

# **ENTSO-E**

## **Network Code on Capacity Allocation and Congestion Management**

**ID section**

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### ***Notice***

The contents of this document reflect the status of ongoing work by TSO experts as of December 2011, based on the ACER framework guideline on Capacity Allocation and Congestion Management published on 29 July 2011, as well as the input of an extensive dialogue with stakeholders.

### ***Disclaimer***

This draft does not represent a firm, binding and definitive ENTSO-E position on the contents, the structure, or the prerogatives of the “network code on Capacity Allocation and Congestion Management”.

# Title 1

## GENERAL PROVISIONS

### Article 1

#### DEFINITIONS (glossary)

For the purpose of this Network Code, the following definitions shall apply:

**Balance Responsible Party**- An entity that has a contract proving financial security and identifying balance responsibility with the imbalance settlement responsible of the market balance area entitling the party to operate in the market. This is the only role allowing a party to buy or sell energy on a wholesale level.

**Border** - A set of physical lines linking adjacent Bidding Zones.

**Capacity Coordinator** – The function responsible for establishing a coordinated Offered Capacity and/or NTC and/or ATC between different market balance areas.

**Common grid model (CGM)** - European wide data set used as a unique basis for capacity calculation., created through European merging function.

- The CGMs for day ahead capacity calculation are named D2CF
- The CGMs for intraday capacity calculation are named DACF
- The DACF updates in intraday are called IDCF
- The CGMS for month ahead capacity calculation are named MACF
- The CGMS for year ahead capacity calculation are named YACF

**Market Operator:** The function of providing the service to Market Participants of matching orders and, as the case may be, providing additional services for clearing and settlement.

**Market Coupling Operator:** The function of providing the service to Market Operators of executing the matching of orders in a cross-zonal context for the whole market area, taking into account the Network Constraints provided by the System Operators and thereby providing the service to TSOs of cross-zonal capacity allocation for the day ahead and intraday timeframes.

**The Central Counter Party:** The function of entering into contracts with Market Parties, by novation of the contracts resulting from the matching process and of entering into contracts for the energy corresponding with the Net Positions with other Central Counter Parties or Shipping Agents.

**Shipping Agent: The function of providing the service of** intermediary counterparty between different Central Counter Parties for the exchange of the energy, corresponding with the Commercial Exchanges for a given cross-zonal border or interconnector.

**System Operator-** The function referring to various tasks and responsibilities assumed by TSOs pursuant to this Network Code, including the physical delivery of energy resulting from the day ahead and intraday market transactions

**Allocation/Capacity Allocation** - The attribution of Available Cross-Zonal Capacity with obligatory use

**Available Cross-Zonal Capacity** - The available transmission capacity, either based on the ATC Grid Model or the Flow Based Grid Model, that can be used for an energy transfer between Bidding Zones,

**Bidding Zone:** smallest geographical area for which one single clearing price in the Day Ahead Market is always applicable. Bidding Zones shall be identical across timeframes.

**Order** - An intention to purchase or sell energy expressed by a Market Participant through a market platform subject to a certain number of execution conditions as determined by the rules governing that market platform. The order may refer to several market time periods .

**Capacity Trader:** The function responsible for submitting, in accordance with the conditions for Explicit Allocation, explicit capacity request for Available Cross-Zonal Capacity during the bidding period and who receives Allocated Capacity via an Explicit Allocation.

**Commercial Exchange** - The aggregated net Allocated Capacity between Bidding Zones, expressed in MW for each Market Time Period and for a given direction.

**Explicit (Capacity) Allocation** - Allocation of Available Cross-Zonal Capacity only, without the electricity transfer, to a Balance Responsible Party in accordance with the time of entrance

**Intraday Cross-Zonal Gate Opening Time** – the point in time when cross-zonal capacity for a Bidding Zone is released for a given Market Time Period and a given border. There is one Intraday Cross-Zonal Gate Opening Time for each day of delivery for a given border.

**Intraday Energy Gate Opening Time** – the point in time when energy trading for a Bidding Zone is permitted for a given Market Time Period. There is one Intraday Energy Gate Opening Time for each day of delivery per Bidding Zone.

