

The Organization of Russian Power Market in Modern Conditions

A.N. Melnik and O.N. Mustafina

Kazan (Volga Region) Federal University,
420008, Kremlyovskaya Street, Kazan, Russian Federation

Abstract: The issue of efficiency of energy markets draws high attention in almost all countries of the world. In order to solve this problem most of the developed countries have already restructured their vertically integrated power sectors. Our study focuses on the notion that liberalization of electricity market, which has already finished in many countries including USA, European countries and Russia, has a great impact on domestic economy performance. Russian model of the electricity market organization in terms of its liberalization is presented. The main features of functioning of different segments of wholesale and retail Russian energy markets are described. Particular attention is paid to the development of exchange activities in the power market.

Key words: Competition % Competitive Russian power market % Wholesale market % Retail market % Energy exchange

INTRODUCTION

High power intensity of the national economy remains a major constraint to its competitiveness [1-3]. In the system of measures aimed at improving energy efficiency, special emphasis is put on liberalization of electricity and power market. The formation of a competitive market by early 2011 was the final step in the reforming of domestic power industry. The liberalization of the market of electric energy and power has had a significant impact on the development of the entire national economy and has led to significant changes in the conditions of functioning of both energy producers and customers [4, 5].

The completion of the phased liberalization of the Russian energy market has resulted in significant changes that affected primarily the organizational bases of its functioning. The Russian market of electric energy and power is now a two-level structure. The first level forms the wholesale market, the second level – the retail one.

The wholesale market has several segments: long-term bilateral contracts market (the free contract segment), short-term spot market (the day ahead market) and the balancing market close to real time. The long-term market is formed by the conclusion of free bilateral contracts, which may cover the period up to five

years. The contracting parties fix the prices and delivery schedules. Nodal price difference, which is defined as the difference between the equilibrium prices in the group of supply points of seller and buyer, is paid by the buyer. The equilibrium prices in each group of supply points are formed as a result of a competitive selection of bids on the day-ahead market and are published on the website of JSC "Trading System Administrator." The day-ahead market is characterized by a system of relations between the wholesale market participants related to the provision or consumption of electricity in the amounts determined by the results of competitive selection of bids. The competitive selection is performed among the buyers and suppliers price bids a day prior to the delivery of electricity. Spot market prices are the main indicators of the market price for electricity. At the day-ahead market, the planned consumption of electrical energy and power, which are determined by the enterprises themselves, are realized. Possible deviations from the planned amounts of electricity and power supplies are also sold in the balancing market by means of a competitive selection of bids for balancing the system.

Pricing in all segments of the wholesale market is highly dependent on the price prevailing in the day-ahead market. Thus, the actual price on the free bilateral agreement depends on the price of the day-ahead market

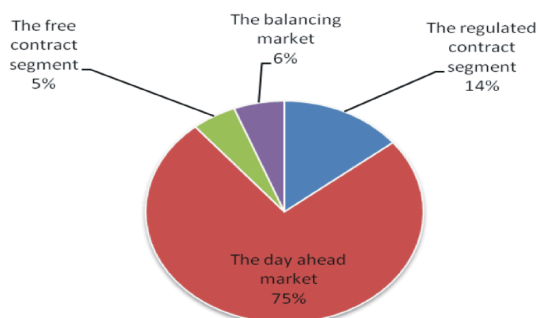


Fig. 1: The distribution of electricity sales over the wholesale market sectors in 2011 [6].

by virtue of the following reasons. First, at registering the free bilateral contract, an opposite transaction is automatically generated for the participants in the day-ahead market, which provides financial clearing and price hedging by offsetting mutual claims through the clearing center. With this view, the buyer sells and the seller purchases the contract volume in the group of contract delivery points. The final result in these transactions will depend on the ratio of the contract price and the price of the transaction to ensure a free bilateral contract. Second, quite often in the contract the delivery price is fixed according to the formula that determines the dependence of the final price of the contract on the prevailing market price on the day ahead. The price of the balancing market is relative to the price of the day-ahead market as follows: If the actual consumption falls, the price in the balancing market in relation to the price in the day-ahead market is reduced because the worst (the most expensive) station of the qualifiers in the day-ahead market is unloaded. If the actual consumption of electricity increases, the price of the balancing market relative to the prices in the day-ahead market is also growing, as the cheapest station of those that were not selected is additionally loaded.

In 2011, the wholesale market of electric energy and power realized more than 86% of the entire electricity volume, which distribution over the sectors of the wholesale market is shown in Fig. 1.

