# Public Consultation on the amendments of the proposal for common capacity calculation methodology for the Core region - PC_2018_E_06

Fields marked with * are mandatory.

The objective of this consultation is to gather views and information from stakeholders regarding the amendments of the proposal for the Core Capacity Calculation Methodology (CCM), that has been developed in accordance with Article 20 of the CACM Regulation. The input from the consultation will inform the Agency's evaluation when preparing its decision on that proposal.

This consultation is addressed to all interested stakeholders, including regulatory authorities, nominated electricity market operators and transmission system operators in accordance with Article 8(1) of Regulation (EC) No 713/2009.

**Replies to this consultation should be submitted by 24 December 2018 23:59 hrs (CET).**

## 1 General Considerations

* 1.1 Name

* 1.2 Email

* 1.3 Company

* 1.4 Country

- Austria
- Belgium
- Bulgaria
- Croatia
- Cyprus
- Czech Republic
- Denmark

- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Latvia
- Lithuania
- Luxembourg
- Malta
- Netherlands
- Poland
- Portugal
- Romania
- Slovak Republic
- Slovenia
- Spain
- Sweden
- United Kingdom

* 1.5 Should the following answers to this public consultation be treated as confidential?

- Yes
- No

1.6 Respondents claiming confidentiality are invited to provide an explanation of their confidentiality interests and a non-confidential version of their response for publication.

The Agency will publish all non-confidential responses, and it will process personal data of the respondents in accordance with Regulation (EC) No 45/2001 of the European Parliament and of the Council of 18 December 2000 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data, taking into account that this processing is necessary for performing the Agency's consultation task. For more details on how the contributions and the personal data of the respondents will be dealt with, please see t he Agency's Guidance Note on Consultations and the specific privacy statement referred to this consultation.

## 2 Background Information

Related documents :

- Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators.

- Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross border exchanges in electricity and repealing Regulation (EC) No 1228/2003
- Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council Text with EEA relevance
- Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a Guideline on Capacity Allocation and Congestion Management
- Recommendation of the Agency for the Cooperation of Energy Regulators No 02/2016 Of 11 November 2016 on the Common Capacity Calculation and Redispatching and Countertrading Cost Sharing Methodologies
- Amended Core CCR TSOs' Capacity Calculation Methodology proposal for the regional design of the day-ahead common capacity calculation methodology
- Amended Core CCR TSOs' Capacity Calculation Methodology proposal for the regional design of the intraday common capacity calculation methodology
- Explanatory document to the amended Core CCR TSOs' Capacity Calculation Methodology proposal
- ACER Guidance Note on Consultations

**Background**

In accordance with Article 20 of the Commission Regulation (EU) 2015/1222 (the 'CACM Regulation'), in each Capacity Calculation Region ('CCR') TSOs are obliged to develop Capacity Calculation Methodology ('CCM') for the day-ahead market time-frame and intraday market time-frame . The proposal needs to be submitted in each CCR to all regulatory authorities for approval no later than 10 months after the approval of the proposal for a capacity calculation region in accordance with Article 15 (1) of the CACM Regulation.
The TSOs of the Core Capacity Calculation Region ('Core TSOs') submitted the first CCM proposal to the national regulatory authorities from the Core region ('Core NRAs') by 20 September 2017 and, subsequently, Core NRAs requested amendments to it in March 2018. Core TSOs then submitted an amended CCM proposal (the 'amended proposal') on 19 June 2018. On 21 August 2018, the Agency received a letter from the Core NRAs requesting the Agency to adopt a decision on the amended proposal pursuant to Article 9(11) of the CACM Regulation.

In this letter, Core NRAs could not conclude that the amended proposal properly tackled the following issues:

1. non-discrimination between internal and cross-zonal trade
2. calculation of capacity calculation inputs
3. application of allocation constraints
4. capacity validation
5. intraday capacity calculation process and the status of cross-zonal capacity at intraday gate closure time
6. transparency
7. implementation timeframe

The Agency shall adopt a decision on this proposal by 21 February 2019. In the context of adopting this decision, the Agency seeks the opinion of stakeholders on the above issues. Other comments and concerns are also welcome.

