Annex II – Core TSOs general measures and action plan to avoid future cross-zonal capacity reductions

Q4 2022

Table of Contents

[Introduction 3](#_Toc127525551)

[DAVinCy TSOs 4](#_Toc127525552)

[APG 4](#_Toc127525553)

[German TSOs 6](#_Toc127525554)

[TENNET TSO BV 8](#_Toc127525555)

[ELIA 10](#_Toc127525556)

[ELES 12](#_Toc127525557)

[HOPS 13](#_Toc127525558)

[MAVIR 14](#_Toc127525559)

[PSE 15](#_Toc127525560)

[RTE 16](#_Toc127525561)

[SEPS 17](#_Toc127525562)

[Transelectrica 18](#_Toc127525563)

# Introduction

According to Articles 20(14)(b) and 20(15) of the DA CCM, Core TSOs have the obligation to provide general measures and/or action plans in order to avoid cross-zonal capacity reductions in the future, as follows:

* As per Article 20(14)(b): *General measures to avoid cross-zonal capacity reductions in the future*
* As per Article 20(15): *When a given Core TSO reduces capacity for its CNECs in more than 1% of DA CC MTUs of the analysed quarter, the concerned TSO shall provide to the CCC a detailed report and action plan describing how such deviations are expected to be alleviated and solved in the future.*

This annex contains the required information described above for each Core TSO that has applied capacity reductions for at least 1 DA CC MTU of the analysed quarter.

# DAVinCy TSOs

## APG

In order to provide a better understanding of the results and the processes applied among DAVinCy TSOs, following are some introductory explanations:

* APG, Tennet NL and the German TSOs (DAVinCy TSOs) use a common tool for individual validation called DAVinCy (**D**ay **A**head **V**al**i**datio**n** of **C**apacit**y**). In case an overload cannot be solved with the available remedial actions, DAVinCy determines the necessary Individual Validation Adjustments (IVAs) on relevant CNECs with the objective to minimise the overall capacity reduction among the six DAVinCy TSOs. This can lead to situations where an overload occurs in one control area of TSO A whereas the IVA(s) is/are applied within other control areas, e.g., of TSOs B and C.
* The application of an IVA prevents a network element from being overloaded and necessarily does not lead to a deviation from the minimum cross-zonal capacity according to Article 16(8) of regulation (EU) 2019/943 on the internal market of electricity. Deviations from the minimum cross-zonal capacity according to the Austrian action plan, will be analysed and reflected accordingly in the Austrian action plan report submitted to the Austrian NRA E-Control.

In Q4/2022, the following could be observed:

* In 106 hours or 4.8 % of the MTUs an IVA was applied within the DAVinCy area [1].
* Compared to the whole Core region, DAVinCy TSOs applied IVAs infrequently and the effective part of the IVA that limits possible market outcomes was similar to the average within the Core region. [1]
* Applied IVA on BD 07/11/2022 and 17/12/2022 are related to an issue of the Common Grid Model with wrong exchanges, which highly impacted loadflow results and therefore led to high IVA. For BD 17/12/2022 DAVinCy fallback was applied due to the wrong Common Grid Model.
* High IVA application on BD 06/12/2022 can be explained by planned outages in the grid of Tennet NL and wrong data for generator unavailability published on ENTSO-E transparency platform.

In the opinion of the DAVinCy TSOs, the cooperation of six TSOs within the DAVinCy consortium leads to a very effective result when relieving potential overloads within the grid in order to secure operational security. This is caused by the fact that remedial actions within six control areas can be used. Moreover, IVAs having a minimal impact on cross-zonal capacities offered to the market can be applied to solve congestions. Furthermore, the DAVinCy TSOs acknowledge, that this report has to be based on the amount of capacity reductions, i.e. IVAs applied by DAVinCy. Nevertheless, it should be noted, that measures to reduce the application of IVAs need to address the cause of IVAs, respectively the reduction of congestions and fallbacks.

[1] Not considering the IVA application because of the DAVinCy fallbacks

Regarding the reductions of congestions, only in 1 hour or 0.05 % of the MTUs an overload within the Austrian control area leading to IVA application during the DAVinCy process was observed. Therefore, the proposed measures applied by APG can only have a limited impact on the amount of IVAs applied on Austrian CNECs. For any further reductions, APG depends on measures to reduce congestions in other control areas of the DAVinCy consortium or cross border and improvements to prevent DAVinCy fallbacks. APG wants to highlight that it fully supports the innovative functioning of DAVinCy since it increases the overall benefit of the Core region compared to a purely national individual validation and could be used as blueprint for an effective coordinated validation approach among all Core TSOs.

