

Request of TenneT TSO B.V. for derogation from the minimum level of capacity to be made available for cross-zonal trade

in accordance with Article 16(9) of Regulation (EU)
2019/943 of the European Parliament and of the Council of
5 June 2019 on the internal market for electricity (recast)

28 July 2023

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THE DUTCH TRANSMISSION SYSTEM OPERATOR TENNET TSO B.V. TAKING INTO ACCOUNT THE FOLLOWING,

Whereas

- (1) Article 16(8) of the Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (recast), hereinafter the “Regulation 2019/943”, prescribes that TSOs shall not limit the volume of interconnection capacity to be made available to market participants as a means of solving congestion inside their own bidding zone, or as a means of managing flows resulting from transactions internal to bidding zones. The same article also defines that this requirement shall be considered to be complied with if a minimum level of available capacity for cross-zonal trade is reached. For borders using a flow-based approach, this level is set to 70% of the capacity respecting operational security limits of internal and cross-zonal critical network elements taking into account contingencies (hereinafter referred to as “CNECs”). Transitory measures, such as action plans pursuant to Article 15 of the Regulation 2019/943 or derogations pursuant to Article 16(9) of the same regulation, allow a step-wise approach for reaching this minimum capacity, ultimately by 31 December 2025.
- (2) In December 2019, the Ministry of Economic Affairs and Climate Policy of the Netherlands has established an action plan pursuant to Article 15 of Regulation 2019/943. In accordance with Article 15(2) of Regulation 2019/943, the action plan has established a linear trajectory for the minimum capacity available for cross-zonal trade to be compliant with Article 16(8) of Regulation 2019/943 (hereinafter referred to as "linear trajectory").
- (3) Article 16(9) of Regulation 2019/943 prescribes that upon request of transmission system operators in a capacity calculation region (hereinafter "CCR"), the relevant regulatory authorities may grant a derogation from Article 16(8) of Regulation 2019/943 on foreseeable grounds where necessary for maintaining operational security. The derogation shall be granted for no more than one year at a time, or, provided that the extent of the derogation decreases significantly after the first year, up to a maximum of two years. The extent of such a derogation shall be strictly limited to what is necessary to maintain operational security and shall avoid discrimination between internal and cross-zonal exchanges.
- (4) In October 2019, TenneT TSO B.V. (hereinafter referred to as "TenneT") applied for two derogations in accordance with article 16(9) of Regulation 2019/943. In anticipation of a decision of the Ministry of Economic Affairs and Climate Policy of the Netherlands to establish an action plan pursuant to Article 15 of Regulation 2019/943, TenneT retracted one of the two applications for derogation on 18 December 2020. The other application for a derogation was approved by the Dutch national regulatory Authority for Consumers and Markets (hereinafter "ACM") on 20 December 2020, for the duration of 1 year from 1 January 2020 until 31 December 2020.
- (5) In July 2020, TenneT applied for a next derogation in accordance with article 16(9) of Regulation 2019/943, this time for the period from 1 January 2021 until 31 December 2021. Apart from the removal of the request for performing a parallel run for the purpose of developing, testing and executing new processes and tools, this derogation for the year 2021 was largely similar to the derogation for the year 2020, This application was approved by ACM on 16 November 2020.
- (6) In July 2021, TenneT applied for a next derogation in accordance with article 16(9) of Regulation 2019/943, this time for the period from 1 January 2022 until 31 December 2022, similar to the derogation for the year 2021. This application was approved by ACM on 1 December 2021.
- (7) In July 2022, TenneT applied for a next derogation in accordance with article 16(9) of Regulation 2019/943, this time for the period from 1 January 2023 until 31 December 2023. Contrary to previous years, the derogation for the year 2023 only addresses the issue of loop flows above an

acceptable level, and does not include a derogation for a lack of redispatch potential as there is by now consensus that this is covered by existing legislation. This application was approved by ACM on 22 December 2022.

