

Polish implementation plan

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I. Introduction

Context

In accordance with article 20 of Regulation (EU) 2019/943 of 5 June 2019 on the internal market for electricity, Member States with identified resource adequacy concerns shall develop and publish an implementation plan.

Poland is a Member State with identified resource adequacy concerns. Therefore **Poland has developed implementation plan.**

This plan includes identification of regulatory distortions and market failures, consideration of improvements and presents a list of market reforms.

Resource adequacy assessments

Under the notification of the Polish capacity market¹, the Polish authorities have demonstrated the existence of market failure and quantified the adequacy issue by means of a detailed probabilistic assessment, which was carried out by the Polish TSO (PSE) and the assumptions and results of which were reviewed by an external consultant. This assessment compares supply and demand adequacy forecasts with a reliability standard, which has been expressed in terms of a Loss of Load Expectation (LoLE).

The adequacy assessment relies on the data that PSE submitted to ENTSO-E for its Mid-term Adequacy Forecast (MAF) 2017 exercise.

In addition to the assumptions used in the MAF 2017, PSE's adequacy assessment tests the following sensitivities regarding the assumptions about the Polish electricity system: higher assumption on mothballing/decommissioning of thermal capacity, increased import interconnection capacity with neighbouring countries against the normal increase assumed in the MAF 2017, and reduced electricity demand growth against the normal demand projection used in the MAF 2017.

In all simulated scenarios capacity shortfalls were expected to arise in 2020 and 2025. In PSE's base case scenario the LoLE reaches 176.4 and 101.7 hours per annum in 2020 and 2025 respectively. In the least conservative scenario, which mirrors the MAF 2017 assumptions, the LoLE was also still above the 3-hour target with 14.2 hours in 2020 and 32.8 in 2025. The external consultant also calculated the volume of dispatchable capacity that would be needed in addition to the capacity assumed in the base case scenario in order to achieve the 3-hour LoLE per year on average. He found that this additional net generating capacity is 2,750 MW in 2020 and 8,068 MW in 2025.

Furthermore, PSE also performed an adequacy assessment for the year 2030 (i.e. beyond the period covered by the MAF 2017 assumptions). The least conservative scenario resulted in 12.56 hours LoLE, which is again higher than the 3-hour target. The other modelled scenarios showed significantly higher

¹ SA.46100 (2017/N) – Poland – Planned Polish capacity mechanism

rates of LoLE (up to 1,165 hours). The external consultant confirmed in this regard that PSE's methodology was consistent with similar adequacy studies of ENTSO-E.

In summary, the identified adequacy issue reflected **the lack of available capacity** (account taken of available imports) to meet the demand. Given the magnitude of this adequacy issue, the Polish authorities considered that **it was necessary to intervene through the introduction of a market-wide capacity mechanism.**

Despite the fact that good progress is being made with the concerns over future generation adequacy and security of supply (indicated in recent assessment of ENSTO-E – MAF 2019), due to the ongoing market reforms and capacity market implementation, the capacity market is necessary in ensuring sustained generation adequacy in the long-term.

II. Polish electricity market

Poland carries out an active climate and energy policy and takes appropriate measures across all the dimensions of the Energy Union. Polish energy system and its development plans are defined in National Energy and Climate Plan for the years 2021-2030 which was submitted to the European Commission at the end of 2019.

The Polish authorities continuously monitor a situation on the Polish electricity market. Any cases of potential regulatory distortions or market failures would be identified, monitored and subsequently addressed.

Capacity market

Poland has introduced market wide and technologically neutral capacity market based on capacity auctions. Mechanism has been approved in the EC decision “*State aid No. SA.46100 (2017/N) – Poland – Planned Polish capacity mechanism*”. The first delivery year is 2021.

The capacity market consists of primary and secondary market. The primary market consists of:

- main auction for a given delivery year n carried out during the last two months of the year $n-5$;
- additional auction for a given delivery year consisting of four simultaneous auctions (each for separate quarter of delivery year) carried out in Q1 of year $n-1$.

