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UKRAINE ENERGY MARKET OBSERVATORY

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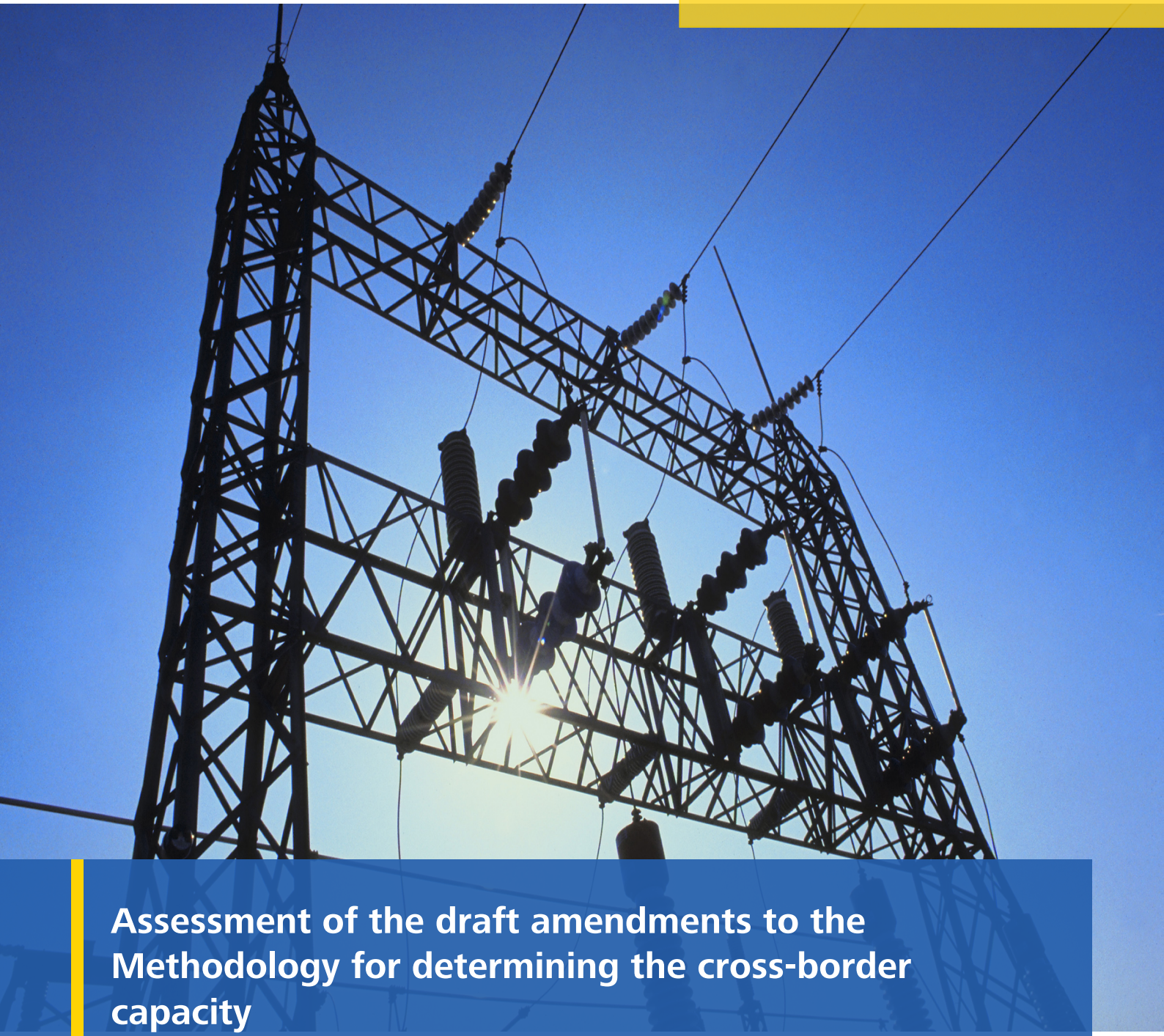

Assessment of the draft amendments to the Methodology for determining the cross-border capacity

by the Energy Community Secretariat

April, 2023

PURPOSE STATEMENT

Compliance assessment of the draft amendments to the Methodology for determining the available cross-border capacity of interstate crossings (interstate electrical networks of Ukraine), approved by NEURC Resolution No 893 of 23 August 2018.

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Ukraine Energy Market Observatory

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Introduction

The present assessment follows a request of the National Energy and Utilities Regulatory Commission (hereinafter "NEURC") to the Secretariat to provide a compliance assessment of the draft amendments to the Methodology for determining the available capacity of interstate crossings (interstate electrical networks of Ukraine) (hereafter "the draft amendments to the capacity calculation methodology (CCM)") with the Energy Community *acquis*.

Background

a) Draft amendments to the CCM

The draft amendments to the CCM will amend the Methodology for determining the available capacity of interstate crossings (cross-border capacity at interconnectors), which was approved by resolution of NEURC No 893, dated 23 August 2018. The draft amendments to the CCM intend to establish the methods and parameters the transmission system operator (hereinafter "TSO") of Ukraine, *Ukrenergo*, shall apply when determining the amount of available cross-border capacity at bidding zone borders for the exchange of electricity.

The purpose of the draft amendments to the CCM, according to the justification provided by NEURC, is to standardize the approach and to implement improved mechanisms for calculating the amount of available cross-border capacity at interconnectors, taking also into account the synchronous operation of the Control Block Ukraine/Moldova with the power system of Continental Europe. The proposed changes to the mechanism for the calculation of the available cross-border capacity are based on the combination of two 'methods', one being based on the calculation of technical parameters of the network taking into account operational security limits (most importantly the calculation of net transfer capacity; hereinafter "NTC") , the so-called "method of electrical modes" (already defined by the methodology as of 2018) and the other one being based on the forecast of the energy balance of the system, the so-called "method of energy regimes/modes".

According to clarifications of *Ukrenergo*, provided during a meeting held on 10 March 2023, the draft amendments to the CCM are meant to apply during a limited period of time, until the full transposition of the new electricity integration package adopted by the Ministerial Council in December 2022, as described below.

b) Ukrainian rules governing cross-border capacity calculation

Article 38(11) of the Electricity Market Law specifies that "[*a*]*ll available transmission capacity of cross-border crossings [I.e. - interconnectors] shall be proposed for allocation subject to compliance with the operational safety standards. The transmission system operator shall define the available transmission capacity using the methodology approved by the Regulator upon consultations with the*

Energy Community Secretariat and published on the official website of the transmission system operator." The methodology adopted in 2018 defines how *Ukrenergo* calculates the main technical values and provides details on the specifics of the NTC for each border (including previously existing interconnections with Belarus and the Russian Federation). Prior to its approval, the existing methodology was consulted by NEURC with the Energy Community Secretariat in February 2018 and some of its suggestions were addressed in the adopted version.

According to the Electricity Market Law, the TSO is responsible for ensuring the operational security of the transmission system that shall be considered when calculating cross-border capacity. Thus, according to the Transmission Grid Code (chapter V), the TSO shall define operational security limits for each element of its transmission system. The operational security limits are considered in the currently applicable methodology for calculating cross-border capacity, namely the total transmission capacity (hereinafter "TTC"), NTC and especially the reliability margins (Chapter 3).

The draft amendments to the CCM also foresee (in addition to the already applied method) the calculation of cross-border capacity taking into account the forecasted energy balance of the system, the so-called method of energy regimes. In the justification of the draft amendments to the CCM, NEURC explains that *"a new calculation method, namely the method of energy regimes, is introduced to improve the mechanism for calculating the available capacity of interstate crossings. It allows to fully take into account the balance capabilities of the energy system for the export and/or import of electricity, taking into account the requirements for the safety of the supply of electrical energy and operational safety limits."*

c) Energy Community rules governing cross-border capacity calculation

Article 12 of the Directive 2009/72/EC, as adapted and adopted by the Ministerial Council of the Energy Community, defines the tasks of the TSO including its responsibility for contributing to the security of supply through adequate transmission capacity and system reliability. Further to this, Article 16 of Regulation (EC) 714/2009, as adapted and adopted by the Ministerial Council of the Energy Community, sets general principles for congestion management requiring the TSOs to make available the maximum capacity of the interconnections and/or the transmission networks affecting cross-border flows to market participants, complying with safety standards of secure network operation. The TSOs shall, as far as technically possible, net the capacity requirements of any power flows in opposite direction over the congested interconnection line in order to use that line to its maximum capacity. Having full regard to network security, transactions that relieve the congestion may not be denied. Furthermore, Annex I to the Regulation (EC) 714/2009 establishes additional guidelines and more detailed provisions for the application of capacity allocation procedures in case of congestion (hereinafter "Congestion Management Guidelines"). Directive 2005/89/EC, as adapted and adopted by the Ministerial Council, defines obligations of the Contracting Parties with regard to ensuring security of supply.