- (8) The Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on Capacity Allocation and Congestion Management (hereinafter referred to as the “CACM Regulation”) and the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereinafter referred to as the “SOGL Regulation”) require TSOs to deliver some methodologies which are key to managing the flows in the electricity grid via coordinated capacity calculation and coordinated application of remedial actions. These key methodologies are:
- a. The Day-Ahead Capacity Calculation Methodologies for the CCRs in which TenneT is a represented member, as referred to in Article 21 of the CACM Regulation;
 - b. The operational security coordination methodology as referred to in Article 76 of the SOGL Regulation (hereinafter referred to as “SOGL 76 methodology”);
 - c. The coordinated redispatching and countertrading methodology as referred to in Article 35 of the CACM Regulation (hereinafter referred to as “CACM 35 methodology”); and
 - d. The redispatching and countertrading cost sharing methodology as referred to in Article 74 of the CACM Regulation (hereinafter referred to as “CACM 74 methodology”).

A timetable summarizing the currently foreseen implementation dates of these key methodologies is depicted below:

Methodology	Status	Currently foreseen implementation date
Core DA CCM	Operational since 8 June 2022	-
Core DA CCM: coordinated validation	Methodology still to be developed	A proposal for implementation is due 18 months after Core DA CCM go-live, thus by Dec 2023. Implementation is expected Q4 2025
SOGL 76	Implementation is ongoing	April 2026
CACM 35	Implementation is ongoing	April 2025
CACM 74	Implementation is ongoing	April 2025

- (9) Acknowledging that only the (first version of the) Core DA CCM methodology has been implemented, but that the other aforementioned key methodologies from the CACM Regulation and SOGL Regulation are not yet implemented, TenneT cannot rely on these methodologies as a structural basis in order to reach the linear trajectory or the minimum capacity provided for in Article 16(8) of Regulation 2019/943 per 1 January 2024. Also, it is not foreseen that all of the key methodologies listed above will be implemented before 31 December 2024.

(10) Article 16(3) of Regulation 2019/943 prescribes that regional coordination centers (hereinafter "RCCs") shall carry out a coordinated capacity calculation in accordance with Article 16(4) and Article 16(8) of Regulation 2019/943. Article 16(3) of Regulation 2019/943 also prescribes that where RCCs conclude that those available remedial actions in the CCR or between CCRs are not sufficient to reach the linear trajectory or the minimum capacities provided for in paragraph 16(8) of Regulation 2019/943 while respecting operational security limits, they may, as a measure of last resort, set out coordinated actions reducing the cross-zonal capacities accordingly.

However, acknowledging the fact that the RCCs are not yet carrying out the coordinated capacity calculation as not all of the coordinated capacity calculation methodologies are fully implemented in the CCRs in which TenneT is a represented member, TenneT cannot yet rely on the RCCs to:

- a. Conclude whether or not those available remedial actions in the CCR or between CCRs are sufficient to reach the linear trajectory or the minimum capacities provided for in paragraph 16(8) of Regulation 2019/943; and
- b. Set out coordinated actions to reduce the cross-zonal capacities accordingly if necessary to respect operational security limits.

(11) Article 16(4) of Regulation 2019/943 prescribes that counter-trading and redispatching, including cross-border redispatching, shall be used to reach the minimum capacity provided for in Article 16(8) of Regulation 2019/943. However, this article stipulates that the application of cross-border measures is subject to the implementation of a redispatching and counter-trading cost sharing methodology. This methodology is also not yet implemented in the CCRs in which TenneT is a represented member.

(12) In order to be compliant with the Regulation 2019/943, given the limitations that several key methodologies for managing the flows in the electricity grid are not yet implemented and operational as set out in Recital 7-9, and given that the current derogation in accordance with Article 16(9) of Regulation 2019/943 only applies until 31 December 2023, TenneT decided to apply again for a derogation from Article 16(8) of Regulation 2019/943. This derogation is applied for on the basis of the following foreseeable ground.