Primary market for capacity will be complemented by the secondary one which allows for secondary trading and volume reallocation once the primary market is cleared.

Capacity auctions for units located in Poland are preceded by two-stage certification process consisting of:

- general certification
- and
- certification for the main auction and additional auctions (hereinafter main certification).

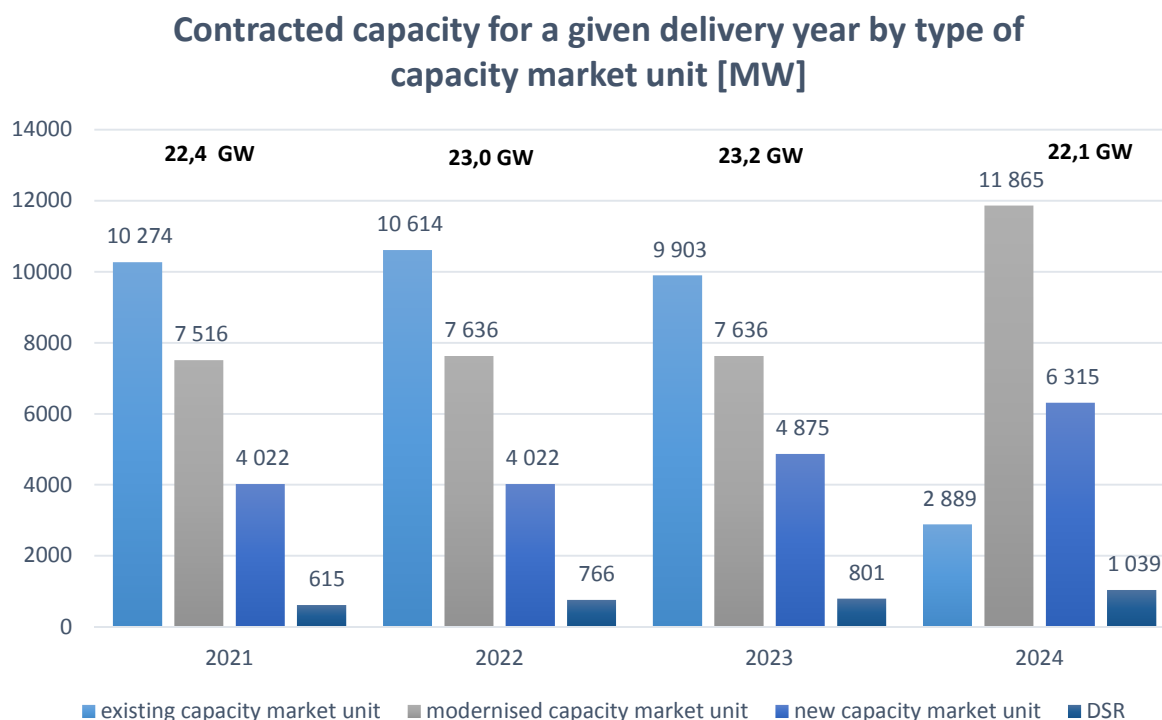
The Polish capacity market is open for all electricity generation technologies including DSR and energy storage. Energy storage is treated as a generating unit, so it can participate in the capacity market as a physical generating unit or a part of DSR unit (part of an end user’s installation).

The capacity market is open for foreign capacity from neighbouring EU countries, whose power systems are electrically connected with Polish power system in the following ways:

- as a “target solution” – based on direct physical unit commitment – possible for a foreign physical unit after PSE (Polish TSO) has agreed with the relevant neighbouring TSO (or relevant TSOs in case of the synchronous profile) on the rules for cooperation, including rules for unit certification, availability testing, remuneration etc.
- as a “bridging solution” – based on interconnector’s participation – before the implementation of the target solution.