**Intraday Cross-Zonal Gate Closure Time** – the point in time where cross-zonal Capacity Allocation is no longer permitted for a given Market Time Period. There is one Intraday Cross-Zonal Gate Closure Time for each Market Time Period for a given border.

**Intraday Energy Gate Closure Time** - the point in time when energy trading for a Bidding Zone is no longer permitted for a given Market Time Period. There is one Intraday Energy Gate Closure Time for each Market Time Period per Bidding Zone.

**Implicit (Capacity) Allocation** - Allocation of Available Cross-Zonal Capacity including the electricity transfer

**Market Congestion** - market congestion at one (or more) Bidding Zone border(s) means a situation in which the Matching of those Bids is impacted by the Available Cross-Zonal Capacities and active Network Constraints at this border/those borders and thereby the highest possible Economic Surplus cannot be achieved.

**Market Participant** – An entity authorized by a Market Operator to perform trades or transactions. For the sake of clarity, TSOs and PXs and their designated entity(ies) can be considered as Market Participants, as the case may be.

**Market Time Period** - is a time resolution for delivery of energy

**Matched Orders** - consist of all matched (buy and sell) Orders within a trade performed by the matching algorithm

**Matching** - the trading mode through which sell Orders in the shared order book are assigned to appropriate buy Orders to ensure the maximization of economic surplus.

**Net position:** Netted sum of electricity exports and imports for each Market Time Period for a given Bidding Zone

**Network constraints** - the system constraints as specified by the System Operator that the matching algorithm shall respect in both the Day Ahead and Intraday market. Network constraints may include, (but is not limited to): Available Cross-Zonal Capacity, security constraints, ramping constraints, minimum flows and transmission losses.

## **Article 2**

### **SUBJECT MATTER**

1. This Network Code defines a common set of rules for allocating capacity and managing cross Bidding Zone congestion in the Day Ahead and Intraday time frame. It also outlines common methodologies for determining the volumes of capacity simultaneously available between Bidding Zones and methodologies for definition of Bidding Zones.

## **Article 3**

### **SCOPE**

1. The requirements set forth by this Network Code shall apply to Transmission System Operators, Power Exchanges and all Market Participants active in the cross-border trading of electricity.
2. For the sake of clarity, the functions in article 67 may also be used in this Network Code to designate the entity in charge of the concerned function.

## **CHAPTER 4**

### **CAPACITY ALLOCATION & CONGESTION MANAGEMENT IN THE INTRADAY TIMEFRAME**

#### **SECTION 1:**

#### **ARCHITECTURE, ROLES & RESPONSIBILITIES**

##### **Article 66**

##### **ARCHITECTURE OF THE PAN-EUROPEAN INTRADAY SOLUTION**

1. The objective of the pan-European intraday solution is to enable Market Participants to continuously trade energy as close to real-time as possible-in order to, inter alia, adjust their balances.
2. The pan-European Intraday Solution shall be composed of a shared order book and a capacity management module. There shall be a one-to-one relationship between the shared order book and the capacity management module.
3. The shared order book shall contain and provide in a transparent and non-discriminatory manner all compatible real-time Intraday Orders of the participating Power Exchanges to the Continuous Trading Matching Algorithm.
4. The capacity management module shall contain and provide all real-time Available Cross-Zonal Capacity to the Continuous Trading Matching Algorithm and shared order book and perform the Capacity Allocation.
5. The Continuous Trading Matching Algorithm is part of the shared order book and shall perform the Matching of Orders on a continuous basis.

##### **Article 67**

##### **FUNCTIONS WITHIN THE INTRADAY MARKET**

The Intraday electricity market shall involve the following roles:

- (a) System Operator
- (b) Market Operator
- (c) Market Coupling Operator
- (d) Capacity Coordinator
- (e) Commercial Exchange Calculator
- (f) Central Counter Party and
- (g) Shipping Agent

## **Article 68**

### **ALLOCATION OF ROLES**

1. A competent entity or entities shall be appointed in each Member State, to perform each of the roles specified in Article 67 subject to the following:

TSOs, at least on a regional basis, shall be responsible to set up and organize the

- (a) the role of System Operator.
- (b) Capacity Allocation by means of the capacity management module in accordance with Article 66
- (c) coordinated capacity calculation and shall to that extent appoint an entity(ies) to perform the role of Capacity Coordinator to perform the tasks specified in Article 75;
- (d) Commercial Exchange calculation and shall to that extent appoint an entity(ies) to perform the role of Commercial Exchange Calculator as specified in Article 77;

