European Network of
Transmission System Operators
for Electricity

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All TSOs' proposal for the methodology and assumptions that are to be used in the bidding zone review process and for the alternative bidding zone configurations to be considered in accordance with Article 14(5) of Regulation (EU) 2019/943 of the European parliament and of the Council of 5th June 2019 on the internal market for electricity

1 October 2019

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Contents

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All Transmission System Operators taking into account the following:

Whereas

(1) This document is a common proposal developed by all Transmission System Operators (hereinafter referred to as "**TSOs**") regarding the methodology and assumptions that are to be used in the bidding zone review process and for the alternative bidding zone configurations to be considered pursuant to Article 14(5) of the Regulation (EU) 2019/943 of the European Parliament and Council of 5th June 2019 on the internal market for electricity (recast) (hereinafter referred to as the "**IME Regulation**"). This proposal is hereinafter referred to as the "**BZ Review Methodology**".

(2) The BZ Review Methodology takes into account the general principles and goals set in the IME Regulation and in Regulation (EC) 2015/1222 establishing a guideline on capacity allocation and congestion management (hereinafter referred to as the "**CACM Regulation**").

(3) The BZ Review Methodology allows for a definition of bidding zones in a manner to ensure market liquidity, efficient congestion management and overall market efficiency as set forth in recital 19 of the IME Regulation

(4) The BZ Review Methodology is based on structural congestions as set forth in Article 14(5) of the IME Regulation.

(5) The BZ Review Methodology balances the need for expeditiousness with practical considerations as set forth in Article 14(10) of the IME Regulation by pondering the requirement of Article 14(5) for the IME Regulation to consider structural congestions which are not expected to be overcome within the following three years, taking due account of tangible progress on infrastructure development projects that are expected to be realized within the following three years with the availability of input data for the BZ review as well as with the possibility for member states to opt for an action plan to overcome the structural congestions inside its bidding zone until 31 December 2025 as set forth in Article 15(2) of the IME Regulation.

(6) The BZ Review Methodology is a common proposal of all relevant TSOs taking due consideration of regional specificities.

SUBMIT THE FOLLOWING BIDDING ZONE REVIEW METHODOLOGY TO ALL REGULATORY AUTHORITIES:

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Article 1
Subject Matter and Scope

(1) The BZ Review Methodology is the common proposal of all relevant TSOs in accordance with Article 14(5) of the IME Regulation.

(2) The BZ Review Methodology defines the methodology and assumptions that are to be used in the bidding zone review process and for the alternative bidding zone configurations to be considered.

Article 2
Definitions and Interpretation

(1) For the purposes of the BZ Review Methodology, the terms used shall have the meaning given to them in Article 2 of the IME Regulation and in Article 2 of the CACM Regulation. In case of inconsistencies, the definitions of Article 2 of the IME Regulation shall prevail.

(2) In this BZ Review Methodology, the following abbreviations are used:

(a) ACER: Agency for Cooperation of Energy Regulators;

(b) BZ: Bidding Zone;

(c) BZR: Bidding Zone Review;

(d) BZRR: Bidding Zone Review Region;

(e) CCR: Capacity Calculation Region;

(f) CACM: Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management;

(g) CGM: Common Grid Model;

(h) CNE: Critical Network Element;

(i) CNEC: Critical Network Element and Contingency;

(j) FRM: Flow Reliability Margin;

(k) GSK: Generation Shift Keys;

(l) HHI: Herfindahl-Hirschman Index;

(m) HVDC: High Voltage Direct Current network element;

(n) LF&SA: Load Flow and Security Analysis;

(o) LMP: Locational Marginal Pricing;

(p) LODF: Line Outage Distribution Factors;

(q) MACZT: Margin Available for Cross-Zonal Trade;

(r) NTC: Net Transfer Capacity;

(s) PECD: Pan-European Climate Database;

(t) PEMMDB: Pan-European Market Modelling Database;

(u) PST: Phase Shifting Transformer;

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(v) PTDF: Power Transfer Distribution Factor;

(w) RAM: Remaining Available Margin;

(x) TSO: transmission system operator;

(y) TYNDP: Ten-Year Network Development Plan.

(3) In the BZ Review Methodology the following terms shall be defined:

(a) 'Bidding Zone Review Region' means region which is a set of Bidding Zones for which collectively a Bidding Zone Review is to be performed;

(b) 'Critical Network Element and Contingency' means a Critical Network Element (CNE) associated with a Contingency used in capacity calculation. For the purpose of this methodology, the term CNEC also covers the case where a CNE is used in capacity calculation without a specified Contingency;

(c) 'Expert-Based Assessment' refers to an approach to define alternative bidding zone configurations, based on a selection of ex-ante defined configurations encompassing splitting or merging of the existing bidding zones. Since these configurations are defined by the concerned TSOs based on their expert assessment (using quantitative analysis to support the choice), these are referred to as expert-based configurations;

(d) 'Energy Not Served' refers to the missing MWh to reach generation per year.

(e) 'Expected Energy Not Served' refers to the expected missing MWh to reach generation per year.

(f) 'Flow Reliability Margin' means the Reliability Margin as defined in Article 2(14) of the CACM Regulation applied to a CNE;

(g) 'Loss of Load Expectation' refers to the predicted hours of no supply per year.

(h) 'MACZT' means the margin available for cross-zonal trade, i.e. the portion of capacity of a CNEC available for cross-zonal trade;

(i) 'Model-Based Assessment' refers to an approach to define alternative bidding zone configurations, based on a model-based (greenfield) approach. The approach is based on two steps: in a first step, a nodal (locational marginal price) market design is simulated, and in a second step, the nodes are clustered in order to constitute a bidding zone;

(j) 'Net Transfer Capacity' means the cross-zonal capacity calculated with the (coordinated) net transmission capacity calculation approach, as defined in Article 2(8) of the CACM Regulation;

(k) 'Power Transfer Distribution Factors' means indicator which describes the impact of a bidding-zone net position or of a commercial exchange between two bidding-zones on a CNEC;

(l) 'Remaining Available Margin' means margin of a CNEC for the considered capacity calculation market time unit.

(m) 'Remaining Capacity Margin' means difference between the maximum available generation capacity and the maximum hourly load per hour.