The Third Energy Package does not contain detailed rules on calculation of cross-border capacity. Article 15 of Regulation (EC) 714/2009 only includes an obligation for the TSO to publish the safety, operational and planning standards used. "*The information published shall include a general scheme for the calculation of the total transfer capacity and the transmission reliability margin based upon the electrical and physical features of the network. Such schemes shall be subject to the approval of the regulatory authorities*." The Congestion Management Guidelines in section 5.2. stipulate that "*TSOs shall publish* […] *a general scheme for the calculation of the interconnection capacity for the different timeframes, based upon the electrical and physical realities of the network. Such a scheme shall be subject to review by the regulatory authorities of the Contracting Parties concerned."*

Article 4 of Directive 2005/89/EC requires that the Contracting Parties shall ensure that the TSO sets the minimum operational rules and obligations on network security and shall require the TSO to maintain an appropriate level of operational network security defined by the operational network security rules. Article 5 of Directive 2005/89/EC stipulates that the Contracting Parties shall take appropriate measures to maintain a balance between the demand for electricity and the availability of generation capacity.

On 15 December 2022, the Ministerial Council, by Decision 2022/03/MC-EnC, incorporated the European Union's electricity market acquis in the Energy Community complemented by Procedural Act 2022/01/MC-EnC on Regional Energy Market Integration. The deadline for transposition and implementation of those acts by Contracting Parties, including Ukraine, is 31 December 2023. The new electricity package includes Network Codes and Guidelines defining detailed rules related to different market segments and system operation, including those related to coordinated capacity calculation in the so-called capacity calculation regions for the long-term (Regulation (EU) 2016/1719, hereinafter "FCA Guideline") and short-term (Regulation (EU) 2015/1222, hereinafter "CACM Guideline") timeframe. Unlike the Third Energy Package, the new electricity integration package, incorporated in the Energy Community in December 2022, includes detailed rules on cross-border capacity calculation. What is most important and different from the rules in place now, is that the new legislation introduces obligations for coordinated capacity calculation in capacity calculation regions ("CCRs") established in Annex 1 of the CACM Guideline, as adopted and adapted by Ministerial Council Decision 2022/03/MC-EnC.

Regulation (EU) 2019/943 on the internal market for electricity sets general principles for capacity calculation and allocation as well as defining minimum values for cross-zonal capacity to be made available to market participants. It also includes new provision on resource adequacy and the implementation of capacity mechanisms to address related risks. Article 16(3) and Annex I of Regulation (EU) 2019/943 requires that regional coordination centres ("RCC") shall carry out coordinated capacity calculation for the day-ahead and intraday timeframes pursuant to the CACM Guideline. Articles 20 and 21 of the CACM Guideline contain the rules for capacity calculation methodology and Article 22 the rules for common reliability margin methodology. Accordingly, the TSOs of the respective regions are tasked to jointly develop several methodologies during the next years including the coordinated calculation of cross-zonal capacities which will need to replace individual methodologies now used in Ukraine. Finally, Article 10 of Regulation (EU) 2016/1719 contains rules for common capacity calculation methodology for long-term time frames within the respective region.

Furthermore, Regulation (EU) 2019/941 on risk preparedness in the electricity sector stipulates that any limitation of provision of cross-zonal capacity for allocation shall only be initiated in accordance with the beforementioned Regulation. Ensuring complete transposition of the new *acquis* by the end of this year will require further amendments to the primary (and secondary) legislation in Ukraine, as well as subsequent regional methodologies for capacity calculation agreed among relevant TSOs.

Impact of the draft methodology for determining cross-border capacity

The implementation of a methodology determining cross-border capacity is crucial for the further integration of the Ukrainian electricity market with the neighboring electricity markets. The calculation and the obtained results define the exact amount of cross-border capacity available for the capacity allocation (joint and unilateral) on interconnections between Ukraine and the neighboring European Union Member States and Moldova. Therefore, it is essential for ensuring cross-border trade, so as to achieve efficiency gains, efficient economic signals to market participants and TSOs and competitive prices in wholesale and retail electricity markets.

Capacity calculation methodologies should strive to maximize the cross-border capacities available for allocation to market participants under safe network operations, and thereby trading opportunities to increase social welfare across the Parties to the Energy Community. Therefore, the details of such methodologies including parameters and methods used for cross-border capacity calculation are to be carefully assessed considering the network operational security while not unnecessarily restricting possibilities for market participants to exchange electricity.

Compliance assessment

As the draft methodology is evidently not intended to transpose Decision 2022/03/MC-EnC incorporating the Regulation (EU) 2019/943, the CACM and the FCA Guidelines, the compliance of the draft amendments to the CCM is assessed against the obligations stemming from the Third Energy Package, namely Directive 2009/72/EC and Regulation (EC) 714/2009 as well as Directive 2005/89/EC.

The Third Energy Package, currently in force, does not govern the calculation of cross-border capacity in detail. It only requires the TSOs to make available the maximum capacity of the interconnections and/or the transmission networks affecting cross-border flows to market participants, complying with safety standards of secure network operation. The TSOs shall, as far as technically possible, net the capacity requirements of any power flows in opposite direction over the congested interconnection line in order to use that line to its maximum capacity. It also should be highlighted that according to the provisions of Regulation (EC) 714/2009 (as well as according to the provisions of the newly adopted Regulation (EU) 2019/943 and the CACM Guideline), the TSOs have the right to curtail already allocated cross-border capacity due to force majeure or an emergency situation, when the TSO shall act in an expeditious manner and redispatching or countertrading is not possible.[1] In all cases, curtailment shall be undertaken in a coordinated manner following liaison with all directly concerned TSOs. The requirement for publication of the general scheme for the calculation of the interconnection capacity for the different timeframes from Article 15 of Regulation (EC) 714/2009 and Section 5.2. of the Congestion Management Guidelines has been complied with, since the Methodology for determining the cross-border capacity of 2018 has been published by *Ukrenergo*.

The present draft methodology calculates the available cross-border capacity by defining the calculation based on the combination of two 'methods': the method of electrical modes and the method of energy regimes/modes. The first one, already included in the currently applicable methodology is based on the calculation of NTC values, while the second one determines the system's predicted imbalance calculated as the difference between the forecasted generation and consumption in Ukraine (national net position, without exchanges). While the operational security limits are already taken into account in the applied methodology based on the calculation of NTC values, the proposed method of energy regimes is intended to additionally take into account the energy balance of Ukrainian system (generation adequacy) with the expressed objective to improve security of supply. As a result of the combination of the two methods, in certain scenarios, namely when the total NTC values calculated based on the method of electrical modes are higher than the forecasted balance according to the method of energy regimes, the possibilities for cross-border exchanges are limited to the amount of the system's predicted 'imbalance' and to the direction of export or import only depending on whether system imbalance is positive or negative respectively.

[1] Article 16(3) of Regulation (EU) 2019/941 makes a reference to Regulation (EU) 2019/943 as well: "[T]*ransaction curtailment including curtailment of already allocated cross zonal capacity, limitation of provision of cross zonal capacity for capacity allocation or limitation of provision of schedules shall be initiated only in accordance with Article 16(2) of Regulation (EU) 2019/943 as adopted and adapted by Ministerial Council Decision 2022/03/MC-EnC, and the rules adopted to implement that provision*."

In the Secretariat's opinion, the newly added method of energy regimes does not improve the existing mechanism for calculating the amount of available capacity in relation to security of supply and is not compliant with the obligation of the TSO stemming from the Energy Community *acquis* in force. These concerns are serious, and not justifiable by the extraordinary situation faced by the Ukrainian energy system under attack, as there are effective alternative options available to address the risks entailed.

The method of energy regimes potentially undermines the maximization of cross-border capacity which the TSO is obliged to make available for exchange of energy (import/export/transit), complying with safety standards of secure network operation as required by Article 16 of Regulation (EU) 714/2009. While the operational security limits are already taken into account in the applied methodology based on the calculation of NTC values, the method of energy regimes is additionally taking into account the energy balance of the Ukrainian system (generation adequacy) and will, in certain scenarios, lead to the reduction of available cross-border capacity below the calculated NTC values according to the method of electrical modes which the TSO is obliged to offer. By addressing the availability of generation capacity through the calculation of available cross-border capacity, the TSO goes beyond its responsibility to contribute to the security of supply through adequate transmission capacity and system reliability as required by Article 12 of Directive 2009/72/EC and to ensure operational network security, an obligation stipulated in Article 4 of Directive 2005/89/EC. The need to maintain the energy balance (generation adequacy) shall be addressed by Contracting Parties by adopting measures in line with Article 5 of Directive 2005/89/EC[2], and not by means of limiting available cross-border capacity. Given that the maximization of cross-border capacities is aimed at ensuring security of supply, reduction of cross-border capacities may decrease security of supply, in particular in the situation of negative energy balance and especially if the real imbalance is larger than predicted.

Cross-border exchanges should not only be used to cover the exact deficit or surplus of the national production, but the objective of the internal energy market is to maximize trading opportunities to create competition and make use of the most cost-efficient offers to finally increase social welfare for end consumers in the Parties of the Energy Community. By introducing the draft amendments to the CCM, the final output of available capacity might be quite low compared to the actual capabilities of critical network elements to accommodate cross-border flows without jeopardizing operational security. This is even more critical for the long-term timeframe for which the chosen methodology and assessment of system imbalance might easily lead to zero capacity available. In this manner, the draft methodology encroaches upon Article 16 of the Regulation (EC) 714/2009. By prioritizing national generation over import of electricity and potentially by banning national generation to export electricity, the draft methodology may also represent a barrier to trade between the Parties contrary to Article 41 of the Energy Community Treaty.

Furthermore, the methodology does not allow for capacity in both directions to be available at the same time and disregards the possibilities of netting flows in opposite directions as required by Article 16 of the Regulation (EC) 714/2009.