The DAVinCy TSOs plan to apply the following measures in order to minimize the application of IVAs and, as required by art 20(14)(b) and 20(15) DA CCM, avoid cross-zonal capacity reductions in the future:

* Improvements within the DAVinCy tool such as the application of additional topological measures and cross-border redispatch (DE-AT implemented since the beginning, DE-NL since BD 21/12/2022; DE-DK1 since BD 18/01/2023, DE-CH since BD 25/01/2023).
* Methodological improvements based on increasing experience with the operational Core DA Capacity Calculation to finetune the trade-off between operational security and offered capacities. This concerns, among other things, the selection of possible market outcomes that are being analysed.
* Further improvement of process robustness through the use of redundant IT systems, plausibility checks and replacement strategies for input data, separate systems for test and productive environment and implementation of security management.

In addition to improvements of the individual validation process and DAVinCy itself, APG plans to implement further measures according to the Austrian Action Plan. Those measures include, but are not limited to:

* Network reinforcement and optimisation, e.g. dynamic line rating to relieve grid elements with overloads in the future
* Network expansion and planned infrastructure projects according to the Network Development Plan

## German TSOs

In order to provide a better understanding of the results and the processes applied among DAVinCy TSOs, following are some introductory explanations:

* APG, Tennet NL and the German TSOs (DAVinCy TSOs) use a common tool for individual validation called DAVinCy (**D**ay **A**head **V**al**i**datio**n** of **C**apacit**y**). In case an overload cannot be solved with the available remedial actions, DAVinCy determines the necessary Individual Validation Adjustments (IVAs) on relevant CNECs with the objective to minimise the overall capacity reduction among the six DAVinCy TSOs. This can lead to situations where an overload occurs in one control area of TSO A whereas the IVA(s) is/are applied within other control areas, e.g., of TSOs B and C.
* The application of an IVA prevents a network element from being overloaded and necessarily does not lead to a deviation from the minimum cross-zonal capacity according to Article 16(8) of regulation (EU) 2019/943 on the internal market of electricity.

In the opinion of the DAVinCy TSOs, the cooperation of six TSOs within the DAVinCy consortium leads to a very effective result when relieving potential overloads within the grid in order to secure operational security. This is caused by the fact that remedial actions within six control areas can be used. Moreover, IVAs having a minimal impact on cross-zonal capacities offered to the market can be applied to solve congestions. Furthermore, the DAVinCy TSOs acknowledge, that this report has to be based on the amount of capacity reductions, i.e. IVAs applied by DAVinCy. Nevertheless, it should be noted, that measures to reduce the application of IVAs need to address the cause of IVAs, respectively the reduction of congestions and fallbacks.

The DAVinCy TSOs plan to apply the following measures in order to minimize the application of IVAs and, as required by art 20(14)(b) and 20(15) DA CCM, avoid cross-zonal capacity reductions in the future:

* Improvements within the DAVinCy tool such as the application of additional topological measures and cross-border redispatch (DE-AT implemented since the beginning, DE-NL since BD 21/12/2022; DE-DK1 since BD 18/01/2023, DE-CH since BD 25/01/2023).
* Methodological improvements based on increasing experience with the operational Core DA Capacity Calculation to finetune the trade-off between operational security and offered capacities. This concerns, among other things, the selection of possible market outcomes that are being analysed.
* Further improvement of process robustness through the use of redundant IT systems, plausibility checks and replacement strategies for input data, separate systems for test and productive environment and implementation of security management.

The application of an IVA prevents a network element from being overloaded and necessarily does not lead to a deviation from the minimum cross-zonal capacity according to Article 16(8) of regulation (EU) 2019/943 on the internal market of electricity. In case of a deviation from the minimum cross-zonal capacity, the compliance with the minimum cross-zonal capacity targets of the German action plan according to the monitoring methodology approved by the German NRA Bundesnetzagentur will be detailed within the German Compliance Monitoring Report for 2022 that will be finished in mid-2023[1].

* In Q4/2022, the following could be observed:
* In 106 hours or 4.8 % of the MTUs an IVA was applied within the DAVinCy area [2].
* Compared to the whole Core region, DAVinCy TSOs applied IVAs infrequently and the effective part of the IVA that limits possible market outcomes was similar to the average within the Core region.2
* Applied IVA on BD 07/11/2022 and 17/12/2022 are related to an issue of the Common Grid Model with wrong exchanges, which highly impacted loadflow results and therefore led to high IVA. For BD 17/12/2022 DAVinCy fallback was applied due to the wrong Common Grid Model.
* High IVA application on BD 06/12/2022 can be explained by planned outages in the grid of Tennet NL and wrong data for generator unavailability published on ENTSO-E transparency platform.

