Annex 2 to the Algorithm methodology:

All NEMOs proposal for amendment of the Common set of requirements for the continuous trading matching algorithm and the intraday auction algorithm

~~30 January 2020~~ 23 November 2023

TITLE 1

Requirements for continuous single intraday coupling algorithm

	Owner		State
	TSO	NEMO	Requirement deadline
1 Requirements on functionalities and performance			
1.1 General requirements			
a) The continuous trading matching algorithm shall support the continuous matching of orders as well as the continuous allocation of intraday cross-zonal capacity.	X	X	EXISTING
b) The continuous trading matching algorithm shall ensure equal treatment of orders coming from all NEMOs and from requests for explicit capacity allocation.		X	EXISTING
c) For each bidding zone, the continuous trading matching algorithm shall be able to:			
(i) support at least the order types included in the ID products;		X	EXISTING
(ii) support non-standard products (all products besides quarter hourly, half hourly and hourly) to the extent this is technically feasible and approved by the competent regulatory authorities;	X	X	AUG 2023
(iii) facilitate different market time units (MTUs) which shall be configurable in each bidding zone;	X	X	EXISTING
(iv) facilitate configurations with more than one NEMO for a given bidding zone or a scheduling area in accordance to the multiple NEMO arrangement as referred to in Article 57 of the CACM regulation;	X	X	EXISTING
(v) support multiple scheduling areas within a bidding zone as requested by TSOs;	X		EXISTING
(vi) allocate cross-zonal capacities on a bidding zone border with multiple TSOs on one or both sides of the concerned bidding zone border.	X	X	EXISTING
d) Intraday cross-zonal gate opening and intraday cross-zonal gate closure times (IDCZGT) shall be configurable for each bidding zone border.	X	X	EXISTING
e) The continuous trading matching algorithm shall aim to ensure that economic surplus is maximised, where applicable.	X	X	EXISTING
f) The continuous trading matching algorithm shall support one or multiple bidding zones within a country and shall be scalable to cover all bidding zones eligible for participating in SIDC.	X	X	EXISTING
g) The continuous trading matching algorithm shall be able to provide the net positions considering bidding zone borders included in SIDC and scheduled exchanges between bidding zones.	X		EXISTING

h) For each bidding zone the result from application of the continuous trading matching algorithm shall be for each MTU calculate one net position and, where applicable, net positions for each scheduling area and each NEMO trading hub.	X		EXISTING
i) The continuous trading matching algorithm must ensure the respect of the proprietary rights and the anonymity of the data (orders, etc.) and information submitted and accessed by the parties in their use of the system.	X	X	EXISTING
j) The integrity of the continuous trading matching algorithm and the data it processes shall be properly secured from unauthorized access.	X	X	EXISTING
k) The continuous trading matching algorithm needs to provide all necessary information for the cross-NEMOs settlement and shipping.		X	EXISTING
l) Problems in one area, on one border or for one NEMO shall not, as far as possible, prevent trading in the other areas, on the other borders or for the other NEMOs.	X	X	EXISTING
m) The continuous trading matching algorithm must support, but not be limited to: (i) receive the available cross-zonal capacity information in real time; (ii) request cross-zonal capacity when pairs of matchable orders are identified.	X	X	EXISTING
n) The continuous trading matching algorithm must support transaction cancellation functionalities. The system must be able to initiate the required actions on the capacity allocation side and interaction with the NEMOs: (i) In case a cross-border trade is involved in the transaction cancellation, the continuous trading matching algorithm shall request cross-zonal capacity in the opposite direction; (ii) The system must support to define a deadline for transaction cancellation.		X	EXISTING
o) The continuous trading matching algorithm shall match orders according to price, time priority and, for cross-border trades, available cross-zonal capacity and allocation constraints. The configuration of the matching rules must support, but not be limited to the following matching rules: (i) Automatic matching process meaning buy and sell orders with crossed prices. The matcher will match the orders at the price of the passive order, i.e. the one already in the order book; (ii) When an order is updated or entered, the continuous trading matching algorithm checks if it can be matched; (iii) A buy (sell) order can be matched if: • there is an order by a trading counterpart with an inferior sell (superior buy) price or equal price; • there are several orders on the sell (buy) side fulfilling the first criterion the order with best price is matched first and if the aggressor order is not fully matched, then the second best price order is matched etc.; • there are several orders with the same price on the sell (buy) side fulfilling the first criterion, the order with the oldest timestamp is matched first and if the aggressor order is not fully matched, then the second oldest is matched etc.; • the matching respects the cross-zonal capacity and allocation constraints; • the matching price is within the harmonised maximum and minimum clearing prices for SIDC.		X	EXISTING

