All TSOs' proposal for a Methodology for Calculating Scheduled Exchanges resulting from single intraday coupling in accordance with Article 56 of the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

13/12/2016

Contents

TSOs which intend to calculate Scheduled Exchanges resulting from single intraday coupling, taking into account the following,

Whereas

1. This document is a common proposal developed by the Transmission System Operators (hereafter referred to as "TSOs"), which intend to calculate Scheduled Exchanges resulting from single intraday coupling. The document provides a high-level methodology for calculating Scheduled Exchanges resulting from the single intraday coupling ("hereafter referred to as "ID Scheduled Exchanges Calculation Methodology") in accordance with Article 56 of Commission Regulation (EU) 2015/1222 establishing a guideline on Capacity Allocation and Congestion Management (hereafter referred to as "Regulation 2015/1222"). This proposal is hereafter referred to as "ID Scheduled Exchanges Calculation Methodology Proposal".

2. The ID Scheduled Exchanges Calculation Methodology Proposal, in line with Article 56 of Regulation 2015/1222, accommodates situations where there are more than one Nominated Electricity Market Operator (hereafter referred to as "NEMO") designated and/or offering intraday trading services in a particular geographic area. In addition, according to Article 4(1) of Regulation 2015/1222, multiple NEMOs can be designated to perform single intraday coupling in a Member State. For each NEMO, a NEMO Trading Hub shall be defined. Where multiple NEMOs operate within a geographic area, there shall be multiple NEMO Trading Hubs within that geographic area.

3. The ID Scheduled Exchanges Calculation Methodology Proposal takes into account the general principles, goals and other methodologies reflected in Regulation 2015/1222. The goal of Regulation 2015/1222 is the coordination and harmonisation of capacity calculation and allocation in the day-ahead and intraday cross-border markets.

4. The ID Scheduled Exchanges Calculation Methodology Proposal recognises that there are two options available for the production of Scheduled Exchanges:

   i. The Single Intraday Coupling Solution[1], will produce scheduling information in the form of Scheduled Exchanges. These Scheduled Exchanges shall be automatically used for Shipping, Scheduling and Congestion Income Distribution[2].

   ii. Alternatively, net positions of Bidding Zones, Scheduling Areas and NEMO Trading Hubs, allocated capacities in the form of allocated flows into and out of individual relevant DC network elements (operated in DC mode) and allocated capacities in the form of allocated flows on relevant Bidding Zone borders (difference in flows in/out reflecting losses where applicable) shall be produced as an output of the intraday market coupling. These net positions and allocated capacities shall be used as an input into the Scheduled Exchange calculation by the Scheduled Exchange Calculator(s).

   This ID Scheduled Exchanges Calculation Methodology Proposal provides the common methodology framework for the production of Scheduled Exchanges by the Scheduled Exchange

---

[1] Implementation of Cross Border Intraday Solution for single intraday coupling is the aim of project XBID subject to Market Coupling Operator Plan approval

[2] Noting that, for now, the Cross Border Intraday Solution does not generate congestion income

All TSOs' proposal for a Methodology for Calculating Scheduled Exchanges
resulting from single intraday coupling in accordance with Article 56 of the
Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline
on capacity allocation and congestion management

entsoe

Calculator(s). According to Article 56 of the Regulation 2015/1222, this is a methodology for those TSOs which intend to calculate scheduled exchanges resulting from single intraday coupling. According to Article 2(32), a 'scheduled exchange' means an electricity transfer scheduled between geographic areas, for each market time unit and for a given direction. This ID Scheduled Exchanges Calculation Methodology Proposal also provides for the calculation of Scheduled Exchanges per NEMO Trading Hub. While a NEMO Trading Hub cannot be interpreted as a geographic area, the calculation of Scheduled Exchanges per NEMO Trading Hub is essential in order to accommodate multi-NEMO arrangements within Bidding Zones and Scheduling Areas.

5. The ID Scheduled Exchanges Calculation Methodology shall serve as a common high level calculation methodology to be applied by the Scheduled Exchange Calculator(s) who shall be responsible for the calculation of Scheduled Exchanges resulting from single intraday coupling as per Article 61 of Regulation 2015/1222.

6. The ID Scheduled Exchanges Calculation Methodology Proposal shall consider situations where the Bidding Zone is equal to the Scheduling Area, as well as where there are multiple Scheduling Areas within a Bidding Zone.

7. Net positions and prices are fixed by the results from the single intraday coupling. Furthermore, cross zonal capacities and allocation constraints have already been taken into account by the continuous trading matching algorithm. Cross zonal capacities and allocation constraints shall therefore not be impacted by the calculated scheduled exchanges nor the 'Scheduling Restrictions'.