In addition, the electricity market in Ukraine is constrained by price caps set by the NEURC for all organized market segments (day-ahead, intraday and balancing market) that are much lower than the electricity market prices in neighbouring EU Member States. Therefore, it is in the economic interest of producers and other market participants to export electricity at higher prices instead of selling it on the national market. Given that the export ban previously imposed has been terminated,

[2] Article 5(1) in particular names *(a) without prejudice to the particular requirements of small isolated systems, encourage the establishment of a wholesale market framework that provides suitable price signals for generation and consumption; (b) require transmission system operators to ensure that an appropriate level of generation reserve capacity is available for balancing purposes and/or to adopt equivalent market based measures* while Article 5(2) lists optional additional measures.

market participants would supposedly start exporting electricity, thus, in case of limited generation, the security of supply and consequently electricity supply for customers in Ukraine may indeed be endangered. Nevertheless, as already highlighted above, this is not an issue to be addressed in the capacity calculation methodology but an issue of adequacy and security of supply which is to be addressed primarily through a reform of the electricity market to remove price caps and other barriers to the proper functioning of electricity markets. Additionally, in case of resource adequacy risks and as a transitional measure, a capacity mechanism could be applied in accordance with Article 20 et seq. of the newly adopted Regulation (EU) 2019/943. With regards to security of supply, Regulation (EU) 2019/941 on the risk-preparedness in the electricity sector outlines principles for managing electricity crises including provisions on short-term adequacy assessments and the respective definition of methodologies. Until these new provisions of the new electricity integration package are applied, the Ministry of Energy has the power to take measures to ensure the security of electricity supply if at risk, generally based on the principles as laid down in Directive 2005/89/EC and, if applicable, during the period of martial law. Thus, in case reasonably justified, measures limiting cross-border capacity for export and import considering the internal generation resources can be adopted by the Ministry of Energy. Bearing in mind that such restrictions are likely to amount also to barriers to trade falling within the scope of Article 41 of the Energy Community Treaty, they should be justified, proportional and time-limited.

Conclusions and recommendations

Assessment 4/2023 of the Secretariat[3] addressed the draft amendments to the Law on the Electricity Market proposed by NEURC concerning capacity allocations (existing unilateral and planned joint) on interconnectors between Ukraine and the neighboring Parties to the Energy Community, namely the European Union Member States and Moldova. Both assessments are interlinked and should be read and considered jointly.

In relation to the draft amendments to the CCM, based on the assessment above and as further elaborated in the table below, the Secretariat recommends the following:

- The final methodology should be fully aligned with the Law on the Electricity Market with regards to the terminology used as well as the provisions related to capacity allocation as assessed by the Secretariat in Assessment 4/2023.
- As regards the newly added method of energy regimes, the Secretariat understands that export/import limits might be applied as separate temporary measures under martial law to ensure security of supply at all times. But such restrictions should not be included in the capacity calculation methodology as they are detrimental to the further market integration of Ukraine. Therefore, the Secretariat strongly recommends excluding adequacy assessments from the capacity calculation methodology, in particular the deletion of the newly added energy regime method. If need be, the Ministry of Energy could adopt a well-justified and proportional measure ensuring security of supply separate to the methodology, as outlined above.
- as regards the already existing capacity calculation method of electrical modes:
  - In accordance with Regulation (EC) 714/2009, there should be rules governing the allocation of cross-zonal capacity both in the long-term and short-term timeframe (day-ahead and intraday) and consequently also the methodology for the calculation of available cross-border capacity needs to be defined for these timeframes.

[3] https://www.energy-community.org/dam/jcr:f004fe99-eea7-429e-9b41-ffa4a070689c/Note04.pdf

Furthermore, the exact timing of the calculation for the different timeframes should be defined within the methodology.

- The calculation should be aligned with EU best practice and should be harmonized for all borders to the extent possible (i.e. the same methodology applies for all borders, including for the new (planned) interconnector with Poland), without introducing additional elements (such as the value C for the border with Moldova). It should be clarified that these values are calculated for each bidding zone border, for each direction and each market time unit.
- The TTC and NTC calculation seem to be based on non-transparent parameters and methodologies (coefficients, operational instructions or conditions/agreements between TSOs). As the available capacity at borders is an essential element for the market and market participants, its calculation and all parameters used shall be clearly defined and transparent.
- The capacity calculation methodology should take into account netting of flows and allow for capacity to be made available in both directions, not restricting any market transactions not jeopardizing operational security limits regarding to its direction (in or out of the power system).
- The methodology should take account of the different timeframes specificities and input data required (which are different for long-term and short-term and especially different in their certainty/predictability).

- The Secretariat recommends focusing on the timely transposition and implementation of the newly adopted electricity integration package by 31 December 2023, which includes several provisions and principles on the calculation of cross-border capacities such as enhanced coordination via regionally developed methodologies or minimum amounts to be made available by TSOs, which will require substantial changes to the currently applicable as well as the draft amendments to the methodology. Furthermore, the new package governs measures to address resource adequacy with the transitional implementation of capacity mechanisms while the Regulation on Risk Preparedness complements by providing principles for managing crisis in the electricity sector which will need to be transposed by the end of this year as well.
- As determining cross-border capacity is the basis for both - unilateral and the joint – allocation of capacity at the bidding zone borders of Ukraine and the neighboring EU Member States and Contracting Parties, and an obligation stemming from the Third Energy Package, the Secretariat also recommends setting deadlines for the TSOs to implement and apply such methodology.

Artur Lorkowski Dirk Buschle

Annex

Detailed assessment of the draft methodology

Draft Methodology for determining the cross-border capacity – **version provided by the NEURC on 02.03.2023**

Justification

the expediency of making changes to the current edition of the Methodology for determining the available capacity of interstate crossings (interstate electrical networks of Ukraine), which was approved by the resolution of the NEURC dated August 23, 2018 No. 893.[4]

The purpose of making changes to the current version of the Methodology is the need to standardize approaches and implement improved mechanisms for calculating the amount of available capacity of interstate crossings (interstate electrical grids of Ukraine) by the transmission system operator of Ukraine for export and/or import of electricity by market participants.

A new calculation method, namely the method of energy regimes, is introduced to improve the mechanism for calculating the available capacity of interstate crossings. It allows to fully take into account the balance capabilities of the energy system for the export and/or import of electricity, taking into account the requirements for the security of supply of electricity and operational safety limits.

In the opinion of NPC "Ukrenergo", it is advisable to combine the current methods of calculations into one section "Calculation methods of electrical modes" with clarification of the formulas developed by the TSO in the process of calculations.

Taking into account the synchronous operation of the Control block "Ukraine-Moldova" with the power system of Continental Europe (ENTSO-E), it is proposed to remove from the current Methodology the calculations of the value of NTC of interstate connections with the power systems of the Russian Federation and the Republic of Belarus.

In addition, for the transparency of calculations of the amount of available cross-border capacity (interstate electrical networks of Ukraine), we propose to introduce a new section "Determining the amount of available cross-border capacity of interstate intersections of the TSO". In which

[4] https://www.nerc.gov.ua/acts/pro-zatverdzhennya-metodiki-viznachennya-dostupnoi-propusknoi-spromozhnosti-mizhderzhavnikh-peretiniv-mizhderzhavnikh-elektrichnikh-merezh-ukraini?id=34002

the mechanism (comparison of two methods) of determining the final value of the available capacity of interstate crossings for different planning periods is clearly prescribed.

Table of changes and additions to the Methodology for determining the available capacity of interstate crossings (interstate electrical networks of Ukraine), which was approved by the resolution of the National Commission for State Regulation in the Energy and Utilities Sectors dated August 23, 2018 No. 893

No. z/p	The current edition of the Methodology for determining the available capacity of interstate crossings (interstate electrical networks of Ukraine)	Suggested changes and additions to the draft Methodology	Justification of the expediency of changes	Energy Community Secretariat's comments and recommendations
	1. General provisions			
1.	1.1. This Methodology was developed for the purpose of determining the amount of available capacity of interstate crossings (interstate electrical networks of Ukraine).	1.1. This Methodology was developed for the purpose of determining the amount of available capacity of interstate crossings (interstate electrical networks of Ukraine).	Remain in the current version	
2.	1.2. This Methodology establishes the procedure for calculating the amount of available capacity of interstate crossings (interstate electrical grids of Ukraine) by the transmission system operator of Ukraine for the purpose of export and/or import of electric energy by market participants (hereinafter referred to as trade operations).	1.2. This Methodology establishes the procedure for calculating the amount of available capacity of interstate crossings (interstate electrical networks of Ukraine) by the transmission system operator of Ukraine for the purpose of export and/or import of electric energy by market participants (hereinafter referred to as trade operations).	Remain in the current version	As for the Assessment 4/2023 on the amendments to the Law with regards to the allocation of cross-border capacity, the Secretariat wants to point out that all used terms within the Law and within different subsequent methodologies or rules incl. the draft methodology for calculating cross-border capacities should be aligned and consistently used. Especially, the newly adopted Energy Community legal framework does not refer to export/import but rather to 'exchange' and uses the term 'bidding zone border' (instead of 'interstate crossing'). It is to be noted that in addition to export and import, transit should also be allowed despite the fact that it is not happening for the time being.