	In case of partial matching of an order, the non-matched part remains in the book (except otherwise specified by the order type) as an order with the quantity equal to the non-matched quantity - the price of the remaining part of order is the one entered initially by the trader except otherwise specified by the order type.			
p)	The orders are all centralised in a consolidated order book that is used to generate the local views, considering the relevant cross-zonal capacity and allocation constraints.		X	EXISTING
q)	All incoming orders and explicit capacity requests are queued in the same queue and treated in non-discriminatory way. The continuous trading matching algorithm shall guarantee a first come first serve principle. Only one matching and/or cross-zonal capacity allocation event can occur at the same time.	X	X	EXISTING
r)	The continuous trading matching algorithm supports increase and decrease of capacity. When the capacity available increases due to netting, capacity publication or update, it may lead to a crossed order book. The continuous trading matching algorithm must include a mechanism to solve this situation (pair matching or auction).	X	X	EXISTING
s)	The continuous trading matching algorithm must calculate local views of order books based on available orders and capacities. The configuration of the local views must support, but not be limited to the following rules:			
	(i) The local view of a bidding zone corresponds to the orders that the market participants of the bidding zone can trade;			
	(ii) The available capacity corresponds to the maximum flow between two bidding zones (unless flow-based cross-border capacity mechanisms are defined and implemented) taking all allocation constraints into consideration;		X	EXISTING
	(iii) For building the same local view, the same capacity can only be considered once;			
	(iv) Construction of the local view must take into account the harmonised maximum and minimum clearing prices for SIDC;			
t)	The continuous trading matching algorithm must prevent that NEMOs have the information to calculate the local view based on the order books from other NEMOs and capacities.		X	EXISTING
u)	Capacity and order book updates are used to create updated local views. Local view updates are continuously broadcasted to the connected NEMOs in a non-discriminatory manner.	X	X	EXISTING
v)	The continuous trading matching algorithm must allow, as part of SIDC, to cross-match the different order types of the ID products within one and between multiple bidding zones, respecting the capacity and order restrictions.		X	EXISTING
1.2	Qualitative requirements with precision and price ranges			
a)	The continuous trading matching algorithm shall provide all market participants non-discriminatory access to cross-zonal capacity in accordance with Article 3(j) of the CACM Regulation.	X	X	EXISTING
b)	The continuous trading matching algorithm shall aim to ensure that in case there are matching opportunities the matching shall always take place taking into account the IDCZGT.		X	EXISTING

c)	The continuous trading matching algorithm shall be able to reproduce the same results with the same input data coming in exactly identical sequence and timing.	X	X	EXISTING
d)	The continuous trading matching algorithm shall support 23, 24 or 25 hours for a trading day.	X	X	EXISTING
e)	The continuous trading matching algorithm shall support automatically the leap years, i.e. 366 days in a year.	X	X	EXISTING
f)	The matching process of the continuous trading matching algorithm, including prices and allocated capacities resulting from this calculation process, has to be transparent, auditable, and explainable. This requirement applies also to all the deterministic rules and applied continuous trading matching algorithm heuristics, if any, and occurrence rate of these rules and heuristics.	X	X	EXISTING
g)	The continuous trading matching algorithm shall be well structured and well documented. A description of the continuous trading matching algorithm should be made publicly available, and should be kept up to date. The documentation shall be written in English.	X	X	EXISTING
h)	The continuous trading matching algorithm shall support negative prices as well as prices with different price boundaries.		X	EXISTING
i)	The continuous trading matching algorithm shall be able to deliver prices and volumes according to globally configurable ticks and, in case rounding is required, specific rounding rules.	X	X	EXISTING
1.3	Other functionalities related to cross-zonal capacity allocation			
a)	The continuous trading matching algorithm shall be able to match both implicit (NEMOs) and explicit capacity allocation requests.	X	X	EXISTING
b)	The continuous trading matching algorithm shall be able to calculate for each MTU the scheduled exchanges between bidding zones.	X	X	EXISTING
c)	The continuous trading matching algorithm shall be able to calculate for each MTU the scheduled exchanges between scheduling areas.	X		EXISTING
d)	Once allocated by the continuous trading matching algorithm, the capacity is firm (cannot be changed by TSOs).		X	EXISTING
e)	Cross-zonal capacity shall be allocated to either energy transactions or explicit requests where approved, at zero price for market participants, in accordance with Article 64 of the CACM Regulation.	X	X	EXISTING
		X	X	EXISTING
f)	The continuous trading algorithm shall:			
	(i) support switchover to auction mode where the IDA requirements apply to allocation of cross zonal capacity and enable its automatization;			
	(ii) support switchback from auction mode to continuous trading mode where continuous trading requirements apply to allocation of cross zonal capacity and enable its automatization;			
	(iii) make the allocation results available for the TSOs on the relevant borders when the suspension of the continuous trade occurs;	X	X	JAN 2023
	(iv) allow setting the priority level of the already allocated capacity files in the same way as for net transfer capacity files, depending on the sender of the already allocated capacity file;			
	(v) allow automatization of halting and unhalting of allocation of cross-zonal capacities in continuous trading;			