Regarding the reductions of congestions, only in 20 hours or 0.9 % of the MTUs an overload within the German control area leading to IVA application during the DAVinCy process was observed. Therefore, the proposed measures applied by German TSOs can only have a limited impact on the amount of IVAs applied on German CNECs. For any further reductions, the German TSOs depend on measures to reduce congestions in other control areas of the DAVinCy consortium or cross border and improvements to prevent DAVinCy fallbacks. German TSOs want to highlight that they fully support the innovative functioning of DAVinCy since it increases the overall benefit of the Core region compared to a purely national individual validation and could be used as blueprint for an effective coordinated validation approach among all Core TSOs.

In addition to the measures mentioned above in the general section for all DAVinCy TSOs, the planned grid enforcements within the control areas of the German TSOs will relieve grid elements with overloads in the future (cf. Action Plan of Germany [3] and Network Development plan [4]) will minimize the application of IVAs and, as required by art 20(14)(b) and 20(15) DA CCM, avoid cross-zonal capacity reductions in the future.

[1] See: approved [Monitoring Report](https://www.bundesnetzagentur.de/DE/Fachthemen/ElektrizitaetundGas/HandelundVertrieb/EuropElektrBinnenmarkt/Downloads/Genehmigung_622_22_006.pdf?__blob=publicationFile&v=2) (2022)

[2] Not considering the IVA application because of the DAVinCy fallbacks

[3] See: Chapter 2 [German Action Plan](https://www.bmwk.de/Redaktion/DE/Downloads/A/aktionsplan-gebotszone.html)

[4] See; <https://www.netzentwicklungsplan.de/en/front>

## TENNET TSO BV

In order to provide a better understanding of the results and the processes applied among DAVinCy TSOs, following are some introductory explanations:

* APG, Tennet NL and the German TSOs (DAVinCy TSOs) use a common tool for individual validation called DAVinCy (**D**ay **A**head **V**al**i**datio**n** of **C**apacit**y**). In case an overload cannot be solved with the available remedial actions, DAVinCy determines the necessary Individual Validation Adjustments (IVAs) on relevant CNECs with the objective to minimise the overall capacity reduction among the six DAVinCy TSOs. This can lead to situations where an overload occurs in one control area of TSO A whereas the IVA(s) is/are applied within other control areas, e.g., of TSOs B and C.
* The application of an IVA prevents a network element from being overloaded and necessarily does not lead to a deviation from the minimum cross-zonal capacity according to Article 16(8) of regulation (EU) 2019/943 on the internal market of electricity.

In the opinion of the DAVinCy TSOs, the cooperation of six TSOs within the DAVinCy consortium leads to a very effective result when relieving potential overloads within the grid in order to secure operational security. This is caused by the fact that remedial actions within six control areas can be used. Moreover, IVAs having a minimal impact on cross-zonal capacities offered to the market can be applied to solve congestions. Furthermore, the DAVinCy TSOs acknowledge, that this report has to be based on the amount of capacity reductions, i.e. IVAs applied by DAVinCy. Nevertheless, it should be noted, that measures to reduce the application of IVAs need to address the cause of IVAs, respectively the reduction of congestions and fallbacks.

The DAVinCy TSOs plan to apply the following measures in order to minimize the application of IVAs and, as required by art 20(14)(b) and 20(15) DA CCM, avoid cross-zonal capacity reductions in the future:

* Improvements within the DAVinCy tool such as the application of additional topological measures and cross-border redispatch (DE-AT implemented since the beginnig, DE-NL since BD 21/12/2022; DE-DK1 since BD 18/01/2023, DE-CH since BD 25/01/2023).
* Methodological improvements based on increasing experience with the operational Core DA Capacity Calculation to finetune the trade-off between operational security and offered capacities. This concerns, among other things, the selection of possible market outcomes that are being analysed.
* Further improvement of process robustness through the use of redundant IT systems, plausibility checks and replacement strategies for input data, separate systems for test and productive environment and implementation of security management.

In exceptional situations IVA application occurred in the fourth quarter of 2022 for the Dutch bidding zone. Regarding this quarter the following can be mentioned:

* Compared to the whole Core region, DAVinCy TSOs applied IVAs infrequently and the effective part of the IVA that limits possible market outcomes was similar to the average within the Core region.
* On BD06.12 heavy IVA application occurred in DAVinCy due to projected overloads in the NL grid in some possible market situations. The primary cause of the overloads were sensitive grid topology due to a special maintenance action in the field, causing each N-1 situation to be very sensitive for overloads. In addition, a large generator should have been modelled as unavailable, however it was considered nonetheless, thereby contributing to the severe overloads on the network elements.