No. z/p	The current edition of the Methodology for determining the available capacity of interstate crossings (interstate electrical networks of Ukraine)	Suggested changes and additions to the draft Methodology	Justification of the expediency of changes	Energy Community Secretariat's comments and recommendations
3.	1.3. This Methodology takes into account the generally accepted provisions applied in the united power system of the European Transmission System Operators of the ENTSO-E, aimed at the implementation/implementation of Ukraine's obligations within the framework of the Energy Community, in particular Directive 2009/72/EU of the European Parliament and of the Council of July 13, 2009 on common rules of the internal electricity market and on the repeal of Directive 2003/54/EC and Regulation (EC) No. 714/2009 of the European Parliament and of the Council of July 13, 2009 on network access conditions for cross-border exchange of electricity and repeal of Regulation (EC) No. 1228 /2003.	1.3. The methodology takes into account the generally accepted provisions applied in the united power system of the European Transmission System Operators of the ENTSO-E, aimed at the implementation/introduction of Ukraine's obligations within the framework of the Energy Community. ~~in particular, Directive 2009/72/EC of the European Parliament and of the Council of July 13, 2009 on common rules of the internal electricity market and repealing Directive 2003/54/EC and Regulation (EC) No. 714/2009 of the European Parliament and of the Council of July 13, 2009 on network access conditions for cross-border electricity exchange and repeal of Regulation (EC) No. 1228/2003.~~	Editing of item. Directive 2009/72/EC is currently not in force, we propose to define in general terms that this technique must comply with ENTSO-E standards. For reference: https://eur-lex.europa.eu/legal-content/en/ALL/?uri=celex%3A32009L0072	Directive 2009/72/EC still applies until 31 December 2023. It is not clear to which 'generally accepted provisions' the paragraph refers to, please clarify and refer to the concrete ENTSO-E/EU rules and the technical rules governing UA power system operation and operational security limits, e.g. Grid Code if relevant. Beside this, in the Secretariat's opinion, the proposed methodology based on the energy balance is not defined according to EU best practice. The Secretariat wants to highlight that under the EU legal framework (which also needs to be transposed by Contracting Parties by the end of 2023), it is not ENTSO-E defining capacity calculation methodologies or any parameters thereof/used but these are regionally proposed and approved methodologies under the different Guidelines such as Regulation (EU) 2016/1719 ('FCA Guideline) for the long-term and Regulation (EU) 2015/1222 (CACM Guideline') for the short-term timeframe (day-ahead and intraday).
4.	1.4. In this Methodology, the terms are used in the following meanings: general network model - a set of data, agreed between operators of	1.4. In this Methodology, the terms are used in the following meanings: general network model - a set of data, agreed between transmission	Editing an item.	If the 'general network model' is the common grid model used at European level as defined by the respective Guidelines, it should be correctly referred to as the European common grid model

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	the transmission system (hereinafter - TSO), which describes the main characteristics of the power system (generation, load, topology and network parameters) and the rules for their change in the process of calculating throughput; critical network elements - network elements that limit the amount of power flow when calculating the cross-border capacity; system operators of adjacent electrical systems - system operators and/or TSOs of a neighboring state, which carry out operational and technological management of adjacent energy systems of other states;	system operators (hereinafter - TSO), which describes the main characteristics of the power system (generation, load, topology and network parameters) and the rules for their change in the process of calculating throughput; critical network elements - network elements that limit the amount of power flow when calculating the cross-border capacity; system operators of adjacent electrical systems - system operators and/or TSOs of a neighboring state, which carry out operational and technological management of adjacent energy systems of other states; **the forecast energy balance of the unified energy system of Ukraine is a constituent element of the system of forecasting and planning the development of the unified energy system of Ukraine for the short, medium and long term, carried out by the transmission system operator to ensure the requirements of the Rules of security of electricity supply, approved by the order of**	We propose to amend the Methodology the definition of the term **"forecast power balance of the unified energy system of Ukraine"** , which is used in the new chapter 3.	defined by pan-EU methodology in accordance with Art. 18 of the FCA Guideline and Art. 17 of CACM Guideline (which shall be applied by TSOs of Contracting Parties by the end of 2023 according to Art. 4 and Art. 9 of the respective Guideline). Furthermore, there are separate methodologies for the generation and load data provision which should also be clearly referenced if meant here (Art. 17 FCA Guidelines and Art. 16 CACM Guideline). The Electricity Regulation (EU) 2019/943 defines critical network element' as *network element either within a bidding zone or between bidding zones taken into account in the capacity calculation process, limiting the amount of power that can be exchanged*. If the objective is to use common EU practice (such as mentioned above), the same definitions should be applied. Even more important is that the methodology lacks the technical definition and selection of critical network elements which should be the elements taken into account when calculating the capacity available for cross-zonal exchanges. Normally, it is defined by

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	AAC (Already Allocated Capacity) - allocated capacity based on the results of auctions, MW; ATC (Available Transfer Capability) - the available transfer capacity of the interstate crossing after deducting the amount of transfer capacity distributed at auctions and the transfer capacity for which an exemption has been granted in accordance with the law, MW; NTC (Net Transfer Capacity - available transfer capacity capacity) - the value of the maximum power of electrical energy that can be transferred from the energy system of one state to the energy system of another state in the appropriate direction (interstate crossing) under the condition of ensuring the safety and reliability of the operation of the unified energy system of Ukraine, MW; TRM (Transmission Reliability Margin) is a transmission system reliability margin that takes into account uncertainties in TTC	**the Ministry of Energy and Coal from August 27, 2018 No. 448, registered with the Ministry of Justice of Ukraine on September 19, 2018 under No. 1076/32528;** AAC (Already Allocated Capacity) - allocated capacity based on the results of auctions, MW; ATC (Available Transfer Capability – free transfer capacity) – the available transfer capacity of the interstate crossing after deducting the amount of transfer capacity distributed at auctions and the transfer capacity for which an exemption has been granted in accordance with the law, MW; NTC (Net Transfer Capacity - available transfer capacity) - the value of the maximum power of electric energy that can be transferred from the energy system of one state to the energy system of another state in the appropriate direction (interstate crossing) under the condition of ensuring the safety and reliability of the operation of the unified energy system systems of Ukraine, MW;		identifying the network elements' sensitivity to cross-zonal exchanges.[5] Each definition should have exactly one meaning/term used (e.g. not both free and available capacity). AAC should clearly reference to all previous timeframes/auction (by adding 'in previous timeframes'). ATC is called 'available transfer capacity' (which is commonly used) but then defined as 'available transfer capacity after deducting […]' which seems inconsistent. According to EU practice, ATC is normally defined as NTC minus AAC calculated for each of the timeframes. Furthermore, 'capacity distributed at auctions' seems to refer to AAC as defined above, which should be clarified, and the correct term used. With regards to exemption, the methodology should clearly reference the respective provision of the Electricity Market Law. NTC is normally defined as TTC minus TRM and means the maximum exchange possible between two bidding zones

[5] The sensitivity can be determined by assessing the network elements 'power transfer distribution factors' (PTDFs). This is a factor representing the impact of 1 MW variation of the net position of the corresponding bidding zone on the critical network element.

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	calculations arising from deviations in power flows, emergency exchanges of electrical energy between energy systems to eliminate unintended imbalances in real time, as well as data inaccuracies that used, MW; TTC (Total Transfer Capacity) - the maximum amount of active power that can be transferred in the corresponding direction of the interstate crossing without violating operational safety requirements for each TSO, MW. Other terms are used in the meanings given in the Law of Ukraine "On the Electricity Market", the rules for managing restrictions and the procedure for distributing the capacity of interstate crossings, and the Transmission System Code, approved by the Resolution of the NEURC dated March 14, 2018 No. 309 .	TRM (Transmission Reliability Margin) is a transmission system reliability margin that takes into account uncertainties in TTC calculations arising from deviations in power flows, emergency exchanges of electrical energy between energy systems to eliminate unintended imbalances in real time, as well as data inaccuracies that used, MW; TTC (Total Transfer Capacity) - the maximum amount of active power that can be transferred in the corresponding direction of the interstate crossing without violating operational safety requirements for each TSO, MW. Other terms **and definitions** are used in the meanings given in **the Laws** of Ukraine "On the Electricity Market", **"On Alternative Energy Sources"**, the rules for managing constraints and the procedure for allocation the transfer capacity of interstate crossings **(with amendments)** , **the Market Rules approved by the resolution of the NEURC dated March 14, 2018 No. 307 (with amendments)**	Editing and clarification.	compatible with security standards in both areas. As stated above, TTC minus TRM is normally defined as NTC which means that TTC should be the maximum exchange possible between two bidding zones compatible with security standards in both areas and NTC the part also considering the reliability margin. For now, the definitions of NTC and TTC sound very similar. The Ukrainian legislation provides for the calculation of several types of energy 'balances' (specified in the Transmission Grid Code, Order of the Ministry of energy of 26.10.2018 No 539). It needs to be clearly specified in the definition which of the balances is used in this methodology. Furthermore, the list of related and used documents has to be clarified and shall properly include the entire set (agreements with TSOs, orders under which the forecast balance is formed, etc.)