# 3 Topic 1: Undue discrimination between internal and of cross-zonal trade

**The Core TSOs' proposal**

In accordance with Article 21(1)(b)(ii) of the CACM Regulation, the proposal for the CCM should include rules for avoiding undue discrimination between internal and cross-zonal exchanges to ensure compliance with point 1 .7 of Annex I to Regulation (EC) No 714/2009. Core TSOs propose to address this requirement by:

1. including in capacity calculation only those network elements which are 'cross-zonal relevant'. These are all cross-zonal network elements and only those internal network elements which are significantly influenced by cross-zonal trade (i.e. their maximum zone-to-zone PTDF is higher than 5 %);
2. ensuring a minimum margin made available for commercial exchanges on those elements. Core TSOs propose to fix this minimum margin at 20% of Fmax, but with the possibility for each TSO to reduce it during the capacity validation process, should the respective TSOs not have sufficient remedial actions to guarantee this value.

Core NRAs concluded that the amended proposal did not properly address the issue of undue discrimination.
In order to mitigate the issue of undue discrimination, the Agency issued a Recommendation for the development of capacity calculation methodologies establishing two high-level principles, which would be respected should an optimal bidding zone configuration be implemented :

- Principle 1: limitations on internal network elements should not be considered in the cross-zonal capacity calculation;
- Principle 2: the capacity of the cross-zonal network elements considered in the common capacity calculation methodologies should not be reduced in order to accommodate loop flows.

The Agency's Recommendation further mentions that, as loop flows are inherent in a zonal market design even in case of optimally defined bidding zones, a minimum amount of loop flows could be allowed. Finally, the Recommendation foresees the possibility temporally to deviate from these principles if properly and transparently justified.

**The Agency's suggested amendments**

Following the approach in its recommendation, the Agency suggests to address the issue of non-discrimination as follows:

**Selection of critical network elements and contingencies**

In an efficient zonal congestion management model, the bidding zones should be established such that

physical congestions occur only on network elements located on the borders of bidding zones. In principle, the network elements located within bidding zones should not limit cross-zonal capacity and should therefore not be considered in capacity calculation. Nevertheless, at the time of adopting this methodology, the Agency observes that the usual practice in the Core CCR is to include these internal network elements in the capacity calculation methodology and to reduce the level of cross-zonal capacity to be made available to the market in order to limit congestions occurring on network elements located inside Core bidding zones.
As the Agency acknowledges that such a practice cannot change overnight, a transitory period limited to 2 years is proposed during which TSOs will still be allowed to include these internal network elements in the capacity calculation methodology. During this transitory period, TSOs should gradually shift from limiting cross-zonal capacity, as the main method to address these internal congestions, to other methods, which do not limit cross-zonal capacity (such as remedial actions, reconfiguration of bidding zones or network investments). After this transition period, TSOs should demonstrate that during the transition period they have evaluated all possible alternatives, taking into account the time needed for their implementation, and that this analysis demonstrated that none of the alternatives is more efficient than limiting cross-zonal capacity to address congestions within bidding zones. If regulatory authorities are convinced about the outcome of this analysis and that the concerned TSOs did everything in their power, the concerned TSOs may continue to limit cross-zonal capacity to address congestions within bidding zones.
The Agency also acknowledges that operational security shall be ensured throughout this transition phase. As a result, the Agency suggests that, as a last resort measure during exceptional situations, a TSO may temporary add an internal network element to capacity calculation during the validation phase, when no other measure would guarantee operational security.

**Minimum remaining available margin**

The Agency commends the TSOs' proposal of a minimum remaining available margin ('minRAM') equal to 20% of Fmax, but considers this value as not ambitious enough even as a starting point for the Core capacity calculation methodology. The Agency proposes that this value is increased to 30% of Fmax at the go-live of the methodology (expected by mid- to end of 2020). This threshold should then linearly increase in the following years, in order to reach the target of 75% of Fmax by 2026*.
This proposal aims to find the right balance between the ambition for high cross-zonal capacity and the risk of significantly delaying the implementation date. It also takes account of the current status of the discussions in the context of the "Clean Energy Package" , however, the Agency cannot ensure full consistency with this package as it is not adopted yet, and therefore the Core CCM will need to be amended after the adoption of the Clean Energy Package.