(vi) ensure no double allocation of capacity, especially in connection to IDAs; and (vii) allow for the timeout time and timings of all process steps to be configurable.			
g) The continuous trading matching algorithm shall support the possibility of continuous matching of orders during the IDA without continuous allocation of intraday cross-zonal capacity.	X	X	JAN 2023
h) The continuous trading algorithm and the IDA shall align the approach toward the losses functionality.	X	X	JAN 2023
i) The continuous trading algorithm and the IDA algorithm shall support updating relevant data: (i) Upon switchover into IDAs – the continuous trading algorithm shall allow processes for sending of capacity data and other relevant input data to the IDA. (ii) Upon switchback from IDAs the continuous trading algorithm shall allow processes for updating the cross-zonal capacities and other results accordingly.	X	X	JAN 2023
j) For the execution of complementary regional auctions, it shall be possible to stop continuous trading within and between relevant bidding zones for a limited period of time before the intraday cross-zonal gate closure time, which shall not exceed the minimum time required to hold the auction and in any case 10 minutes.	X	X	EXISTING
k) Once IDAs are combined with continuous trading, the continuous trading matching algorithm shall include the necessary mechanisms for: (i) allowing the operational integration with the auctions taking into account the intraday cross-zonal gate opening and closure times; and (ii) allowing the incorporation of the auctions' results to the continuous trading, in terms of cross-zonal capacity.	X	X	JAN 2023
1.4 Performance			
a) The continuous trading matching algorithm shall produce and log performance indicators with minimum level of those indicators in order to monitor its performance. This shall include, among others, the statistics related to the usage of different products with regard to their impact on continuous trading matching algorithm performance and in relation to particular products. These measurements should include for every bidding zone the number and volume of bids per product and the number and volume of accepted bids per product.		X	EXISTING
b) All TSOs and NEMOs shall develop performance indicators in order to monitor the performance of the continuous trading matching algorithm.	X	X	EXISTING

2 Requirements related to cross-zonal capacities

2.1 The continuous trading matching algorithm shall be able for each MTU to:

a) allow TSOs to set constant cross-zonal capacity and allocation constraints for each bidding zone border in case coordinated net transmission capacity is applied. This cross-zonal capacity value may also be a very high value;	X		AUG 2023