    'Scheduling Restrictions' may include:
    i.   Prioritisation Path: the prioritisation of a given path among all possible paths to transfer a net position from a source area to a sink area;
    ii.   Shortest Path: the minimisation of a number of areas involved in transferring a net position from a source area to a sink area;
    iii. Intuitiveness: the requirement that net positions are always transferred from low price areas to high price areas.

8. According to Article 9(9) of Regulation 2015/1222, the proposed timescale for the implementation of the proposed ID Scheduled Exchanges Calculation Methodology shall be included and can be found in Article 8 of the ID Scheduled Exchanges Calculation Methodology Proposal.

9. The Congestion Income Distribution Methodology provided according to Article 73 of the Regulation 2015/1222, notes that when calculating the Congestion Income per Bidding Zone border, Scheduled Exchanges may be required as an input. Where the Single Intraday Coupling Solution produces scheduling information in the form of Scheduled Exchanges, these Scheduled Exchanges shall be used as an input.

10. This ID Scheduled Exchanges Calculation Methodology may require amendment as the intraday market coupling develops as described in Article 8 below but shall at least be reviewed by

All TSOs' proposal for a Methodology for Calculating Scheduled Exchanges
resulting from single intraday coupling in accordance with Article 56 of the
Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline
on capacity allocation and congestion management

entsoe

relevant TSOs no later than two years after the approval by the regulatory authorities of the concerned region.

11. According to Article 9(9) of Regulation 2015/1222, the expected impact of the proposed ID Scheduled Exchanges Calculation Methodology, on the objectives of Regulation 2015/1222, shall be described.

- Article 3(a) of Regulation 2015/1222 aims at promoting effective competition in the generation, trading and supply of electricity.
  o The ID Scheduled Exchanges Calculation Methodology, as it is derived from the results of single intraday coupling, does not impact on competition in the generation, trading and supply of electricity.

- Article 3(b) of Regulation 2015/1222 aims at ensuring optimal use of the transmission infrastructure.
  o The Scheduled Exchanges resulting from the ID Scheduled Exchanges Calculation Methodology are derived from the results of the single intraday market coupling i.e they are based upon:
    ▪ Net positions of Bidding Zones, Scheduling Areas and NEMO Trading Hubs;
    ▪ Allocated capacities in the form of allocated flows, into and out of individual relevant DC Network Elements and on relevant Bidding Zone borders (difference in flows in/out reflecting losses where applicable)

- Article 3(c) of Regulation 2015/1222 aims at ensuring operational security.
  o The ID Scheduled Exchanges Calculation Methodology is carried out by the Scheduled Exchange Calculator(s) following receipt of the outputs itemised within the list of information required from relevant NEMOs as outlined in Article 3 of this ID Scheduled Exchanges Calculation Methodology. This list of information provided by the relevant NEMOs to the Scheduled Exchange Calculator(s) shall result from completion of the single intraday market coupling session where all constraints defined by TSOs in order to maintain operational security shall be duly respected. The ID Scheduled Exchanges Calculation Methodology shall be initiated post single intraday coupling and shall have no influence on operational security under Regulation 2015/1222.

- Article 3(d) of Regulation 2015/1222 aims at optimising the calculation and allocation of cross zonal capacity.
  o Scheduled Exchanges resulting from single intraday coupling shall not modify, but only duly reflect the results of the single intraday market coupling session.

- Article 3(e) of Regulation 2015/1222 aims at ensuring fair and non-discriminatory treatment of TSOs, NEMOs, the Agency, regulatory authorities and market participants.
  o The ID Scheduled Exchanges Calculation Methodology shall be fair, transparent and based on the results of single intraday coupling. Additionally, where required under

certain market settlement regimes, the calculation may be performed at NEMO Trading Hub level, in order to allow the reconciliation of Scheduled Exchanges per NEMO and therefore facilitating multi-NEMO scenarios in such contexts.

- Article 3(f) of Regulation 2015/1222 aims at ensuring and enhancing the transparency and reliability of information.
  - o The ID Scheduled Exchanges Calculation Methodology comprises a step-wise, top-down approach (from Bidding Zone, to Scheduling Area, to NEMO Trading Hub) for the calculation of Scheduled Exchanges which ensures and enhances the transparency and reliability of the ID Scheduled Exchanges Calculation Methodology.