Entity(ies) shall be responsible to set up and organize the

- (a) the role of Market Coupling Operator
- (b) the role of Market Operator

## **SECTION 2:**

### **OBJECTIVES, FUNCTIONALITY & OUTPUTS FROM THE INTRADAY MARKET**

## **Article 69**

### **OBJECTIVES OF THE CONTINUOUS TRADING MATCHING ALGORITHM**

1. As from Intraday Cross-Zonal Gate Opening Time and prior to Intraday Cross-Zonal Gate Closure Time, the Continuous Trading Matching Algorithm shall avoid undue discrimination when determining which Orders to select for Matching such that it
  - (a) maximises allocative efficiency per trade for the intraday timeframe by allocating implicitly capacity to the best bid/ask Orders that are possible to match in accordance to price and time of entrance
  - (b) while respecting the Network Constraints as referred to in Article 74
  - (c) while respecting the requirements for the delivery of results as referred to in Article 78; and
  - (d) has a consistently high level of availability, is repeatable and scalable
2. The Continuous Trading Matching Algorithm shall produce the outputs specified in Article 72 and meet the capabilities and functionalities specified in Articles 72 to 74.

## **Article 70**

### **ALGORITHM DEVELOPMENT**

1. Immediately after the entry into force of this regulation, System Operators shall provide the Market Coupling Operator with a single set of binding requirements related to efficient Capacity Allocation for the development of the Continuous Trading Matching Algorithm. These requirements shall facilitate the objectives in Article 69 and promote transparency and non-discrimination.
2. As soon as reasonably practicable, and no later than 6 months after the receipt of these requirements, the Market Coupling Operator shall develop a single Continuous Trading Matching Algorithm which meets these requirements specified by System Operators.
3. Details of the Continuous Trading Matching Algorithm on the fulfilment of these requirements provided by System Operators shall be set out in a single proposal. This proposal shall be submitted by the Market Coupling Operator to the System Operators for consultation with Market Participants.
4. Within two months of receiving the proposal from Market Coupling Operator, System Operators shall provide a reasoned opinion as to whether the requirements provided pursuant to paragraph 1 are fulfilled. In the event that the opinion is negative, the Market Coupling Operator and System Operators shall work together to refine the approval such that it reflects the requirements provided by System Operators. Following a positive opinion, System Operators shall submit details of the proposal for approval to National Regulatory Authorities.
5. National Regulatory Authorities shall determine whether the proposal should be implemented within two months. In the event that no decision is received within two months, the proposal shall be deemed to be accepted. The Market Coupling Operator and System Operators shall provide information as required to facilitate the decision by National Regulatory Authorities.
6. The Market Coupling Operator and System Operators shall implement the decision of National Regulatory Authorities as soon as reasonably practicable after the decision of the National Regulatory Authorities.
7. National Regulatory Authorities and ACER shall monitor the implementation and operation of the Continuous Trading Matching Algorithm.
8. The source code of the Continuous Trading Matching Algorithm shall be made publically available while respecting the intellectual property rights of the owners.

## **Article 71**

### **ALGORITHM AMENDMENT**

1. In the event that System Operators identify an amendment to the Continuous Trading Matching Algorithm which could, in their opinion, better facilitate the efficient Capacity Allocation; System Operators shall provide an updated set of binding requirements pursuant to article 70,1 to Market Coupling Operator. System Operators, Market Coupling Operators and National Regulatory Authorities shall develop, consult on and approve or reject the proposed amendment in accordance with the process specified in Article 70.2 to 70.8
2. In the event that the Market Coupling Operator identifies an amendment to the Continuous Trading Matching Algorithm which could, in their opinion, better facilitate the objectives specified in Article 69; the Market Coupling Operator shall provide information to System Operators outlining the rationale for the proposed amendment.
  - (a) Within two months upon reception of the information, System Operators shall review the rationale for proposed amendment and, if related to efficient Capacity Allocation, provide an updated set of binding requirements related to efficient capacity allocation in line with proposed amendment to Market Coupling Operator. System Operators, Market Coupling Operators and National Regulatory Authorities shall develop, consult on and approve or reject the proposed amendment in accordance with the process specified in Article 70.2 to 70.8
  - (b) If the proposed amendment is not related to efficient Capacity Allocation pursuant to paragraph 71,1, System Operators shall within two months upon reception of the information notify the Market Coupling Operator and National Regulatory Authorities.