b) constrain scheduled exchanges to the respective cross-zonal capacity value for each bidding zone border for each cross-zonal flow directions, in case the coordinated net transmission capacity approach is applied;	X		EXISTING
c) where applicable, allow setting a default value for cross-zonal capacity for each bidding zone border and for each direction in case coordinated net transmission capacity approach is applied;	X		AUG 2023
d) constrain, where appropriate, an aggregated set of cross-zonal interconnectors with one global cross-zonal transmission capacity limit (cumulative net transmission capacity), i.e. a general boundary constraint. This constraint shall be applicable also to a predefined set of bidding zone borders in order to limit for example the net position of a bidding zone(s);	X		AUG 2023
e) allow the processing of flow-based parameters, if provided at the defined MTU, when allocating cross-zonal capacities for each bidding zone border;	X		AUG 2023
f) allow definition and application of the following flow-based parameters for each network element of a given bidding zone for flow-based approach:	X		AUG 2023
(i) power transfer distribution factor (PTDF) as defined in Regulation (EU) 543/2013; and	X		AUG 2023
(ii) available margin on critical network element as refered to in Regulation (EU) 543/2013;	X		AUG 2023
g) ensure that the PTDF matrix multiplied by the net position is less than or equal to the available margin for each critical network element;	X		AUG 2023
h) allow the reception of the flow-based parameters as:	X		AUG 2023
(i) 'zero balanced' meaning that the available margin on critical network elements applies from zero exchanges and that pre-existing exchanges are transmitted aside; or			
(ii) 'not zero balanced' meaning that the available margin on critical network elements applies from pre-existing exchanges;			
i) allow the coexistence of both flow-based and coordinated net transmission capacity approaches within the coupled regions, i.e. hybrid coupling;	X		AUG 2023
j) allow the use of virtual bidding zones to model how the critical network elements of a CCR applying the flow-based approach are impacted by cross-zonal exchanges on HVDC interconnectors within a CCR or by cross-zonal exchanges on bidding zone borders outside the CRR that are applying the coordinated net transmission capacity approach;	X		AUG 2023
k) facilitate change of cross-zonal capacity values or flow-based parameters, which among other things might be a consequence of netting, capacity publication or update of capacity value or flow-based parameter. In such a case, if a crossed order book is produced, the continuous trading matching algorithm shall match the relevant orders with the aim of maximizing economic surplus;	X	X	AUG 2023
l) allow configuring the moment when the cross-zonal capacity update is applied or becomes effective;	X		EXISTING
m) enable to halt/unhalt one bidding zone, one border, one instrument, and one NEMO. In case of halting of one bidding zone, one instrument and one NEMO, all the relevant orders will be halted or inactivated.	X	X	EXISTING
n) handle situations for relevant bidding zone borders where the calculated cross-zonal capacity value applying coordinated net transmission capacity approach is less than the current level of exchange so that no more capacity is allocated	X		EXISTING

in the direction of this exchange until level of exchange is below the calculated cross zonal capacity value; and			
o) handle situations for relevant bidding zone borders where for continuous intraday trading applying flow-based approach an initial market clearing point is outside flow-based domain by allowing only trades moving the clearing point towards the flow-based domain.	X		AUG 2023

3 Requirements related to allocation constraints

3.1 The continuous trading matching algorithm shall allow to: a) constrain the increase/decrease of scheduled exchanges over one direct current (DC) interconnector and/or a combination of DC interconnectors from a MTU to the following MTU or between the last MTU from the day before and the first MTU of the following day. The constraint shall take into account the nominations of capacity allocations, i.e. physical transmission rights, day-ahead scheduled exchanges, and auction SIDC scheduled exchanges, where applicable. The constraint shall be handled on a single DC interconnector and multiple DC interconnectors in combination (i.e. ramping); b) constrain the increase/decrease of net positions of a single bidding zone from a MTU to the following MTU within a day or between the last MTU from the day before and the first MTU of the following day; and c) incorporate losses on interconnector(s) between bidding zones during capacity allocation, if requested by the owner(s) of the relevant interconnector after approval by the relevant NRAs.	X		AUG 2023
3.2 For the DC interconnectors, the scheduled exchanges shall not be below the minimum stable flow (MSF), other than at zero. The MSF will be given for the DC interconnector, if requested by the owner(s) of the interconnectors after approval by relevant NRAs. The capacity allocation shall take into account the nominations of long term cross- zonal capacity and day ahead cross-zonal capacity, where applicable. The constraints shall be handled on a DC interconnector-by-DC interconnector, multiple DC interconnectors and on a net position (regional) basis.	X		AUG 2023
3.3 The continuous trading matching algorithm shall allow to set a minimum price difference between adjacent bidding zones when a DC interconnector is used for power exchange. For this requirement, the continuous trading matching algorithm shall model the costs incurred for each MWh passing through a DC interconnector as a 'flow tariff'. This 'flow tariff' shall be treated as a threshold for the price between the bidding zones connected by the DC interconnector. If the price difference between the relevant bidding zones is less than the 'flow tariff', the scheduled exchanges will be set to zero. If there is a scheduled exchange, the price difference will equal the 'flow tariff', unless there is a congestion. Once the price difference exceeds the 'flow tariff', the congestion income becomes positive. This functionality shall be incorporated in the continuous trading matching algorithm if requested by the owner(s) of the interconnector after approval by relevant NRAs.	X		AUG 2023
3.4 The continuous trading matching algorithm shall allow for adverse scheduled exchanges, i.e. scheduled exchanges from higher price bidding zone to lower price bidding zone, if this leads to an increase in overall economic surplus.	X		AUG 2023
3.5 The continuous trading matching algorithm shall aim to minimize the number of bidding zone borders on the path between the matched orders and allow for route prioritisation by the use of interconnector specific cost coefficients.	X		AUG 2023