- Article 3(g) of Regulation 2015/1222 aims at contributing to the efficient long-term operation and development of the electricity transmission system and electricity sector in the Union.
  - o The ID Scheduled Exchanges Calculation Methodology shows clear cross-Network Code thinking in order to contribute to the efficient development of a single intraday electricity market in Europe. The ID Scheduled Exchanges Calculation Methodology, through its construction comprising of bilateral scheduled exchanges, as well as multilateral scheduled exchanges, facilitates the efficient long-term operation and development of the European transmission system.

- Article 3(h) of Regulation 2015/1222 aims at respecting the need for a fair and orderly market and fair and orderly price formation.
  - o The ID Scheduled Exchanges Calculation Methodology does not interfere with or compromise a fair and orderly market and price formation as it has no influence on the results of single intraday coupling.

- Article 3(i) of Regulation 2015/1222 aims at creating a level playing field for NEMOs.
  - o The ID Scheduled Exchanges Calculation Methodology creates a level playing field for NEMOs as it has no influence on the results of single intraday coupling. Additionally, the ID Scheduled Exchanges Calculation Methodology supports scenarios where there are multiple NEMOs within a Bidding Zone or Scheduling Area.

- Article 3(j) of Regulation 2015/1222 aims at providing non-discriminatory access to cross-zonal capacity.
  - o The ID Scheduled Exchanges Calculation Methodology does not interfere with the provision nor allocation of cross-zonal capacity.

SUBMIT THE FOLLOWING ID SCHEDULED EXCHANGES CALCULATION METHODOLOGY TO ALL RELEVANT REGULATORY AUTHORITIES:

Article 1 - Subject matter and scope

All TSOs' proposal for a Methodology for Calculating Scheduled Exchanges
resulting from single intraday coupling in accordance with Article 56 of the
Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline
on capacity allocation and congestion management

entsoe

The ID Scheduled Exchanges Calculation Methodology, as determined in this ID Scheduled Exchanges Calculation Methodology Proposal shall be considered as the common proposal of all TSOs, for those TSOs which intend to calculate Scheduled Exchanges resulting from single intraday coupling, in accordance with Article 56 of Regulation 2015/1222. The outputs of the applied ID Scheduled Exchanges Calculation Methodology shall be:

a) Calculation of Bilateral and Multilateral Scheduled Exchanges between Bidding Zones
b) Calculation of Bilateral and Multilateral Scheduled Exchanges between Scheduling Areas
c) Calculation of Bilateral and Multilateral Scheduled Exchanges between NEMO Trading Hubs

The scope of the ID Scheduled Exchanges Calculation Methodology does not extend to the assignment of roles and responsibilities to specific parties. Neither does the scope attempt to provide a governance framework for specific roles or responsibilities. These aspects shall be defined by the TSOs, where required, and in accordance with Article 8(2g) of Regulation 2015/1222.

This ID Scheduled Exchanges Calculation Methodology shall apply to TSOs which intend to calculate Scheduled Exchanges resulting from single intraday coupling.

Article 2 - Definitions and interpretation

1. For the purposes of this ID Scheduled Exchanges Calculation Methodology, terms used shall have the meaning of the definitions included in Article 2 of Regulation 2015/1222, Commission Regulations (EU) 543/2013 and (EU) 1227/2011. In addition, the following definitions shall apply:

   a) 'Scheduling Area' shall be defined as an area within which the TSOs' obligations regarding scheduling apply due to operational or organisational needs.
   b) 'TSOs which intend to calculate scheduled exchanges' shall be defined as 'the group of TSOs, according to Article 56(1) from Regulation 2015/1222, who shall use the Scheduled Exchange Calculator and the Intraday Scheduled Exchange Calculation Methodology in order to calculate Scheduled Exchanges."
   c) 'NEMO Trading Hub' shall be defined as 'a combination of a NEMO and a scheduling area (where applicable scheduling area is a bidding zone)'.
   d) 'Scheduling Restrictions' shall be defined as restrictions applied by the Scheduled Exchange Calculator(s) in order to calculate Scheduled Exchanges resulting from market coupling, in such a way that the results are unique and do not impact on the market coupling results.
   e) 'Scheduled Exchange Calculator (hereafter referred to as "SEC") Net Position within a Capacity Calculation Region (hereafter referred to as "CCR")' refers to the Net Position of the SEC within a defined CCR which is the aggregated netted sum of the net positions of the Bidding Zones or Scheduling Areas or NEMO Trading Hubs within that CCR adjusted by the borders where TSOs do not intend to calculate scheduled exchanges resulting from single day-ahead or intraday coupling.
   f) 'Bidding Zone SEC Net Position within a CCR' refers to the SEC Net Position of a Bidding Zone within a particular CCR which is calculated pursuant to Article 7.1 of the ID Scheduled Exchange Calculation Methodology.
   g) 'Scheduling Area SEC Net Position within a CCR' refers to the SEC Net Position of a Scheduling Area within a particular CCR which is calculated pursuant to Article 7.1 of the ID Scheduled Exchanges Calculation Methodology.