Energy Exchange in Organization of Electric Energy and Power Market: A special place in a complex system of relations of the energy market is given to power exchange. OJSC "Moscow Energy Exchange" is the only stock exchange in Russia, approved for electricity and power trading. It is an organized trading platform, which enables the participants of the wholesale market of electric power and energy, first, to trade and to shape the market price

for electricity and power, concluding free contracts; and secondly, to hedge the risk of changes in electricity prices by entering into financial contracts; and third, to make a profit through the conclusion of fixed-term contracts for electricity [7].

The stock exchange includes two sections: a section of electricity and the Derivatives Market. In the electricity section the participants of the wholesale market sign free contracts for electricity and power. In the derivatives market section the futures contracts on energy indexes are concluded. Trading in the power section is permitted only for organizations with the status of the subjects of the wholesale market of electric energy and power. Trading in the derivatives market section is allowed for legal persons having the status of stock broker. The exchange intermediaries may be a brokerage firm or an independent broker who makes exchange transactions on behalf of the clients. In addition, to work in both sections the bidders accredit their representatives as traders at the exchange. In this case, the trader is an individual who is authorized by the bidder to make a deal at the exchange on his behalf.

In the power section free contracts are signed. Free exchange traded contracts differ from off-exchange trading contracts, firstly, by being concluded during the centralized trading on one platform and, secondly, the exchange contracts are standardized, that is part of their terms is rigidly fixed. The exchange contract stipulates the following parameters: the length of the delivery period, the beginning of the delivery period, the delivered power volume in each month, the delivery of electricity in each hour and type of power supply schedule. The party in exchange trading defines a group of supply points of counterparties, the free flow area, the number of standard contracts and the price of buying or selling. The main benefit of stock trading is that the company has no need to search for a supplier of electricity and carry out measures to harmonize the conditions of the contract. The Energy Exchange provides a large number of variants of standard contracts. Moreover, the company can choose a suitable contract and make deals, almost without coming into contact with by the supplier. This, in turn, allows the company to quickly obtain the most complete picture of the situation in the market and make an informed decision.

In the derivatives market section, energy indexes futures contracts are concluded. A futures contract is a forward contract with the fixation of the transaction volume, date of performance and price at the time of the exchange transaction. Futures contracts are estimates because they do not involve delivery of the underlying

asset, but are performed only by financial calculations. In this case, the underlying asset is an index of the average contract price of electricity in a certain price area, which is published on the official website of the exchange for each hour of the day. Futures trading allows insuring risks of adverse changes in market prices for electricity; at that, the execution of transactions is characterized by a small diversion of funds for the performance of transactions in the market, low transaction costs, the possibility of conducting transactions between various segments of the energy market. In addition, the energy futures market allows lucrative speculation. All this in combination creates opportunities for the companies, who have entered the wholesale market, in implementing different strategies of their behavior in the energy market.

Specific Features of Organization of Retail Market of Electricity and Power in Russia: The retail market forms the second level of market power and capacity. It combines the guaranteeing suppliers, power supply companies, the regional distribution companies, territorial network organizations, regional dispatch administrations, small generation suppliers and retail consumers. According to the data provided by the official website of OJSC "Trading System Administrator", it can be concluded that the retail prices for electricity are highly correlated with the wholesale prices (Figure 2).

Such dependence of retail prices for electricity on the wholesale ones is primarily due to the fact that the sales companies acquire the necessary energy for resale to retail customers in the wholesale market and are completely dependent on fluctuations in the wholesale price. The marketing companies have an important role in the energy market functioning [9,10]. Sometimes, one more intermediate level between the wholesale and retail ones is distinguished; at this level the initial distribution of electricity and power takes place. It is proposed to include the sales companies into this level; these companies, on the one hand, purchase electric energy and power on the wholesale market and on the other hand, distribute it to the final consumer at a fair price. The marketing company to some extent performs the function of protecting the interests of their customers. It is explained by a number of reasons. First, the rise in prices for electricity often has a negative impact on the performance of the sales company, as it leads to a decrease in the collection of cash from customers. Second, the rapid growth of energy consumption is also disadvantageous for the sales company, since it inevitably increases payments for power in the wholesale market. Therefore, neither an excessive growth of energy consumption, nor overstating

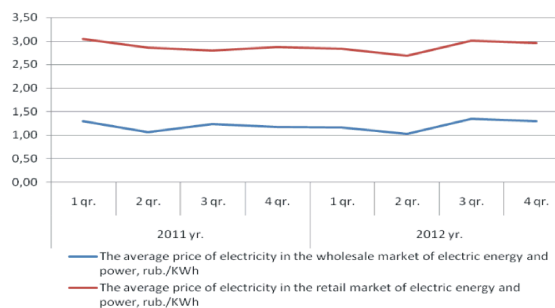


Fig. 2: Dynamics of price changes in the wholesale and retail electricity markets [8]

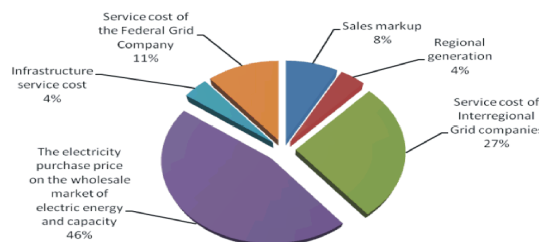


Fig. 3: The structure of the retail price of electricity in 2012 [6]

of tariffs is unprofitable for the marketing company. The main objective of the sales company is to determine the balance between these two components.