Detailed description of the participation of the foreign capacity is included in the EC decision (*State aid No. SA.46100 (2017/N)*, point 2.5).

Four main capacity auctions have been already conducted. Total capacity, by type of capacity market unit, contracted at all main auctions for the 2021 – 2024 delivery periods is presented in a bar graph below.



Source: *Ministry of State Assets*

Wholesale market

The volume of gross domestic electricity generation in 2018 was slightly lower compared to the previous year and totalled 165,214 GWh (decrease by 0.38% as compared to 2017). At the same time, gross domestic electricity consumption amounted to 170,932 GWh and increased by over 1.66% in comparison to 2017. In 2018, the rate of increase of domestic consumption of electricity was lower than the GDP increase rate, which – according to preliminary estimates of the Central Statistical Office – amounted to 5.1%. In 2018, the share of imports in the domestic balance of physical flows constituted 7.7% of total electricity fed into, while the share of exports constituted 4.5% of electricity off-taken. As compared to 2017 both these parameters decreased by 0.3 percentage point and 2.1 percentage point respectively. The electricity production structure did not change considerably as compared to 2017. A great majority of generation is still based on conventional fuels, that is hard coal and lignite. At the same time, the generation leader in the RES segment was still wind generation. In 2018, the installed capacity in the National Electricity System (NES) amounted to 45,939 MW and the available capacity to 45,650 MW, which represents an increase by 5.8% and 5.4%, respectively, as compared to 2017. The average annual capacity demand was at the level of 23,322.7 MW, with the maximum demand at the level of 26,447.6 MW, which means an increase by respectively: 1.5% and 0.8% as compared to 2017².

² National Report of the President of the Energy Regulatory Office – 2019.

Poland takes action to ensure transparency and quality of price formation on the power exchange market. According to legal regulations adopted in 2018, obligation for electricity generators to sell electricity via power exchange was increased from 30% to 100% in 2019.

According to the rules currently in force for the Polish Power Exchange (i.e. the "The Detailed Trading and Clearing Rules for Electricity Traded on the Day-Ahead Market" approved by Resolution of the Management Board No 161/32/19 of June 18th 2019 effective as of June 28th 2019 and the "The Detailed Trading and Clearing Rules for Electricity Traded on the Intraday Market" approved by Resolution of the Management Board No 278/59/19 of November 8th 2019, effective as of November 19th 2019), **there are no other formal or informal price limits** other than those implementing Article 41(1) and Article 54(1) of Regulation 2015/1222 (CACM).

Thus, in case of the day-ahead market, the minimum price is an equivalent of -500 EUR and the maximum price is an equivalent of +3.000 EUR. For the intraday market, the minimum price is an equivalent of -9.999 EUR and the maximum price is an equivalent of +9.999 EUR.

Balancing market

At the end of 2018, 125 entities participated in balancing market processes, including 21 power plants, 9 end-users, 8 network customers, 80 trading companies, a power exchange, 5 DSOs and PSE as the TSO. Technical and commercial data were notified by 46 market operators and concerned 356 scheduling units. In 2018, the total volume of unplanned balancing electricity purchased on the balancing market amounted to 6.22 TWh, which was lower by some 8% in comparison to the previous year and also constituted some 4% of gross national electricity consumption. In 2018, the total volume of unplanned balancing electricity delivered to the balancing market amounted to 9.51 TWh and was by 3.29 TWh higher than the total volume of electricity purchased from the balancing market.

The Polish TSO – PSE is currently developing a comprehensive **reform of the balancing market which includes e.g. cost-efficient and market-based procurement of balancing capacities**. Public consultation on the new design of the balancing market have begun in November 2019. The date of implementation is planned for 2021.

According to the article 16 (e) of the EC decision "*State aid No. SA.46100 (2017/N) – Poland – Planned Polish capacity mechanism*" by 1 January 2021, Poland will introduce **an administrative scarcity pricing mechanism** as referred to in Article 44(3) of the Electricity Balancing Guideline.