## **Article 72**

### **OUTPUTS OF THE CONTINUOUS TRADING MATCHING ALGORITHM**

1. The Market Coupling Operator shall ensure that the Continuous Trading Matching Algorithm shall perform the Matching of Orders resulting in:
  - (a) Matched Orders and price(s) per trade
  - (b) Net Positions for each Market Time Period within the Intraday time frame
2. The Market Coupling Operator shall ensure the accuracy and efficiency of results produced by the single Continuous Trading Matching Algorithm.
3. The Market Coupling Operator shall make sure that results anytime are compliant with the objectives in Article 69.



## **Article 73**

### **PRODUCTS ACCOMMODATED**

1. Market Operators shall ensure that all Orders in the shared order book are submitted in terms of Euro and shall refer to an individual or multiple Market Time Period(s), making reference to Central European Time (CET). However this shall not preclude local markets settling in local currency and converting the Orders to Euros prior to their submission to the Shared Order Book.
2. Market Operators shall ensure that products shall be compatible with the characteristics of the Available Cross-Zonal Capacities allowing them to match simultaneously
3. Market Operators shall periodically liaise and consult with relevant stakeholders, for developing and ensuring that the available products reflect Market Participants' needs, and are reflective of power system capability and promote the objectives specified in Article 69. This shall be done in close cooperation with the System Operators.
4. Market Coupling Operator shall ensure that the Continuous Trading Matching Algorithm is able to accommodate hourly and multi-hourly Orders, and Orders covering parts of an hour

## **Article 74**

### **REFLECTION OF CONSTRAINTS**

The Market Coupling Operator shall provide adequate or sufficient evidence to the System Operators that the Continuous Trading Matching Algorithm is capable of achieving the objectives in Article 69 while respecting the Network Constraints notified to them by the System Operators.

## **SECTION 3:**

### **THE INTRADAY MARKET PROCESS**

## **Article 75**

### **CAPACITY CALCULATION**

1. The Capacity Coordinator shall ensure that arrangements are in place such that Available Cross-Zonal Capacity, calculated in accordance with the methods set out in *[chapter on capacity calculation]* shall be provided to the capacity management module as soon as possible after distinct changes of the input parameters of the Common Grid Model within the Intraday timeframe but not later than fifteen (15) minutes prior to the Intraday Cross-Zonal Gate Opening Time.

2. System Operators shall notify the Capacity Coordinator if updates are required to the Available Cross-Zonal Capacity without delay at any time, due to operational changes on the transmission network.
3. If, for reasons beyond the reasonable control of the Capacity Coordinator, the Capacity Coordinator is unable to comply with paragraph 1, the Capacity Coordinator shall notify the Market Participants.

## **Article 76**

### **OPERATION OF THE INTRADAY MARKET**

1. System Operators are responsible for setting Intraday Cross-Zonal Gate Opening and Closure Time.
2. All Orders for a given Market Time Period shall be submitted to the Market Operator before Intraday Energy Gate Closure Time. In order to have access to cross-zonal trading, Orders for a given Market Time Period shall be submitted to the Market Coupling Operator before Intraday Cross-Zonal Gate Closure Time. The Market Operator shall ensure anonymity when submitting Bidding Zone Orders to the Shared Order Book.
3. The Intraday Cross-Zonal Gate Closure Time shall be set up in order to:
  - (a) maximize Market Participants' opportunities for adjusting their balances by trading in the Intraday timeframe as close as possible to real time.
  - (b) provide System Operators and Market Participants sufficient time for their scheduling and balancing processes in respect of network and system security.
4. The Intraday Cross-Zonal Gate Closure Time shall be at the latest one hour prior to real time. An adequate coordination with the balancing timeframe and related balancing processes in respect of network security shall be considered when defining the Intraday Cross-Zonal Gate Closure Time.
5. The Intraday Energy Gate Opening Times of at least the Bidding Zones adjacent to a Bidding Zone border shall be prior or equal to the Intraday Cross-Zonal Gate Opening Time of this border. The Intraday Energy Gate Closing Times shall be after or at the same time as the Cross-Zonal Intraday Gate Closing Time.