# ELIA

General measures to avoid cross-zonal capacity reductions in the future, as per Art. 20(14)(b) of DA CCM include, but are not limited to:

**Robustness and CGM quality**

* A daily follow up plus short-term mitigations and long-term local validation of the tool has been set up to improve the tool aiming to:
  + reduce the number of occurrences of fallbacks,
  + reduce the number of occurrences of spanning by switching to DCLF when no ACLF converges.
* Common Core action ongoing to correct the DC imbalance corrected and the CGM used in the FB DA CC process to make the flowbased calculations more correct.

**Detailed report and action plan describing how such deviations are expected to be alleviated and solved in the future**

**Integration of coordinated validation**

* The lack of re-dispatch potential on the axis Zandvliet-Doel-Mercator will be solved with the incoming of XB RD in the future evolution of Core DA CCM.

**Situation linked to short outages:**

* There are no extra investments foreseen to cover N-2 situations like for temporary short outages.

**ROSC + Cost Sharing**

* Elia uses 50% of the PSTs range to reduce the loopflows in D-2. Our optimizer achieves a LF reduction of up to 16% of Fmax on the grid element experiencing the highest relative LF. In doing so, the optimizer uses ~70% of time the available range on the North Border PSTs (Zandvliet side) into its full extent. Thus 70% of the time the derogation is needed to adapt the CEP target. The derogation set a threshold for LF and if there is excessive LF, the target, 70%, is reduced. This derogation will stop when the methodologies of ROSC and Cost-sharing are implemented.

In Q4 there were less instances with a very high IVA reduction, also because application of fallback was not needed for Belgium. On average the application of IVA represent 2.5% of FMax and, although IVA is applied more than 1% of the time, the Market Coupling is limited by a Belgian CNEC only 0.7% of the time.

# ELES

**General measures to avoid cross-zonal capacity reductions in the future, as per Art. 20(14)(b) of DA CCM**

1. Improvement in congestion management – we will continue to improve the quality of our inputs for CORE DA CC in order to avoid unnecessary IVA application in case of errors in inputs files.
2. Network development and optimisation

**Detailed report and action plan describing how such deviations are expected to be alleviated and solved in the future**

In the second quarters after CORE DA CC go-live, ELES applied reduction for more that 1% of MTU. There are three main reasons for this:

1. Issues with our local validation tool – we faced some issues with the validation tool. We solved the issues as soon as possible, but still there were some unnecessary IVA values applied in October 2022.
2. Network weaknesses – there are some weaknesses on our network, most critical are the lines Podlog – Obersielach (SI-AT) and Divaca – Pehlin (SI - HR).

Our plan to improve the situation consists of the following:

1. Additional training of operators in order to improve the process and to avoid local tool failures due to operators’ error
2. Cooperation with the vendor of the validation tool to improve stability and reliability of the tool
3. Analysis will be performed on accuracy of validation tool (e.g. comparing the flows considered during the validation and realised flows). Based on the result of the analysis, the validation tool reliability margin will be adjusted in order to decrease the level of IVA application.
4. Network development and optimisation

# HOPS

1. General measures to avoid cross-zonal capacity reductions in the future, as per Art. 20(14)(b) of DA CCM

General measures include, but are not limited to:

* Network development and optimisation

The goal is to increase the transmission capacity and reduce grid congestion. The measures to achieve these goals include strengthening the optimising the existing network and the development of new infrastructure.

* Improvements concerning congestion management

Core CCR coordinated improvements based on shared forecasts and aligned assumptions in capacity calculations with coordinated actions to increase cross-zonal capacities and reduce uncertainties (CGM improvements, Coordinated validation, etc.). Also, inclusion of third countries could open further opportunities for HOPS (with planning process and implementation of remedial measures). Unscheduled allocated flows coming from commercial exchanges outside the Core CCR (Fuaf) has a strong impact on HOPS grid.

1. Detailed report and action plan describing how such deviations are expected to be alleviated and solved in the future

In the analysed quarter (Q4 2022), HOPS applied reduction of 11,05% MTUs. For most MTUs, the reductions are applied to TL 220kV Pehlin - Divača (6,9% MTUs, or 63% of times of all applied reductions) with the associated contingency case TL 400kV Melina – Divača. Applied reductions on network element are mostly low (3% of Fmax), while for several MTUs during business days in October higher values are applied on TL 400kV Ernestinovo – Pecs 1 due to unsolvable overloads in the relevant grid area. The rest of MTUs with applied reductions refers to several very sensitive 220kV and 400kV CNECs for the cross-zonal exchanges and with an additional impact of uncoordinated flows coming from third countries (mainly from the direction of RS and BA).