h) 'NEMO Trading Hub SEC Net Position within a CCR' refers to the SEC Net Position of a NEMO Trading Hub within a particular CCR which is calculated pursuant to Article 7.1 of the ID Scheduled Exchanges Calculation Methodology.

i) 'Relevant NEMOs' shall be defined as 'NEMOs responsible for the market coupling operator function'.

j) 'Bilateral Scheduled Exchanges' shall be defined as 'Scheduled Exchanges between one Bidding Zone, Scheduling Area or NEMO Trading Hub and another neighbouring Bidding Zone, Scheduling Area or NEMO Trading Hub'.

k) 'Multilateral Scheduled Exchange' shall be defined as a 'scheduled exchange between one Bidding Zone, Scheduling Area or NEMO Trading Hub and a group of other Bidding Zones, Scheduling Areas or NEMO Trading Hubs'.

l) 'Neighbouring Scheduling Areas / Bidding Zones' shall be defined as 'a Scheduling Area or Bidding Zone directly connected to another Scheduling Area / Bidding Zone via at least one AC or DC interconnector'.

m) 'Neighbouring NEMO Trading Hub' shall be defined as 'a NEMO Trading Hub connected to another NEMO Trading Hub, either as part of the same Scheduling Area or Bidding Zone, or as part of a Neighbouring Scheduling Area or Bidding Zone'.

2. The term 'Scheduled Exchange' is defined within Article 2 of Regulation 2015/1222. For the purposes of the ID Scheduled Exchanges Calculation Methodology Proposal, the term 'geographic areas' is interpreted as meaning both Scheduling Area, as defined by this ID Scheduled Exchanges Calculation Methodology Proposal and Bidding Zone, as defined in Commission Regulations (EU) 543/2013. It is acknowledged that the NEMO Trading Hub is not equal to a geographic area, but characterized by location within the specific geographic area such as Bidding Zone and Scheduling Area. The notion of 'NEMO Trading Hub' is required in order to ensure proper functioning of post market coupling processes under market settlement regimes where multiple NEMOs are active in a Bidding Zone or Scheduling Area in accordance with the requirements contained within Article 57 of Regulation 2015/1222.

3. In this ID Scheduled Exchanges Calculation Methodology Proposal, unless the context requires otherwise:

a) the table of contents and headings are inserted for convenience only and do not affect the interpretation of this methodology for the calculation of Scheduled Exchanges from single intraday coupling proposal; and

b) any reference to legislation, regulations, directive, order, instrument, code or any other enactment shall include any modification, extension or re-enactment of it then in force.

Article 3 - List of Information Required from Relevant NEMOs

The Relevant NEMOs shall provide the following information, resulting from the single intraday market coupling algorithm to the Scheduled Exchange Calculator(s) and all TSOs, for each market time unit, in order to perform the ID Scheduled Exchanges Calculation:

- Rounded and unrounded net position per Scheduling Area;

- Rounded and unrounded net position per Bidding Zone;
- Rounded and unrounded net position per NEMO Trading Hub;
- Allocated capacities, in the form of allocated flows into and out of individual relevant DC network elements (difference in flows in/out reflecting losses where applicable);
- Allocated capacities, in the form of allocated flows on relevant Bidding Zone borders (flows in/out reflecting losses where applicable)[3]

The receipt of this information is essential in order for the Scheduled Exchange Calculator to perform the calculation of Scheduled Exchanges.

Article 4 - Scheduled Exchange Calculator(s)

The Scheduled Exchange Calculator(s) shall be established at least at Capacity Calculation Region level (as defined by Article 2(3) of the Regulation 2015/1222) by those TSOs which intend to calculate Scheduled Exchanges.

Those TSOs which do not intend to calculate Scheduled Exchanges shall use the Single Intraday Coupling Solution which will produce scheduling information in the form of Scheduled Exchanges. While TSOs which do not intend to calculate Scheduled Exchanges using the ID Scheduled Exchanges Calculation Methodology are outside the scope of this ID Scheduled Exchanges Calculation Methodology, this information is included as it pertains to the calculation of 'SEC Net Position within a CCR'.

The Scheduled Exchange Calculator role shall evolve in line with intraday market coupling moving stepwise towards pan-European level.

The ID Scheduled Exchanges Calculation shall be initiated upon receipt of the items included within the list of requirements from relevant NEMOs, pursuant to Article 3.