(13) The ground to request a derogation is the foreseeable externality that loop flows on Dutch CNECs cannot be contained to an acceptable level as they are not under the control of TenneT, which contributes in creating an operational security risk if the minimum capacity provided for in Article 16(8) of Regulation 2019/943 would be applied:

- a. From Article 16(8) of Regulation 2019/943 it can be understood that the maximum acceptable level of loop flows is defined as the amount of loop flows which, together with the reliability margins and the internal flows, uses 30% of capacity of a CNEC respecting their operational security limits.
- b. Historical analyses of data from the period January 2017 until July 2019 have shown that the average level of loop flows on Dutch presolved CNECs is usually above 30% of the total power flow and can amount up to almost full capacity usage on specific hours, which is exceeding the level that would allow meeting the requirements set in Article 16(8) of the Regulation 2019/943.
- c. Analysis of data on loop flows from the period April 2020 until December 2022, gathered as part of the assessment of available cross-zonal capacity for the Netherlands, shows that also in this period for the majority of CNEs, loop flows frequently surpass the threshold value of 'acceptable' loop flows.

- d. Loop flows are created in neighbouring bidding zones and cannot be contained by using the redispatch potential available in the Netherlands. Phase Shifting Transformers located at the North-Eastern border of the Netherlands can help to partially limit the loop flows, but even an optimised utilisation of these transformers is not expected to be sufficient to contain the level of loop flows to an acceptable level.
- e. Considering that several Member States implemented an action plan in accordance with Article 15 of the Regulation 2019/943 among which the Federal Republic of Germany, TenneT expects that identified structural congestions in neighboring bidding zones will not disappear on short term. Consequently, loop flows are expected to continue to remain above an acceptable level according to Article 16(8) of Regulation 2019/943, at least for the duration of this derogation.
- f. Although the first version of the Core DA CCM has been implemented, this is not yet sufficient to respect operational security limits in cases of high loop flows. Article 20 of the Core DA CCM requires that in a next version of the Core DA CCM, the Core TSOs also implement a “coordinated validation” process, implying there will be a process that consolidates the prediction and usage of available remedial action on Core level. This process creates the necessary visibility on the ability to maintain operational security in a coordinated way when applying the minimum 70% requirement. This is important in the Dutch context because the local remedial action potential may be insufficient to alleviate the impact of loop flows, but there may be effective remedial actions available elsewhere to alleviate the impact of loop flows.
- g. The application of coordinated cross-border remedial actions could be an efficient solution to reduce the level of loop flows. However, the fact that the SOGL 76 methodology and CACM 35 methodology are not yet in place and are not expected to be in place before 31 December 2024, prevents TenneT to structurally rely on cross-border remedial actions to reduce the level of loop flows. Existing bilateral redispatching contracts do not enable an efficient use due to the manual procedures involved.

(14) This request for derogation is compliant with the Regulation 2019/943, more specifically Article 16(9), since:

- a. The grounds to request this derogation are foreseeable, as set out in Recital 8 to 13.
- b. The derogation is required to maintain operational security as set out in Recital 8 to 13.
- c. The extent of the derogation is strictly limited to what is necessary:
 - i. Acknowledging the limitations by the absence of the CACM and SOGL methodologies listed in Recital 8, the redispatching potential structurally available to TenneT will be used to solve congestions in the day-ahead timeframe after the day-ahead market coupling took place. Only if the operational security cannot be maintained (amongst others due to a lack of redispatching potential), the capacity for cross-zonal trade set in the capacity calculation process is reduced.
 - ii. The methodological approach described in Article 3 allows taking assumptions as late as possible in the capacity calculation process, that is, with the most accurate information related to the grid situation. This approach reduces the extent of the derogation compared to an approach where fixed values would have been defined and included directly in the derogation. The methodological approach avoids under- or overestimating the actual need for a derogation. Indeed, a fixed value approach would lead to unnecessary security margins considering the variety of situations to be covered, the intrinsic uncertainty of grid operation and the lack of

visibility on the intentions of neighbouring Member States regarding their approach for implementing Article 16 of Regulation 2019/943, and possibly Article 15 of the same regulation. Given the fact that loop flows follow a variable pattern by nature, the inefficiency of a fixed value approach would be significant and structural.

- d. The derogation avoids undue discrimination between internal and cross-zonal exchanges: the methodological approach as described in Article 3 ensures that, even in presence of loop flows above an acceptable threshold, the accepted level of internal flows accounted for in the capacity calculation is reduced in order to avoid discrimination between internal and cross-zonal exchanges in case the minimum capacity available for cross-zonal trade is below the level as set by the linear trajectory.