Such reductions are planned to be solved by developing and optimising the transmission network. Also, collaboration with a validation tool vendor will improve the stability and reliability of the individual validation tool in order to eliminate usage of fallback for any MTU.

# MAVIR

1. **Explanation for the reductions applied by MAVIR in Q4, 2022**

MAVIR performs the individual validation with the basic principle of determining CBCOs that can be potentially overloaded by a realistic market outcome. In case a CBCO which cannot be solved by available remedial actions from contingency analysis but selected to be potentially overloaded is identified, IVA with the objective of minimizing the loss of the flow-based domain volume is optimized and calculated in order to relieve the potential overload. In Q4, there were only three business days with considerable amount of IVA applied to one CBCO by MAVIR due to a pattern of significant power flows in the grid which can be counted as a singular case for which there is no other solution but IVA application in other hours as well. There were 5 hours each having one-one CBCO which did not fulfil the 20% minimum RAM requirement due to special planned grid outage situation that resulted in significant loadings of the concerned CBCO. In addition, of the three business days, one business day had one CBCO with IVA = 5 MW. It can be considered negligible. MAVIR has already taken measures to avoid applying negligible amount of IVA to CBCOs.

# PSE

1. General measures to avoid cross-zonal capacity reductions in the future, as per Art. 20(14)(b) of DA CCM:

PSE is taken under consideration: long-, medium- and short-term measures to prevent capacity reduction.

Generally, the main source of improvements will be grid developments, as prescribed in the Action Plan and as foreseen in the Grid Development Plan.

In medium PSE is investigating dynamic monitoring of the lines, which increase the line rating.

As the short-term measures, PSE will consider parametrization of the validation tool, potentially leading to avoiding application of low IVA values (so that IVAs will be less frequent). This is yet to be analysed and investigated. Additional propose was to include in individual validation topological remedial actions.

In some cases the IVA was implemented in specific maintenance situation, this will be only temporary and additional investigation are not foreseen,

1. Detailed report and action plan describing how such deviations are expected to be alleviated and solved in the future.

* In the analysed quarter (Q4 2022), PSE applied reduction of ~2,5% MTUs = 55 distinct MTUs with applied reductions.
* On 4 days (15 distinct MTUs) due to problem with tool for individual validation, PSE using fallback procedure applied 12692MW of IVA and it was about half of whole IVA volume for Q4. 10680MW (84% of fallback volume) was applied on CNE Krajnik-Vierraden c.2.
* For BD 10-13.10.2022, PSE used very high IVA values due to a serious error in the internal tool, which was noticed later. The error has been fixed.

Action plan:

* 1. The parametrisation of tool for individual validation might reduce frequency of IVA. Additional analysis and test will be needed to finally conclude on this, following by a decision on PSE side and necessary operators training. Upgrading of the tool is in progress and expected in some of upgrading will be available in Q2 2023.
  2. Including additional remedial actions: e.g. topological remedial action close to congested area. Additional analysis and test will be needed to finally conclude on this.
  3. Reinforcement of the grid is included in grid development plan. For example: maintenances to increase ampacity of Krosno Iskrzynia – Rzeszów line planned in 2024.
  4. The new line 400 kV line Rzeszów - Khmelnytska with Ukraine may reduce flows in the congested area (the line that is most often indicated as limiting, which was previously never identified as potentially congested). The line is planed to be in operation by Q2 2023
  5. Monitoring of CGM quality in case of F0\_Core. This is a very important element, for which unfortunately PSE is not able to do much, since CGM quality results from modelling issues from power systems outside of PSE.
  6. Special situation on the market influences redispatching potentials. Therefore, improvements of the fuel availability for the conventional power plant will increase redispatching potentials and in consequence value and frequency of the IVA  implementation. This however depends of the market situation and lies outside of PSE competences and authority.

# RTE

**Individual validation improved with the inclusion of a topological remedial action optimizer**

RTE is developing the integration of an NRAO in order to improve the inclusion of topological remedial actions in the validation step. This tool integration is expected to be ready by the end of 2023.

# SEPS

1. **General measures to avoid cross-zonal capacity reductions in the future, as per Art. 20(14)(b) of DA CCM**

There are two main measures that should lead to the increase of IVA application in the future.