The Scheduled Exchange Calculator(s) shall receive the list of information outlined in Article 3 of this ID Scheduled Exchanges Calculation Methodology Proposal by 5 minutes after intraday cross-zonal gate closure.

The Scheduled Exchange Calculator(s) shall notify the results of the ID Scheduled Exchanges Calculation to relevant NEMOs, central counter parties, shipping agents and TSOs within 3 minutes after delivery of the information listed in Article 3 by the relevant NEMOs. The results of the Scheduled Exchange Calculator(s) shall be (for each market time unit):

- o Bilateral Scheduled Exchanges per DC network element, per Scheduling Area border, per Bidding Zone border and between NEMO Trading Hubs;
- o Multilateral Scheduled Exchanges[4] per Scheduling Area, per Bidding Zone and per NEMO Trading Hub.

---

[3] Requirement valid irrespective of capacity calculation approach applied, i.e. CNTC or Flow-based.
[4] Multilateral Exchanges do not include DC network element exchanges as DC network element exchanges are not relevant for calculation of the Load Frequency Controller set-point.

All TSOs' proposal for a Methodology for Calculating Scheduled Exchanges resulting from single intraday coupling in accordance with Article 56 of the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

entsoe

Article 5 – General Principles for Calculation of Scheduled Exchanges

The Scheduled Exchange Calculator(s) shall, on request of TSOs which intend to calculate Scheduled Exchanges, calculate the Scheduled Exchanges on the relevant Bidding Zone or Scheduling Areas borders and between NEMO Trading Hubs according to the following principles:

- Scheduled Exchanges already validated by relevant TSOs on non-relevant[5] Bidding Zone or Scheduling Areas borders and between NEMO Trading Hubs shall not be impacted by the ID Scheduled Exchanges Calculation.

- A Bilateral Scheduled Exchange for a given DC network element, Scheduling Area border, Bidding Zone border, or between NEMO Trading Hubs shall only be calculated by the designated Scheduled Exchange Calculator.

- The calculation of Scheduled Exchanges shall be carried out by the Scheduled Exchange Calculator(s) such that the constraints described in Article 5, Article 6 and Article 7 of this ID Scheduled Exchanges Calculation Methodology proposal are respected. Where relevant, Scheduled Exchange Calculators shall coordinate to ensure that the specific implementation of the methodology they apply respectively fulfils this principle.

- The ID Scheduled Exchanges Calculation as described in Article 6 and Article 7 shall respect the net position of the Scheduling Area, Bidding Zone and NEMO Trading Hub and allocated capacities, both in the form of allocated flows on DC network elements (operated in DC mode) and in the form of allocated flows on relevant Bidding Zone borders (difference in flows in/out reflecting losses where applicable) resulting from the single intraday coupling.

- Scheduled Exchanges across a Bidding Zone border, where one Bidding Zone has multiple Scheduling Areas, shall be consistent i.e. the Scheduled Exchanges shall be calculated by a designated Scheduled Exchange Calculator and the sum of the Scheduled Exchanges on the Scheduling Area borders corresponding to this Bidding Zone border shall equal the Scheduled Exchange on this Bidding Zone border.

- When applicable, the relevant TSOs which intend to calculate Scheduled Exchanges resulting from single intraday coupling shall identify to the Scheduled Exchange Calculator(s) all relevant constraints considered for allocation and possible additional 'Scheduling Restrictions'. Any additional 'Scheduling Restrictions' shall be justified by the relevant TSOs and communicated in a transparent way to relevant stakeholders.

Article 6 - Methodology for calculating Scheduled Exchanges between Scheduling Areas, Bidding Zones and NEMO Trading Hubs resulting from single intraday coupling

The Scheduled Exchange Calculator shall, on request of the relevant TSOs, calculate the Scheduled Exchanges according to the calculation set forth below. This calculation shall respect the 'Scheduling Restrictions' defined in Article 5 and shall be performed per market time unit:

1. The Scheduled Exchange Calculator shall derive the 'SEC Net Position within a CCR' from the available input for each Bidding Zone, Scheduling Area and NEMO Trading Hub as per Article 3 of this ID Scheduled Exchanges Calculation Methodology proposal. The 'SEC Net Position within a CCR' shall equal the total volume of Scheduled Exchanges on relevant borders for which

---

[5] Non-relevant refers to those borders which shall not use the ID Scheduled Exchanges Calculation Methodology as per Article 56 of Regulation 2015/1222

All TSOs' proposal for a Methodology for Calculating Scheduled Exchanges resulting from single intraday coupling in accordance with Article 56 of the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

entsoe

the Scheduled Exchange Calculator shall calculate the Scheduled Exchanges. The calculation shall respect and be compliant with the TSOs using scheduling information in the form of Scheduled Exchanges produced by the Single Intraday Coupling Solution on non-relevant borders.