## **Article 77**

### **CALCULATION OF COMMERCIAL EXCHANGES**

1. In situations where notifications of Commercial Exchanges are required, System Operators shall define and publish a single methodology to be used in calculating Commercial Exchanges between Bidding Zones following the Matching of Orders. The calculation of Commercial Exchanges shall be based on the Continuous Trading Matching Algorithm results as specified in Article 72, 1 (b) and shall respect the principles of transparency and non-discrimination.

2. System Operators shall provide this methodology to the Commercial Exchange Calculator and System Operators shall ensure that the Commercial Exchange Calculator is able to produce the Commercial Exchanges specified by this methodology.
3. The Commercial Exchange Calculator shall, in accordance with this methodology, ensure that the Available Cross-Zonal Capacity in the capacity management module is updated with the Allocated Cross-Zonal Capacity after each trade performed by the Continuous Trading Matching Algorithm.
4. The Commercial Exchange Calculator shall, in accordance with this methodology, calculate Commercial Exchanges each Market Time Period prior to the next Commercial Exchange calculation cycle.
5. In situations where notifications of Commercial Exchanges are required, the Commercial Exchange Calculator shall use best endeavours to deliver the Commercial Exchanges to Market Operators, System Operators and Central Counter Parties as referred to in article 86. In the event where the Commercial Exchange Calculator, having used best endeavours, is unable to deliver the Commercial Exchanges, the Commercial Exchange Calculator shall notify the Market Operators, System Operators and Central Counter Parties as referred to in article 86 as soon as reasonably possible.

#### **Article 78**

#### **DELIVERY OF RESULTS**

1. The Market Coupling Operator shall use best endeavours to deliver the Continuous Trading Matching Algorithm results as specified in Article 72, 1 (a) to the Market Operators. In the event where the Market Coupling Operator, having used best endeavours, is unable to deliver these Continuous Trading Matching Algorithm results, Market Coupling Operator shall notify the Market Operators as soon as reasonably possible.
2. The Market Coupling Operator shall use best endeavours to deliver the Continuous Trading Matching Algorithm results as specified in Article 72, 1 (b) to the System Operators and the Commercial Exchange Calculator,. In the event where the Market Coupling Operator, having used best endeavours, is unable to deliver these Continuous Trading Matching Algorithm results, Market Coupling Operator shall notify the System Operators and the Commercial Exchange Calculator as soon as reasonably possible. System Operators and the Commercial Exchange Calculator shall notify concerned entities as soon as reasonably possible.
3. The Market Coupling Operator shall perform the operation of the Continuous Trading Matching Algorithm at high quality in relation towards the availability of their technical system. The Market Coupling Operator shall ensure the functioning of the Continuous Trading Matching Algorithm and the availability of the technical infrastructure at all times when required.

4. Market Operator shall send the necessary information to Market Participants to ensure that necessary post-trading actions can be made.

## **Article 79**

### **PUBLICATION OF MARKET INFORMATION**

1. The Market Coupling Operator shall publish per trade the results of the Continuous Trading Matching Algorithm in accordance with Article 72, 1(a).
2. The System Operators shall ensure the publication per trade of the updated Available Cross-Zonal Capacity in accordance with the Allocated Capacity in Article 78.
3. The Market Coupling Operator and System Operator shall ensure that historical data with respect to market information in this article are available in an accessible format to Market Participants for a period of not less than 5 years (where available).

## **Article 80**

### **COMPLEMENTARY REGIONAL AUCTIONS**

1. Complementary regional auctions may be implemented subject to National Regulatory Authorities' approval and subject to the fulfilment of the following conditions:
  - (a) The implementation of the regional auction shall not have an adverse impact on the liquidity of the pan-European Intraday solution.
  - (b) All available Cross-Zonal Capacity shall be allocated through the capacity management module.
  - (c) The regional auction shall not introduce any undue discrimination between member states or Market Participants from adjacent regions; and
  - (d) The timescales for regional auctions shall be consistent with the pan-European Intraday solution to enable the Market Participants to trade as close as possible to real-time.
2. National Regulatory Authorities shall periodically review the compatibility between any regional solutions and the pan-European Intraday solution to ensure the conditions above continue to be met.