4 Requirements on continuous trading matching algorithm output for the delivery of single intraday coupling results

4.1	Regarding the quantities for each MTU the output of the continuous trading matching algorithm shall be:			
	a) rounded and unrounded net position for each bidding zone, which is defined as the difference between matched supply and demand orders within a bidding zone, where rounding shall follow the rounding rules defined for each bidding zone;	X	X	EXISTING
	b) where applicable, the rounded and unrounded net position for each NEMO trading hub in bidding zones with several NEMOs shall be provided;		X	EXISTING
	c) the execution status of orders and prices per trade;		X	EXISTING
	d) number and volume of matched block orders for each bidding zone;		X	AUG 2023
4.2	For each relevant MTU, the continuous trading matching algorithm shall provide scheduled exchanges resulting from intraday market coupling in the form of:			
	a) scheduled exchanges between scheduling areas;	X		EXISTING
	b) scheduled exchanges between bidding zones;	X		EXISTING
	c) scheduled exchanges between NEMO trading hubs;		X	EXISTING
	and pursuant to the Methodology for calculation of scheduled exchanges resulting from market coupling. This is to support the scheduled exchanges calculation and/or multi-NEMO arrangements function.			
4.3	Regarding the calculation results, the output of the continuous trading matching algorithm shall be the output necessary for monitoring in accordance with Article 82(2) and (4) of the CACM Regulation.	X	X	AUG 2023
4.4	The continuous trading matching algorithm shall provide NEMOs and TSOs with information necessary to comply with the monitoring pursuant to Regulation (EU) 1227/2011 where such information can be obtained only from the continuous trading matching algorithm.	X	X	AUG 2023
4.5	The continuous trading matching algorithm shall be able to implement a change of bidding zone configurations no later than 4 weeks after a TSO notifies a change subject to the change request procedure.	X	X	EXISTING
4.6	The continuous trading matching algorithm shall be capable of providing results in order for all post coupling processes to be initiated in 5 minutes after gate closure time of a particular MTU.	X	X	EXISTING

5 Currency

5.1	The continuous trading matching algorithm shall only accept matching in Euro, i.e. all input and output currency data shall be in Euros. This should not prevent local currency orders and settlements.	X	X	EXISTING

TITLE 2

Requirements for intraday auctions

6. Requirements on functionalities and performance

6.1. General requirements

	Owner		State
	TSOs	NEMOs	Requirement deadline
a) For each bidding zone, the IDA algorithm shall be able to:			
(i) Facilitate orders for several Market Time Units ('MTUs'), such as quarter-hourly, half-hourly and hourly;	X	X	JAN 2023
(ii) support the products as defined in the IDA products;		X	JAN 2023
(iii) facilitate configurations with more than one NEMO for a given bidding zone or a scheduling area in accordance to the multiple NEMO arrangement as referred to in Article 45 of the CACM regulation;	X	X	JAN 2023
(iv) support multiple scheduling areas within a bidding zone as requested by TSOs; and	X		JAN 2023
(v) allocate cross-zonal capacities on a bidding zone border with one or multiple TSOs on one or both sides of the concerned bidding zone border.	X		JAN 2023
b) The IDA algorithm shall aim at maximising the economic surplus of the SIDC auction for all market time units that are part of the delivery period of the IDA, consistent with time limitations, conditions and requirements established by NEMOs and TSOs.	X	X	JAN 2023
c) The IDA algorithm shall provide for a fair and orderly price formation in accordance with Article 3(h) of the CACM Regulation.		X	JAN 2023
d) The IDA algorithm shall support multiple bidding zones within a country and shall be scalable to cover all bidding zones eligible for participating in SIDC.	X	X	JAN 2023
e) In case the IDA algorithm finds solutions with equal social welfare, it shall apply deterministic rules in order to define prices and net positions for each bidding zone.	X	X	JAN 2023
f) The IDA algorithm shall be reliable, thus able to find a solution within the allowed time limit, including the potential to extend the calculation time in case the allowed calculation time is exceeded.	X	X	JAN 2023