*This value may need to be amended once the Clean Energy Package if finalised and adopted.

3.1 Please comment on the suggested approach on the selection of critical network elements and contingencies

3.2 Please comment on the suggested approach to minimum remaining available margin

# 4 Topic 2: Capacity validation

Whenever TSOs are not able to ensure operational security with the cross-zonal capacity (i.e. RAM) resulting from the capacity calculation process, they are entitled to reduce it. TSOs propose four different reasons for reductions (mistake in the input data, reactive power problems, unforeseen event during capacity calculation process, insufficient remedial actions).
While the Agency generally agrees with preserving the 'final say' of TSOs to ensure operational security, it deems important that an additional step is introduced in the capacity calculation process to allow for a regional assessment by the coordinated capacity calculator of whether all available remedial actions in the Core CCR are sufficient to guarantee the calculated cross-zonal capacity and operational security. In the Agency's opinion, the application of remedial actions is indeed by default a regional process and the assessment of their sufficiency can only be properly performed at a regional level. After this step, the final competence of each TSO to validate calculated cross-zonal capacity will remain. However, in the Agency's opinion, reductions due to individual TSO validation should be properly justified. That is why the Agency proposes to require, every three months, the following information for each reduction occurring during validation:

- the identification of the CNEC;
- all the corresponding flow components pursuant to capacity calculation;
- the volume of reduction, the shadow price of the CNEC resulting from SDAC and the estimated market loss of economic surplus;
- the detailed reason(s) for reduction, including the security constraint violated, and in which configuration it was violated;
- the forecast flow in the D-2 CGM, in the D-1 CGM, and the realised flow, before (and when relevant after) contingency;
- if an internal CNEC was added during validation: a justification why introducing the CNEC was the only way to ensure operational security, the identifier of the CNEC, the market time units for which the CNEC was introduced, all corresponding flows pursuant to Article 25 and the corresponding shadow price, the forecast flow in the CGM, the D-1 CGM, and the realised flow, before (and when relevant after) contingency;
- the remedial actions included in the CGM before capacity calculation;
- in case of reduction due to individual validation, the TSO invoking the reduction;
- the proposed measures to avoid similar reductions in future.

In addition to these specific data items, when, for a given Core TSO, such reductions occur more than 1% of market time units in a given quarter, the Agency suggests to request a detailed action plan from the TSO, detailing the underlying cause and specific measures aiming to remove the reductions in the following two years.

4.1 Please comment on the suggested approach to the validation process

# 5 Topic 3: The quality of the capacity calculation input parameters

In some instances, the methodology to determine the capacity calculation input parameters is unclear and too vague. This is particularly true for the Flow Reliability Margins and the Generation Shift Keys.

**Flow Reliability margins ('FRM')**

The proposed methodology for the calculation of FRMs establishes a two-step process to (i) calculate the probability distribution of expected errors in capacity calculation, and (ii) draw a value from this distribution using a common risk level of 10% such that, in 90% of the cases, the forecast errors would not create congestions. Nevertheless, TSOs propose that this methodology would be first applied only after one year of actual operation and for some TSOs a single FRM would be calculated for a specific critical network element (CNE), whereas for some other TSOs, the FRM for a specific CNE would differ depending on the associated contingency. Given the above, it is difficult for the Agency to evaluate the impact of the methodology and the respective choices on the final values of FRMs.
To address this uncertainty, the Agency proposes to:

1. Temporarily apply existing FRMs in the former CWE Region, and a FRM of 10% of Fmax in the remaining Core CCR;
2. Ask TSOs to use the proposed methodology and perform the first calculation of FRMs after at least one year of operation;
3. By eighteen months after the go-Live of the Core CCM, the TSOs would submit amendments to the Core CCM in order to specify whether FRMs should be unique per CNE or per CNEC and support the proposal with concrete values based on the first calculation.

The Agency considers that the above approach should provide the Core NRAs, when receiving the proposal for amendment, an opportunity to make a more informed decision on the calculation of FRMs.