1. Short-term measure: Change request for our validation tool that will allow to use more realistic vertices (based on the historical NPs that can be achieved by bidding zones in Core). This functionality aims on the evaluation of the scenarios that are more inside of the domain and should reduce the application of IVA.
2. Long-term measure: The grid reinforcements that are planned in our grid and should improve the situation on CNECs that are currently limiting the market and remedial actions that are currently available are not sufficient and therefore IVA needs to be applied.
3. **Detailed report and action plan describing how such deviations are expected to be alleviated and solved in the future**

SEPS has applied IVA reductions on 6.5 % of MTUs in Q4 2022. Most of the reductions have been done on the following CNECs:

Nosovice – Varin (tie-line CZ-SK). Short-term measure is usage of a topological remedial action in substation Nosovice. Additionally, there is already planned reinforcement, that shall increase Imax and consequently reduced the volume of IVA that is applied. The reinforcement shall be accomplished in 2026. The reductions were also caused by outages in the vicinity of that tie-line.

Levice – God (tie-line SK-HU). This tie-line was influenced by high transit flows at the end of 2022. However, this situation was temporary and we significantly decrease the number of reductions in 2023

Velky Dur – Levice This internal line is influenced by a nuclear power plant that is connected to the substation Velky Dur and therefore the loading already in base case is high and that leads to the reduction of the capacities if necessary. Grid development department is already working on a proposal how to facilitate this situation.

# Transelectrica

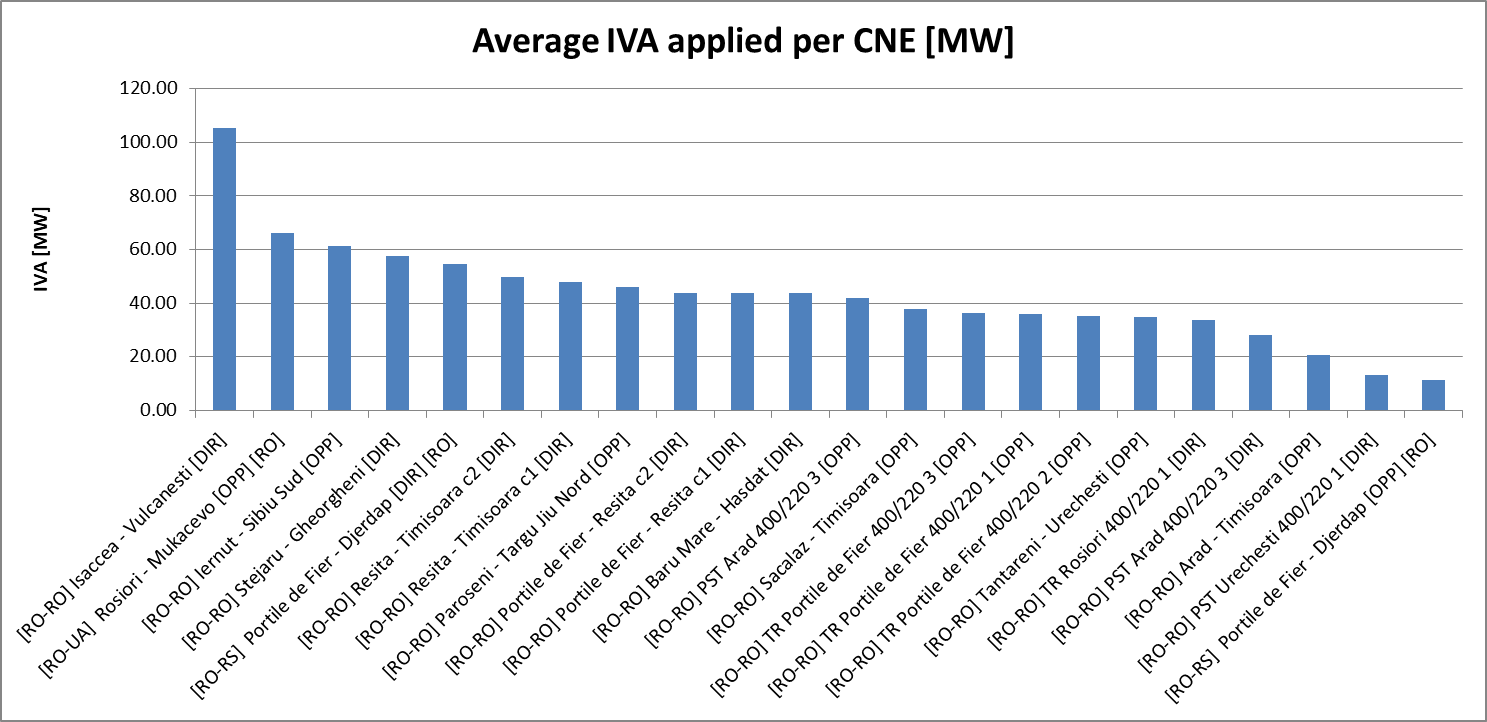
In 2021, the Romanian Government decided to adopt an Action Plan pursuant to Article 15 of the Regulation (EU) 2019/943, including a linear trajectory for the yearly increase of the minimum capacity made available for cross-zonal trade until 31 December 2025.