(n) 'Monetized Benefit' means societal benefit that an alternative bidding zone configuration is expected to entail in terms of Euros with respect to the status quo bidding zone configuration, while considering that impacts of the bidding zone amendments as much as possible by their economic value.

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(4) In the BZ Review Methodology, unless the context requires otherwise:

(a) the singular indicates the plural and vice versa;

(b) headings are inserted for convenience only and do not affect the interpretation of the BZ Review Methodology; and

(c) any reference to legislation, regulations, directives, orders, instruments, codes or any other enactment shall include any modification, extension or re-enactment of it when in force;

(d) any reference to an Article without an indication of the document shall mean a reference to the BZ Review Methodology.

Article 3
Overview of the Bidding Zone Review process

(1) The TSOs of each Bidding Zone Review Region (hereinafter "**BZRR**") shall perform a Bidding Zone Review consisting out of the following steps:

(a) The definition of the exact scenarios and assumptions considered by TSOs of each BZRR, for elements not defined yet by this BZ Review Methodology;

(b) Performing the simulation chain as described in Article 6 of BZ Review Methodology according to these scenarios and assumptions;

(c) The evaluation of the criteria describing the performance of the configurations resulting from the simulation chain according to Article 13 of BZ Review Methodology;

(d) The determination and publication of a final recommendation on maintaining or amending the bidding zones within the BZRR.

Article 4
Configurations

(1) The BZ Review shall be carried out on a regional level by the TSOs of each BZRRs.

(2) The following BZRRs and BZs shall be considered in the BZ Review:

(a) **The BZRR Central Europe** comprises the Bidding Zones: France, Belgium, The Netherlands, Germany/ Luxembourg, Austria, Czech Republic, Poland, Slovakia, Hungary, Slovenia, Croatia, Romania, Denmark 1, Switzerland and Italy 1 (Nord);

(b) **The BZRR Nordic** comprises the Bidding Zones: Finland, Sweden 1, Sweden 2, Sweden 3, Sweden 4, Norway 1, Norway 2, Norway 3, Norway 4, Norway 5 and Denmark 2;

(c) **The BZRR South-East Europe** comprises the Bidding Zones: Bulgaria and Greece;

(d) **The BZRR Central Southern Italy** comprises the Bidding Zones: Italy 2 (Cnor), Italy 3 (Csud), Italy 4 (Sud), Italy 5 (Sici), Italy 6 (Sard), and Italy 7 (Rosn/Cala);

(e) **The BZRR Iberian Peninsula** comprises the Bidding Zones: Spain and Portugal;

(f) **The BZRR Baltic** comprises the Bidding Zones: Estonia, Latvia and Lithuania;

(g) **The BZRR Ireland** comprises the Bidding Zone: Ireland Single Electricity Market;

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(h) **The BZRR United Kingdom** comprises the Bidding Zone: Great Britain.

(3) The TSOs of a BZRR shall deliver a set of bidding zone configurations for their BZRR which are to be used in the BZR Process. These sets of configurations contain the current BZ configuration (also referred to as status quo configuration) as the benchmark configuration and additional alternative configurations.

(4) If sufficient justification is provided on the absence of structural congestions that have impact on neighbouring bidding zones under the consideration of applicability of the 70% criterion as intended in Article 16(8) of the IME regulation, TSOs of a BZRRs may submit only the status quo configuration, subject to approval of all national regulatory authorities. In this case, no alternative configurations will be investigated by the TSOs of these BZRRs in the BZ Review.

(5) An overview of the sets of configurations to be used in the BZR process is given in Annexes of this BZ Review Methodology. Configurations are based on an Expert-Based Assessment, a Model-Based Assessments or a combination of both.

Article 5
Scenarios and assumptions

(1) **Target year.** For BZR purposes, target year is a year that is represented in BZR calculations. TSOs of a BZRR may perform sensitivity analyses or complete additional model runs for other target years than the Base Year as defined in paragraph 2.

(2) **Base year** Pursuant to Article 14(5) of the IME Regulation, the BZ review shall take as target year the third year from methodology approval (hereinafter referred to as "**Base Year**"). The data set used for the Base Year shall be based on the year 2025 to align it with the TYNDP scenarios available and shall incorporate the adjustments or qualitative assessment to show the differences between the third year from methodology approval and 2025.

(3) **Grid data.** For the Base Year, the network model shall be based on the TYNDP 2020 process for the 2025 reference grid taking into account at least the relevant network elements operating at voltage levels of 220 kV and higher. In case additional target years would be analysed, network models shall be developed for those years as well. The level of detail of the grid data may vary for the Bidding Zones within the BZRR and shall be determined by the TSOs of the BZRR. The modelling of BZs outside the BZRR may also be simplified, if appropriate. The grid model can include the following adjustments:

(a) TSOs can apply topological changes in their own grid such as opening or closing circuit breakers or busbar breakers, as long as these assumptions are estimated to be suited to the Bidding Zone Review.

(b) If a TSO shows that including 220 kV model results leads to less representative model results, the inclusion of the 220 kV grid is not mandatory.

(c) If one or more TSOs of a BZRR deems that the inclusion of part of the lower voltage levels than 220 kV improves the model, these may also be included.

(4) **Weather years**. Load and a number of generation technologies are dependent on their climatic conditions which are represented in the data as weather years. The model shall be run for at least one representative weather year which may be derived from the TYNDP clustering process. TSOs of a BZRR may run the model and base their final recommendations on multiple weather years as well.

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(5) Load data. Zonal load data shall be based on the demand data from the Pan-European Market Modelling Database (hereinafter "**PEMMDB**") 'National Trends' scenario for the relevant target year.

(a) As load data is weather dependent, the TSOs of a BZRR shall run the model at least for the weather year defined in paragraph 3 of this Article.

(b) The load data shall be disaggregated to nodal level as defined under paragraph (8).

(c) Demand elasticity is represented via demand side response as defined in the PEMMDB 'National Trends' scenario. The remaining load will be considered inelastic with respect to the market price.

(6) Generation data. Zonal generation data shall be based on the generation data from the PEMMDB 'National Trends' scenario for the relevant target year.

(a) Zonal generation data, such as solar and wind capacity, shall be disaggregated to nodal level as defined under paragraph (8).

(b) Generation data directly connected to the modelled network shall be mapped to the appropriate nodes of the grid model.