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		(hereinafter - Market Rules), and the Transmission System Code, approved by resolution of NEURC dated March 14, 2018 No. 309 **(with changes) (hereinafter referred to as the Transmission System Code).**		
5.	1.5. The value of NTC is used as an indicative indicator for conducting trade operations with electric energy between market participants and is applied for each direction of interstate crossing. The value of NTC is determined by the formula NTC = TTC - T_0 RM.	The proposal to remove the item from section 1	Moved to the new chapter 4 "Methods for calculating electrical modes"	
6.	1.6. Features of NTC calculations of interstate connections with the energy systems of Russia, Belarus, Moldova, Poland, Hungary, Slovakia and Romania. 1.6.1. Calculation of transmission capacity between the power systems of Ukraine and Russia. The value of NTC for the actual state of the interstate crossing network is determined by the Instruction on the modes of parallel operation of the UES Center from the UES of Ukraine, which is agreed upon by the two UES. The NTC value is determined for	The proposal to remove the item from section 1	Moved to new section 4	

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	power flow in opposite directions, taking into account the N-1 criterion, seasonal changes in ambient temperature, allowable levels of current, voltage, static stability and transmission reliability margin. 1.6.2. Calculation of transmission capacity between the energy systems of Ukraine and Belarus. The value of NTC for the actual state of the interstate crossing network is determined by the Instruction on the modes of parallel operation of the UES of Belarus with the UES of Ukraine, which is agreed upon by the two UES. 1.6.3. Calculation of transmission capacity between the energy systems of Ukraine and Moldova. The value of NTC for the actual state of the interstate crossing network is determined by the formula $NTC = NTC_{Ukr\text{-}Od,\ Md} - C$, Where $NTC_{Ukr\text{-}Od,\ Md}$ - is defined by the Instruction OD-10 of SE "NEC "Ukrenergo" on connections of UES of Ukraine - Odesa, Moldova, which is agreed by two TSOs; C is the amount of consumption of			

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	the part of the UES of Ukraine fed through the energy system of Moldova, in the range from 650 to 1000 MW, which depends on the period of the year and the hour of the day. 1.6.4. Calculation of transmission capacity between the energy systems of Ukraine and Poland. Transmission of electrical energy occurs only from the power system of Ukraine to the power system of Poland by allocation of generating units of the Dobrotvir TPP to one interstate connection. Under such a scheme of work, the guaranteed bandwidth is not ensured. 1.6.5. Calculation of transmission capacity between the energy system of Ukraine and the energy systems of Hungary, Slovakia and Romania. A part of the energy system of Ukraine, the so-called "Island of Burshtyn TPP", operates in parallel with the mentioned energy systems. The maximum agreed value of the algebraic sum of electricity flows from the Burshtyn TPP island is limited by the conditions of dynamic stability of the generating units of the Burshtyn TPP and is determined by			

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	the Agreement on the organization of parallel work with the ENTSO-E countries.			
7.	1.7. The amount of free bandwidth is determined by the formula ATC=NTC - AAC.	The proposal to remove the item from section 1	Moved to new section 4	
2. The principle of determining the amount of available transfer capacity of interstate electrical networks of the UES of Ukraine				
8.	2.1. Determination of the amount of available capacity of interstate crossings in the corresponding direction of the international crossing is carried out in order to assess the technical possibility of market participants carrying out trade operations with electric energy, taking into account the annual and monthly maintenance plans (repair work) of the energy equipment of the UES of Ukraine and the energy system of neighboring countries.	2.1. Determination of the amount of available capacity of interstate crossings in the corresponding direction of the international crossing is carried out in order to assess the technical possibility of market participants carrying out trade operations with electric energy, taking into account the annual and monthly maintenance plans (repair work) of the energy equipment of the UES of Ukraine and the energy system of neighboring countries.	Leave in the current version	The methodology should ensure that for all timeframes the latest available information shall be used.
9.	The item is missing	**2.2. To determine the amount of available capacity of transfer capacity, TSO uses methods of calculating energy and electrical regimes.**	New and improved mechanisms for calculating the amount of available capacity of interstate crossings (interstate electrical networks of Ukraine) have been introduced by the operator of the transmission system of Ukraine for the purpose of	In the Secretariat's opinion, the newly added method of energy regimes does not improve the existing mechanism for calculating the amount of available cross-border capacity and is not compliant with the obligation of the TSO stemming from the Energy Community acquis in force. The method of energy regimes potentially undermines the maximization of cross-border capacity which the TSO is obliged

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			export and/or import of electricity by market participants, taking into account the requirements of security of supply of electrical energy and operational security .	to make available for exchange of energy (import/export/transit), complying with safety standards of secure network operation as required by Article 16 of Regulation (EU) 714/2009. While the operational security limits are already taken into account in the applied methodology based on the calculation of NTC values, the method of energy regimes is additionally taking into account the energy balance of the Ukrainian system (generation adequacy) and will, for certain regimes, lead to the reduction of available cross-border capacity below the calculated NTC values according to the method of electrical modes which the TSO is obliged to offer. By addressing the availability of generation capacity through the calculation of available cross-border capacity the TSO goes beyond its responsibility to contribute to the security of supply through adequate transmission capacity and system reliability as required by Article 12 of Directive 2009/72/EC and to ensure operational network security, an obligation stipulated in Article 4 of Directive 2005/89/EC. On the other hand, a need to maintain the energy balance (generation adequacy) shall be addressed by the Contracting Parties by adopting measures in line with Article 5 of Directive 2005/89/EC, not by means of limiting available cross-border

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				capacity. Given that the maximization of cross-border capacities is aimed at ensuring security of supply, reduction of cross-border capacities may decrease security of supply, in particular in the situation of negative energy balance and especially if the real imbalance is larger than predicted. Furthermore, the usage of the energy regime method is not in line with the EU best practices for capacity calculation. Consequently, the method of energy regime shall be deleted from the draft methodology as being non-compliant with the applicable Energy Community *acquis*. If availability of generation capacity (adequacy) is to be addressed, it shall be done in line with the *acquis* as outlined in the recommendations of this assessment.
10.	The item is missing	**2.3. Calculations using the method of energy regimes are carried out by drawing up the forecast energy balance of UES of Ukraine.**	The addition of a new calculation method is implemented to improve the determination of the available capacity of interstate crossings.	To delete from the draft methodology
11.	2.2. The calculation of TTC, TRM, NTC, AAC and ATC values of interstate crossings is carried out by using input data agreed with the system operators of neighboring states regarding:	2.4. **Calculations using the method of electrical modes are carried out by determining** the values of TTC, TRM, NTC, AAC and ATC of interstate crossings and using input data agreed with the	Editing and clarification of the item according to the introduced "Method of calculations of electrical modes"	A reference to the specific paragraphs is missing. As above, if 'general network model' refers to the common grid model, this needs to be clarified.

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	current general network model; list of critical network elements; the list of agreed emergency situations; planned equipment repairs; limit values of load currents for equipment, voltage levels, frequency, limits of dynamic and static stability.	system operators of neighboring states regarding: current general network model; list of critical network elements; the list of agreed emergency situations; planned equipment repairs; limit values of load currents for equipment, voltage levels, frequency, limits of dynamic and static stability.	Due to the fact that new clauses 2.2-2.3 have been added, clauses 2.2 should be considered clause 2.4, respectively.	The agreement on input data is not fully clear: it needs to be clarified how this is done and especially also the frequency of such interactions has to be defined.
12.	2.3. The values of TTC, TRM, NTC, ATC and AAC characterize the operation of the corresponding direction of the interstate crossing in the corresponding period. These values should be compared and clarified with the values obtained by the relevant system operators of neighboring states. The operator of the transmission system calculates the values of TTC, TRM, NTC, AAC and ATC separately for each direction of the interstate crossing from/to the UES of Ukraine.	2.5. The values of TTC, TRM, NTC, ATC and AAC characterize the operation of the corresponding direction of the interstate crossing in the corresponding period. These values should be compared and clarified with the values obtained by the relevant system operators of neighboring states. The operator of the transmission system calculates the values of TTC, TRM, NTC, AAC and ATC separately for each direction of the interstate crossing from/to the UES of Ukraine.	Due to the fact that new clauses 2.2-2.3 have been added, clauses 2.3 should be considered clause 2.5, respectively.	
13.	2.4. The value of the NTC is agreed with the relevant system operators of the neighboring states. In the event of discrepancies between the NTC values calculated by the TSO and the corresponding system	2.6. The value of the NTC is agreed with the relevant system operators of the neighboring states. In the event of discrepancies between the NTC values calculated by the TSO and the corresponding system	Due to the fact that new clauses 2.2-2.3 have been added, clauses 2.4 should be considered clause 2.6, respectively.	

