

## Analysis on Bidding Mode of Power Plants in Power Market Environment

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**Abstract:** With the rapid development of the social economy, in the current market, it is necessary to establish a foothold and develop the industry economy. Reform has become a necessary path. Especially in the modernized market, if the technology is not reformed and updated, it will be eliminated. The power market is no exception. Due to the rapid development of technology, a new competition mechanism has been gradually introduced in the current power market. The introduction has brought greater risks and pressures to power companies. In order to ensure the stable development of power companies in the current society, China has proposed to complete the separation of plant and network to help power companies solve the problem of difficult benefits. The purpose is to analyze the bidding mode of power plants in the power market environment.

### 1. Introduction

Reform in the current society is the only way to develop. With the wave of power enterprise reform sweeping across the globe, the separation of China's plant and network, in order to improve the economic efficiency of power companies, it is especially important to do a good job of bidding online. One of the important steps in the development of power enterprise reform. In the new power market environment, many power companies are difficult to adapt, in order to help power companies to quickly adapt to the market, improve economic efficiency, and analyze the model of bidding online. It is necessary for power enterprise managers to choose the most suitable way to complete the power trading of bidding online according to their favorite methods and the actual situation of power companies, improve their own competitiveness, and obtain better economic advantages, thus promoting the development of China's economy.

### 2. Technical support system for bidding online mode

In the process of completing the bidding mode for power companies, in order to help power companies to quickly complete the bidding mode, their technical support mainly has the following points: First, it can complete the automatic collection of energy data in different time periods and complete the data. The remote transmission and storage support; secondly, the system has an energy management system, ie EMS, which can collect and monitor the data inside the power plant, and also has a network analysis module, dispatcher training and assessment module, etc.; Point, the transaction management system, TMS, receives and sorts the data sent by the power generation enterprise. Fourthly, the contract management system, CMS, manages the contracts of power companies and power plants for a long time, and can also call them For the "futures management system."

### 3. Mode selection of power companies bidding online

Through the analysis of the current development of the power industry, there are currently two types of bidding models mainly used by China's power companies: the single-system electricity price model and the two-system electricity price model. These two models are different and require power companies to the actual situation is chosen to maximize economic benefits.

### **3.1 Single electricity price model**

In the process of selecting the bidding online mode for power companies, if the single-system electricity price model is selected, it is necessary to understand what is the single-system electricity price model. When applying this competitive bidding mode, the cost of all the costs used by the power company in the work needs to be Profits, taxes, and so on are all included in the electricity price. This type of bidding online mode is different from the two-part system price mode, and it simply applies the bidding mode of electricity price. In the use, the price is sorted by the same price as the finalists, and the company is selected according to the final order. However, when applying this bidding mode, all units with the same price will be selected, and the price of the Internet will be used as the system marginal price for the period, which will not be able to promote the development of the power industry. In China, only a small number of power companies will choose to use this bidding Internet model.

### **3.2 Two-part electricity price model**

In the bidding mode selection of power companies, if the two-system electricity price model is selected, it is first necessary to have a brief understanding of this bidding mode, that is, to know what is the two-system electricity price model. In this kind of bidding online mode, it is mainly divided into capacity electricity price and electricity price, which can make the cost of the large-capacity unit in actual work in the task of completing the power generation change, which is much lower than the small capacity unit. An advantage not only saves more money for power companies, but also brings more economic benefits to power companies. It can gain greater competitiveness in the process of completing bidding online, and directly increase power generation of power companies. The net efficiency of the link is in line with China's sustainable development strategy. The application of the two-part electricity price model is also to help the power companies to complete the optimal allocation of power generation resources, so that the generator sets can more effectively exert capacity benefits. The two-part electricity price model is based on the electricity price of the electricity company and the power generation capacity of the Internet. It can guarantee that the price of the electricity charge can be compared with the value given by the power company. Matching, improving the management effect of electric power enterprises, and optimizing the dispatching mode of electric power enterprises can also optimize the power supply of electric power enterprises. Many power enterprise managers have doubts about the way in which electricity charges are paid in the initial selection of bidding online mode, especially the way in which their economic returns are obtained. The two-part electricity price model is based on capacity electricity price and electricity. The electricity price is composed of two parts. In order to ensure that the power companies can make profits through self-sale and self-sale, the government will make up for most of the capacity electricity prices for the power companies. This is to supplement the cost of the power companies. However, the electricity prices in the power companies are competitive by the market. Formed, the purpose is to allow power companies to obtain more profits through their own management.

#### **3.2.1 Capacity electricity price**

As one of the most important links in the two-part electricity price model, it is necessary for the power enterprise managers to understand the composition of the capacity price, which itself is based on the marginal cost of the power company and a small amount of revenue, in the face of different power quality power companies or electricity. When the unit is required, it is necessary to complete the payment of the electricity price in different categories, for example, according to the base load, waist load, etc., in which it is necessary to realize that the capacity price of the same unit is equal, and the specific pricing of the capacity price is based on the actual situation of the electricity market in the area. And the power dispatching and trading center in the region is under the jurisdiction, and the pricing of power companies is completed according to the actual situation of different regions. The pricing basis is based on the average investment cost of various power companies and generator sets in the market.

That is, the capacity electricity price = capacity electricity fee / the actual available capacity of the unit. When the payment of the capacity electricity fee is completed, the purchaser needs to complete the payment according to the actual conditions of the generator set of the selected power company according to the standards set by the power company.