For year 2022 the minimum capacity made available for cross-zonal trade on Romania – Hungary border (part of Core CCR) has been 41% from the transmission capacity) according to the Action Plan. For this year though, Transelectrica was granted a derogation on foreseeable grounds for maintaining operational security, thus the minimum capacity for cross-border trade remains at 33% from the transmission capacity, the same target provided in the Action Plan for the year of 2021.

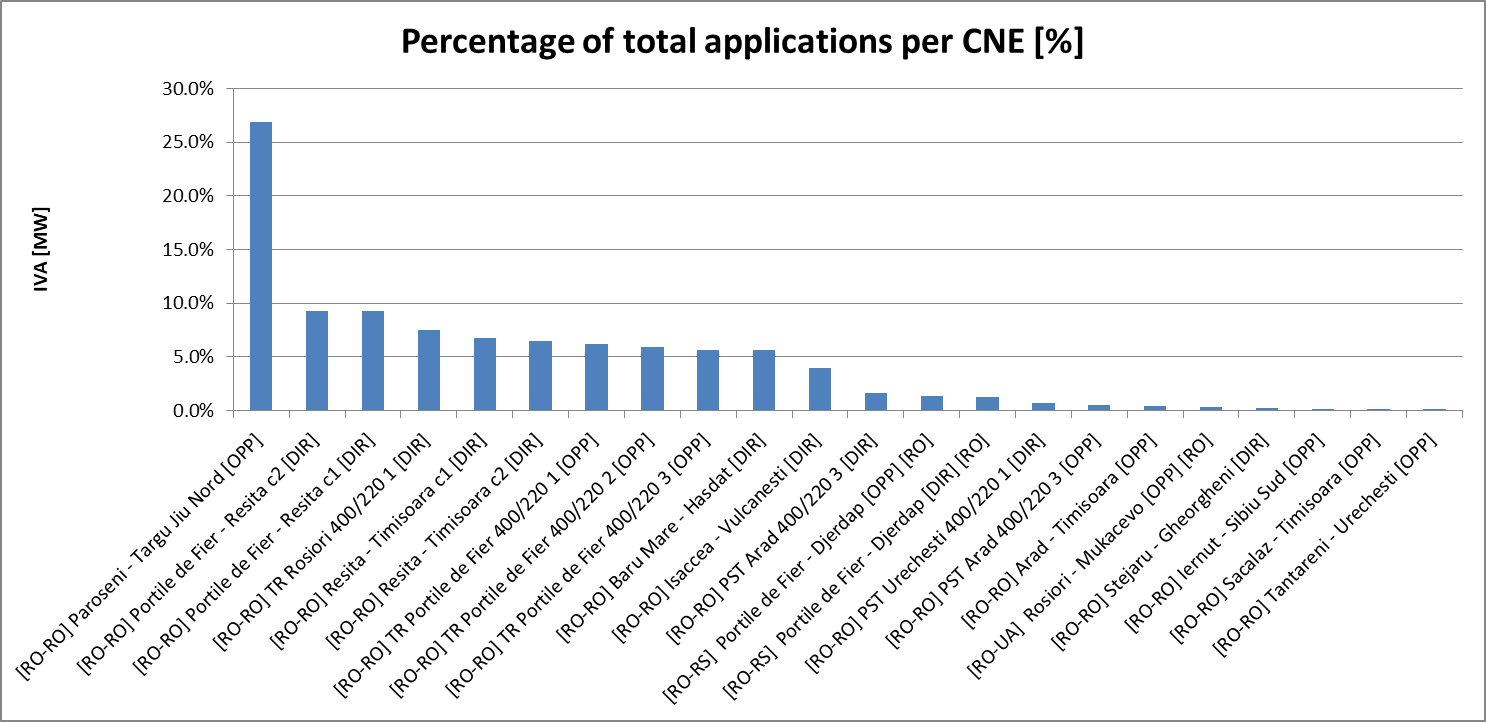
In addition to being part of the Core CCR, Transelectrica is also part of SEE CCR with RO – BG border having operational processes for Day-ahead capacity calculation since June 2021 and first Intraday capacity calculation since October 2021. Moreover, there are three non-EU borders for which there is no coordinated capacity calculation.

Regarding the capacity calculation process, the Core DA CCM allows TSOs to correct cross-zonal capacity for reasons of operational security during the validation process individually and in a coordinated way according to Article 20 (1). Article 20(5) states that *“each Core TSO shall validate and have the right to decrease the for reasons of operational security during the individual validation. The adjustment due to individual validation is called ‘individual validation adjustment’ ( and it shall have a positive value, i.e. it may only reduce the . may reduce the only to the minimum degree that is needed to ensure operational security considering all expected available costly and non-costly RAs”.*

* For the period 20221001 – 20221231, Transelectrica applied an Individual Validation Adjustment (IVA) on the CNEs mentioned in Figure 1. In this graph the average IVA per CNE is represented for the timestamps where reductions were applied.