(c) Weather dependent generation technologies shall be based on the resource potential time series as generated for the PEMMDB in the Pan-European Climate Database (PECD) for the weather years defined according to paragraph 3 of this Article. Other weather data sources of equal or higher quality may also be used.

(7) Other assumptions. Fuel and CO_2 prices shall be based on the data collected for the TYNDP 2020 process for the relevant target year.

(8) Disaggregation to nodal level. To allow for the analysis of alternative zones and for the optional case of an analysis of locational prices, zonal generation and load data from PEMMDB will be disaggregated to nodal level by the TSO operating those nodes, in line with the TYNDP methodology. The TSOs shall provide an explanation on the method used for the disaggregation if not in line with the TYNDP methodology. Generation and load data from zones with a simplified modelling approach (e.g. zones outside of the BZRR) will not be mapped to a nodal level but be considered on a zonal level. Nodal level in this Methodology is understood as the level of substations of the represented voltage levels as described in paragraph 2. Substations at voltage levels not represented in the grid model shall be aggregated to the most relevant substations represented in the models.

(9) Sensitivity analysis. TSOs of a BZRRs may decide to perform additional sensitivity analyses by variation in any of the input data or grid infrastructure. Such additional sensitivity analysis is not mandatory to be performed by the TSOs of a BZRR.

Article 6
Modelling chain

(1) In order to assess the criteria as described in Article 13, the TSOs shall develop a series of steps in a consecutive modelling chain to represent the trade and the flows of electricity through the BZRR electricity grid within the scenario described under Article 5. The steps may be internal to the modelling tool, but results are available for each step. The steps comprise:

(a) For BZRRs where a flow-based approach is used, NTC base case and flow-based capacity calculations to determine the flow-based parameters for the market coupling process;

(b) For BZRRs where an NTC approach is used, NTC capacity calculations to determine one NTC value per BZ border and per direction for the market coupling process;

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(c) A market coupling algorithm to determine the final market dispatch of generation;

(d) Load flow calculations based on the results of the market coupling process to determine flows through the electricity network;

(e) An operational security analysis to determine congestions within the electricity grid;

(f) A redispatch simulation/analysis to determine the amount of required remedial actions and their costs as defined in Article 10;

(g) An analysis of flows not induced by cross-zonal trade to determine the effects of the assessed bidding zone configuration on flows in other bidding zones caused by internal trades;

(2) The model shall be run for data at a minimum resolution of every third hour.

(3) For calculations the modelling chain shall make use of the Value Of Lost Load ("VOLL").

Article 7
Capacity calculations

(1) The TSOs shall determine cross-zonal capacities on all borders relevant for the market coupling. The capacity calculation performed for this purpose can be based on NTC approach or on Flow Based approach.

(2) The choice between NTC approach and Flow Based approach shall be made for each BZ border. For existing BZ borders, if technically possible, it shall be made according to the capacity calculation approach that is foreseen to be in use on the given border in the target year. For non-existing BZ borders studied within the configurations, TSOs shall justify their choice of methodology. The possible methodologies for these capacity calculations are described in this Article.

(3) Due to the high level of uncertainty and the risk of an excessive complexity of the modelling chain, TSOs shall strive towards simplification in capacity calculation in comparison to currently operational capacity calculation processes. A trade-off between accuracy of results and simplification shall be aimed at.

(4) **IME Regulation Article 16 requirement**. The IME Regulation requirement on margins available for cross-zonal trade (70%) shall be applied in the capacity calculation taking into consideration:

(a) the information available at the time of BZ Review Methodology approval regarding the MACZT target for each CNEC, taking into account any reductions due to submitted/accepted action plans and derogations;

(b) indications provided in Recommendation of the ACER of 8 August 2019 on the implementation of the minimum MACZT pursuant to Article 16(8) of IEM Regulation or any other indications or guidelines provided by the NRAs about how to calculate this percentage, as long as they are available within a time period allowing for their consideration in the modelling, e.g. if TSOs receive them reasonably in advance;

(c) the information available at the time of BZ Review Methodology approval about how the different capacity calculation regions plan to implement this requirement in their methodology;

(d) any simplification necessary within the scope of the Bidding Zone Review to avoid excessive complexity.

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(5) Approaches for NTC capacity calculation. On borders where NTC approach is chosen as well as for the NTC base case calculation within the flow-based approach, TSOs shall choose from the methods listed below. The choice shall be explained taking into account regional specificities.

(a) **NTC approach based on thermal limits**. In this approach, the NTC on a BZ border is calculated as a ratio of the sum of thermal limits of the tie-lines:

i. On each border, the sum of the thermal limits is computed. The NTC on each border is then determined as a percentage (x%) of the sum of the thermal limits.

ii. The percentage x shall be calibrated in a way that gives the closest results on existing borders with the current or foreseen capacity calculation processes. This value of x is then applied to the hypothetical BZ borders that are studied within the configurations.

iii. The time resolution of the NTCs computed with this method shall reflect the time resolution of the tie-lines thermal limits (for instance seasonal ratings).

(b) **NTC approach based on process-specific computations**. In this approach, NTCs are computed by TSOs in a way that takes into account the specificities of the considered CCR and that reflects current or foreseen capacity calculation practices in that CCR. The method shall be based on the following principles:

i. TSOs determine a GSK and a list of CNECs for each bidding zone according to the current or foreseen practices. Different situations of commercial exchanges are created using the GSKs and the resulting grid situations are assessed using the lists of CNECs to detect congestions. Non-costly remedial actions can be taken into account to solve congestions.

ii. For each border, a maximum commercial exchange allowing operational safety (and taking into account impact of exchanges on neighbouring BZ borders) is determined. This maximum value may be determined through a dichotomy process. A transmission reliability margin may be applied.

iii. This calculation shall be carried out on a set of timestamps selected by TSOs in a way that reflects a representative panel of possible grid situations.

(c) **NTC approach based on PTDF**. In this approach, the impact of cross-zonal trade on physical flows is modelled in a linear way through PTDFs. PTDF computation is based on GSKs and CNECs like for the Flow Based approach but considering cross-zonal trade across a single border. NTC values on this border are determined as the maximum exchange not creating any overload on the CNECs considered in the computation. Non-costly remedial actions can be taken into account to solve congestions.

(d) **NTC approach based on TYNDP** for existing borders. For existing borders, where appropriate and relevant, TSOs can use existing NTC values calculated as part of TYNDP process.

