

## China's power system institutional reform: Development and optimization of transmission and distribution tariff

In May 2023, the National Development and Reform Commission (NDRC) issued the *Notice on the Third Supervision Cycle of the Provincial Power Grid Transmission and Distribution Tariff and Related Matters* (CHN: 关于第三监管周期省级电网输配电价及有关事项的通知).<sup>6</sup> Establishing transmission and distribution tariffs (T&D tariffs) is important to China's power system institutional reform. This is the third time the government has approved the T&D tariffs of various provinces. On the one hand, from October 2021, the government requires all industrial and commercial users to participate gradually in the power market, so the classification and structure of end-use electricity prices must be further optimized. On the other hand, China is building a new-type power system with new energy as the main body. Electricity prices need to reflect the multiple values of power resources more accurately, such as capacity reserve and ancillary services. This revision aims to fully address the problems mentioned above.



### Background of transmission and distribution tariff reform

In March 2015, the Central Committee of the CPC and the State Council jointly issued *Opinions on Further Deepening the Reform of the Electric Power System*<sup>7</sup> (referred to as *Document No. 9*, CHN: 关于进一步深化电力体制改革的若干意见), which officially opened a new round of institutional reform of China's power system. The NDRC and the National Energy Administration (NEA) subsequently issued supporting policy documents that identified six key reform areas<sup>8</sup>, including transmission and distribution tariff (T&D tariff) reform, the key of which is to realize direct transactions between power generators and electricity sellers/users, and power grid enterprises to charge T&D tariff as service providers. The verification of transmission and distribution costs to form the T&D tariff has become a vital issue. T&D tariffs include inter-provincial transmission tariffs and provincial transmission and distribution tariffs. This document mainly focuses on provincial transmission and distribution tariffs. The NDRC issued three documents in 2017, 2020, and 2022, taking three years as a cycle, and progressively optimized the provincial power T&D tariff verification system according to the development of China's power system marketization.



### Main contents of provincial power T&D tariff reform

Provincial T&D tariff reform mainly includes two parts: 1) clarifying the electricity price structure of users participating in market transactions; 2) clarifying the pricing principles, price structure, and calculation methods of T&D tariff.

Key contents of the three pricing cycles of provincial power T&D tariff

	Period I (2017~2019) <sup>4</sup>	Period II (2020~2022) <sup>5</sup>	Period III (June 2023 ~ June 2026) <sup>6</sup>
Classification of user electricity price	Large-scale industrial, general industrial and commercial, residential, agricultural	Industrial and commercial, residential, agricultural	<b>Industrial and commercial, residential, agricultural</b>
Structure of user electricity price	<ul style="list-style-type: none"> <li>Market-oriented users: feed-in tariff + T&amp;D tariff (including grid loss) + government fees and surcharges</li> <li>Non-market users: fixed electricity prices approved by the government</li> </ul>	<ul style="list-style-type: none"> <li>Market-oriented large-scale industries, general industrial and commercial users: feed-in tariff + T&amp;D tariff + <b>ancillary service fee</b> + government fees and surcharges</li> <li>Non-market large-scale industrial, general industrial, and commercial users, all residential and agricultural users: fixed electricity price approved by the government</li> </ul>	<ul style="list-style-type: none"> <li>All industrial and commercial users: feed-in tariff + <b>feed-in grid loss</b> + T&amp;D tariff + <b>system operating cost (ancillary service fee + capacity tariff of pumped storage, etc.)</b> + government fees and surcharges</li> <li>All residential and agricultural users: fixed electricity price approved by the government</li> </ul>
Pricing Principles for T&D tariff	<ul style="list-style-type: none"> <li>Allowable costs + reasonable profits</li> <li>By voltage level and user type</li> </ul>		<ul style="list-style-type: none"> <li>Allowable costs + reasonable profits</li> <li><b>By voltage level only</b></li> </ul>
T&D tariff structure	<ul style="list-style-type: none"> <li>Single electricity price or two-part electricity price (capacity tariff + electricity tariff)</li> <li>The capacity tariff for a certain of users is the same</li> </ul>		<ul style="list-style-type: none"> <li>Single electricity price or two-part electricity price (capacity tariff + electricity tariff)</li> <li><b>The capacity tariff of a specific type of user is accounted according to the voltage level</b></li> </ul>

Source: Sorted according to the NDRC policies.

# 01

## The first pricing cycle (2017–2019):

Initially establishing a framework for the pricing of T&D tariff

NDRC clarified that the electricity price structure for market-oriented users keeps to the *feed-in tariff + T&D tariff + government fees and surcharges*. Among these, the T&D tariff adopts the basic principle of allowable cost + reasonable profit and is determined according to the voltage level. The T&D tariff structure adopts a single electricity price or a two-part electricity price which includes capacity tariff and electricity tariff. The capacity tariff standard is fixed regardless of the voltage level for a specific type of user.

