

Draft Action Plan¹

developed on the basis of Article 15 of Regulation (EU) 2019/943

¹ Please note that this document is executed in Polish language version only. The translation is made for working and consultation purposes exclusively and should not be treated as a binding one.

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Executive summary of the Action Plan

The purpose of the Action Plan document is to fulfil the obligation to make available to market participants cross-zonal capacity at a level of no less than 70% of the transmission capacity under Article 16(8) of Regulation 2019/943 (hereinafter “CEP 70% target”). With the use of the Action Plan, the deadline for the achievement of the CEP 70% target is 31 December 2015. The CEP 70% target shall be achieved with the use of the Action Plan by means of a linear trajectory.

The Ministry of Energy (ME) in coordination with the Regulator (Energy Regulatory Office, ERO) has prepared the draft Action Plan, which is an outcome of cooperation between ME, ERO and the Polish Transmission System Operator (TSO) – Polskie Sieci Elektroenergetyczne S.A. (PSE). The Action Plan will be implemented as of 1 January 2020. The measures adopted under the Action Plan have been scheduled for four years (1 January 2020 – 31 December 2023). Progress in the achievement of the CEP 70% target in the course of implementation of the Action Plan will be monitored by ERO verifying the achievement of the minimum transmission capacity expressed in the linear trajectory.

The Action Plan has been prepared for the synchronous profile (borders: Poland - Germany, Poland - Czech Republic, Poland - Slovakia) and for one asynchronous border: Poland - Sweden. The action plan does not apply to the other asynchronous border: Poland - Lithuania. Therefore, the CEP 70% target will be achieved on the Poland - Lithuania border from 1 January 2020, which results from international commitments.

The Action Plan contains the methodology and result of calculations for the determination of the linear trajectory pattern, as well as a timetable of measures adopted to gradually achieve the CEP 70% target. The methodology identifies a list of elements for which linear trajectories has been prepared. These are critical network elements (hereinafter: “CNEs”) and critical network elements associated with a contingency used in capacity calculation (hereinafter: “CNECs”), forming a set of 812 elements (the total of CNEs and CNECs). Types of CNECs have also been defined for the purposes of the Action Plan (Section 1). A further part of the document describes how the values of individual points of the linear trajectories have been calculated for each of the 812 elements, including the presentation of calculation results.

The basic tool provided for in the timetable of measures to be used to achieve the CEP 70% target is the implementation network investment projects (the list and timetable are provided in Section 3). The use of remedial actions, e.g. in the form of redispatching is a supplementary tool.

The draft Action Plan will be submitted for public consultation. After the final version is developed and the document is adopted, it will be delivered to the European Commission and ACER (Agency for the Cooperation of Energy Regulators).

Introduction and purpose of the document

The energy market model prevailing in Europe is the zonal model where market participants can enter into electricity trading transactions within a particular bidding zone, while trading between bidding zones requires access to cross-zonal capacity.

In June 2019, the last documents of the Clean Energy Package for All Europeans (CEP) were published, including Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (hereinafter: “Regulation 2019/943”). Regulation 2019/943 introduced a number of significant changes in the EU electricity market. Some of them concern the rules of cross-zonal electricity trading. The purpose of the changes is to continue the present direction of increasing the capability of cross-zonal trading, which is reflected in the imposition on Transmission System Operators (hereinafter: “TSOs”) of the obligation to make available to market participants cross-zonal capacity of not less than 70% of the transmission capacity for a particular border or critical network element, determined respecting operational security limits.

The CEP 70% target should be met from 1 January 2020. If this target cannot be achieved due to the occurrence of structural congestions, the Member State, together with the TSO, may opt to prepare an Action Plan that will enable the CEP 70% target to be achieved by 31 December 2025, or may decide to split its bidding zone. If the Action Plan option is chosen, the Member State will prepare such a plan in coordination with the Regulator.

On 7 August 2019, the President of the Energy Regulatory Office approved the PSE S.A. Report on Structural Congestions in the Polish Bidding Zone² (hereinafter: “PSE Report”), and then, on 12 August 2019, the PSE Report was submitted to the Ministry of Energy, providing a basis for taking the above-mentioned decisions. As a consequence, the ME, in coordination with the Regulator and with the TSO, has prepared the draft Action Plan.