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	operators of neighboring states, the smaller value is accepted for use.	operators of neighboring states, the smaller value is accepted for use.		
14.	**Chapter 3 "Methods of TTS calculation"** 3.1. The calculation of TTS is carried out by using the input data specified in subsection 2.2 of chapter 2 of this Methodology. 3.2. Before starting the process of calculating the maximum bandwidth, the TSO must update the data specified in subsection 2.2 of chapter 2 of this Methodology with the system operators of neighboring states. 3.3. The limit capacity in the interstate crossing is determined by iterative weighting of the base mode (the mode of the updated general network model) - increasing the flow of electric energy by increasing the level of electric energy generation in the energy system for the export of electric energy and, accordingly, reducing the level of electric energy generation in the energy system for import until reaching the maximum stability regimes (including taking into account criterion N-1). 3.4. Monitoring of the operating mode of the UES of Ukraine is	-	We propose to combine the methods of calculating electrical modes into one chapter of the Methodology. Moved to new section 4 consider clauses 3.1-3.5 as clauses 4.3 (sub-para 4.3.1-4.3.4)	

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	carried out by the following methods: 1) by method A, according to which the change in electric energy generation occurs in proportion to the generating capacity of generating units of UES of Ukraine and adjacent energy systems in the base mode. The calculation continues until the boundary of the stability region is violated. This method shows the theoretical maximum value of the TTC value, as it does not contain any restrictions on the generation of generating units that are engaged in the basic mode, and the amount of electric energy generation can significantly exceed the permissible limits: $P_{it+1}^{dec} = P_{it}^{dec} - ДЕ \times \frac{P_{it}^{dec}}{\sum_{in} P_{it}^{dec}}$; $P_{jt+1}^{inc} = P_{jt}^{inc} - ДЕ \times \frac{P_{jt}^{inc}}{\sum_{im} P_{jt}^{inc}}$, Where - t – weighting iteration number; - n – the number of generating units of the energy system for import; - m – the number of generating units of the energy system for			

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	export; - ΔE _- amount of generation increase/decrease, MW; - P_{it}^{dec} - generation of the i-th generating unit of the energy system for import at iteration t of weighting, MW; - P_{jt}^{inc} - generation of the j-th generating unit of the energy system for export at iteration t of weighting, MW; 2) by method B, which takes into account the real possibilities of electricity generation in accordance with the reserves of active power of generating units of UES of Ukraine and adjacent energy systems for unloading and loading. The change in electric power generation occurs in proportion to the active power reserves of the generating units: $P_{jt+1}^{inc} = P_{jt}^{inc} - ДЕ \times \frac{P_{jmax}^{inc} - P_{jt}^{inc}}{\sum_{m}(P_{jmax}^{inc} - P_{jt}^{inc})}$; $P_{it+1}^{dec} = P_{it}^{dec} - ДЕ \times \frac{P_{imin}^{dec} - P_{it}^{dec}}{\sum_{n}(P_{imin}^{dec} - P_{it}^{dec})}$, Where			

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	- P^{inc}_{jmax} - the maximum possible generation of the j^{th} generating unit of the energy system for export, MW; - P^{dec}_{imin} - the minimum possible generation of the i^{th} generating unit of the energy system for import, MW. Weighing iterations are carried out until operational safety limits are violated or $ДЕ \le \left\| \sum_{m} \left(P^{inc}_{jmax} - P^{inc}_{jt} \right) \right\|$; $ДЕ \le \left\| \sum_{n} \left(P^{dec}_{imin} - P^{dec}_{it} \right) \right\|$; 3) by method C, which takes into account the real possibilities of electric energy generation similarly to method B, and also uses the list of generating units of the UES of Ukraine and adjacent energy systems that participate in changing the level of electric energy generation and sets the priority of their loading/unloading to increase/decrease volumes generation of electrical energy. For this, the operator of the transmission system uses additional information			

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	about the basic mode and about the order of change and the permissible level of electric energy generation of the generating units. 3.5. Method B and method C are used to calculate the amount of TTC. In the case of justified impossibility of using method B or method C to calculate the amount of TTC, method A is used.			
15.	There is no section	**Chapter 3. Methods of calculating energy regimes**	New Chapter. Implementation of a new additional method of determining the available capacity of interstate crossings allows to fully take into account the balance capabilities of the energy system for the export and/or import of electricity, taking into account the requirements for the safety of the supply of electrical energy and operational safety limits.	To delete this chapter from the draft methodology
16.	The item is missing	3.1. When determining the available capacity of interstate crossings using the method of calculating energy regimes, TSO develops a forecast energy balance of the unified energy system of Ukraine (hereinafter - forecast energy		

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		balance) for the planned period taking into account the requirements of operational safety. The formation of the energy balance is carried out on the principles of transparency and non-discrimination, taking into account the requirements of the Law of Ukraine "On the Electricity Market", the Transmission System Code and the Market Rules.		
17.	The item is missing	3.2. The forecast energy balance consists of the following indicators: 3.2.1. The estimated volume of electricity consumption, which determines the TSO in accordance with the requirements of Chapter 4.4 of Section IV of the Market Rules. 3.2.2. The forecast volume of load calculated by TSO as an algebraic sum of the forecast volume of electricity producers' load for the i-th planning period is determined by the formula: $\sum_{1}^{n} P = \mathrm{P}_{\mathrm{NPP}i} + \mathrm{P}_{\mathrm{block-stations}.i} + \mathrm{P}_{\mathrm{RES}i} + +\mathrm{P}_{\mathrm{HydroPump}i} + \mathrm{P}_{\mathrm{HPP}i} + \mathrm{P}_{\mathrm{TPP}i} + \mathrm{P}_{\mathrm{CHPblock}i} + \mathrm{P}_{\mathrm{storage}i}$ and takes into account the following:		

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		1) The forecast volume of nuclear power plants (hereinafter – NPP) is planned in the base mode, taking into account operational dispatch applications, approved and submitted for consideration, plans-schedules for decommissioning NPP generating equipment; data transferred in accordance with the provisions of chapter 5 of section VI of the Transmission System Code. NPP participation in daily regulation, namely capacity change (unloading and loading) during one day**, is not allowed**, unless otherwise notified by the State Enterprise "NAEGC "Energoatom". In the absence of the above-mentioned data - according to the information available for the TSO. 2) The forecast total volume of load of stations that are part of the consumer and non-block-type power plants is planned in the basic mode, taking into account the actually achieved level of load in similar periods. 3) The TSO determines the forecast volume of the load of producers producing electric energy using alternative sources (hereinafter RES) on the basis of data provided by the relevant producers in		

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		accordance with the provisions of Chapter 5, Section VI of the Transmission System Code. In the absence of the above-mentioned data, the TSO uses an operational forecast for solar (hereinafter - SPP) and wind (hereinafter - WPP) electric plants, developed in accordance with the requirements of Chapter 4.5 of Section IV of the Market Rules. 4) The forecast load volume of hydro pump power plants (hereinafter referred to as HydroPump) is determined by TSO on the basis of data provided by the relevant producers in accordance with the provisions of Chapter 5 of Section VI of the Transmission System Code. TSO, taking into account the needs of the power system and/or operating modes of the Hydro Pumped Storage Stations in the previous and the current day, optimizes and redistributes the load of the Hydro Pumped Storage Stations, taking into account the active, allowed and submitted for consideration operational dispatch bids of producers on the date of the calculation. In the absence of the specified data, the TSO plans balanced operation of the Hydro		

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		Pumped Storage Stations with the same number of hours of operation in generating and pump modes. 5) The TSO determines the load forecast of energy storage facilities (hereinafter referred to as Storage) on the basis of data provided by the relevant producers in accordance with the provisions of Chapter 5 of Section VI of the Transmission System Code. The TSO, taking into account the needs of the power system and/or the operation modes of the UES in the past and current day, optimizes and redistributes, if necessary, the load of the UES and takes into account the active, permitted and submitted for consideration operational dispatch requests of producers on the date of the calculation. 6) The estimated load volume of hydraulic power plants (hereinafter - HPP) is determined by the TSO on the basis of the data provided by the respective producers in accordance with the provisions of Chapter 5, Section VI of the Transmission System Code and other data provided by these manufacturers in accordance with the current requirements of the Transmission System Code. TSO, taking into		

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		account the needs of the power system, has the right to redistribute the load of the hydroelectric power plant for the planning period in compliance with the planned volume of production and takes into account the active, permitted and submitted for consideration operational dispatch bids of producers on the date of the calculation. In the absence of the specified data, the TSO uses the actually achieved volumes of generation in the days preceding the forecast for short-term planning and statistical data for similar periods of the last three years for long-term planning. 7) The estimated load volume of thermal power plants (hereinafter - TPP) and block thermal power plants (hereinafter - TPP) is determined by TSO on the basis of data provided by the relevant producers in accordance with the provisions of Chapter 5, Section VI of the Transmission System Code. In the absence of the specified data, the TSO uses statistical data for similar periods of the last three years. TSO verifies the received forecast volumes of load of the relevant		

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		producers to meet the requirements regarding: - constant maintenance in the power system of sufficient volumes of capacity reserves for downloading and uploading, namely to ensure the fulfillment of the requirements for reserves in accordance with Chapter 8, Section V of the Transmission System Code and the conditions for the synchronous operation of the Ukrainian power system with the Continental European Power System ENTSO-E; - ensuring the modes of operation of the electrical network of individual power stations, resolving network constraints; - the condition of the equipment, including planned repairs, possibilities for changing the load, the possibility of switching on/off during a certain period of time. TSO takes into account the plan-schedule of repairs of the generating equipment as of the date of the calculation or any other available information; - fuel supply of power plants – the possibility of working with the necessary composition of equipment during the planning period, taking into account forecast		