SUBMITS THE FOLLOWING REQUEST FOR DEROGATION FROM THE IMPLEMENTATION OF THE MINIMUM LEVEL OF CAPACITY TO BE MADE AVAILABLE FOR CROSS-ZONAL TRADE FOR APPROVAL TO THE AUTHORITY FOR CONSUMERS AND MARKETS

Article 1. Subject matter and scope

- (1) This request for derogation is a request of TenneT to derogate from the implementation of the minimum capacity available for cross-zonal trade as established in Article 16(8) and in accordance with Article 16(9) of the Regulation 2019/943.
- (2) This request for derogation is based on one foreseeable ground to deviate from the minimum levels of capacity to be made available for cross-zonal trade as set by Article 16(8) of Regulation 2019/943, namely loop flows above an acceptable level, as detailed in Article 4 and justified in Recital 13.
- (3) The minimum capacity available for cross-zonal trade taking into account this request for derogation, will be implemented for as long as operational security limits can be respected. The state of The Netherlands shall ensure that, in accordance with Article 15(2) of Regulation 2019/943, without prejudice to derogations granted under Article 16(9) of Regulation 2019/943, the cross-zonal trade capacity is increased on an annual basis until the minimum capacity provided for in Article 16(8) of Regulation 2019/943 is reached. Deviations will be reported to ACM along with a justification why the deviation was required in order to respect operational security limits.
- (4) This request for derogation is made to ACM in accordance with Article 16(9) of Regulation 2019/943.
- (5) Ultimately 1 July 2024, TenneT shall submit a report to ACM detailing the developments on methodologies and projects that shall provide a long-term solution to the issue that this derogation seeks to address, in accordance with Article 16(9) of Regulation 2019/943. This report will be published for stakeholders.

Article 2. Definitions and interpretation

- (1) For the purpose of this request for derogation, the terms used in this document shall have the meaning of the definitions included in Article 2 of the day-ahead capacity calculation methodology for the Core CCR as referred to in Article 21 of the CACM Regulation (hereinafter referred to as “Core DA CCM”).
- (2) In this derogation request, unless the context requires otherwise:
 - a. The singular indicates the plural and vice versa;
 - b. The table of contents, headings and examples are inserted for convenience only and do not affect the interpretation of this derogation request;
 - c. Any reference to legislation, regulations, directive, order, instrument, code or any other enactment shall include any modification, extension or re-enactment of it then in force.

Article 3. Methodological approach for derogation

- (1) The approach used in this request for derogation defines principles and calculation rules including, where needed, mathematical formulas. These principles and calculation rules are applied to the Core day-ahead capacity calculation process.
- (2) More specifically, the methodological derogation takes the common grid models (24 in total, 1 for each hour) delivered as part of the day-ahead capacity calculation process as basis and applies the following principles:
 - a. After the initial flow-based calculation, the loop flows are calculated and the resulting minimum capacity available for cross-zonal trade is applied on the Dutch CNECs as detailed in Article 4. For the avoidance of doubt, if the loop flows are below the acceptable level defined in paragraph 2 of Article 4, the minimum capacity remains equal to the minimum capacity provided for by the linear trajectory.
 - b. During the verification/validation phase, operational security is assessed. This implies the detection of congestion and the possibility to relieve such congestion through the application of remedial actions, non-costly and costly. For this reason, the capacity domain used during the verification/validation phase shall include the application of the derogation for loop flows pursuant to Article 4.
 - c. As long as operational security limits of the transmission system can be respected, the minimum capacity resulting from the intermediate Core flow-based capacity calculation is provided to the day-ahead market. If operational security limits of the transmission system cannot be respected, the available capacity for cross-zonal trade is reduced to a level that respects these operational security limits.
 - d. The minimum capacity available for cross-zonal trade inside the Core coordination area on each CNEC shall in any case respect commonly coordinated minimum values as defined in paragraph 6 of Article 4.