The purpose of this document is to present a draft Action Plan developed in accordance with Article 15 of Regulation 2019/943. The Action Plan includes:

- the methodology and calculation results for the determination of the starting points of the linear trajectory of the annual growth of transmission capacity for the purposes of cross-zonal electricity trading, in order to achieve the CEP 70% target;
- the timetable for adopting measures to reduce identified structural congestions, planned for implementation in 2020-2023.

² The calculation results for 2020 presented in the PSE S.A. Report on Structural Congestions in the Polish Bidding Zone showed that the provision of cross-zonal capacity in volumes resulting from the CEP 70% target leads to a number of structural congestions within the Polish Power System.

1. Calculation of the trajectory of increasing capacity for the purposes of cross-zonal trade

According to Article 15(2) of Regulation 2019/943, the starting point of the trajectory is either:

- the **capacity allocated** at the border or on a critical network element in the **year before** adoption of the action plan

or

- **the average during the three years before adoption of the action plan,**

whichever is higher.

The application of the Polish Action Plan is to start on 1 January 2020, and its adoption date falls at the end of 2019. Thus the basis for the calculation of the starting point is the average capacity allocated in 2018 and the average capacity allocated in 2016-2018.

While the CEP 70% target is calculated differently for the borders for which the capacity calculation methods are used based on the coordinated net transmission capacity (NTC) approach and the flow-based approach (FBA) (see Article 16(8) of Regulation 2019/943), having regard to the planned implementation of the FBA in the Core region, the way of calculating starting points has been adopted that can be applied to the future FBA in Poland. In addition, according to the CEP 70% target monitoring guidelines contained in the ACER³ (Agency for the Cooperation of Energy Regulators) Recommendation of 8 August 2019 on the implementation of the minimum margin available for cross-zonal trade pursuant to Article 16(8) of Regulation (EU) 2019/943 (hereinafter: “ACER Recommendation”), the achievement of the linear trajectory is monitored at CNEC level⁴ – as is the CEP 70% target itself for the FBA. Having regard to the provisions of the ACER Recommendation and the planned implementation of the FBA, the linear trajectories and their **starting points have been calculated for each CNEC** in this draft Action Plan according to a specific list of CNECs for synchronous connections of the Polish bidding zone and on the basis of historical results for the energy market, represented by hourly net positions of bidding zones of the Continental Europe synchronous area for 2016-2018. For the Poland-Sweden interconnector, the starting points of the linear trajectory have been calculated on the basis of historical capacity allocated on the interconnector for 2016-2018.

³ ACER Recommendation of 8 August 2019 on the implementation of the minimum margin available for cross-zonal trade pursuant to Article 16(8) of Regulation (EU) 2019/943.
https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Recommendations/ACER%20Recommendation%2001-2019.pdf

⁴ The ACER Recommendation shows in Section 4.2 that a uniform and consistent monitoring approach should be taken to monitor the minimum levels of the margin available for cross-zonal trade (MACZT) should consist in monitoring MACZT at the level of critical network element associated with a contingency used in capacity calculation (CNEC) in all coordination areas, i.e. areas with different methods of calculating and allocating cross-zonal capacity and with different levels of coordination of those processes.

A detailed description of the process of calculating starting points of linear trajectories is provided in Appendix 1 to this document.

1.1. Rules for taking into account the variation of the nature of CNECs over time

The list of CNECs for which trajectory starting points have been calculated includes network elements currently used and monitored when calculating transmission capacity. Nevertheless, the present list of CNECs will be extended in future by additional CNECs. It should also be noted that most CNECs were invariable over the 2016-2018 period and they are taken into account in all grid models that were used in calculating trajectory starting points. However, there are CNECs that appeared in 2016-2018 and are consequently included only in a part of the grid models used to calculate trajectory starting points.