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		data on fuel supply (according to the information available in TSO). TSO, taking into account the needs of the power system, can adjust the equipment composition of thermal power plants and block thermal power plants, compared to the provided forecast load volumes of manufacturers, taking into account the need to ensure the ability of the power system to meet the total demand for electric energy and capacity reserves. 8) During planning, the sufficiency of adjustment ranges and reserves should be provided for reliable coverage of electricity consumption, requirements of criterion N-1, necessary volumes of power reserves. 3.2.3. The overall imbalance of the energy system for each i planning period is determined by the formula: $H_i = \sum_1^n P_{n,i} - \sum_1^m Pc_{m,i}$, where Hi is the general imbalance of the power system; $\sum_1^n P_{n,i}$- the algebraic sum of the forecast load volumes of electricity producers for the i-th planned period, determined in accordance with these Recommendations		

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		$\sum_1^n P_{n,i}$=$P_{NPPi} + P_{TPPi} + P_{CHPi} + P_{block.stations.i} + P_{RESi} + P_{HPPi} + P_{HydroPumpi} + P_{Storagei}$, $\sum_1^m Pc_{m,i}$- the value of the forecasted total consumption of UES of Ukraine in the i-th planning period, determined in accordance with the requirements of Chapter 4.4 of Section IV of the Market Rules, including the consumption of Hydro Pumped Storage Stations in pumping mode and the consumption of Storages in energy storage mode. Based on the obtained results, the estimated values of the forecast import and/or export of electric energy are determined according to the following assumptions: 1) if the power system imbalance for the planning period is positive for UES of Ukraine, then the possible amount of electricity export is equal to the amount of energy system imbalance: If (Hi > 0), then Ei = Hi, MW where Hí is the general imbalance of the power system of the i-th period; i - settlement period; Eи - export of the i-th period. 2) if the power system imbalance for the planning period is negative for		

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		UES of Ukraine, then the possible amount of electric power import is equal to the amount of energy system imbalance. if, (Hi < 0), then Ii= Hi, MW where Hí is the general imbalance of the power system of the i-th period; i - settlement period; Ii - import of the i-th period. 3) if for the UES of Ukraine, in one or more of the settlement periods of planning, the imbalance of the power system is positive (possible export), and in others - negative (possible import), then for each of these periods, either the possible export or import of electric power is determined, respectively. Ii = Hi, MW, if Hi < 0 Ei = Hi, MW, if Hi > 0.		
18.	Chapter 4 "Methods of TRM calculation" 4.1. The value of TRM is determined for each interstate crossing separately according to the methodology described in this chapter. 4.2. The calculation of the amount of TRM for a certain interstate crossing is based on the method of	-	We propose to combine the methods of calculating electrical modes into one chapter of the Methodology. Moved to new section 4 consider clauses 4.1-4.5 as clauses 4.4-4.5 respectively (items 4.4.1-4.4.5)	As explained above, the method of energy regimes should be deleted and therefore not combined.

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	comparing statistical data on actual power flows with planned power flows, which are measured at a time interval of 1 minute. If there is no archive data with a time interval of 1 minute, then the smallest time interval available in the archive of the information complex is used. Archive data for the past month is used to determine TRM during daily and monthly planning. In the case of significant changes in the network topology or under other conditions that have a significant impact on the amount of power flows compared to the previous month, archive data for the last week or the last day is used. 4.3. When calculating the value of TRM, the values of excesses of the actual power flows over the planned power flows are taken into account. 4.4. For annual planning, the average value of TRM for the last 12 months is used, for monthly planning - the average value of TRM for the previous month. 4.5. The value of TRM is defined as the arithmetic mean of the deviation plus the standard deviation according to the formula :			

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	$$TRM = \frac{\sum_{i=1}^{n} X_i}{n} + \sqrt{\frac{\sum_{i=1}^{n}\left(X_i - \overline{X}\right)^2}{n-1}},$$ Where - X_i - exceeding the deviation of the actual power flow through the interstate crossing over the planned for the i-th measurement; - $\dot{X}$ - the average arithmetic value of Xi, is calculated according to the formula: $$\overline{X} = \frac{\sum_{i=1}^{n} X_i}{n},$$ where n – the number of measurements in the data set. The TRM value is rounded to the nearest multiple of 50. 4.6. In the absence of archival data on the calculation of the TRM value, a formula is used $$TRM = K \times \sqrt{\frac{P_{k1} \times P_{k2}}{P_{k1} + P_{k2}}},$$ where - Ph1, Ph2 – total load capacity (for the maximum load regime)			

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	from each side of the interstate crossing, MW; - K – 0.75 with automatic adjustment and limitation of power flow.			
19.	There is no section	**Chapter 4. Methods of calculating electrical modes**	A new section that combines sections of the current Methodology "TTC calculation methods", "TRM calculation methods" and NTC value determination into one new section "Electrical mode calculation methods"	
20.	The item is missing	4.1. When determining the available capacity of transfer capacity using the method of calculating electrical modes, the TSO calculates the values of TTC, TRM, NTC, ATC and AAC.		It should be clarified that these values are calculated for each bidding zone border, for each direction and each market time unit. The new methodology should strive to be harmonised for all borders to the extent possible, without introducing additional elements (such as the value C for the border with Moldova) which are not part of EU best practices. Separate provisions related to Burshtyn island should be removed. In general, NTC values for each border should be calculated based on TTC minus TRM. The TTC and NTC calculation seem

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				to be based on non-transparent parameters and methodologies (coefficients, operational instructions or conditions/agreements between TSOs). As the available capacity at borders is an essential element for the market and market participants, its calculation and all parameters used shall be clearly defined and transparent.
21.	The item is missing .	4.2. The value of NTC is used as an indicative indicator for conducting trade operations with electric energy between market participants and is applied for each direction of interstate crossing. The value of NTC is determined by the formula NTC = TTC - TRM.	*Clause 1.5 was moved from Chapter 1* to consider item 1.5 as item 4.2	It is not clear why the NTC is an indicative value. It is the output of the capacity calculation and result of a mathematical calculation as prescribed by this methodology.
22.	The item is missing	4. 2.1. Determination of the value of NTC for each of the interstate connections with the power systems of Moldova, Poland, Hungary, Slovak Republic and Romania:	*Clause 1.6 was transferred with clarification from Chapter 1 (deletion of clauses 1.6.1 and 1.6.2).* Editorial clarification of the current Methodology and corrections regarding interstate relations with the energy systems of Russia and Belarus. *The calculation of throughput between the energy systems of Ukraine and Russia is removed, in*	

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			accordance with the Resolution of the Cabinet of Ministers of Ukraine dated 23.08.2022 No. 946 on the termination of the Agreement between the Cabinet of Ukraine and the Government of the Russian Federation on measures to ensure the parallel operation of the United Energy System of Ukraine and the Unified Energy System of the Russian Federation . Calculation of transmission capacity between the energy systems of Ukraine and Belarus. remove, since March 16, 2022, the unified energy system of Ukraine has been synchronized with the Energy System of Continental Europe ENTSO-E and operates in isolation from the energy systems of Russia and Belarus.	

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23.	The item is missing	1) Calculation of transmission capacity between the power systems of Ukraine and Moldova. The value of NTC for the actual state of the interstate crossing network is determined by the formula: NTC = NTC $_{Ukr-Od, Md}$ - C, where NTC $_{Ukr-Od, Md}$ is determined by Instruction OD-10 of SE "NPC "Ukrenergo" on UES connections of Ukraine - Odesa, Moldova, which is agreed upon by two TSOs; C - the amount of electricity consumption of the part of the UES of Ukraine, fed through the power system of Moldova, in the range from 650 to 1000 MW, which depends on the period of the year and the hour of the day.	*Clause 1.6.3 was transferred from Chapter 1.* consider item 1.6.3 as item 4.2.1 sub-item 1, respectively	
24.	The item is missing	2) Calculation of transmission capacity between the power systems of Ukraine and Poland. Transmission of electrical energy occurs only from the power system of Ukraine to the power system of Poland by allocation of generating units of the Dobrotvir TPP to one interstate connection. ~~Under such a scheme of work, the guaranteed bandwidth is not ensured.~~	Clause 1.6.4 was moved from Chapter 1. consider item 1.6.4 accordingly as item 4.2.1 sub-item 2 with editorial clarification. We suggest removing the last sentence due to the lack of a definition of "guaranteed bandwidth".	Methodology should include provisions related to the new (planned) interconnector with Poland.