## **Article 81**

### **PRICING OF INTRADAY CAPACITY**

1. Intraday Available Cross-Zonal Capacity shall be priced at one or more border(s) between Bidding Zones if the following prerequisites are simultaneously fulfilled:
  - (a) the border(s) contribute to the occurrence of Market Congestion, and

(b) the method for pricing of Intraday capacity has been approved by the National Regulatory Authorities

2. Where appropriate, the Intraday capacity pricing shall be included within the Continuous Trading Matching Algorithm.
3. In order to always reflect the actual specific network and market situation, the Intraday Available Cross-Zonal Capacity price shall be calculated based on the actual Order Prices.

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## **TITLE 2**

### **TRANSITIONAL ARRANGEMENTS**

#### **Chapter 1**

#### **INITIATION OF TRANSITIONAL ARRANGEMENTS TOWARDS INTRADAY SOLUTION**

##### **Article 98**

##### **General Provisions**

1. The transitional arrangements shall comply with the architecture of the pan-European solution as described in Title 2, Chapter 4, Article 1;

##### **Article 99**

##### **EXPLICIT ALLOCATION**

1. The System Operators shall provide Explicit Allocation by means of the capacity management module on those interconnections where requested by the relevant National Regulatory Authorities. For this purpose the System Operators shall publish the conditions that must be fulfilled to participate in the Explicit Allocation. These conditions are subject to approval by the relevant National Regulatory Authorities.
2. In accordance with the objectives stated in Article 69, the Continuous Trading Matching Algorithm shall avoid undue discrimination when determining which Orders to select for Matching such that it maximises allocative efficiency per trade for the Intraday timeframe by allocating explicitly capacity to the best bid/ask Orders that are possible to match in accordance to time of entrance

##### **Article 100**

##### **REMOVAL OF EXPLICIT ALLOCATION**

1. Market Operators shall work in close cooperation with the System Operators and in consultation with Market Participants for the translation of the needs of Market Participants linked with explicit capacity allocation rights into sophisticated products..
2. Concerned National Regulatory Authorities shall approve the introduction of these sophisticated products
3. Prior to the removal of Explicit Allocation, National Regulatory Authorities shall organize a market consultation. The Explicit Allocation of capacity shall be removed at the latest in 2016.

## Chapter 2

### OBJECTIVES & PROVISIONS OF THE TRANSITIONAL ARRANGEMENTS

#### Article 101

##### **BORDER-SPECIFIC PROVISIONS, POST-TRADING OBLIGATIONS AND TRANSPARENCY**

1. Capacity Traders shall accept and comply with all conditions for Explicit Allocation applicable on the interconnection. The Capacity Trader is fully responsible and liable for the completion of the post-trading obligations related to the cross-zonal exchanges.
2. The Capacity Trader is fully responsible and liable for fulfilling the financial rights and obligations related to settlement arising from the Explicit Allocation.
3. The System Operators shall publish the relevant interconnection(s) where the Explicit Allocation is applicable, the Available Cross-Zonal Capacity for Explicit Allocation and other relevant information.

#### Article 102

##### **EXPLICIT REQUEST FOR CAPACITY**

1. The Explicit request for capacity can only be submitted by a Capacity Trader for an interconnection where the Explicit Allocation is applicable, in accordance with Article 99. For each Explicit request for capacity the Capacity Trader shall submit the volume and the price to the capacity management module. The price and volume of Explicit Allocated Capacity will be made publicly available.
2. Each Capacity Trader shall upon request of the relevant National Regulatory Authorities submit a summary of their Explicit trades, including the underlying energy prices.

#### Article 103

##### **TRANSITIONAL ARRANGEMENTS FOR ISLAND SYSTEMS WITH CENTRAL DISPATCH**

1. Transitional Arrangements shall apply for island systems with central dispatch as long as these:
  - (a) are justified on the basis of a cost-benefit analysis;
  - (b) do not unduly affect other jurisdictions;
  - (c) guarantee a reasonable degree of integration with the markets in adjacent jurisdictions;
  - and
  - (d) do not extend beyond 2016.
2. The relevant National Regulatory Authoritie(s) shall provide ACER with the information required for assessing that the above conditions are met.