Therefore, four specificities of CNECs have been identified, regarding their operation manner in the respective timeframes:

a) Invariable CNEC

The first considered group of critical network elements consists of the elements operating in 2018 and throughout the 2016-2018 period in the identical manner as they will operate in 2020. For such CNECs, the trajectory starting point is taken to be the greater of: (i) the average of the allocated capacity in 2018 or (ii) the average of the allocated capacity for the years 2015-2018.

b) CNEC commissioned in 2016-2018

Another group of critical network elements consists of the elements that started to operate at a certain point in time during the 2016-2018 period and will operate in 2020 in an identical manner. For such CNECs, the trajectory starting point is taken to be the greater of: (i) the average of the allocated capacity in 2018 or (ii) the average of the allocated capacity for the years 2016-2018, limited to the period for which the CNEC concerned was included in the grid model. For example, if a new CNEC was first included in the grid model applicable from November 2018, the starting point for that CNEC was taken to be the average of the allocated capacity for the period of November-December 2018.

c) New CNEC commissioned after 2018

In the case of new network elements, i.e. those non-existent in the grid models used to calculate trajectory starting points, both values for comparison (average capacity allocated on an element) are assumed to be 0 MW. Thus the trajectory starting point is 0% of the thermal capacity of the element.

It should be noted that 0% is a minimum value and on that element the TSO will offer the maximum capacity calculated according to the results of the cross-zonal capacity calculation process.

d) Network element commissioned by the end of 2018, which is added to the list of CNECs after the decision to adopt the Action Plan

In the case of network elements that existed physically in the 2016-2018 period, but did not constitute relevant elements in terms of cross-zonal exchange, and consequently were not included in the list of CNECs at the time the Action Plan was developed, they can be added to the list of CNECs after a decision to adopt the Action Plan, e.g. due to their operation in a different grid topology. In such a case, it is necessary to determine the relevant point of reference. The reason is that capacity allocated in a specific

topology may be disproportionately lower or higher than those possible to be allocated in a new configuration. However, the element already operates in the grid and it would not be reasonable to treat it as a completely new one, and consequently “0%” has been assumed for it as the trajectory starting point.

In order to determine what capacity would be allocated on that element if the element were included in the list of CNECs at the time the decision was taken to adopt the Action Plan, it was assumed that the linear trajectory starting point for that element is calculated as for an invariable CNEC (where such element was commissioned before 2016, see point a) or as for a new CNEC (where such element was commissioned in 2016-2018, see point b).

2. Linear trajectory starting points – calculation results

According to Regulation 2019/943, the trajectory starting point is the capacity allocated at the border or on a critical network element in the year before adoption of the Action Plan or the average during the three years before adoption of the Action Plan, whichever is higher.

The linear trajectory starting points have been calculated for asynchronous interconnectors and for CNEs and CNECs taken into account in calculating cross-zonal capacity for synchronous interconnectors. The linear trajectory starting points have been calculated separately for the import and export directions, and they are expressed in percent of the transmission capacity of the element concerned. This section presents selected examples of linear trajectory starting points, whereas a full list of linear trajectory starting points together with their patterns is provided in Appendix 2 to this document.

2.1. Asynchronous profile

The asynchronous profile includes two borders: Poland – Sweden and Poland – Lithuania. The Action Plan will include only one of those borders – the Poland - Sweden border. On the Poland – Lithuania border, the CEP 70% target will be achieved from 1 January 2020, which results from international commitments.

For the import direction, the calculated trajectory starting point meets the CEP 70% target.

Calculation parameters for the Poland – Sweden border:

- F_{\max} = 600 MW
- $F_{\text{alok_imp}}$ = 502 MW (i.e. 84% of the maximum capacity)

where: F_{\max} – maximum capacity

$F_{\text{alok_imp}}$ – average capacity allocated in the import direction (the greater of the average for 2018 or the average for 2016-2018)

The calculation result for the determination of trajectory starting points for the Poland – Sweden interconnector in the import direction is 84% of the maximum capacity. Thus the minimum capacity on the Poland – Sweden border in the import direction is taken to be 70% of the maximum capacity.

For the export direction, the calculated trajectory starting point does not meet the requirement for the minimum level of capacity provided for in Article 16(8). Therefore, the linear trajectory has been adopted for the export direction.

Calculation parameters for the Poland – Sweden border:

- $F_{max}=600$ MW
- $F_{alok_imp}= 239$ MW (i.e. 40% of the maximum capacity)

where: F_{max} – maximum capacity

F_{alok_exp} – average capacity allocated in the export direction (the greater of the average for 2018 or the average for 2016-2018)

The results of the determination of the linear trajectory starting point for the Poland - Sweden interconnector in the export direction together with the linear trajectory pattern are provided in Table 1.