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25.	The item is missing	3) Calculation of transmission capacity between the power system of Ukraine and the power systems of Hungary, Slovak Republic and Romania. **The maximum agreed value of the algebraic sum of electricity flows with the energy systems of these countries is limited by the conditions of dynamic stability and is determined by the Agreement on the organization of parallel work with the ENTSO-E countries.**	*Transferred with editing and clarification from Section 1, Clause 1.6.5.* change clause 1.6.5 and consider it accordingly clause 4.2.1 sub-clause 3 with a clarification regarding the organization of parallel work with ENTSO-E countries. The changes were made in accordance with the resolution of the NCRECP dated December 29, 2021 No. 2972, during the isolated mode of operation, one trade zone "UES of Ukraine" will function. From March 16, 2022, the unified energy system of Ukraine was synchronized with the Energy System of Continental Europe ENTSO-E.	This could be applied as a transitional provision for the existing process (when ENTSO-E approves max allowed value), but not as a basis for the actual calculation.
26.	The item is missing	4.2.2 The amount of free cross-border capacity is determined by the formula ATC=NTC - AAC.	Clause 1.7 was moved from Chapter 1 consider item 1.7 as item 4.2.2	
27.	The item is missing	4.3. Calculation of TTC is carried out by using the input data specified in	Clause 3.1 was transferred from Chapter	

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		subsection 2.4 of chapter 2 of this Methodology.	3 with clarification of clauses n and d consider item 3.1 as item 4.3	
28.	The item is missing	4.3.1. Before starting the process of calculating the maximum cross-border capacity, the TSO must update the data specified in subsection 2.4 of chapter 2 of this Methodology with the system operators of neighboring states.	Clause 3.2 was transferred from Chapter 3 with clarification of the subsection consider item 3.2 as item 4.3.1	
29.	The item is missing	4.3.2. The limit capacity in the interstate crossing is determined by iterative weighting of the base mode (the mode of the updated general network model) - increasing the flow of electric energy by increasing the level of electric energy generation in the power system for the export of electric energy and, accordingly, reducing the level of electric energy generation in the power system for import until reaching the maximum stability regimes (including taking into account criterion N-1).	Clause 3 was moved from Chapter 3. 3 consider item 3.3 as item 4.3.2	
30.	The item is missing	4.3.3. Weighting of the operating mode of the UES of Ukraine is carried out by the following methods: 1) by method A, according to which the change in electric energy generation occurs in proportion to	*3.4 was transferred from Chapter 3 with clarification of the formulas* to consider item 3.3 as item 4.3.3 with the introduction of	It is not clear what "boundary of the stability area"means. If this relates to the operational security limits, as assumed by the Secretariat, this should be changed accordingly.

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		the generating capacity of generating units of UES of Ukraine and adjacent power systems in the base mode. The calculation continues until the boundary of the stability area is violated. This method shows the theoretical maximum value of the TTC value, as it does not contain any restrictions on the generation of generating units that are engaged in the base mode, and the amount of electric energy generation can significantly exceed the permissible limits: $\mathbf{P^{inc}_{jt+1} = P^{inc}_{jt} + \Delta E \times \frac{P^{inc}_{jt}}{\sum_m P^{inc}_{jt}}}$ $\mathbf{P^{dec}_{it+1} = P^{dec}_{it} - \Delta E \times \frac{P^{dec}_{it}}{\sum_n P^{dec}_{it}}}$ where t is the iteration number of weighting; n - the number of generating units of the power system for import; m - the number of generating units of the power system for export; ΔE - amount of generation increase/decrease, MW; P^{dec}_{it} - generation of the i-th generating unit of the power system for import at the weighting iteration t, MW;	clarifications to calculation formulas	

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		P^{inc}_{jt} - generation of the j-th generating unit of the power system for export at iteration t, MW; 2) by method B, which takes into account the real possibilities of electricity generation in accordance with the reserves of active power of generating units of UES of Ukraine and adjacent power systems for unloading and loading. The change in electric power generation occurs in proportion to the active power reserves of the generating units: $P^{inc}_{jt+1} = P^{inc}_{jt} + \Delta E \times \frac{P^{inc}_{jmax} - P^{inc}_{jt}}{\sum_m (P^{inc}_{jmax} - P^{inc}_{jt})}$ $P^{dec}_{it+1} = P^{dec}_{it} - \Delta E \times \frac{P^{dec}_{imin} - P^{dec}_{it}}{\sum_n (P^{dec}_{imin} - P^{dec}_{it})}$ where P^{inc}_{jmax} is the maximum possible generation of the j-th generating unit of the power system for export, MW; P^{dec}_{imin} - the minimum possible generation of the i-th generating unit of the power system for import, MW. Weighing iterations are carried out until the limits of operational safety are not violated **and**		

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		$\Delta E \leq \left\lvert \sum_m (P_{jmax}^{inc} - P_{jt}^{inc}) \right\rvert$; $\Delta E \leq \left\lvert \sum_n (P_{imin}^{dec} - P_{it}^{dec}) \right\rvert$; 3) by method C, which takes into account real capabilities of generation of electric energy similarly to the method B, and also uses list of generating units of UES of Ukraine and adjacent power systems that take part in change the level of generation of electric energy and set priority of their loading/unloading for increase/decrease of volumes of generation of electric energy. For this, the transmission system operator of the transmission system uses additional information about the base mode and about the order of change and the permissible level of electric energy generation of the generating units.		
31.	The item is missing	4.3.4. Method B and method C are used to calculate the amount of TTC. In the case of justified impossibility of using method B or method C to calculate the amount of TTC, method A is used.	Clause 3.5 was transferred from Chapter 3 consider item 3. 5, respectively, clause 4.3 . 4	

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32.	The item is missing	**4.4. The methodology for calculating the amount of** TRM is determined for each interstate crossing separately according to the following calculations.	Clause 4.1 was transferred from Chapter 4 with clarification. consider item 4.1 as item 4.4	
33.	The item is missing	4.4.1. The calculation of the amount of TRM for a certain interstate crossing is based on the method of comparing statistical data on actual power flows with planned power flows, which are measured at a time interval of 1 minute. If there is no archive data with a time interval of 1 minute, then the smallest time interval available in the archive of the information complex is used. Archive data for the past month is used to determine TRM during daily and monthly planning. In the case of significant changes in the network topology or under other conditions that have a significant impact on the amount of power flows compared to the previous month, archive data for the last week or the last day is used.	Clause 4.2 was transferred from Chapter 4 consider item 4.2 as item 4.4.1	
34.	The item is missing	4.4.2. When calculating the value of TRM, the values of excesses of the actual power flows over the planned power flows are taken into account.	Clause 4.3 was transferred from Chapter 4 to consider clause 4.3 accordingly clause 4.4.2	

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35.	The item is missing	4.4.3 The average value of TRM for the last 12 months is used for annual planning, and the average value of TRM for the previous month is used for monthly planning.	Clause 4 was moved from Chapter 4. 4 to consider clause 4.4 accordingly clause 4.4.3	
36.	The item is missing	4.4.4. The value of TRM is defined as the arithmetic mean of the deviation plus the standard deviation according to the formula $TRM = \frac{\sum_{i=1}^{n} X_i}{n} + \sqrt{\frac{\sum_{i=1}^{n}\left(X_i - \overline{X}\right)^2}{n-1}}$, Where Xi – the exceeding of the deviation of the actual power flow through the interstate crossing over the planned for the i-th measurement; $\overline{X}$ - the average arithmetic value *of Xi* is calculated according to the formula: $\overline{X} = \frac{\sum_{i=1}^{n} X_i}{n}$, where n – the number of measurements in the data set. The TRM value is rounded to the nearest multiple of 50.	Clause 4.5 was transferred from Chapter 4 consider item 4.5 as item 4.4.4	

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37.	The item is missing	4.4.5. In the absence of historical data on the calculation of the TRM value, a formula is used $TRM = K \times \sqrt{\frac{P_{h1} \times P_{h2}}{P_{h1} + P_{h2}}}$, where Ph1, Ph2 – total load capacity (for the maximum load regime) from each side of the interstate crossing, MW; K – 0.75 with automatic adjustment and limitation of power flow.	Clause 4.6 was transferred from Chapter 4 consider item 4.6 as item 4.4.5	This equation is not clear as well as what the total load capacity for the maximum load regime is and how it is determined.
38.	The item is missing	**Section 5. Determining the value of the available capacity of interstate crossings of the TSO**	Processing of the results of calculations according to the methods of energy and electrical regimes	
39.	The item is missing	5.1. After obtaining the values according to the calculation methods of energy modes and according to the methods of electrical modes, these values are compared with each other in the corresponding "i" periods.	Comparison of the obtained data by two methods in order to finally determine the amount of available capacity of interstate crossings.	
40.	The item is missing	5.2. In the case of exceeding the value obtained according to calculations by methods of electrical modes, the value of the carrying capacity of interstate crossings is taken at the level of Hi, while the decrease at the crossings is proportional to the obtained values of NTC in each of the directions.	Processing of calculation data and determination of the value of NTC of interstate crossings in each direction.	

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41.	The item is missing	5.3. In other cases, the value of the carrying capacity of interstate crossings is taken based on the results of calculations using the methods of electrical modes.	Determining the available capacity of interstate crossings	If the Secretariat's assumption is correct that this final value of the TSO is then compared with the neighboring TSOs' value (lesser-of), this should be further clarified.
42.	The item is missing	5.4. The resulting values of the carrying capacity of interstate crossings for daily allocation should take into account that the difference between two consecutive calculation periods of the day should not exceed 280 MW. If it is exceeded, this value is recalculated in the direction of its decrease, while the decrease along the intersections is proportional to the obtained NTC values in each of the directions.	Clarification for daily allocation.	It is not clear how this value was determined.
43.	**Chapter 5. "Periodicity of calculation"**	**Chapter 6. Periodicity of calculation**	Changing the section numbering	
44.	Calculation of TTC, TRM, NTC, AAC and ATC is performed: 1) for the annual auction - annually before the annual auction; 2) for monthly auctions - monthly before the monthly auction; 3) for daily auctions - if necessary.	Calculation of TTC, TRM, NTC, AAC and ATC is performed: 1) for the annual auction – annually before the annual auction; 2) for monthly auctions – monthly before the monthly auction; 3) for daily auctions – if necessary.	Leave in the current version.	It is necessary to define the exact timing of the calculations for each timeframe (day, time) harmonized with the respective allocation procedure. According to Regulation (EC) 2009/714, capacity shall be allocated and therefore needs to be calculated both for long term and short-term timeframes (including day-ahead and intraday).