The foreseen scarcity pricing mechanism (currently, as the draft is in the consultation process) will provide a price adder to the energy prices on the balancing market varying in function of the amount of the reserve margin in the Polish system. The proposed price adder calculation is based on the Value of Lost Load (VoLL) and the Loss of Load Probability (LoLP), ensuring that when reserves are exhausted (i.e. there are no more available reserves that can be activated by the TSO) the imbalance settlement prices are not lower than the maximum price set in accordance with Article 54(1) of Regulation 2015/1222.

Retail market

In 2018, similarly to the preceding years, there were five big DSOs operating on the electricity market whose grids are directly connected to the transmission system and which are obliged to separate distribution activity performed by the system operator from other types of activity not connected with electricity distribution (unbundling). In addition, in 2018 there were 171 vertically integrated

undertakings designated as DSOs, which are not subject to the unbundling obligation. In 2018 there were five incumbent suppliers and, depending on the area of five “large” distribution system operators, from 123 to 169 alternative trading companies active in the electricity supply to end-users, including households. On the electricity market there were also 171 suppliers acting within undertakings vertically integrated with the DSOs³.

In Poland, final customers benefit from market prices and they can obtain bundled offers, which might be tailor-made solutions that address individual needs of customers. Regulated prices are applicable only for those final customers:

- who have not decided to switch the supplier,
- whose demand is relatively low,
- who are connected to low voltage grid, and
- who are supplied by four suppliers of last resort.

Regulated prices are calculated by the suppliers on the basis of justified costs. President of the Energy Regulatory Office (Polish NRA) verifies their calculation and approves regulated prices in the form of tariffs. Share of the consumption of customers under regulated prices in total electricity consumption is approx. 14,5%.

All consumers, also those who are eligible for regulated prices, can choose offers with unregulated prices (market prices) – and they do so. Very often they decide to switch supplier or to apply for a contract with bundled products. This ensures effective price competition among suppliers.

There are currently no decisions regarding the deregulation of prices for eligible households. The measures and timeline will be considered under the process of implementation of the Electricity Directive (EU) 2019/944.

Demand response

All types of demand-side response are eligible to participate in the wholesale electricity markets, including day-ahead and intraday. Demand side response (DSR) units can also participate in the balancing market and provide balancing services. This is done by submitting balancing energy offers to the Polish balancing market, where such offers can influence the balancing price formation. DSR interested in participation in the balancing market needs to be certified. Once the balancing offer from the demand side is accepted by the Polish TSO, market participant who submitted this offer shall fulfil its obligation to deliver, meaning it has to reduce the consumption in line with its offer.

DSR may also participate in the capacity market. DSR capacity market units participated and concluded agreements in all previous main auctions. A table below presents an overview of agreements concluded by those units at each capacity auction. Both: number of agreements and capacity contracted by DSR increased.

³ National Report of the President of the Energy Regulatory Office – 2019 (summary).

Table 1. Capacity market auctions - results for DSR

Auction	Number of capacity agreements concluded by DSR units	Capacity obligations resulting from the capacity agreements concluded by DSR units (MW)
Main auction for the delivery year 2021	18	614.60
Main auction for the delivery year 2022	21	761.00
Main auction for the delivery year 2023	22	791.00
Main auction for the delivery year 2024	29	1029.00

Source: *Ministry of State Assets*

Decentralised generation

Poland has amended the Act of renewable energy sources⁴ in order to eliminate identified regulatory distortions.

The scope of a definition of prosumer has been extended. Now, not only consumers but also other final customers may be treated as prosumers under condition that their prosumer activity does not constitute their primary commercial or professional activity. Therefore they benefit from more favorable electricity settlement system.

Electricity cooperatives (which may be established by final customers located in rural or urban-rural areas) **may use electricity grid as a “storage facility”**. This means that they generate locally electricity and consume it according to their preferences. If there are any surpluses of this locally generated electricity they may inject it to the grid and consume the respective amount of electricity later on, in practice receiving a discount.

