	0.3	0.25	0.05	0.20
B	0.28				0.33
C	0.35				0.40
Case 2 (RMB/kWh)					
Project	Power market transaction price	Strike price	Weighted average power market price	CfD adjusted price	Final power price
A	0.15	0.3	0.35	-0.05	0.10
B	0.28				0.23
C	0.35				0.30

- 1) Determine a CfD reference price, i.e., **Strike price** ^{a)}
- 2) Wind and solar power projects participate in the power market to get the **power market transaction price**; the **weighted average power market price** ^{b)} can also be calculated
- 3) Strike price-weighted average power market price = CfD adjusted price
Case 1: If the strike price > weighted average power price, the grid company repays the gap; CfD adjusted price is positive
Case 2: If strike price < weighted average power market price, the generator needs to refund the surplus; CfD adjusted price is negative
- 4) The final power price received by the power generator = power market transaction price + CfD adjusted price

	Wind and solar power projects connected to the grid before June 1, 2025	Wind and solar power projects connected to the grid since June 1, 2025
^{a)} Strike price	<ul style="list-style-type: none"> The price is the same as the current power generation project's feed-in price, capped at the local coal power benchmark price. 	<ul style="list-style-type: none"> Formed through power market direct bidding by voluntary participation of existing projects and new projects to be implemented within the next 12 months, it is a unified clearing price with an upper limit determined by the government.
^{b)} Weighted average power market price	<ul style="list-style-type: none"> For areas with continuous spot power market operation: monthly real-time weighted average price by technology Other regions: weighted average price of medium and long-term transactions by technology 	

Relevant regulations of CfD-based price settlement mechanism

	<ul style="list-style-type: none"> Projects connected to the grid before June 1, 2025 	<ul style="list-style-type: none"> Projects to be connected to the grid since June 1, 2025
Participants	<ul style="list-style-type: none"> Generation side: All existing and new wind and solar power projects Demand side: All industrial and commercial consumers 	
Options of settlement	<ul style="list-style-type: none"> Grid guaranteed purchase ^{o)} of power generation: CfD-based Excess power generation: Direct bidding in the power market 	<ul style="list-style-type: none"> All power generation: Voluntarily choose to participate fully/partially in the power market direct bidding or CfD-based mechanism
Settlement period	<ul style="list-style-type: none"> Monthly Settlement 	
Effective period	<ul style="list-style-type: none"> The exact expiry date of the grid-guaranteed purchase policy for the project CSP and some offshore wind power projects: Case by case 	<ul style="list-style-type: none"> Determined by the average capex payback period by technology
Withdraw rule	<ul style="list-style-type: none"> Can voluntarily exit but cannot re-enter 	
^{o)} Amount of guaranteed purchase	<ul style="list-style-type: none"> Determined by each province's mandatory wind and solar power consumption target, the proportion of guaranteed power purchases decreases yearly. 	

2. Policy monitoring

2025-03-24

https://www.ndrc.gov.cn/xwdt/tzgg/202503/t20250324_1396767.html

NDRC issues the second batch of carbon peak pilot projects

Notice on Issuing the List of the Second Batch of National Carbon Peak Pilot Projects, NDRC General Office Environment Resource [2025] No. 248

In November 2023, NDRC released the first batch of carbon peak pilots, including 25 cities and 10 high-tech parks. In March 2025, NDRC released the second batch of carbon peak pilots, further incorporating 15 cities and 12 parks. The carbon peak pilot has covered 28 provinces, with Inner Mongolia, Xinjiang, Jiangsu, and Zhejiang in both lists. Inner Mongolia and Xinjiang are both major coal-producing and renewable power generation provinces and are the leading powers of low-carbon energy transformation; Jiangsu and Zhejiang are located in the country's only ecological green integrated development demonstration zone, with a good foundation for green and low-carbon transformation, and can play a demonstration role.

2025-03-06

https://www.ndrc.gov.cn/xwdt/tzgg/202503/t20250318_1396628_ext.html

NEA promotes green certificate development

Opinions on Promoting the High-quality Development of the Renewable Energy Green Electricity Certificate Market, NDRC Energy [2025] No. 262

In major energy-intensive industries, the Chinese government has proposed mandatory renewable power consumption targets for the electrolytic aluminium industry and used green certificates for accounting. NEA requires expanding this policy to steel, nonferrous metals, petrochemicals, chemical companies, and data centres. By 2030, the mandatory renewable power consumption targets of various industries will be no lower than the national average, and the proportion of renewable power consumption of newly built data centres at national hubs will be further increased based on 80%. The government will promote the effective interaction between green certificates and carbon emission accounting standards for key industry enterprises and carbon footprint accounting standards for key products, and promote the inclusion of green power consumption information in the ESG reporting system of listed enterprises.