g) The IDA algorithm shall be able for each MTU to provide the net position per NEMO trading hub and the input for the calculation of the scheduled exchanges between bidding zones or scheduling areas.	X	X	JAN 2023
h) The IDA algorithm shall be able to calculate the scheduled exchanges between bidding zones or scheduling areas.	X		JAN 2023
i) For each bidding zone, the result from the application of the IDA algorithm shall be one price and one net position for each MTU. For the bidding zones containing several TSOs separating their scope in different scheduling areas, the net position for each MTU shall be calculated for each scheduling area. For scheduling areas where more than one NEMO operates, the net position for each MTU shall be calculated for each NEMO trading hub.	X	X	JAN 2023
j) The integrity of the IDA algorithm and the data it processes shall be properly secured from unauthorized access.	X	X	JAN 2023
k) Intraday auction cross-zonal gate opening and intraday cross-zonal gate closure times (IDCZGT) shall be configurable.	X	X	JAN 2023
6.2. Qualitative requirements with precision and price ranges			
a) The IDA algorithm shall ensure: (i) equal treatment of orders coming from all NEMOs in accordance with Article 3(e) of the CACM Regulation; and (ii) provide all orders of market participants non-discriminatory access to cross zonal capacity in accordance with Article 3(j) of the CACM Regulation.	X	X	JAN 2023
b) In case of tie rules (between two or more orders) and for branching decisions (if any), deterministic rules shall be implemented. Such choices shall be logged.	X	X	JAN 2023
c) The IDA algorithm shall deliver the auction results even in the circumstance that some NEMOs stay coupled and some others are partially decoupled from the session, due to unexpected or known reasons, knowing that the decoupling process can be either triggered by the direct experience of the issue or as consequence of the impossibility to reopen the orderbooks. It shall be understood that IDA algorithm shall allow partially coupled auction results only within a NTC domain, as NEMOs operating in a Flow-Based domain are either all coupled or all decoupled from the session, whatever the issue and the affected parties are~~The IDA algorithm shall allow for partial coupling, in order to deliver the auctions results, even if some inputs from a market or a delivery area are missing~~ .	X	X	JAN 2023
d) The IDA algorithm shall automatically support leap years, i.e. 366 days in a year.	X	X	JAN 2023
e) The IDA algorithm shall automatically support daylight saving clock changes.	X	X	JAN 2023
f) The IDA algorithm shall support MTUs from first auction MTU till end of the delivery day for each IDA.	X	X	JAN 2023
g) The calculation process of the IDA algorithm, including prices and scheduled exchanges resulting from this calculation process, shall be transparent, auditable, and explainable. This requirement applies also to all deterministic rules and applied algorithm heuristics and occurrence rate of these rules and heuristics.		X	JAN 2023
		X	JAN 2023

h) The IDA algorithm source code shall be well structured and well documented.

i) The IDA algorithm shall support negative prices for each bidding zone.