Poland has introduced **feed-in tariff (FiT) and feed-in premium (FiP) systems** to support hydro power plants and biogas power plants. These mechanisms provide a guaranteed price of electricity (FiT) or the right to obtain a negative price balance coverage (FiP) for micro, small and medium installations in dedicated technologies.

A new programme “My Electricity” supporting the development of distributed electricity generation from renewable energy sources has been launched in 2019⁵. It aims at increasing the availability of prosumer solutions in households, particularly in those located in rural areas. The main objective of the

⁴ Dz.U. z 2019 r. poz. 1524, <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20190001524>

⁵ <https://www.gov.pl/web/climate/my-electricity-programme-launched>

programme is **to increase the production of energy from photovoltaic micro-sources** and grant subsidies to more than 200,000 prosumers. The subsidy covers up to 50% of the costs of building a photovoltaic installation with the installed power ranging from 2 to 10 kW, up to 5,000 PLN (over 1,100 EUR)⁶. As of 15.01.2020 applications for 21,755 beneficiaries has been approved for more than 108 million PLN (over 25 million EUR).

Cross-border exchange

Poland significantly increases the amount of interconnection capacities available for trading.

Thanks to the efforts taken, current hourly import capacities available on all Polish borders regularly exceed 2000 MW (achieved *inter alia* by adopting an improved day-ahead cross-border capacity calculation with statistical approach to reliability margins). Besides, Poland has developed an action plan⁷ (in accordance with article 15 of the Regulation (EU) 2019/943) to increase cross-zonal electricity trade by means of grid investments and other measures. Grid investments included in the Action Plan are only a small part of vast and ambitious grid development plan until 2027. In addition, in November 2019 Poland has joined SIDC (single intraday market coupling) and by the end of 2020 will join SDAC (single day ahead coupling) which are a big step forward in increasing the trade possibilities.

Electricity interconnectivity indicator determined in point (d) of Article 4 of Regulation (EU) 2018/1999 defines: “the level of electricity interconnectivity that the Member State aims for in 2030 in consideration of the electricity interconnection target for 2030 of at least 15 % ...”. However the exact meaning of this factor (15%) is not specified. “Report of the Commission Expert Group on electricity interconnection targets” developed in November 2017 stated that the previously used formula for calculating interconnectivity indicator does not respond to the challenges facing energy system. The Report further recommended that the formula to measure the interconnectivity in the 2030 perspective should refer to the estimated peak load and the estimated installed renewable generation capacity in 2030 as:

- (1) nominal transmission capacity (thermal) / peak load 2030,
- (2) nominal transmission capacity (thermal) / installed renewable generation capacity 2030.

The Expert Group recommended that countries below the threshold of 30% on any of the two formulas should urgently investigate options of further interconnectors. Poland has fulfilled this requirement already today, and it should be expected that it would also meet it by 2030:

- (1) ~ 11 000 MW / 27 700 MW (net) = 39%,
- (2) ~ 11 000 MW / 20 100 MW (base case, only onshore, offshore and PV) = 54%.

It should be underlined that the Polish interconnections have sufficient interconnector thermal capacity, but only limited part of it is available to market participants as cross-border trading capacity due to unscheduled power flows through the Polish grid. Currently the import capacities available on all Polish borders regularly exceed 2000 MW. When considering transits and loop-flows through Poland, utilization of Polish interconnectors for trade by Polish market participants or by market participants in other countries outside of Poland (causing transits and loop-flows) is much higher. It is assumed that the

⁶ 1 EUR ≈ 4,25 PLN

⁷ <https://www.gov.pl/web/aktywa-panstwowe/plan-dzialania-przyjety-przez-kse>

implementation of Flow Based approach will address these concerns and will result in the improvement of cross-border capacity calculation and allocation.

III. Plan of electricity market reforms

Poland is currently carrying out electricity market reforms.