**Generation Shift Key ('GSK')**

In their proposal, Core TSOs mainly listed current practices in the Core Region. The Agency considers that TSOs should establish a harmonised methodology to calculate GSK, which does not necessary exclude that the GSKs are different in order to accommodate specific generation and load pattern in specific bidding zones. For this reason, the Agency proposes the following improvements:

1. Define in the methodology a high level principle according to which selected GSKs should be established based on historical response of generation and/or load units to changes in the net positions of bidding zones, prices and other fundamental factors;
2. By eighteen months after the go-Live of the CCM, Core TSOs shall, based on the operational experience gained since the go-live, submit an amendment to the Core CCM in order to define:
    1. criteria and metrics for the efficiency and performance of GSKs;
    2. a harmonised GSK methodology combined with, where necessary, rules and criteria when TSOs can deviate from it.

5.1 Please comment on the suggested approach to FRM

5.2 Please comment on the suggested approach to GSK

5.3 Please comment on any other input parameter

## 6 Topic 4: Allocation constraints

In their proposal, the Core TSOs propose to use only one type of allocation constraint, i.e. external constraint, which limits the total import or export (i.e. net position) of a bidding zone. Such constraint is proposed by the TSOs of Belgium, the Netherlands and Poland. For Belgium and the Netherlands, the concerned TSOs explain that in case of large import or export volumes they could face voltage and dynamic stability problems (which are defined as operational security constraints) and these constraints cannot be translated into the maximum flow on critical network elements (i.e. Fmax). In the case of Poland, the concerned TSO explained that in specific market situations they could face a problem of ensuring sufficient balancing capacity (for electricity balancing) and it is therefore essential to limit the total import or export from Poland in order to ensure that sufficient generating capacity remains available after the day-ahead market to ensure sufficient balancing capacity.
The Agency is generally very sceptical with the proposal and justifications made by the concerned TSOs, since:

- they have not indicated that they have explored all other alternatives to address the underlying problems and concluded that external constraints are the only or the most efficient way to address them;
- they have not provided a methodology to calculate the value of these constraints on a daily basis;
- in the case of the Polish external constraint, it is not clear which operational security constraint is causing the need for external constraint, because sufficient balancing capacity can be ensured by a different model from procurement of balancing capacity.

The Agency therefore proposes the following amendments to address the allocation constraints:

- Include a transitory period of 2 years during which the concerned TSOs will be allowed to use allocation constraints and evaluate alternative solutions to address the underlying problems;
- After the transitory period, the use of allocation constraints will not be allowed anymore, unless the concerned TSOs can demonstrate that 1) these allocation constraints are legally justified, 2) their impact on the market has been properly assessed and 3) alternative solutions have been explored by the concerned TSOs and deemed not appropriate to address the underlying problems. In the latter case, a proposal for amendment of the Core CCM shall be submitted to the Core NRAs before the expiry of the transitory period in order to continue using the allocation constraints.

6.1 Please comment on the suggested approach to allocation constraints

## 7 Topic 5: Intraday (ID) capacity calculation

**ID capacity calculation process:**

Based on the TSOs' proposal, the ID capacity calculation is similar to the day-ahead (DA) one, with the following main differences. The steps of minRAM and LTA inclusion are not conducted in the ID, whereas the other main calculation steps (including RAO) apply in both ID and DA.

TSOs reasoned that the minRAM and LTA inclusion knowingly creates congestions, which need to be resolved with remedial actions. However, after the ID capacity calculation and allocation, TSOs do not have sufficient time for a proper validation and application of remedial actions in case operational security issues are identified due to the application of minRAM and LTA inclusion.

The Agency does not propose significant amendments to the ID capacity calculation process as proposed by TSOs and in particular acknowledges the difficulty to implement the minRAM and LTA inclusion concepts in the ID capacity calculation*. However, the Agency would like TSOs to investigate ways to increase available margin on network elements when it is valuable and does not endanger operational security.
In order to ensure consistency between the ID and DA capacity calculation methodology, the Agency proposes relying on a uniform approach for both DA and ID capacity calculation for the following topics:

- CNEC selection and operational security limits;
- Allocation constraints
- Consideration of non-Core borders
- FRM
- GSK
- Capacity calculation process, excluding minRAM, LTA inclusion and coordinated validation
- Precoupling backup, and ATCs for fallback
- Data publication and transparency, monitoring
- Review and updates of the methodology