(6) Flow Based approach. On borders where Flow Based approach is chosen, the inputs of the capacity calculation shall be determined in accordance with paragraph 7 (Generation Shift Keys), paragraph 8 (CNEC selection) and paragraph 9 (Flow reliability margins) of this Article. The NTC values for the NTC base case shall be computed in line with one of the methods described in paragraph 5 (Approaches for NTC calculation). Non-costly remedial actions can be taken into account to solve congestions and optimise the capacities computed with the flow-based approach. Internal HVDC links and cross-border HVDC links shall be taken into account and their modelling shall be in accordance with capacity calculation methodologies as far as technically feasible.

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(7) **Generation Shift Keys**. The selection of Generation Shift Keys shall be made in a way that is in line with foreseen practices in the relevant CCR, taking into account any simplification deemed necessary for the scope of the BZR.

(8) **CNEC selection**. TSOs shall choose a set of criteria to select the CNECs among the possible criteria given below. The set of criteria shall be chosen in a way that reflects foreseen practices or according to current approved regulation with simplifications, where necessary, in the given CCR and shall apply to all the bidding zones considered within the given CCR. Contingencies can include generators. The possible criteria to choose from are the following:

(a) Inclusion by default of certain voltage levels or exclusion by default of certain voltage levels;

(b) Inclusion by default of all tie-lines;

(c) Inclusion by default of all grid elements directly connected to a tie-line;

(d) Exclusion of all elements not affected by cross-zonal exchanges for topological reasons: radial connections or grid elements connected to the bulk of the network via radial connections;

(e) Selection of CNECs based on PTDFs. PTDFs are computed in the considered CCR. All CNECs with at least one PTDF value above a certain threshold (to be determined and justified by TSOs, in accordance with capacity calculation methodologies) are selected;

(f) Principle of dominant contingency. For each CNE, only the contingency (or contingencies) leading to the highest PTDF value(s) in both directions are kept;

(g) Principle of defining the most critical operation security limit.

(9) **Flow Reliability Margins**. The flow reliability margins shall be computed following the current or foreseen practices in the considered CCR.

(10) **Output.** The capacity calculation shall provide the following results for each timestamp simulated in the rest of the simulation chain:

(a) For BZ borders where NTC approach is used: one NTC value per BZ border and per direction.

(b) For BZ borders where Flow Based approach is used: the list of CNECs, the zonal PTDFs, FRMs and RAMs for these CNECs.

(c) For all BZ borders: the list of non-costly remedial actions applied during capacity calculation and a grid model resulting from the implementation of these non-costly remedial action. This grid state shall be used for the load flow calculation after market coupling.

Article 8
Market coupling

(1) The market coupling algorithm as intended in Article 6 paragraph 1c shall be built up as a linear optimization matching generation with demand with the target of minimizing the total system cost while considering network constraints based on capacity calculation practices.

(a) Optionally and if technically feasible, mixed integer optimization can be used instead of linear optimisation for a more correct representation of start-up and shut-down behaviour of power plants or a better depiction of hydro power plant constraints.

(2) The market coupling algorithm shall take as input load and generation data as described in Article 4 paragraphs 4 and 5.

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(3) Representation of network constraints shall take into account the IME Regulation Article 16 as described in Article 7 paragraph 4, and can be as either NTC or flow based:

(a) For bidding zone borders where NTC capacity calculations are applicable, NTC values as determined by the NTC capacity calculation as described in Article 7 paragraph 5;

(b) For regions in which flow based capacity calculation is applicable, the market coupling algorithm shall use for its calculations the list of CNECs, the zonal PTDFs, FRMs and RAMs for these CNECs as calculated in the flow-based capacity calculations as defined under Article 7 paragraph 6,

(4) The market coupling algorithm will result in a power plant dispatch starting with the assumption of perfect competition, i.e. power plants are assumed to operate in the market in a way that leads to cost minimization. The following assumptions about power plant behaviour are taken:

(a) Thermal power plants bid according to their short-run marginal costs, including fuel costs, CO_2 costs, variable operation and maintenance costs as well as relevant start-up costs. In case the power plants have must-run constraints due to e.g. combined heat and power production, industrial process connection or other reasons, the simulation ensures that must-run obligation is always followed.

(b) Wind and solar power plants bid at a marginal cost of €0,00 per MWh by default. However, other bidding prices are possible in case where, subject to subsidy schemes or technical restrictions, it is not likely that the plants would stop their output when marginal price reaches zero. The load factors of weather dependent generation technologies shall be estimated via historical weather profiles. The used data is a combination of installed capacity and load factors as determined for the relevant weather year as set forth in Article 5 paragraph 3.

(c) Regulated (reservoir) hydro power plant bidding strategy may be optimized, subject to constraints set in power plant data. Stochasticity ("water value calculation") or perfect foresight, depending on which approach better describes the hydro power plant behaviour in the respective BZRR might be included. Unregulated hydro power shall be based on unregulated inflow from historical weather profiles for the respective weather year as specified in Article 5 paragraph 3.

(d) Pump storage power plants shall optimize their generation and pumping consumption based on market price signals and constraints set in power plant data. Reservoir inflow shall be estimated by historical weather data as specified in Article 5 paragraph 3.

(e) Large biomass power plants may be represented either as conventional power plants similar to category (a) if the output depends on marginal costs, or fixed infeed time series if the output is price-independent.

(f) Other non-renewable power plants not included under category (a) are represented with infeed time series and a marginal cost that reflects the projected bidding price of the units.

(g) Other Renewable power plants not specifically modelled are represented with load factor time series.

(h) Any other technologies shall be represented in the model in accordance with estimated impact on results and reliability/availability of input data.

(i) If considered relevant, sensitivity analysis can be performed in order to test the effects of different bidding behaviours.

(5) Representation of load

(a) Load input refers to electricity demand, including final electricity use and grid losses but excluding power plant self-consumption. Load flexibility is represented by demand side response. The rest of the load is assumed to be inflexible and represented by a fixed time series for the relevant weather

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year. In case inflexible load needs to be shed, the Value Of Lost Load (VOLL) shall be assumed as the cost of the shedding.

(b) Demand side response shall be utilized based on its projected availability and cost in the scenario according to the scenarios as described in Article 5 paragraph 4.

