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The diagnosis of the European electricity market from the point of view of the Polish Transmission System Operator

The management and balancing of the power system is becoming more and more complicated and expensive, and the European TSOs face new challenges. In order to prevent the instability of the system and the increase of the energy costs for the end users, it is necessary to reshape the current electricity market – these are the conclusions of the publication entitled “The European electricity market – diagnosis” prepared by *Polskie Sieci Elektroenergetyczne*.

“There is a debate in Europe about the electricity market design. It is the most important dispute concerning the electricity industry”, emphasizes Eryk Kłossowski, the President of the Management Board of Polskie Sieci Elektroenergetyczne. “The main dividing line between parties arguing over the Europe’s electricity market project remains geographical extent of the bidding zones, or areas, within which prices of electricity, reserves and ancillary services are determined.”

“The European Electricity Market - diagnosis” is the first of the series of PSE’s publications concerning the European electricity market. It aims at initiating a comprehensive discussion on the energy market – its current design inefficiencies and future architecture.

The current challenges, related to the growing number of prosumers, the increasing role of RES and decentralized generation, as well as the change of the demand patterns caused, i.a. by the development of electromobility, require the operators to rethink the foundations of the European energy market, including market design. Unfortunately, currently pursued regulations often respond to yesterday’s, not the current or future challenges. Therefore, the diagnosis prepared by PSE points out the key areas that require changes in the market model:

the division into large bidding zones (areas)

Today the actual delimitation of zones was made taking into account mainly the existing administrative boundaries coinciding with state boundaries, with a few exceptions, and not an analysis of transmission capacity within them. Due to political rather than technological reasons, zones are difficult to change in order to optimize their configuration. Moreover, the network representation in the zonal model is highly simplified, causing detachment of market and system operations (depending on the physics). In the opinion of PSE, European market outcome within large bidding zones is often physically infeasible, requiring TSOs to take a large number of out-of-wholesale-market remedial actions aimed to ensure the secure operation of the system. The scale of these actions may lead to a serious reduction of the operational security margin of the transmission system.

the preferences for the energy-only market

The trade can take place under energy-only market formula, where energy and capacity are traded in a single market process (like today in most European countries) or an energy-plus-capacity market, where the market processes for energy and capacity are separated. There are justified concerns that future price signals on an energy-only market will not create the conditions for functioning or deployment of all stable generation sources necessary to ensure the operational security of the power system, which may result in generation outages in the future. Moreover, in reality,

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the energy-only market does not provide correct signals for investing in the network development, which may lead, in some cases, to oversizing investments. Consequently, in the opinion of PSE, energy-only market is not suited to the technological and business challenges faced today by the sector.

the preference for cross-zonal exchange

It is intended as another tool to enhance supra-national market integration. Unfortunately, nowadays it contributes to growing problems in the system management, which arise from the contradiction between the fundamental feature of the zonal model, i.e. the “copper plate” assumption, of unlimited transmission capacities and trading possibilities within each bidding zone, and the preference for cross-zonal transactions, which are technically limited by cross-border capacities. In reality, underutilization of cross-border infrastructure is mainly due to zonal market imperfections, particularly loopflows i.e. “power flows leaving and re-entering the given bidding zone without being scheduled”. Increasing loopflows impact the secure operation of the interconnected system and may prevent the accomplishment of the goals of the EU’s energy policy. This problem cannot be solved by any regulations that artificially increase the cross-zonal capacities and in effect will create only artificial exchanges.

Given the new challenges, the perseverance of policy makers to rigidly maintain the solutions that in the past allowed building the European energy market is unjustified. *“European electricity industry cannot be closed for new ideas, and should rather look for enriching experiences and drawing inspirations”*, stress the authors of the diagnosis. According to their opinion, a remedy for the European challenges are the smallest possible bidding zones and resulting from it *“locational signals that would allow for much better grid utilization without going beyond the secure boundaries of system operation. Improved, more locational market design should better contribute to reaching all objectives of the European energy policy contributing to higher social welfare for all Europeans.”*

In the forthcoming publications, PSE will present the outline of the future market design, responding to the new challenges pointed out in the Diagnosis and founded on four fundamental pillars: economic efficiency, system security, incentive compatibility and market transparency.

The full text of the diagnosis is available at www.pse.pl

Polskie Sieci Elektroenergetyczne (PSE) is a power transmission system operator (TSO) in Poland. PSE is a State Treasury company of a particular importance for the Poland’s economy. Its scope of responsibilities is specified in the Energy Law Act.

PSE deals with the transmission of electricity to all regions of the country. The Company is responsible for the power system balancing, and for the maintenance and development of the network infrastructure and cross-border connections. The Company also provides on market conditions its transmission capacities for the purpose of cross-border exchange.

PSE is the owner of over 14,195 kilometres of power lines and more than 106 top-voltage power substations.