2025-02-24

https://www.gov.cn/zhengce/zhengceku/202502/content_7005459.htm

MNR facilitates the large-scale development of ocean energy

Guiding Opinions on Promoting Large-Scale Utilisation of Ocean Energy, MNR Development [2025] No. 34

Ocean energy mainly includes tidal energy, wave energy, temperature difference energy, salinity difference energy, etc., and is an important renewable energy source. The government has proposed that by 2030, it will strive to reach 400 MW of installed capacity for ocean energy, and build several island multi-energy complementary power systems and large-scale ocean energy demonstration projects, such as 100-megawatt tidal energy projects, wave energy and offshore wind power co-development, island ocean energy complementary power stations and deep-sea ranches supporting ocean energy power stations. Meanwhile, it aims to improve the laws, policies, standards, and market environment for the industrialisation of ocean energy and to cultivate several competitive large-scale developers.



2025-02-21

https://www.mee.gov.cn/xgk2018/xxgk/xxgk05/202503/t20250303_1103199.html

MEE encourages enterprises to disclose GHG information

Opinions on Promoting Voluntary Disclosure of Greenhouse Gas Information by Enterprises, MEE General Office Climate [2025] No. 7

Voluntary disclosure of greenhouse gas information (hereinafter referred to as "GHG disclosure") is an important measure to strengthen corporate emission control responsibilities and willingness and enhance the ability to respond to climate risks and transparency. The government plans to establish a GHG disclosure policy system and technical standards by 2027 and form a GHG disclosure model that aligns with international standards and is mutually recognised by 2030. The government encourages thermal power, cement, steel, aluminium smelting, petrochemical, and chemical enterprises to carry out GHG disclosure pilot projects first; encourages coal, oil and gas developers, animal husbandry, and rice planting industries to explore the disclosure of key non-CO₂ GHGs such as methane and nitrous oxide.

2025-01-26

<https://www.nea.gov.cn/20250218/8b14082a18c2423ba9779882d3791d30/c.html>

MIIT releases new-type energy storage manufacturing industry's development plan

Notice on Issuing the Action Plan for the High-quality Development of New-Type Energy Storage Manufacturing Industry, MIIT Joint Electronics [2025] No. 7

The new-type energy storage manufacturing industry is an emerging field in the IT manufacturing industry, mainly based on batteries and related electronic devices and control systems. China aims to establish a significant international competitive advantage in the entire industrial chain by 2027. Technically, it will accelerate the research and development of battery engineering and application technologies, improve the economy and efficiency of long-term energy storage, and proactively deploy ultra-long-term energy storage technologies such as hydrogen energy storage. In terms of application, on the generation side, to explore the joint participation of thermal power with equipped energy storage facility in power regulation; on the user side, to encourage large-scale users with high requirements for power supply stability, such as data centres, industrial parks, and highway service areas to install energy storage, and to support the construction of industrial green microgrids.

2025-01-24

<https://www.nea.gov.cn/20250207/0b5268899a14427aa43b08a0c9f0e146/c.html>

NDRC clarifies the management measures for pumped hydro projects by type

Notice on Issuing the Interim Measures for the Development, Construction, and Management of Pumped Hydro Power Plants, NDRC Energy Regulation [2025] No. 93

The document divides pumped hydro projects into two categories: "serving the power system" (i.e. general projects) and "serving specific power sources" (i.e. specific projects). General projects serve provincial and regional power grids, with the central government specifying the total capacity target and local governments specifying project lists. Specific projects serve specific power sources, such as large-scale wind and solar bases and integrated hydro-wind-solar bases. They are included in the special plan of the NEA by the principle of "approve case by case with mature conditions". The document implements the "assess first, approve later" process, with key assessment contents including the necessity of the project, technical and economic feasibility, ecological and environmental impact, etc., and strictly controls the construction costs. In addition, the construction pace of power transmission lines should be matched with the progress of served pumped hydro projects.