j) The IDA algorithm shall be able to round calculated prices and volumes according to bidding zone specific ticks and rounding rules.	X	X	JAN 2023
6.3. Performance			
a) The IDA algorithm shall be robust and reliable and it shall be resilient to pretested data configurations such as, but not limited to, non-crossing of bids and offer curves, orders' curtailment, maximum and minimum prices, price and volume indeterminacy.	X	X	JAN 2023
b) The IDA algorithm shall always produce a unique result, i.e. price and volume indeterminacy shall be resolved.	X	X	JAN 2023
c) The IDA algorithm shall use reliable IT technology, e.g. reliable third party software.	X	X	JAN 2023
d) The IDA algorithm shall be available at all times when required.	X	X	JAN 2023
e) The IDA algorithm shall be adequately scalable when the number of bidding zones increases. The IDA algorithm shall cope with new markets that need to be incorporated in the price coupling, either corresponding to geographical extensions, or with additional NEMOs in existing bidding zones.	X	X	JAN 2023
7. Requirements related to cross-zonal capacities			
The IDA algorithm shall be able for each MTU to:			
a) Allow setting cross-zonal capacity value for each bidding zone border in accordance with the CACM Regulation in case coordinated net transmission capacity is applied;	X		JAN 2023
b) constrain scheduled exchanges to the respective cross-zonal capacity value for each bidding zone border for each direction, including capacity allocated under previous timeframes , in case the coordinated net transmission capacity approach is applied;	X		JAN 2023
c) where applicable, allow TSOs setting a default value for cross-zonal capacity for each bidding zone border and for each direction in case coordinated net transmission capacity approach is applied;	X		JAN 2023
d) constrain, where appropriate, an aggregated set of cross-zonal interconnectors with one global cross-zonal transmission capacity limit (cumulative ATC), i.e. a general boundary constraint. This constraint shall be applicable also to a predefined set of bidding zone borders in order to limit, for example, the net position of a bidding zone(s);	X		JAN 2023
e) allow to define a positive and a negative limit to the net position for each bidding zone;	X		AUG 2023
f) process flow-based parameters, if provided at the defined MTU, when allocating cross-zonal capacities for each bidding zone border;	X		AUG 2023
g) allow definition and application of the following flow-based parameters for each network element of a given bidding zone for the flow-based approach:			

(i) power transfer distribution factor (PTDF) as defined in Regulation (EU) 543/2013; and	X		AUG 2023
(ii) available margin on critical network element as refered to in Regulation (EU) 543/2013;	X		AUG 2023
h) ensure that the PTDF matrix multiplied by the net position from the current IDA is less than or equal to the available margins for each critical network element adjusted for already existing exchanges;	X		AUG 2023
i) receive the flow-based parameters as:			
(i) 'zero balanced' meaning that the available margin on critical network elements applies from zero exchanges and that pre-existing exchanges are transmitted aside; or	X		AUG 2023
(ii) 'not zero balanced' meaning that the available margin on critical network elements applies from pre-existing exchanges;	X		AUG 2023
j) allow the coexistence of both flow-based and coordinated net transmission capacity approaches within the coupled regions, i.e. hybrid coupling;	X		AUG 2023
k) allow the use of virtual bidding zones to model how the critical network elements of a CCR applying the flow-based approach are impacted by cross-zonal exchanges on HVDC interconnectors within a CCR or by cross-zonal exchanges on bidding zone borders outside the CRR that are applying the coordinated net transmission capacity approach.	X		AUG 2023
8. Requirements related to allocation constraints			
8.1. The IDA algorithm shall be able to:			
a) constrain the increase/decrease of scheduled exchanges over one direct current (DC) interconnector and/or a combination of DC interconnectors from a MTU to the following MTU or between the last MTU before first auction MTU and the first auction MTU;	X		JAN 2023
b) constrain the increase/decrease of scheduled exchanges over one DC interconnector and/or a combination of DC interconnectors from a MTU to the following MTU or between the last MTU before first auction MTU and the first auction MTU taking into account the results of previous allocation including nominations of long term capacity allocations, i.e. physical transmission rights, where applicable. The constraint shall be handled on a single DC interconnector and multiple DC interconnectors in combination;	X		AUG 2023
c) constrain the increase/decrease of net positions of a single bidding zone between MTUs;	X		JAN 2023
d) calculate losses on interconnector(s) between bidding zones during capacity allocation, and activate this functionality during allocation, if requested by the owner(s) of the relevant interconnector after the approval by the relevant NRAs.	X		JAN 2023
8.2. The IDA algorithm shall allow to set a minimum price difference between adjacent bidding zones when a DC interconnector is used for electricity exchange. For this	X		JAN 2023

requirement, the IDA algorithm shall model the costs incurred for each MWh passing through a DC interconnector as a 'flow tariff'. The 'flow tariff' shall be treated as a threshold for the price between the bidding zones connected by the DC interconnector. If the price difference between the relevant bidding zones is less than the 'flow tariff', the scheduled exchange shall be set to zero. If there is a scheduled exchange, the price difference shall equal the 'flow tariff', unless there is a congestion. Once the price difference exceeds the 'flow tariff', the congestion income becomes positive. This functionality shall be incorporated in the IDA algorithm and activated during allocation if requested by the owner(s) of the interconnector after approval by the relevant NRAs.			
8.3. The IDA algorithm shall allow for adverse scheduled exchanges, i.e. scheduled exchanges from higher price bidding zone to lower price bidding zone, if this leads to an increase in overall economic surplus.	X		JAN 2023