2. The Scheduled Exchange Calculator shall calculate the Bilateral Scheduled Exchanges between the Bidding Zones of the CCR using the 'Bidding Zone SEC Net Position within a CCR'. This calculation shall then optimise the Scheduled Exchanges between the Bidding Zones according to the defined 'Scheduling Restrictions'.

3. The calculation of the Bilateral Scheduled Exchanges between Scheduling Areas of the CCR shall follow the principles described in Article 7.3

4. The calculation of Bilateral Scheduled Exchanges between NEMO Trading Hubs of the CCR shall follow the principles described in Article 7.4

5. Scheduled Exchanges shall always be calculated for a specific direction i.e. scheduled exchange from / to.

6. Finally, if requested by the relevant TSOs, the Scheduled Exchange Calculator shall calculate the Multilateral Scheduled Exchange per Bidding Zone, Scheduling Area and NEMO Trading Hub by aggregation of the relevant Bilateral Scheduled Exchanges.

Article 7 Calculation of Scheduled Exchanges per CCR

The ID Scheduled Exchanges Calculation Methodology, in accordance with Article 56 of Regulation 2015/1222, shall be based on a step-wise ID Scheduled Exchanges Calculation as described in Article 6. This section gives an overview of the calculation methodology which the Scheduled Exchange Calculator shall apply to derive the 'SEC Net Position of a Bidding Zone, Scheduling Area or NEMO Trading Hub within a particular CCR'.

Article 7.1 Calculation of input parameters: the SEC net positions within a CCR

For each Bidding Zone, Scheduling Area and NEMO Trading Hub within a particular CCR, the Scheduled Exchange Calculator shall derive the SEC Net Position. The 'SEC Net Position of a Bidding Zone, Scheduling Area or a NEMO Trading Hub within a particular CCR' shall be used as an input value for the calculation of Scheduled Exchanges. The 'SEC Net Position of a Bidding Zone, Scheduling Area or a NEMO Trading Hub within a particular CCR' shall equal the total volume of scheduled exchanges calculated by the respective Scheduled Exchange Calculator.

The Scheduled Exchange Calculator(s) shall calculate the different 'SEC Net Positions within a CCR' according to the principles defined below:

1. The 'Bidding Zone SEC Net Position within a CCR' is determined by the net position of the Bidding Zone reduced by the allocated capacities in the form of allocated flows of all Bidding Zone borders not being part of this CCR, as provided by the relevant NEMOs.

2. The 'Scheduling Area SEC Net Position within a CCR' is determined proportionally to the ratio between:

   o the corresponding Bidding Zone SEC Net Position within this CCR

   o the corresponding Bidding Zone Net Position.

Equation 1

$$SEC\ NP_{SA}/CCR_j = NP_{SA} \times \frac{SEC\ NP_{BZ}/CCR_j}{NP_{BZ}}$$

$SEC\ NP_{SA}/CCR_j$ = *Scheduling Area SEC Net Position within a CCR j*

NP_{SA} = *Net Position of the Scheduling Area*

$SEC\ NP_{BZ}/CCR_j$ = *Bidding Zone SEC Net Position within a CCR j*

NP_{BZ} = *Net Position of the Bidding Zone*

- o When multiple Scheduling Areas exist within one Bidding Zone then, this calculation shall respect the 'Bidding Zone SEC Net Position within a CCR', i.e. the sum of 'Scheduling Area SEC Net Position within a CCR' shall be equal to the 'Bidding Zone SEC Net Position within a CCR'

- o If there is only one Scheduling Area within the Bidding Zone, then the 'Scheduling Area SEC Net Position within a CCR' and the 'Bidding Zone SEC Net Position' shall be equal.

3. Notwithstanding the specific cases where there are efficiency gains which can be achieved by prioritising Scheduled Exchanges between the same NEMOs over Bidding Zone or Scheduling Area borders, the 'NEMO Trading Hub SEC Net Position within a CCR' is determined proportionally to the ratio between:

- o the corresponding Bidding Zone or Scheduling Area SEC Net Position within this CCR

- o the corresponding Bidding Zone or Scheduling Area Net Position.