Article 4. Loop flows

- (1) The application of a derogation for loop flows above an acceptable level entails the following steps:
 - a. Step 1: define the acceptable level of loop flows LF_{accept} per CNEC, as further detailed in paragraph 2.
 - b. Step 2: calculate the loop flows LF_{calc} per CNEC, as further detailed in paragraph 3.
 - c. Step 3: define the minimum capacity for cross-zonal trade taking into account the results of the previous steps, as further detailed in paragraphs 4 to 6.
- (2) Article 16(8) of Regulation 2019/943 prescribes that the total amount of 30% can be used for the reliability margins, loop flows and internal flows on each critical network element. This derogation defines the acceptable level of loop flows (LF_{accept}) for the different types of critical network elements as follows:
 - a. Cross-zonal critical network elements: the acceptable level of loop flows is equal to the difference between 30% of the capacity of a CNEC respecting their operational security limits and the corresponding reliability margins of these CNECs.

- b. Internal critical network elements: in order to avoid discrimination between internal and loop flows, it is considered that the acceptable level of loop flows is equal to half of the difference between 30% of the capacity of a CNEC respecting their operational security limits and the corresponding reliability margins of these CNECs.

(3) The loop flows LF_{calc} are calculated in the day-ahead capacity calculation process as follows:

- a. The common grid model (hereinafter "CGM") used during the initial flow-based calculation shall be used.
- b. The zero-balanced grid model is obtained by shifting the net positions of the common grid model CGM to zero:

$$F_0 = F_{ref} - \mathbf{PTDF} \overline{NP}_{ref}$$

With:

- i. F_0 : flow derived from the zero-balanced common grid model, to approximate a situation without any commercial exchange between bidding zones within the region for which the capacity calculation is performed.
 - ii. F_{ref} : flow per CNEC in the CGM.
 - iii. $PTDF$: power transfer distribution factor matrix for all bidding zones in the region for which the capacity calculation is performed and all CNECs.
 - iv. NP_{ref} : net positions per bidding zone of the region for which the capacity calculation is performed, as included in the CGM.
- c. Apply flow decomposition to derive the loop flows and internal flows on each CNEC using Full Line Decomposition (FLD) method.¹ As the capacity available for cross-zonal trade is calculated in F_0 , loop flows are defined as a share of F_0 .
 - d. For a given CNEC, LF_{calc} is equal to the sum of loop flows computed following paragraph 3c, divided by the maximum admissible power flow (F_{max}) of that CNEC according to its operational security limits.

(4) For a given CNEC, the minimum capacity to be made available for cross-zonal trade $MACZT_{min}$ is then equal to:

$$MACZT_{min} = MACZT_{target} - \max(0; LF_{calc} - LF_{accept})$$

Where $MACZT_{target}$ refers to the level of minimum capacity to be made available for cross-zonal trade on the given CNEC according to the linear trajectory.

(5) The minimum capacity for cross-zonal trade to be made available for trade inside the Core capacity coordination area (MCCC), results from the minimum capacity $MACZT_{min}$ as defined in previous paragraph reduced by cross-zonal flows assumed to result from commercial exchanges outside the capacity coordination area (MNCC) following the method as defined in Article 17(4) of the Core DA CCM.

¹ A detailed explanation of the FLD method is published in "[CIGRE Science & Engineering, issue 9 \(CSE 009\)](#)"

- (6) As a result of this derogation, the minimum capacity for cross-zonal trade inside the Core capacity coordination area (MCCC) on each CNEC shall not be below 20% of the maximum admissible power flow (Fmax) of that CNEC according to its operational security limits.
- (7) TenneT will publish data on the effects of the application of the formulas in this article as part of the regular publications on the results of the Core day-ahead capacity calculation process.
- (8) In accordance with Article 1(3), deviations from the formulas in this article will be reported to ACM along with a justification why the deviation was required in order to respect operational security limits.

Article 5. Extent and duration of the derogation

- (1) The derogation regarding loop flows in accordance with Article 4 shall be applicable to all Dutch CNECs included in the Core day-ahead capacity calculation process.
- (2) This derogation shall apply for the duration of one year, as of its approval by ACM, starting from 1 January 2024.

Article 6. Language

The reference language for this derogation request is English.

Article 7. Confidentiality

The information provided by TenneT to ACM for this derogation request does not have to be treated as confidential unless stated or agreed otherwise.