*Figure 1. Average IVA applied per CNE during the reported period*



*Figure 2. Percentage of total IVA applications per CNE during the reported period*

1. General measures to avoid cross-zonal capacity reductions in the future, as per Art. 20(14)(b) of DA CCM;
2. Detailed report and action plan describing how such deviations are expected to be alleviated and solved in the future.

* ***Development of the transmission grid***

Most of the cases with IVA applications are related to 220 kV critical network elements located in the southwest part of the country. The following measures are foreseen according to the National Action plan in order to increase the remaining available margin of these elements:

* New 400 kV OHL Porțile de Fier – Reșița planned for 2024;
* OHL 400 kV Reșița – Timișoara – Săcălaz d.c. planned for 2025;
* OHL 400 kV Timișoara – Săcălaz – Arad d.c. planned for 2027;
* Increase the transmission capacity for the OHL in the 220 kV axis Urechești – Târgu Jiu Nord – Paroșeni – Baru Mare – Hășdat planned for 2028;
* New 400 Kv tieline Romania – Rep. Moldova planned for 2030.
* ***Increase the quality of the D2CF CGMs at CCR level***

At this moment there is no common D2CF CGMs process to be used for DA CC in all CCRs. Each CCR has its own rules on the IGMs (e.g. D2CF for Core TSOs and DACF for the rest of Continental Europe) and a net position forecast to be used when CGMs are created. As there is no common, harmonized and reliable net position or exchange forecast yet implemented in Europe, the assumptions taken by each CCR will lead to large uncertainties, potentially high overloads and operational situations where the available remedial action potential (including redispatching) is insufficient, thus leading to applying reductions on CNECs. This situation affects the power flow on the 220 kV critical network elements located especially in the southwest part of the country, heavily influenced by the exchanges in the SEE region where DACF files are used for the purpose of D2CF CGMs in Core CCR. A common D2CF CGM process is required for all CCRs in Continental Europe as soon as possible.

* ***Implementation of the coordinated validation in the Core CCR***

Coordinated validation would allow TSOs to use commonly the remedial actions available throughout Core CCR, making use of the most suitable remedial action in order to secure a minimum capacity and reduce the IVA applications.

* ***Implementation of regional coordinated processes for security analysis***

The Articles 16(4) and 16(8) of the Regulation (EU) 2019/943 refers to the implementation of the coordinated capacity calculation and security analysis at regional level to ensure a minimum capacity available for cross-zonal trade. Though the capacity calculation using flow-based method in Core CCR is now an operational process, it is not enough to comply with the minimum available capacity requirements. The results of the day-ahead capacity calculation come with a lot of uncertainties without a coordinated security analysis implemented at a regional level before real-time. Not always the internal measures and remedial actions estimated as available for day-ahead capacity calculation are available and enough to maintain the system security in real-time.

* ***Implementation of redispatching and countertrading processes implemented at regional level pursuant to Article 35 and 74 of Regulation (EU) 2015/1222.***

The Article 16(4) of the Regulation (EU) 2019/943 stated that the redispatching and countertrading shall be used to maximize the available capacity to reach the minimum capacity provided for in Article 16(8) of the Regulation (EU) 2019/943. This process shall be coordinated and follow the implementation of cost-sharing methodology. At Core CCR level these processes are under implementation. Because of this Transelectrica applies an individual redispatching process aimed at achieving the minimum level of cross-zonal capacity as per national Action Plan. This is not always feasible due to the lack of sufficient remedial actions.

* ***Coordination between capacity calculation regions***

Besides Core CCR, Transelectrica SA is also part of SEE CCR with RO – BG border. Furthermore, for the three non-EU borders there is no coordinated capacity calculation. The exchanges on the borders with Bulgaria, Serbia, Ukraine and Republic of Moldova are considered as fixed in coordinated capacity calculation from Core CCR. Any deviation from these values forecasted two days ahead will create a different loading on the critical network element with risks for the operational security of the system. Because of this, lack of cross-CCR coordination becomes critical for Romania in cases with high export from the southeast part of Continental Europe towards the central area. These uncoordinated transits through Romania correlated with high generation in the wind and hydro power plants from the south part of Romania lead to increasing the power flows on the 220 kV network in the southwest part of the country. These transits create (N-1) violations in the transmission grid which cannot be addressed without coordinated remedial actions for redispatching and countertrading.