**Number of ID recalculations:**

Core TSOs propose that the ID capacity calculation is performed twice, once in the evening of D-1 for all MTUs of the day D and once in the morning of day D for the remaining MTUs of day D. Additional recalculations may be possible subject to specific constraints. However, the proposal is rather vague on the timings and implementation of these requirements.
In order to improve the clarity and enforceability of these requirements, the Agency proposes that TSOs should first focus on one ID recalculation in the evening of D-1, with the target deadline for first allocation at 22:00. The Agency would thus also define a more concrete and legally binding implementation timeline for this recalculation. The requirements for additional recalculation could, in the

Agency's opinion, remain undefined in terms of timings and implementation deadline, since their implementation is likely to require very long implementation timeline and these can be further specified in future amendments of the Core CCM.

**ID cross-zonal capacity at intraday cross-zonal gate opening time:**

Article 4(9) of the proposed intraday capacity calculation methodology provides TSOs with the possibility not to offer any capacity to the intraday market until 22:00 CET D-1. This would apply before the implementation of the ID capacity calculation methodology (when leftover capacity from day-ahead timeframe would be offered) and after the implementation (when updated capacity based on the ID capacity calculation would be offered). This provision could imply:

1. different solutions on different Core bidding zone borders (as it allows that TSOs may decide to not offer leftover capacity); and
2. no intraday cross-zonal trading in the Core CCR until 22:00 D-1 in case all TSOs decide to apply the option provided by Article 4(9) of the proposal.

In order to facilitate intraday cross-zonal trading, the Agency considers that TSOs should generally offer the leftover capacity from day-ahead timeframe at the intraday-cross-zonal gate opening time. Nevertheless, the Agency understands that some TSOs in the Core CCR may have difficulty with this requirement since they do not have sufficient experience on the interaction between day-ahead congestion management, intraday capacity calculation and intraday cross-zonal trading when these are running in parallel. For this reason, the Agency proposes that TSOs are given a sufficient transition period to gain experience with these processes and to prepare for such parallel operation. Such transition period could expire with the successful implementation of the intraday capacity calculation methodology.

*This reinforces the importance to address adequately the issue of non-discrimination in the day-ahead capacity calculation methodology.

7.1 Please comment on the consistency between DA and ID (removal of minRAM, LTA inclusion and validation, use of RAs to increase ID capacity)

7.2 Please comment on the on the suggested approach to the timing and frequency of ID capacity calculation

7.3 Please comment on the on the suggested approach to the cross-zonal capacity at the intraday cross-zonal gate opening time

# 8 Topic 6: Transparency of the CCM

Capacity calculation is still largely considered as a black box by market participants and the interested public, but the latter are entitled to understand how the publicly financed infrastructure is used and whether it is used efficiently. Transparency of capacity calculation is essential to achieve the objectives of the CACM Regulation, namely ensuring and enhancing the transparency and reliability of information (Article 3(f) of the CACM Regulation) and the objective of ensuring optimal use of the transmission infrastructure (Article 3(b) of the CACM Regulation).

The CCM should therefore provide sufficient clarity as to how the physical properties of the network translate into opportunities for cross-zonal trade. In the context of the calculation of cross-border capacity, it is essential to enable stakeholders to understand whether the methodology results in ensuring an offer of capacity, which maximises welfare at the level of the Capacity Calculation Region.

Article 21(1) of the CACM Regulation specifies all the details that a capacity calculation methodology must lay down, namely the calculation methods for capacity calculation inputs, the capacity calculation approach and the capacity calculation validation.

In addition to the overall transparency on the calculation methods and processes, the application of these methods and processes on a day-to-day basis also needs to be transparent. The purpose of this segment of transparency is to provide sufficient visibility to market participants on the (i) correct application of the capacity calculation methodology and (ii) the evolution of the cross-zonal capacities, which are considered as one of the most fundamental factors to electricity prices.