(6) Starting from installed power plant capacities, it shall be possible to reserve part of the available capacity for the energy only market for operating reserves and/or balancing mechanisms based on data from PEMMDB.

(7) The market coupling algorithm shall provide as a result the following:

(a) For each time stamp considered and for each represented generating unit the amount of production in MW;

(b) For each time stamp considered the zonal electricity prices in € per MWh;

(c) For each time stamp for each zone the net positions will be determined in MW;

(d) For each time stamp Commercial exchanges between zones;

(e) List of number of occurrences that CNECs were active constraints in case flow-based market coupling applies.

Article 9
Operational security analysis

(1) Based on the optimization results delivered by market simulations, calculations for operational security analysis are performed in order to detect at least power flows exceeding operational security limits in the N-situation and (N-1) situation.

(2) First, the TSOs of a BZRR shall establish a contingency list to be used as basis for the operational security analysis for that BZRR, on the basis of the following principles:

(a) The chosen set of contingencies to be investigated for operational security analysis is independent of the CNEC selection for capacity calculation.

(b) At least all network elements of voltage levels 220 kV and higher that are relevant for the transmission system, subject to current or foreseen practices, are included by default as contingency in the contingency list.

(c) Where deemed necessary in order to detect constraints as listed in (1), network elements of voltage levels below 220 kV can be included as well as contingency in the contingency list.

(d) Occurrences of a loss of (a) power generating module(s) can also be included as contingency in the contingency list

(3) The operational security analysis is carried out for each contingency included in the contingency list.

(4) TSOs shall decide whether seasonal line ratings should be considered.

(5) The detected violated constraints as defined in (1) shall be considered by remedial action simulation in accordance with Article 10.

(6) Due to model simplifications and time constraints regarding the process, the DC load flow calculation approach is recommended. Compared to AC load flow calculation, the DC approximation limits the

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computational burden for simulating the grid model. Further, this approach is in line with the chosen load flow calculation methods in the previous steps of the BZR model chain.

(7) Optionally, AC load-flow calculations may be performed under certain circumstances:

(a) For certain geographical regions, if agreed by the TSOs of the BZRR.

(b) For the recalculation of cases where DC load flow results are close to the defined operational security limits of network elements.

(8) The load-flow calculations and contingency analysis shall provide as a result the following:

(a) A list of violations found in the operational security analysis including the name of the affected network element, its contingencies and a quantitative description of the constraint violation.

Article 10
Remedial action simulation

(1) A remedial action simulation shall take as input the resulting flows and overloads from the load-flow and security analysis.

(2) The use of non-costly remedial actions (PST tap positions and topological actions) shall be simulated as much as possible to reflect operational practices of TSOs. Non-costly remedial actions shall have priority over costly remedial actions. Non-costly remedial actions include at least:

(a) PST tap positions as preventive and/or curative remedial action: use of a range of tap positions to solve congestions

(b) Topological actions: opening or closing a busbar breaker, opening or closing a circuit breaker, switching loads of not represented voltage levels from one node to another (where feasible).

(c) Power flow control using HVDC.

(3) In case a full simulation of non-costly remedial actions is not feasible within the simulation chain due to technical difficulties, there is a risk that this leads to an over-estimation of redispatching costs. TSOs who show that this over-estimation is significant in their control area can use one of the methods listed below to improve the consideration of non-costly remedial actions. The results of those actions shall be used either to apply a correction to the redispatching costs in their area or to estimate the uncertainty on the computed redispatching costs and other relevant results. In the latter case, this uncertainty shall be considered in the assessment of indicators and stated in the result's study.

(a) Exclusion of certain grid elements from the redispatching calculation: the concerned TSO determines the grid elements for which non-costly remedial actions exist that allow to solve congestions and removes those grid elements from the list of elements considered during the optimisation of costly remedial actions.

(b) Limited assessment of non-costly remedial actions: the TSO performs a full optimisation of non-costly remedial on a representative subset of timestamps after market coupling and security analysis. This optimisation can be performed manually or with any suited software outside the BZR simulation chain. By running the redispatching calculation with and without implementation of these non-costly remedial actions, the impact of non-costly remedial actions on redispatching costs and other relevant results is assessed.

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(4) Costly remedial actions shall be represented through a cost-based optimization by running an optimal power flow calculation. The redispatch simulation shall be in line with the European redispatch target model as given in Article 13 of the IME Regulation. The optimization therefore shall be performed for the entire BZRR irrespective of the bidding zone or control area borders. The additional power flow calculation shall be targeted to a minimal cost change as compared to the initial unit dispatch resulting from the Market Coupling simulation described under Article 8 while solving (N-1) overloads. The redispatch simulation shall take into account the following:

(a) TSOs shall assess for each generation technology or generation unit within their control area whether it should be made available for the redispatch simulation, considering the actual and likely practices in their respective control area for the respective target year.

(b) The available capacity of generation and demand side management shall be based on the unit dispatch from the market coupling simulation as described in Article 8.

(c) Prices of the capacity activated for redispatch shall be based on the costs of the respective generation type and shall include an additional factor representing opportunity costs, or other mark-ups, if applicable according to foreseen regulations and TSO practices.

(5) The redispatch simulation shall result in:

(a) A new unit dispatch for each unit represented in the grid model;

(b) By comparison with the original unit dispatch after market coupling, the total volume dispatched for the sake of remedial action in MW for each time stamp under consideration;

(c) By comparison with the original unit dispatch according to market coupling, the total additional system costs in euro for each time stamp under consideration.

Article 11
Analysis of flows not induced by cross-zonal trade

(1) In order to calculate flows not induced by cross-zonal trade, the TSOs of a BZRR shall calculate the flow in the situation without any commercial exchanges between the bidding zones of the BZRR, and between the bidding zones from the BZRR and bidding zones from other BZRR. The DC interconnectors shall be modeled as additional bidding zones and a GSK of 1 at the connection point shall be assumed. The basis for this calculation is the CGM used as input for the Capacity Calculation.

$$\vec{F}_{0,all} = \vec{F}_{ref} - \mathbf{PTDF_{all}}\,\overrightarrow{NP}_{ref,all}$$

With

$\vec{F}_{ref}$ flow per CNEC in the CGM

$\vec{F}_{0,all}$ flow per CNEC in a situation without any commercial exchanges between the bidding zones of the region, between the bidding zones of the region and the bidding zones outside the regions remaining in the same synchronous areas and between the bidding zones from the region and bidding zones from other synchronous areas.