### **3.2.2 Electricity price**

Different from the capacity price, in the price setting of the completed electricity price, it is mainly completed through the competition in the electricity market. Since the selection of the electricity market in different regions basically conforms to the actual market transactions in the region, this is the region. In the process of power dispatching and trading center, in the process of bidding for electricity price, its rules need to be consistent with the actual development of the market. As a power company manager, it is also necessary to realize that the purpose of setting different electricity prices is to compensate for the variable cost of electricity prices, and to generate more profits for the development of power companies, and to help power companies improve economic efficiency. Using different electricity prices can help power companies achieve reasonable cost compensation and help enterprises obtain the most reasonable profits. It can be seen that in completing the economic benefits of power companies, electricity prices are the most important link, and they can also be found. If it is difficult to help the power companies to obtain higher profits in the choice of the bidding mode, it also finds another fatal shortcoming of the single tariff model, which is different from the two-system tariff model. The electricity price model is difficult to help power companies to complete technical reforms, which means that they do not meet the innovation technologies and sustainable development strategies promoted by China. In the current era, only by ensuring continuous technological innovation can we ensure social development and ensure that power companies are not eliminated by the market. In China's power companies to choose the bidding online mode, the difference between the two-part system and the single-system bidding mode is not only the different pricing methods, but also the application of the two-part system price mode can help the power market to develop better, and implement a benign competition for the power enterprise. Add vitality. Especially in China's current market economy situation, the use of the two-part electricity price model can create better conditions for market competition and promote economic development. However, the single electricity price model can only be a resource war, not economic competition. In order to ensure that the market economy can develop at a high speed and improve the overall market economy efficiency of China, it is more necessary to compete with the economy and technology rather than resources. At present, the selection of bidding online mode is completed in China's power market, and the two-system electricity price model is further promoted, which is used to promote the optimal allocation of resources.

### **3.3 Determination method of two-part electricity price**

In order to improve the economic benefits of the two-part electricity price model, it is necessary to conduct an in-depth analysis of the economic composition of the two-part electricity price model. Among them, the economic source of the two-system electricity price model is the capacity electricity price and the electricity price. The acquisition of the capacity electricity price depends on the capital cost established by the power enterprise, the expenses incurred in the operation of the daily power enterprise, the cost of regular maintenance of different equipment in the power enterprise, the fixed tax of the power enterprise, and the surplus reserve. The cost component is the most basic cost fixed in the two-part electricity price model, and the capital cost in the power enterprise includes the depreciation of fixed assets due to the continuous updating of technology in the development of power companies. Intangible assets existing in power companies, amortization expenses of deferred assets, financial expenses generated by labor, returns of power enterprise investors (about 70% of total profits), etc., and different cost items; Maintenance costs for daily fixed operations include: labor costs for workers in power companies, maintenance costs for equipment damage due to machine damage or scheduled maintenance, management fees for all equipment management in power companies, and other operating expenses. It is not lacking in

power companies; it is stored in power companies. The fixed taxes include: electricity enterprise income tax, value-added tax on electricity bills incurred in production, urban construction surcharges, and education surcharges, etc., all attributed to the capacity electricity price. For this reason, the accurate pricing process for the capacity electricity price is carried out. It needs to be improved or reduced according to the own development of the power company, and it also needs to be changed according to the actual nature of the power company. In the two-part electricity price model, the purpose of the capacity price is to recover the capital cost paid by the power company and the fixed cost that the power company must pay. As the power company must ensure that the company has enough reliable spare capacity to face sudden situations. At the same time, it is necessary to pay a certain fee to the power plant on a regular basis. The capacity electricity price belongs to the fixed cost of the power enterprise. It is necessary to determine the data to ensure that the collection of the capacity electricity price can meet the use of all fixed costs in the daily operation and work of the power enterprise. Failure to pay the fixed costs of power companies will lead to an economic crisis in power companies. The electricity price in the two-part electricity price model includes the cost of the power plant in the process of producing electricity, including the fixed cost of the power plant: fuel cost, water fee, to ensure The variable operation and maintenance cost, the variable tax of the power plant, and the partial return on investment (20% of the total profit of the power company), which can be operated normally, are determined, and the variable tax involved in the power plant is included in the In actual development, with the change of electricity and electricity tariffs, the introduction of value-added tax, urban construction surtax and education surcharges, etc., the specific calculation process of the cost of the two-part electricity price model is as follows:

Capacity electricity price = (fixed capital fee for power companies and fixed operating expenses + profit of power companies  $\times$  80%)  $\div$  capacity  $\times$  (1 - unplanned outage factor)

Electricity price = (variable cost of power plant and tax + profit  $\times$  20%)

The following points need to be noted before the calculation: the first point, where annual profit = total power plant investment  $\times$  investment recovery coefficient = total power plant investment  $\times$  (A / P, r, n). r is the social standard discount rate that occurs according to market changes; n is the investment recovery period. In the process of calculating the two-part electricity price model for power companies, it is necessary to calculate according to the actual situation of the power company and the actual cost of the power plant. If the power company chooses the principle of the same price and the same price in the calculation process to complete the calculation, it needs to recalculate the capacity electricity price of the power enterprise, complete the calculation according to the data given in the power grid, and determine the two-part system. In the basic data of electricity price in the electricity price model, it is necessary to calculate and determine according to the economic dispatching basis of the electricity market, and choose the method that best meets the needs of the market and power enterprises to complete the pricing.

#### 4. Conclusion

In summary, through the research on the model analysis and development characteristics of bidding online, it is found that the separation of online factories and bidding online is an important step that can help China's power enterprises to develop rapidly. This method can not only help power companies to quickly. Adapting to the market, it can also help power companies to complete their own reforms, flexibly improve economic efficiency, and also meet the demands of power enterprise managers, effectively solving the problems that arise in the process of market economic reform, for our country. The optimization of the power industry structure has played a positive role. In the era of big data, we need to realize that only effective use of network information technology can help different industries to quickly adapt to the market and obtain greater economic benefits in the market.

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