During the period from January 2011 to December 2012 the purchase price of electricity in the retail market price exceeded the wholesale price 1.5 - 2 times. The main factor influencing the retail price was the wholesale market price, which share in the structure of the retail price was about 55%. Another powerful component is payment for the services of regional networks, which in the same time period ranged from 25 - 27%. Sales markup in the retail price was about 4% (Fig. 3).

Despite the strong dependence of the retail price for electricity on the wholesale one, the retail companies today can mitigate the impact of fluctuations in the wholesale price on the retail one by using the tools that are widely available in the wholesale market of electric energy and power. So, for example, in 2011 OJSC "Tatenergosbyt" used free bilateral contracts for the purchase of electricity and power. As a result of this policy, the price of electricity to retail customers was approximately 12% lower than if it had been fully purchased on the spot market [11].

This example shows that the use of different tools by the distribution companies working in the wholesale market will allow them to offer the most suitable conditions for their customers. At the same time, the wider application of these and other analogous tools by various

distribution companies in order to reduce the price of electricity and power on the wholesale market will enhance competition between them [12-14]. This, in turn, will contribute to the development of market relations in the retail market and reduction of retail prices and will encourage sales companies to offer the best conditions, not only on price but also on quality parameters.

CONCLUSION

The completion of electricity and power market liberalization has resulted, first, in creating the additional conditions for the development of the energy sector. Second, as a result of the liberalization the consumers of electric power received a new status of full participants in the market of electric energy and power and for the first time acquired great opportunities for generating their own energy policies. At that, they are no longer limited to just finding ways to reduce energy costs through energy saving measures. Their opportunities have been greatly expanded as a result of using the advantages of currently formed market pricing mechanisms related to energy products.

REFERENCES

1. Melnik, A.N. and A.R. Sadriev, 2010. Influence of the World Financial Crisis upon the Development of Russian Electric Power Engineering. *Problems of Modern Economy*, 1: 21-26.
2. Sadriev, A.R., 2009. Cluster Mechanism of Energy System Innovation Development in the Republic of Tatarstan. *Technological University Newspaper*, 2: 209-214.
3. Chitalina, O.N., 2009. To the Problem of Search of the World Financial Economic Crisis Reasons. *Ural federal University Newspaper. Series Economics and Management*, 6: 113-119.
4. Nagayama, H., 2007. Effects of Regulatory Reforms in the Electricity Supply Industry on Electricity Prices in Developing Countries. *Energy Policy*, 35: 3440-3462.
5. Engoian, A., 2005. Industrial and Institutional Restructuring of the Russian Electricity Sector: Status and Issues. *Energy Policy*, 34: 3233-3244.
6. Official site of JSC "Administrator of Trading System", [electronic resource]. Mode of access: <http://www.atsenergo.ru>.
7. Official site of JSC "Moscow Energy Exchange", [electronic resource]. Mode of access: <http://www.rena-trade.ru>.
8. Official site of Nonprofit Partnership "Market Council", [electronic resource]. Mode of access: <http://www.ais.np-sr.ru/information>.
9. Kuleshov, D., S. Viljainen, S. Annala and O. Gore, 2012. Russian Electricity Sector Reform: Challenges to Retail Competition. *Utilities Policy*, 23: 40-49.
10. Pittman, R., 2007. Restructuring the Russian Electricity Sector: Re-creating California? *Energy Policy*, 35: 1872-1883.
11. Official site of JSC "Tatenergosbyt", [electronic resource]. Mode of access: <http://www.tatenergosbyt.ru>.
12. Nepal, R. and T. Jamasb, 2012. Reforming the Power Sector in Transition: Do Institutions Matter? *Energy Economics*, 34: 1675-1682.
13. Nagayama, H., 2009. Electric Power Sector Reform Liberalization Models and Electric Power Prices in Developing Countries An Empirical Analysis Using International Panel Data. *Energy Economics*, 31: 463-472.
14. Wamukonya, N., 2004. Power Sector Reform in Developing Countries: Mismatched Agendas. *Energy Policy*, 32: 941-941.