To address this need, the CCM lists the capacity calculation data that TSOs must publish. The Agency identified the following proposed data items to be published:

1. *flow-based parameters before long term nominations pursuant to Article 21(1) shall be published no later than 8:00 of D-1 market time for each market time unit of the following day ;*
2. *the long term nominations for each Core border where PTRs are applied shall be published no later than 10:30 of D-1 market time for each market time unit of the following day;*
3. *final flow-based parameters pursuant to Article 21(4) shall be published no later than 10:30 of D-1 market time for each market time unit of the following day;*
4. *the following information shall be published no later than 10:30 of D-1 market time for each market time unit of the following day:*
    1. *maximum and minimum possible net position of each bidding zone;*
    2. *maximum possible bilateral exchanges between all pairs of Core bidding zones;*
    3. *ATCs for fallback procedure.*
    4. *real names of CNECs and external constraints;*
    5. *for each CNEC the EIC code of CNE and Contingency;*
    6. *detailed breakdown of RAM for each CNEC:*
        1. *I_max;*
        2. *U;*
        3. *F_max;*
        4. *FRM;*
        5. *F_0;*

6. *F_LTN;*
7. *F_nrao;*
8. *AMR;*
9. *LTA_margin;*
10. *CVA;*
11. *IVA;*

7. *detailed breakdown of RAM for each external constraint:*
    1. *F_max;*
    2. *F_LTN.*
8. *for each RA resulting from the NRAO:*
    1. *Type of RA;*
    2. *Location of RA;*
    3. *Whether the RA was curative or preventive;*
    4. *If the RA was curative, a list of CNEC identifiers describing the CNECs to which the RA was associated.*

5. *the following forecast information contained in the D-2 CGM for each market time unit, for each Core bidding zone and each TSO shall be published no later than 10:30 of D-1 market time:*
    1. *vertical load;*
    2. *production;*
    3. *net position;*
    4. *exchange programs on non-Core bidding zone borders*
6. *Every six months, publication of an up-to-date static grid model by each Core TSO*

Further, at the request of specific TSOs, the Agency proposes that in those instances when a national legislation prevents the publication of information related to the protection of critical infrastructure, the relevant TSO may withhold such information. Thus, the Core CCM would contain the following paragraph:

*Individual Core TSO may withhold the publication of information disclosing the locational information referred to in paragraph (d)iv, (d)v and (f) if required by a competent regulatory authority or by relevant national legislation on the grounds of protecting the critical infrastructure. In such a case, the information referred to in paragraph (d)iv and (d)v shall be replaced with an anonymous identifier which shall be stable for each CNEC across all market time units. The anonymous identifier shall also be used in the other TSO communications related to the CNEC, including when communicating about an outage or an investment in infrastructure. The list of data items withheld pursuant to this paragraph shall be published on the communication platform.*

8.1 Please comment on the on the suggested approach to transparency

# 9 Topic 7: Implementation timeline

The TSOs propose an open-ended process of implementation timeline, where specific implementation steps are conditional on the successful completion of the previous steps. The Agency proposes a more firm and legally enforceable deadline for implementation, which would read as follows:

*The TSOs of the Core CCR shall implement this methodology no later than [1 April 2020]*. The implementation process shall start with the entry into force of this methodology and shall consist of the following steps:*

1. *Internal parallel run, during which the TSOs shall test the operational processes for capacity calculation inputs, capacity calculation process and capacity validation and develop the appropriate IT tools and infrastructure;*
2. *External parallel run, during which the TSOs will continue testing their internal processes and IT tools and infrastructure. In addition, Core TSOs will involve Core NEMOs to test the implementation of this methodology within the SDAC, and market participants to test the effects of applying this methodology on the market. In accordance with Article 20(8) of CACM Regulation, this phase shall not be shorter than 6 months.*

*During the internal and external parallel run as well as after the implementation of this methodology, Core TSOs shall continuously monitor the effects and the performance of the application of this methodology. For this purpose, they shall develop, in coordination with Core regulatory authorities, the Agency and stakeholders, the monitoring and performance criteria and publish a report on the outcome of this monitoring on a quarterly basis.*

*This date is subject to ongoing discussions and may change.

9.1 Please comment on the on the suggested implementation timeline

## 10 Conclusion

10.1 Please provide any further comment on the Core Capacity Calculation Methodology