# 02

## The second pricing cycle (2020–2022):

Improving the pricing rules for T&D tariff

With the increasing proportion of renewable energy power generation, the demand for flexibility services in the power system is increasing. Accordingly, NDRC has added ancillary service fees to user electricity prices, clarifying the cost transmission principle. At the same time, the government requires the cancellation of fixed electricity prices for industrial and commercial users, that is, all industrial and commercial users with consumption above 10 kV must gradually participate in power market transactions. Therefore, the accounting of T&D tariff has covered all provincial power grids (according to voltage levels) for the first time, laying the foundation for comprehensive market-oriented power transactions.

# 03

## The third pricing cycle (June 2023–June 2026):

Optimizing the T&D tariff pricing system

NDRC gradually merges large-scale industrial users and general industrial and commercial users into industrial and commercial users, that is, all industrial and commercial users of the same voltage level to implement the same user electricity price (including T&D tariff). Previously, the T&D tariff of general industrial and commercial users was higher than that of large-scale industrial users. The change is conducive to creating a fairer market environment and further promoting the participation of all industrial and commercial users in the electricity market.

In the electricity price structure, NDRC listed the feed-in line loss and system operation costs separately, making it more explicit that costs unrelated to power transmission and distribution services should not be included in the T&D tariff. Listing the grid line loss separately makes it easier for users to see grid loss cost change more intuitively, and promotes the efficiency and loss reduction of the power grid; listing the system operating cost separately, and dividing the ancillary service fee and the capacity tariff of pumped storage, helps to more clearly reflect the flexibility resources in the power system and clarifies the cost transmission mechanism. In addition, for the first time, NDRC has accounted for the capacity tariff of the T&D tariff according to the voltage level, which more scientifically reflects the actual power supply capacity cost.<sup>12</sup>



## References

<sup>1</sup> “关于第三监管周期省级电网输配电价及有关事项的通知, 发改价格〔2023〕526号,” National Development and Reform Commission, 9 May 2023, accessed at [https://www.ndrc.gov.cn/xxqk/zcfb/tz/202305/t20230515\\_1355747\\_ext.html](https://www.ndrc.gov.cn/xxqk/zcfb/tz/202305/t20230515_1355747_ext.html).

<sup>2</sup> “中共中央国务院关于进一步深化电力体制改革的若干意见, 中发〔2015〕9号,” State Council, 15 March 2015, accessed at [http://fjib.nea.gov.cn/pufa\\_view.asp?id=31434&wd=&eqid=d0c14b790000f4e200000066437c393](http://fjib.nea.gov.cn/pufa_view.asp?id=31434&wd=&eqid=d0c14b790000f4e200000066437c393).

<sup>3</sup> “国家发展改革委国家能源局关于印发电力体制改革配套文件的通知, 发改经体〔2015〕2752号,” National Development and Reform Commission, National Energy Administration, 26 November 2015, accessed at [https://www.ndrc.gov.cn/fzqgw/qjs/tqs/sjdt/201511/t20151130\\_1021524.html](https://www.ndrc.gov.cn/fzqgw/qjs/tqs/sjdt/201511/t20151130_1021524.html).

<sup>4</sup> “国家发展改革委关于核定河南等12个省级电网2017-2019年输配电价的通知, 发改价格〔2017〕1261号,” National Development and Reform Commission, 4 July 2017, accessed at [https://www.ndrc.gov.cn/xxqk/zcfb/tz/201905/t20190529\\_962999.html](https://www.ndrc.gov.cn/xxqk/zcfb/tz/201905/t20190529_962999.html).

<sup>5</sup> “国家发展改革委关于核定2020~2022年省级电网输配电价的通知, 发改价格规〔2020〕1508号,” National Development and Reform Commission, 28 September 2020, accessed at [https://www.ndrc.gov.cn/xxqk/zcfb/qhxxwj/202009/t20200930\\_1243682\\_ext.html](https://www.ndrc.gov.cn/xxqk/zcfb/qhxxwj/202009/t20200930_1243682_ext.html).

<sup>6</sup> “【中电联发布】第三监管周期省级电网输配电价文件解读,” China Electricity Council, 16 May 2023, accessed at <https://mp.weixin.qq.com/s/wAqFeUlGkkYln4SmiUB9EQ>

<sup>7</sup> “坚持问题导向、守正创新, 输配电价改革迈出新步伐、取得新突破,” China Electric Power Planning & Engineering Institute, 15 May 2023, accessed at <https://mp.weixin.qq.com/s/>

<sup>8</sup> [https://www.ndrc.gov.cn/xxqk/zcfb/tz/202305/t20230515\\_1355747\\_ext.html](https://www.ndrc.gov.cn/xxqk/zcfb/tz/202305/t20230515_1355747_ext.html).

<sup>12</sup> “国家发展改革委关于第三监管周期省级电网输配电价及有关事项的通知, 发改价格〔2023〕526号,” National Development and Reform Commission, 9 May 2023, accessed at [https://www.ndrc.gov.cn/xxqk/zcfb/tz/202305/t20230515\\_1355747\\_ext.html](https://www.ndrc.gov.cn/xxqk/zcfb/tz/202305/t20230515_1355747_ext.html).