Table 1. Summary of trajectory starting points and their patterns for the Poland – Sweden interconnector

No.	Critical network element associated with a contingency (CNEC)		% of capacity on CNEC in the export direction from PL						
	Critical network element (CNE)	Contingency	2020	2021	2022	2023	2024	2025	from Jan 2026
1	PL - SE4	-	40	45	50	55	60	65	70

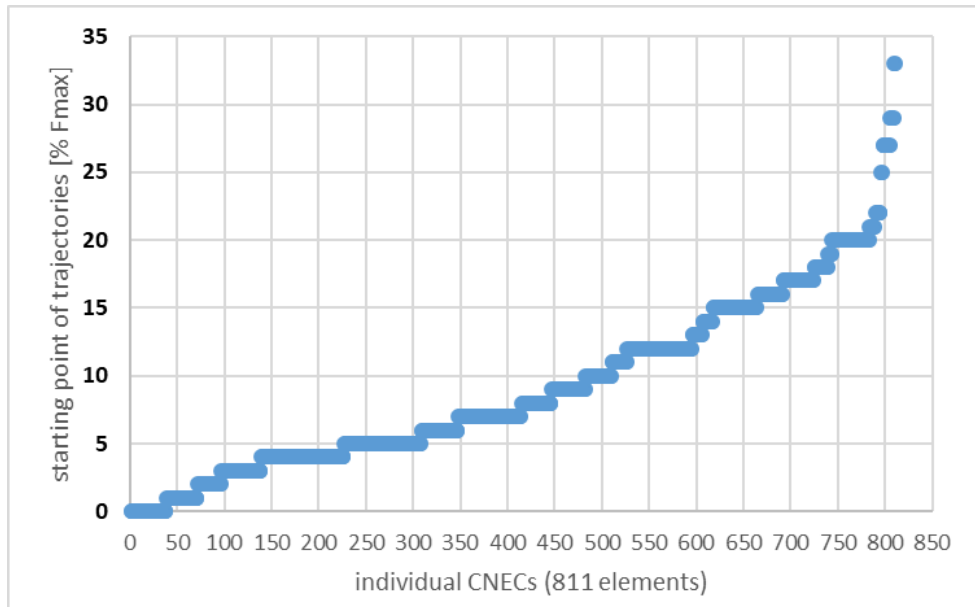
Source: PSE S.A.

2.2. Synchronous profile

The synchronous profile includes three borders: Poland – Germany, Poland – Czech Republic and Poland – Slovakia. In accordance with the ACER Recommendation, the linear trajectory starting points for synchronous interconnectors have been calculated for individual network elements from the list of CNEs and CNECs identified by the TSO, which includes 811 elements for synchronous interconnectors. The methodology for the calculation of trajectory starting points for CNECs is presented in Appendix 1, whereas a full summary of calculation results for trajectory starting points with their patterns is shown in Appendix 2 to this document.

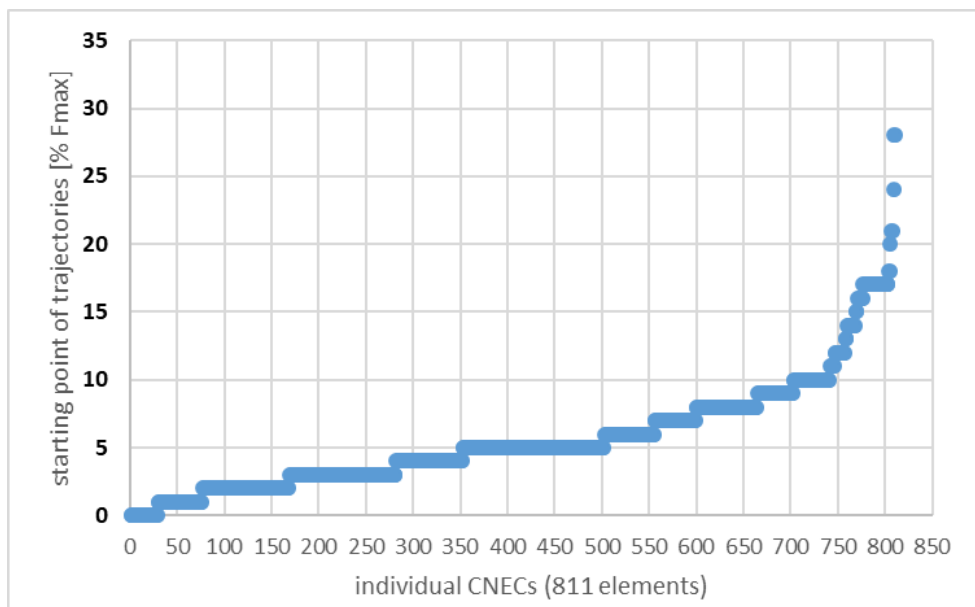
Figures 1 and 2 show duration curves of linear trajectory starting points for all CNECs including synchronous interconnectors, separately for the import and export directions.