It should be underlined that Poland:

- has implemented the EU target model for cross-border intra-day trading XBID in the so called second wave of countries, and has joined LIP15 and LIP16 (Local Implementation Projects) on its own initiative already during the project, improving the ability of market participants to trade all possible shortage or surpluses of energy as close as possible to real-time;
- is implementing Imbalance Netting within the scope of the European IGCC project, improving the efficiency of using the generation reserves. The final tests are planned to be completed in February 2020 and Poland's operational participation in IGCC should start in March 2020;
- is timely implementing the commitments taken in the EC Decision *SA.46100 (2017/N) – Poland – Planned Polish capacity mechanism*, such as the removal of price limits on the Polish balancing market;
- is implementing market coupling on all its borders, with interim NTC-Market Coupling solution in 2020 and enduring Flow-Based Market Coupling solution, significantly improving the efficiency of the cross-border capacity allocation mechanism and price formation in Poland.

Facing the unprecedented challenges of the new market design as it was defined in the Clean Energy Package, Poland is continuously working on increasing the effectiveness and appropriateness of the policies, measures and tools already in place. To meet these challenges, Poland introduces a **plan of electricity market reforms**, in particular its short term balancing market, with a view to improve price signals during times of scarcity.

Timeline: 1 January 2021.

Market reforms:

- **energy prices on the balancing market will be based on a marginal pricing scheme** as set out in Article 30(1)(a) of the Electricity Balancing Guideline. This will be without prejudice to the possibility of applying locational price differentiation within the Polish bidding zone by applying full transmission network model in price discovery. If technical price limits are applied on the balancing market, they will take into account the maximum and minimum prices set in accordance with Article 30(2) of the Electricity Balancing Guideline;
- **all Balancing Service Providers will be allowed to update their integrated scheduling bids to the extent possible until the intraday cross-zonal gate closure time** as provided in Article 24(5) and 24(6) of the Electricity Balancing Guideline;
- **all market participants will be able to bid or change their energy bids in the wholesale market at least until the intraday cross-zonal gate closure time;**
- **an administrative scarcity pricing mechanism will be introduced** as referred to in Article 44(3) of the Electricity Balancing Guideline. The mechanism will be designed to provide a price adder to the energy prices on the balancing market varying in function of the amount of the reserve margin in the Polish system. The price adder calculation will be based on the Value of Lost Load (VoLL) and the Loss of Load Probability (LoLP), ensuring that when reserves are exhausted (i.e. there are no more available reserves that can be activated by the TSO) the imbalance settlement prices are not lower than the maximum price set in accordance with Article

54(1) of Regulation 2015/1222. This will be without prejudice to Poland applying measures to prevent the exercise of market power and strategic behaviour.

- **DSR will be eligible to participate in the wholesale electricity markets** (including day-ahead and intra-day) as well as the balancing market and will be treated in a similar way as other market participants and balancing service providers. DSR can be represented either individually or via aggregators.
- **the following mechanisms** (measures with availability payment which are already used to support TSO to ensure security of supply) **will be terminated:**
 - Cold Contingency Reserve (Interwencyjna Rezerwa Mocy – IRZ);
 - Interventional Operation (Praca interwencyjna – PI);
 - Guaranteed Program of Emergency DSR (Gwarantowany Interwencyjny Program DSR – IP DSR);
 - Operational Capacity Reserve (Operacyjna rezerwa mocy – ORM).

These market reforms respect the principles from Article 3 of Regulation 2019/943.

IV. Conclusion

- Poland as a Member State with identified resource adequacy concerns has developed the implementation plan.
- Poland considered in chapter II all issues which are required in Article 20 of Regulation 2019/943.
- The plan of electricity market reforms includes measures to eliminate any identified regulatory distortions or market failures.
- The timeline for market reforms is strictly defined.
- Poland submitted the implementation plan to the Commission and requests its opinion.