$\mathbf{PTDF_{all}}$ power transfer distribution factor matrix (same as in capacity calculation,

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	where available) for all bidding zones considered (in and outside the region) and all the CNECs of the region
$\overrightarrow{NP}_{ref,all}$	total net positions per bidding zone considered (inside and outside the region) included in the CGM.

(2) $\vec{F}_{0,all}$ represents flows not induced by cross-zonal trade on all the cross-border lines.

(3) In order to carry out the calculation of flows not induced by cross-zonal trade, alternative methodologies may be used additionally, if agreed upon by TSOs of a BZRR.

Article 12
LMP analysis

(1) Carrying out an LMP analysis is an optional part of the modelling chain. The decision whether to include an LMP analysis lies with the TSOs of a BZRR.

(2) The LMP analysis is supposed to be carried out using an optimization algorithm, minimizing the total system costs with subject to at least the following aspects:

(a) The capacity of the relevant network elements;

(b) The nodal energy balance;

(c) The capacity limits of each power plant. With regard to this criterion, TSOs shall have the option to use a linear relaxation.

(3) The (N-1)-criterion shall be considered at least with a limited list of critical outages e.g. calculated based on LODF and PTDF matrices.

(4) Topological measures shall be taken into account within the analysis. Due to high computational requirements within the framework of an LMP simulation, topological measures should not be part of the optimization problem. BZRRs shall have the option to decide whether:

(a) TSO experts apply topological measures manually before the LMP simulation (only possible for limited time series).

(b) The results are validated by the TSOs with, in case of unrealistic results, subsequent removal of respective grid elements and a repetition of the simulation.

(5) In case of high LMPs (positive or negative) the reason has to be investigated and, if possible, input data should be corrected, and the simulation repeated.

Article 13
Evaluation

13.1. Overview of evaluation criteria

(1) TSOs of a BZRR shall assess the current bidding zone configuration and each alternative bidding zone configuration as proposed by them for the BZRR, and they shall compare these configurations by using at least the criteria listed in Article 33 of the CACM Regulation.

(2) TSOs of a BZRR may use additional evaluation criteria to assess the alternative BZ configurations proposed for the BZRR, if decided and justified by them.

(3) The TSOs in every BZRR shall use at least the following evaluation criteria:

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(a) To assess **network security**:

(i) Operational security;

(ii) Security of supply;

(iii) Degree of uncertainty in cross-zonal capacity calculation.

(b) To assess **market efficiency:**

(i) Economic efficiency;

(ii) Firmness costs;

(iii) Market liquidity;

(iv) Market concentration and market power;

(v) Effective competition;

(vi) Price signals for building infrastructure;

(vii) Accuracy and robustness of price signals;

(viii) Transition and transaction costs;

(ix) Infrastructure costs;

(x) Market outcomes in comparison to corrective measures;

(xi) Adverse effects of internal transactions on other bidding zones;

(xii) Impact on the operation and efficiency of the balancing mechanisms and imbalance settlement processes.

(c) To assess **stability and robustness of bidding zones:**

(i) Stability and robustness of bidding zones;

(ii) Consistency across capacity calculation time frames;

(iii) Assignment of generation and load units to bidding zones;

(iv) Location and frequency of congestion (market and grid).

(d) To assess **energy transition:**

(i) RES integration.

13.2. General approach

(1) TSOs shall evaluate each criterion individually according to the evaluation approaches described in Chapter 13.4.

(2) In case the TSOs find that an evaluation criterion cannot be assessed as foreseen in Chapter 13.4 due to technical limitations of the modelling and other unforeseen events, then they shall carry out a qualitative assessment of the said criterion.

(3) The geographical scope of each criterion shall be determined according to chapter 13.3.

(4) The analysis for each criterion shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(5) In case multiple scenarios are considered in the review of a BZRR (for example complete additional target year or one or multiple weather years), the results of all scenarios are combined into a single result per criterion per configuration.

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(6) In case of performance of sensitivity analysis, the results of sensitivity analysis will be compared to the results of relevant target year in order to assess the robustness of the target year results with regards to the investigated sensitivity (i.e. test whether the results are valid conditional to the developments investigated in the sensitivity scenario).

(7) The overall assessment shall be made by TSOs on a BZRR level and not on a per-Member State level.

(8) The assessment shall be based on the following three-step approach:

(a) Step 1: **Economic efficiency versus Transition/transaction costs**

i. TSOs shall assess the monetized benefit of the configuration by calculating the delta between on the one hand the change in economic efficiency compared to the status quo configuration (incl. marginal costs of redispatch and an adequate CO_2 price as defined in Article 5) and on the other hand transition/transaction costs, annualized over a period of 3 years. The volume of CO_2 emissions and the amount of energy produced by RES respectively RES curtailment shall be given per configuration for information purposes.

ii. TSOs shall assess the monetized benefit, considering the following:

- If the monetized benefit is less than 0, then the configuration shall not be recommended. However, if the BZRR TSOs can justify that further assessment is needed, they can still proceed to step 2 and assess all other criteria and recommend the configuration in step 3;
- If the monetized benefit is more than 0, then the TSOs shall proceed to step 2 and assess all other criteria and recommend the configuration in step 3.

(b) Step 2: **Assessment of all other criteria**

i. Following the step 1 the TSOs shall assess all other criteria considering them as positive, neutral or negative (scale shall be +/0/-) in comparison with the current bidding zones configuration.

ii. TSOs shall provide a justification for the outcome of their assessment.

(c) Step 3: **Assessment of the final recommendation**

i. In case all criteria assessed in step 2 of this article are positive and the monetized benefit is more than 0, the alternative configuration can be recommended by the TSOs.

ii. In any other case, the severity of the criteria being assessed as negatively impacted shall be further assessed by the TSOs. To perform this severity assessment, the TSOs shall consider input from the NRAs of the relevant BZRR and other relevant stakeholders. Collection of this input shall be organized at least via an expert workshop. The outcome of the assessment of the criteria shall be either:

a. The severity of a criterion individually or the severity of the criteria collectively is classified as unacceptably negative and therefore the TSOs cannot recommend the relevant BZ configuration; or

b. The severity of none of the criteria individually nor the criteria collectively is classified as unacceptably negative and therefore the TSOs can recommend the relevant BZ configuration.

iii. In case after steps 1 to step 3(ii) only one configuration can be recommended, that configuration shall be the final recommendation by the TSOs. In case several

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configurations can be recommended after steps 1 to step 3(ii), then the configuration with the highest monetized benefit shall be the final recommendation by the TSOs.

iv. Assessment of the uncertainties under which the final recommendation is made shall be provided.