The calculation of a 'NEMO Trading Hub SEC Net Position within a CCR' on a Bidding Zone or Scheduling Area level can be described by the following formulas:

Equation 2

$$SEC\ NP_{NTH}/CCR_j = NP_{NTH} \times \frac{SEC\ NP_{BZ}/CCR_j}{NP_{BZ}}$$

$SEC\ NP_{NTH}/CCR_j$ = *NEMO Trading Hub SEC Net Position within a CCR j*

NP_{NTH} = *Net Position of the NEMO Trading Hub*

$SEC\ NP_{BZ}/CCR_j$ = *Bidding Zone SEC Net Position within a CCR j*

NP_{BZ} = *Net Position of the Bidding Zone*

Equation 3

$$SEC\ NP_{NTH}/CCR_j = NP_{NTH} \times \frac{SEC\ NP_{SA}/CCR_j}{NP_{SA}}$$

$SEC\ NP_{NTH}/CCR_j =$ *NEMO Trading Hub SEC Net Position within a CCR j*

$NP_{NTH} =$ *Net Position of the NEMO Trading Hub*

$SEC\ NP_{BZ}/CCR_j =$ *Scheduling Area SEC Net Position within a CCR j*

$NP_{BZ} =$ *Net Position of the Scheduling Area*

The calculation of the different 'SEC Net Positions within a CCR' can be described by the formula below:

Equation 4

$$SEC\ NP/CCR_j = \sum_{m=1}^{n} SCHEX_{OUT_{f \to m}}$$

$SEC\ NP/CCR_j =$ *Scheduled Exchange Calculator Net Position of a Bidding Zone, Scheduling Area or NEMO Trading Hub within a particular CCR j*

m = Variable representing individual Bidding Zones, Scheduling Areas or Nemo Trading Hubs m→n which have borders with Bidding Zone, Scheduling Area or NEMO Trading Hub (f) and for which TSOs intend to calculate Scheduled Exchanges

n = Total number of Bidding Zones, Scheduling Areas or NEMO Trading Hubs which have borders with Bidding Zone, Scheduling Area or NEMO Trading Hub (f) and for which TSOs intend to calculate Scheduled Exchanges

$SCHEX_{OUT_{f \to m}} =$ *Scheduled Exchanges per Bidding Zone border or Scheduling Area border or between NEMO Trading Hubs m →n which TSOs intend to calculate using the Scheduled Exchange Calculator.*

Article 7.2   Calculation of Scheduled Exchanges between Bidding Zones

After the 'SEC Net Position of a Bidding Zone/Scheduling Area or a NEMO Trading Hub within a particular CCR' has been determined, the Scheduled Exchange Calculator shall calculate the Scheduled Exchanges between the Bidding Zones of the CCR using the 'Bidding Zone SEC Net Position within a CCR'. This calculation shall optimise the Scheduled Exchanges between the Bidding Zones according to Scheduling Restrictions defined per CCR.

The calculation problem shall be defined in such a way that congestion income distribution as described in the Congestion Income Distribution Methodology provided according to Article 73 of the Regulation 2015/1222 is not impacted. When considering the Coordinated Net Transmission Capacity Approach, where a price difference exists between two Bidding Zones, all the capacity available for market coupling on the Bidding Zone Border has been fully utilised. Hence, if there is a price difference between two Bidding Zones, within a CCR applying Coordinated Net Transmission Capacity Approach, then the Scheduled Exchanges shall be equal to the cross zonal capacity.

All TSOs' proposal for a Methodology for Calculating Scheduled Exchanges resulting from single intraday coupling in accordance with Article 56 of the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

entsoe

The optimisation applied for calculation of the Scheduled Exchanges shall aim to minimise the Scheduled Exchanges between the involved Bidding Zones. For this minimisation, the Scheduled Exchanges within the CCR for which TSOs intend to calculate Scheduled Exchanges (BSE_{calc}) shall be used as a set of variables to minimise the target function while respecting the defined constraints, Scheduling Restrictions and the Scheduled Exchanges on the non-relevant borders[6].

Equation 5

$$minimise\ Target\ Function(BSE_{calc}), so\ that\ BSE_{calc}\ respects\ the\ constraints$$

For this target function, the Scheduled Exchanges shall be multiplied by a set of linear and quadratic cost coefficients.

Equation 6

$$Target\ Function(BSE_{calc})$$
$$= \sum(|BSE_{calc}| * Linear\ Cost\ Coefficient + BSE_{calc}^2 * Quadratic\ Cost\ Coefficient)$$

The summation takes into account all Scheduled Exchanges within the CCR for which TSOs intend to calculate Scheduled Exchanges (BSE_{calc}). The definition of the cost coefficients used in the target function should be dependent on the Scheduling Restrictions defined within the CCR e.g. the application of the prioritisation path would mean that the cost coefficients for certain Bidding Zone Borders differ from the others so that the rules imposed by the CCRs are met by the target function. Furthermore, the linear cost coefficients could be set to one and the quadratic cost coefficients could be set to zero so that only the total sum of Scheduled Exchanges, for which the TSO intend to perform the calculation, is minimised.