Figure 1. Summary of trajectory starting points for individual CNECs in the import direction – duration curve



Source: PSE S.A.

Figure 2. Summary of trajectory starting points for individual CNECs in the export direction – duration curve



Source: PSE S.A.

3. Timetable for adopting measures to reduce identified structural congestions

Pursuant to Article 15 of Regulation 2019/943, the Action Plan contains a timetable for adopting measures to reduce the structural congestions identified within four years of the adoption of the decision in accordance with Article 14(7) of Regulation 2019/943, i.e. the decision to adopt the Action Plan, which should be taken by the end of 2019 to ensure the appropriate achievement of the CEP 70% target. Thus the above timetable covers the period from 1 January 2020 to 21 December 2023. The basic measure adopted under the Action Plan is the implementation of network investment projects. As a supplementary measure, remedial actions, such as redispatching, are envisaged.

3.1. Network investment projects intended to improve the conditions of electricity exchange on asynchronous interconnectors

In order to increase the capability of electricity export to Sweden in line with the specific linear trajectory, the network investment implementation timetable is adopted in accordance with Table 2.

Table 2. Summary of investment projects intended to reduce structural congestions

No.	Investment projects intended to reduce structural congestions	Planned year of investment implementation
1.	Construction of Żydowo Kierzkowo-Słupsk 400 kV line	2019/2020
2.	Construction of Żydowo Kierzkowo 400/110 kV substation including 220/110 kV transformer installation	2019/2020
3.	Construction of Gdańsk Przyjaźń-Żydowo Kierzkowo 400 kV line	2020
4.	Construction of Gdańsk Przyjaźń 400/110 kV substation including the entry of one circuit of Gdańsk Błonia-Żarnowiec 400 kV line	2020

Source: PSE S.A. on the basis of the current "Development Plan for meeting the current and future electricity demand for 2018-2027"⁵

3.2. Network investment projects intended to improve the conditions of electricity exchange on synchronous interconnectors

In order to increase the capability of electricity exchange on synchronous interconnectors in line with specific linear trajectories, the network investment implementation timetable is adopted in accordance with Table 3.

⁵ <https://www.pse.pl/dokumenty>, in the Development Plans tab

Table 3. Summary of investment projects intended to reduce structural congestions

No.	Investment projects intended to reduce structural congestions	Planned year of investment implementation
1.	Upgrade of Joachimów-Łagisza/ Wrzosowa 220 kV line	2020
2.	Construction of 400 kV Mikułowa-Czarna-Pasikowice double-circuit line	2021
3.	Construction of Kromolice-Pątnów 400 kV double-circuit line	2021
4.	Construction of Plewiska-Piła Krzewina 400 kV double-circuit line	2021
5.	Construction of Krajnik-Baczyna-Plewiska 400 kV double-circuit line	2022
6.	Upgrade of Morzyczyn-Dunowo 400 kV line	2022
7.	Construction of Ostrołęka-Stanisławów 400 kV double-circuit line	2023
8.	Adjustment of Miłosna-Stanisławów line section to increased power transmission	2023

Source: PSE S.A. on the basis of the current "Development Plan for meeting the current and future electricity demand for 2018-2027"⁶

4. List of appendices

Appendix 1 - Methodology for the Calculation of Linear Trajectories

Appendix 2 - Linear Trajectories

⁶ <https://www.pse.pl/dokumenty>, in the Development Plans tab