13.3. Geographical delimitation

(1) The evaluation criteria shall be classified into one of the following three categories:

(a) The criteria are computed and evaluated for the geographical scope of the BZRR.

(b) The criteria are given in an aggregated way with only one value for the entire simulated area.

(c) The criteria are detailed at the level of the BZRR or per BZ inside the BZRR while for BZs outside the BZRR, only one aggregated value shall be given.

13.4. Evaluation approach per criterion

(1) **"Operational security"** criterion shall be evaluated as follows:

(a) The assessment of the impact of alternative bidding zone configurations on operational security shall be based on the security analysis as described in Article 9 by assessing those indicators that ensure the transmission system security is in the normal state. The assessment shall possibly be done with the help of indicators such as the amount of redispatching available, energy not served, (N-1)-situation and N-situation violation after redispatching.

(b) The analysis shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(2) "Security of supply" criterion shall be evaluated as follows:

(a) The evaluation shall be made by comparing the Remaining Capacity Margin and the Energy Not Served between the different configurations under investigation. Additionally, the Loss of Load Expectation and/or the Expected Energy Not Served may be analysed.

(b) The analysis shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(3) "Degree of uncertainty in CZC calculation" criterion shall be evaluated as follows:

(a) The analysis shall be based on the identification and discussion of fundamental principles/inter-relations. At least the following sources of uncertainty for the capacity calculation shall be used:

i. inaccuracy of zonal PTDFs;

ii. generator outages compensated by frequency containment reserve / frequency restoration reserve (FCR/FRR); and

iii. changes in RES or forecast generation and load.

(4) "Economic efficiency" criterion shall be evaluated as follows:

(a) The assessment of the economic efficiency shall be based on the calculation of the socio-economic welfare. Thereby, total costs are calculated by including marginal costs of redispatch. Additionally, the RES

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and CO_2 impact shall be reflected appropriately (e.g. include an adequate CO_2 price as defined in Article 5.7). Furthermore, the volume of CO_2 emissions and the amount of energy produced by RES respectively RES curtailment shall be given per configuration for information purposes. The resulting socio-economic welfare shall be used in step one of the overall assessment (see chapter 13.2(8)(a)).

(b) The analysis shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(5) "Firmness cost" criterion shall be evaluated as follows:

(a) The assessment of the impact of alternative bidding zone configurations on the financial firmness costs shall be based on the identification and discussion of fundamental principles/interrelations. The physical firmness costs are already quantitatively estimated as part of the redispatching simulation, included in the "Economic efficiency" indicator.

(6) "Market liquidity" criterion shall be evaluated as follows:

(a) The assessment of the impact of alternative bidding zone configurations on the market liquidity shall be based on a study and the identification and discussion of fundamental principles/interrelations.

(b) A quantitative assessment of the market liquidity shall be performed based on market-depth analysis, focusing on the price change between the respective orders taking into account cross-zonal possible exchange. This analysis shall be done at least for day-ahead market, but may incorporate additional timeframes, if technically possible. In case TSOs find out that the model results are accompanied by a lot of uncertainties during the calculations, analysis of historical data shall be performed.

(7) "Market concentration and market power" criterion shall be evaluated as follows:

(a) The evaluation for market concentration shall be made by using internationally established indicators such as at least HHI (Herfindal-Hirschman-Index) and RSI/PSI (Residual Supply Index, Pivotal Supplier Indicator) taking into account cross-zonal possible exchange. Other suited indicators may be used additionally.

(b) The evaluation for market power shall be based on a qualitative assessment.

(c) The analysis shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(8) "Facilitation of effective competition" criterion shall be evaluated as follows:

(a) The assessment of the facilitation of effective competition shall be based on the comparison of results of the four criteria - market liquidity, market concentration, market power and robustness of price signals for the different configurations.

(b) The analysis shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(9) "Price signals for building infrastructure" criterion shall be evaluated as follows:

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(a) The congestion income shows where there is a need for building infrastructure and the price difference gives an exact indication where it is necessary to build it. Therefore, a two-step evaluation approach shall be applied:

i. **On the bidding zone border level,** the assessment of the price signals for building infrastructure on the bidding zone border level shall be based on the comparison of the price spreads between different bidding zone configurations. Additionally, it shall be possible to assess the correlation between market congestion and physical congestion in bidding zone borders under investigation.

ii. **On the bidding zone review region level,** the assessment of the price signals for building infrastructure on the bidding zone review region level shall be based on the comparison of the congestion incomes of the different configurations.

(b) The analysis shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(10) **"Accuracy and robustness of price signals"** criterion shall be evaluated as follows:

(a) The accuracy of price signals shall be measured by one or both of the following two options:

i. The correlation, for each bidding zone configuration, between zonal day-ahead price received by each generator and the volume accepted on the given generator in the redispatching simulations either of the bidding zone configuration under investigation or of the Status Quo configuration (upward volumes are considered as positive values and downward volumes are considered as negative values): a positive correlation is an index of a bidding zone configuration which correctly reflects physical congestions and provides accurate price signals.

ii. The correlation, for each bidding zone configuration, between zonal day-ahead price and a specific percentile of the zonal adequacy margin (e.g. the 10° percentile as was used in the last Italian BZR): a positive correlation is an index of a bidding zone configuration which is correctly reflecting scarcity situations and providing accurate price signals.

(b) The robustness of price signals shall be measured from the analysis of zonal price differences between scenarios and sensitivity analyses, if applicable, for each specific bidding zone, in order to depict risks related to political and economic conditions. It shall be assessed using the day-ahead price resulting from the market coupling simulations by comparing prices between different sensitivities and scenarios.

(c) The analysis shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(11) **"Transition and transaction cost"** criterion shall be evaluated as follows:

(a) A study shall be performed to show an overview of necessary adaptations and to provide a range of related cost estimates. Cost of past BZ reconfigurations shall be used as an input if sufficiently available from all relevant stakeholders. In addition, an expert discussion shall be undertaken.