The constraints defining the optimisation problem include the requirements elaborated in the beginning of Article 7. The calculated BSE_calc should be consistent with the 'SEC net positions within CCRs'.

Article 7.3   Calculation of Scheduled Exchanges between Scheduling Areas

In cases where a Bidding Zone covers only one Scheduling Area, the Scheduled Exchanges between Bidding Zones equal the Scheduled Exchanges between Scheduling Areas. However, a specific case can exist:
- If there is more than one Scheduling Area within a Bidding Zone then:
    a. The Scheduled Exchange Calculator(s) shall calculate the Scheduled Exchanges between the Scheduling Areas of the CCR using the 'Scheduling Area SEC Net Position within a CCR'. This calculation shall optimise the Scheduled Exchanges between the Scheduling Areas according to Scheduling Restrictions defined per CCR. For this calculation, a

---

[6] non-relevant borders are the borders for which the Scheduled Exchanges are not calculated according to the approach defined by Article 56 of Regulation 2015/1222 but the Scheduling Information is provided directly by Single Intraday Coupling Solution

All TSOs' proposal for a Methodology for Calculating Scheduled Exchanges resulting from single intraday coupling in accordance with Article 56 of the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

entsoe

similar optimisation problem shall be defined as for the Bilateral Exchanges between Bidding Zones with additional requirement described in point b.

b. If there are multiple Scheduling Areas on one (or both) side(s) of the Bidding Zone Border, then the Scheduled Exchanges between the Scheduling Areas, over the Bidding Zone Border, shall be attributed to each Scheduling Area Border proportionally to the installed thermal capacity of the interconnections.

Article 7.4   Calculation of Scheduled Exchanges between NEMO Trading Hubs

After the calculation of the Scheduled Exchanges between Bidding Zones and Scheduling Areas within the CCR, the Scheduled Exchanges between the NEMO Trading Hubs can be calculated. Calculated Scheduled Exchanges between the NEMO Trading Hubs shall respect Scheduled Exchanges between Bidding Zones and Scheduling Areas applying the following principles:

- The 'NEMO Trading Hub SEC Net Position within a CCR' shall be settled proportionally within a Bidding Zone or Scheduling Area, depending if Bidding Zone equals Scheduling Area or if multiple Scheduling Areas exist within the Bidding Zone. This implies that if there are multiple NEMOs within a Bidding Zone or Scheduling Area, the NEMOs with the same sign of 'NEMO Trading Hub SEC Net Position within a CCR' (e.g. a NEMO Trading Hub has a positive net position (exporting) within a Bidding Zone with a positive net position (exporting)) shall first schedule an exchange with each of the NEMOs with an opposite sign to the 'NEMO Trading Hub SEC Net Position within a CCR'. This exchange should be proportional to the NEMO Trading Hub's contribution to the 'Bidding Zone's SEC Net Position within a CCR' or the 'Scheduling Area's SEC Net Position within a CCR'.

- The cross border Scheduled Exchanges between NEMOs of the CCR shall respect the Scheduled Exchanges calculated between the Bidding Zones or Scheduling Areas of the CCR and shall prioritise Scheduled Exchanges between the same NEMOs over Bidding Zone or Scheduling Area borders.

Article 8 - Implementation date

The ID Scheduled Exchanges Calculation Methodology shall be implemented by any TSO, which intends to calculate Scheduled Exchanges, in parallel with the Go-Live of the Single Intraday Coupling Solution.

According to Article 56(4) of the Regulation 2015/1222, no later than two years after approval by the regulatory authorities, the relevant TSOs shall review the ID Scheduled Exchanges Calculation Methodology. In addition, further implementation of all processes related to the Single Intraday Coupling Solution may result in amendments to this methodology.

Article 9 - Language

The reference language for this ID Scheduled Exchanges Calculation Methodology Proposal shall be English. For the avoidance of doubt, where TSOs need to translate this ID Scheduled Exchanges Calculation Methodology Proposal into their national language(s), in the event of inconsistencies between the English

version published by TSOs in accordance with Article 9(14) of the Regulation 2015/1222 and any version in another language, the relevant TSOs shall be obliged to dispel any inconsistencies by providing a revised translation of this ID Scheduled Exchanges Calculation Methodology Proposal to their relevant national regulatory authorities.