9. Requirements related to balance constraints

9.1. For overall balance of all bidding zones, the IDA algorithm shall ensure that the sum of unrounded net positions and transmission losses, where applicable, of all bidding zones shall be zero.	X		JAN 2023
9.2. For overall balance of a bidding zone, the IDA algorithm shall ensure for each bidding zone the sum of unrounded net position and transmission losses, where applicable, shall be equal to the sum of import and export of this bidding zone resulting from the intraday capacity allocation.	X		JAN 2023

10. Requirements on algorithm output and deadlines for the delivery of auction SIDC results

10.1. Regarding the prices for each MTU the output of the IDA algorithm shall be:

a)	rounded and unrounded price in Euros for each bidding zone;	X	X	JAN 2023
b)	shadow prices of critical network elements as needed for flow-based capacity allocation; and	X		AUG 2023
c)	regional reference prices, in a network in which the cross-zonal capacity constraints are relaxed, e.g. the Nordic region.	X	X	JAN 2023

10.2. Regarding the quantities for each relevant MTU, the output of the IDA algorithm shall be:

a)	rounded and unrounded net position for each bidding zone, which is defined as the difference between accepted supply and demand orders within a bidding zone, where rounding shall follow the rounding rules defined for each bidding zone;	X	X	JAN 2023
b)	where there are multiple NEMOs within a bidding zone and scheduling area, the rounded and unrounded net position for each NEMO trading hub in a bidding zone;	X	X	JAN 2023

c) the information which enables the execution status of orders to be determined;		X	JAN 2023
d) number and volume of accepted block orders for each bidding zone and paradoxically rejected orders, if any;		X	JAN 2023
e) scheduled exchanges into and out of individual relevant DC network elements (difference in scheduled exchanges in/out reflecting losses where applicable);	X		JAN 2023
f) scheduled exchanges on relevant bidding zone borders (scheduled exchanges in/out reflecting losses where applicable);	X		JAN 2023
g) scheduled exchanges on relevant scheduling area borders (scheduled exchanges in/out reflecting losses where applicable);	X		JAN 2023
h) available margin on critical network elements or the remaining allowable scheduled exchange on the network element in case of flow-based approach.	X		AUG 2023
10.3. For each relevant MTU the IDA algorithm shall provide scheduled exchanges resulting from the IDAs in the form of:			
a) bilateral and multilateral scheduled exchanges between scheduling areas;	X		JAN 2023
b) bilateral and multilateral scheduled exchanges between bidding zones; and	X		JAN 2023
c) bilateral and multilateral scheduled exchanges between NEMO trading hubs;	X	X	JAN 2023
and pursuant to the methodology for calculating scheduled exchanges resulting from SDAC. This is to support the scheduled exchanges calculation and/or multi-NEMO arrangements function[1].			
10.4. Regarding the calculation results, the output of the IDA algorithm shall be:			
a) the overall economic surplus and economic surplus for each bidding zone; and	X	X	JAN 2023
b) the output necessary for monitoring in accordance with Article 82(2) and (4) of the CACM Regulation.	X	X	JAN 2023
10.5. The IDA algorithm shall provide NEMOs and TSOs with information necessary to comply with the monitoring pursuant to Regulation (EU) 1227/2011, where such information can be obtained only from the IDA algorithm.	X	X	JAN 2023
10.6. The IDA algorithm shall be able to implement a change of bidding zone configurations.	X		JAN 2023
10.7. The IDA algorithm shall be capable of finding results within the agreed time limit that is established in the operational procedure of the Algorithm methodology.	X	X	JAN 2023

[1] *The IDA algorithm shall be capable of providing results in order for all post coupling processes to be initiated in 5 minutes after gate closure time of a particular MTU.*

10.8. The IDA algorithm shall be able to deliver the volume of matched orders and not-matched orders of each NEMO for bidding zones or scheduling areas if requested by the relevant TSOs.	X	JAN 2023

11. Currency

11.1. The IDA algorithm shall for auctions under the SIDC arrangements only accept matching in Euro, i.e. all input and output currency data shall be in Euros. This should not prevent local currency orders and settlements.	X	JAN 2023