(b) The study and expert discussion shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(12) **"Infrastructure cost"** criterion shall be evaluated as follows:

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(a) The impact of alternative bidding zone configurations on the infrastructure costs shall not be evaluated since, in comparative terms, grid investments would not change in the different configurations.

(13) **"Market outcomes in comparison to corrective measures"** criterion shall be evaluated as follows:

(a) The evaluation shall be made by comparing market dispatch and total redispatch costs including mark-ups and volumes where appropriate between the different configurations under investigation. The outcome of this evaluation should coincide with the results of the criterion "economic efficiency" (with the exception of the redispatch costs) and shall therefore be only used for comparison and validation purposes and not for the final assessment.

(b) The analysis shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(14) **"Adverse effects of internal transactions on other BZs"** criterion shall be evaluated as follows:

(a) Based on the analysis of flows not induced by cross-zonal trade as described in Article 11, the effects of a changed bidding zone configuration shall be assessed with regards to the adverse effects of internal transactions on other bidding zones.

(b) The analysis shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(15) **"Impact on the operation and efficiency of the balancing mechanisms and imbalance settlement processes"** criterion shall be evaluated as follows:

(a) The assessment of this criterion shall be based on an analysis of the reserve requirements per bidding zone for each configuration, i.e. total needs for capacity reserve provision per configuration. The total needs for operating reserves (e.g. FRR) shall be assessed, based on a probabilistic approach (using defined confidence interval), taking into account the uncertainty from a range of influencing factors such as fluctuations of load, potential outages of power plants (or potentially load) and forecast errors for renewable energies.

(b) The analysis shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(16) **"Stability and robustness of bidding zones over time"** criterion shall be evaluated as follows:

(a) The assessment of the stability and robustness of bidding zones over time shall be based on the comparison of the robustness of the configuration / stability of congestions by changing specific input parameters (e.g. key grid projects, merit order variation) if these sensitivities are applied.

(b) If no sensitivity analyses are available, the assessment will be based only on the expert discussion which needs to consider if:

i. structural congestion in the bidding zone configuration is beneficial for its stability and robustness;

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ii. temporary congestion decreases the stability and robustness of bidding zone;

iii. sufficient predictability of (structural) congestion is important.

(c) The analysis shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(17) "Consistency across capacity calculation time frames" criterion shall be evaluated as follows:

(a) The impact of alternative bidding zone configurations on this criterion shall not be evaluated since the question as to whether an alternative bidding zone configuration leads to a higher or lower level of consistency across capacity calculation timeframes is not a technical one but related to the market design.

(18) "Assignment of generation and load units to BZs" criterion shall be evaluated as follows:

(a) The analysis shall be made through expert discussions and shall be accompanied by the identification and discussion of fundamental principles/inter-relations. The analysis shall at least compare the level of difficulty of assigning generation and load units to bidding zones between the different configurations under investigation.

(19) "Location and frequency of congestion (market and grid)" criterion shall be evaluated as follows:

(a) The evaluation shall be made by comparing market and grid congestion for the configuration under investigation over different sensitivity analyses or target years in order to examine whether the congestion remains sufficiently stable and robust. Thereby, future investment which may relieve existing congestion shall be taken into account.

(b) The analysis shall be accompanied by the identification and discussion of fundamental principles/inter-relations.

(20) "RES integration" criterion shall be evaluated as follows:

(a) The total amount of simulated fed-in energy quantities from RES shall be compared between the different configurations under investigation. However, the focus shall be on the long-term effects (e.g. the decade after the simulated target year) of the different configurations on the integration of RES. The long-term analysis shall be based on the identification and discussion of fundamental principles/inter-relations.

Article 14
Implementation

(1) In accordance with Article 14(5) of the IME Regulation, the implementation of the BZ Review Methodology is subject to its approval by the relevant NRAs or a decision on this BZ Review

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Methodology by the Agency for the Cooperation of Energy Regulators in case the relevant NRAs are unable to reach a unanimous decision.

(2) In accordance with Article 14(6) of the IME Regulation, the TSOs participating in the bidding zone review shall submit a joint proposal to relevant Member States to amend or maintain the bidding zone configuration no later than 12 months after the approval of this BZ Review Methodology.

Article 15
Publication of BZ Review Methodology

The relevant TSOs shall publish the BZ Review Methodology without undue delay after the relevant NRAs have approved the BZ Review Methodology or a decision has been taken by the ACER in accordance with Article 14(5) of the IME Regulation.

Article 16
Miscellaneous

(1) The reference language for the BZ Review Methodology shall be English. For the avoidance of doubt, where the relevant TSOs need to translate the BZ Review Methodology into their national language(s), in the event of inconsistencies between the English version and any version in another language, the relevant TSOs shall be obliged to dispel any inconsistencies by providing a revised translation of the BZ Review Methodology to their relevant national regulatory authorities.

(2) The information and data handled during the execution of the Bidding Zone review is market sensitive information and shall on this basis be treated as confidential, unless specified otherwise by the relevant TSOs. As a result, all information gathered, analysis performed, and other data made available to all TSOs are deemed confidential and shall be managed in accordance with Article 13 of the CACM Regulation and the procedure to ensure its protection.

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Annexes:

Annex 1 – Configurations of the Bidding zone review region "Central Europe" which are to be considered in the bidding zone review process;

Annex 2 – Alternative configurations of the Bidding zone review region "Nordics" which are to be considered in the bidding zone review process;

Annex 3 – Alternative configurations of the Bidding zone review region "South East Europe" which are to be considered in the bidding zone review process;

Annex 4 – Configurations of the Bidding zone review region "Central Southern Italy" which are to be considered in the bidding zone review process;

Annex 5 – Configurations of the Bidding zone review region "Baltic" which are to be considered in the bidding zone review process;

Annex 6 – Configurations of the Bidding zone review region "Iberian Peninsula" which are to be considered in the bidding zone review process;

Annex 7 – Configurations of the Bidding zone review region "Single Electricity Market Ireland" which are to be considered in the bidding zone review process;

Annex 8 – Configurations of the Bidding zone review region "United Kingdom" which are to be considered in the bidding zone review process.

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