



# **INFORMATION SYSTEM RULES**

**for**

## **the Auction Tool of JAO S.A.**

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## 1. Preamble

JAO S.A. has been appointed by the Transmission System Operators (hereafter “TSOs”) to perform explicit cross-zonal capacity allocation via auctions and to facilitate other related procedures described in the applicable Allocation Rules and/or additional rules defined by the Participation Agreement published by JAO S.A.

JAO S.A. implemented an Auction Tool in order to execute the above specified tasks. Participation in auctions, in transfer of long term transmission rights and other procedures in the area of explicit capacity allocation facilitated by JAO S.A. requires that the Registered Participant has access to the Auction Tool.

## 2. Definitions

Capitalized terms defined in the Allocation Rules and/or relevant additional rules according to the Participation Agreement and used in the Information System Rules shall have the meaning as described in the Allocation Rules and/or relevant additional rules unless otherwise explicitly defined herein.

The following definitions shall apply:

- **Allocation Rules** means the rules applicable for arranging/regularizing forward capacity allocation.
- **Article** means an article of the Information System Rules.
- **Auction Tool** means the information technology system used by JAO S.A. to perform auctions, currently the electronic Capacity Auction Tool (eCAT).
- **Authentication** means the User ID, Password and an electronic certificate - used to ensure that the identity of the User has been verified, pursuant to the provisions set forth in Article 9.
- **Computerized Data Exchange** means the transfer of structured and standardized Messages from one computer system to another, via electronic channels.
- **Digital Time Stamping** means the function consisting of placing a digital time validity stamp on a Message.
- **Information System Rules** means the terms and conditions for access to and use of the Auction Tool by Registered Participants.
- **JAO S.A.** means Joint Allocation Office S.A., a public limited liability company (société anonyme) incorporated and cooperating under the laws of the Grand Duchy of Luxembourg, having its registered office at L-1273, Luxembourg, 2, rue de Bitbourg and registered in the Luxembourg Register of Commerce and Companies under number B 142.282.
- **Message** means a set of Computerized Data intended to convey information, as further described in Article 7.
- **Participation Agreement** means the agreement, by which parties undertake to comply with the terms and conditions for cross zonal capacity allocation.

- **Password** means a secret word or string of characters that is used for the identification of the User.
- **Registered Participant** means a market participant taking part in auctions who has concluded a valid agreement with JAO S.A.
- **Registered Participant's Equipment** means all hardware and software required for use of the Auction Tool, as further described in Article 4 and Appendix 1.
- **User ID** means a public word or string of characters that is used for identification of the User.
- **Working Day** means the calendar days from Monday to Friday, with the exception of public holidays as specified on the website of JAO S.A.

### 3. Subject

The Information System Rules set down the terms and conditions for accessing and using the Auction Tool by the Registered Participants and their User(s). In this sense, the Information System Rules are subsidiary to the Allocation Rules and additional rules defined by the Participation Agreement, therefore in case of any discrepancy the latter shall prevail.

### 4. User's equipment

It is the Registered Participant's sole responsibility, and it shall do so at its own cost, to equip its User(s) with hardware and software meeting the technical requirements set forth in Appendix 1 (Technical requirements) and configure and maintain the User's equipment.

### 5. Auction Tool start-up guide

JAO S.A. provides the Registered Participant's User(s) with the Auction Tool start-up guide. This document provides particular information about the graphical User interface and additional recommendations on the use of the Auction Tool. The Registered Participant shall adhere to the guidelines set forth in this document. However, in case of contradiction between this document and the Information System Rules, the latter shall prevail.

## **6. Availability**

### **I Availability of the Auction Tool**

The Auction Tool is in principle available 24 hours, 7 days a week.

### **II Planned maintenance**

JAO S.A. may carry out Auction Tool maintenance to prevent or solve problems of the Auction Tool. In such a case, JAO S.A. will use all its efforts to limit the impact on Registered Participants. Where the maintenance will affect the availability of the Auction Tool, JAO S.A. will inform the Registered Participants with reasonable prior notice. This notification will be published on JAO S.A.'s website and distributed by e-mail, which will contain details of the measures taken to minimize impacts of the resulting unavailability.

### **III Unplanned unavailability**

In the event of unplanned unavailability of the Auction Tool, JAO S.A. will proceed as soon as possible to inform the Registered Participants. The notification will be published on JAO S.A.'s website and distributed by e-mail, which will contain details on the fallback procedures which shall be applied.

## **7. Message standards and processing of Messages**

### **I Message standards**

JAO S.A. defines which type of Message standards are required for the use of the Auction Tool. Each Message standard is referred to on JAO S.A.'s website within the Auction Tool start-up guide by way of a link to the relevant ENTSO-E (European Network of Transmission System Operators for Electricity) standard as published on ENTSO-E's website (hereafter "Message standard"). Registered Participant's Messages shall comply with the Message standards, failure to do so may result in the Message being rejected.

### **II Modification of Message standards**

JAO S.A. reserves the right to modify Message standards. JAO S.A. gives notification to the Registered Participants about the new Message standards, together with the date on which they enter into force on JAO S.A.'s website with reasonable prior notice.

### **III Digital Time Stamping**

The date and time generated by the Auction Tool, as appearing on the Messages received or sent by JAO S.A., will be the only date and time taken into consideration for evidentiary purposes.

#### IV Admissibility and evidentiary value of Messages

Each Registered Participant, as well as JAO S.A., irrevocably agrees that the Messages exchanged via the Auction Tool are considered as valid and trustworthy evidence of any agreement or communication between the Registered Participant and JAO S.A. Each Registered Participant, as well as JAO S.A., undertake herein not to dispute or claim as invalid any action executed via the Auction Tool in accordance with the Allocation Rules and/or additional rules defined by the Participation Agreement, on the basis of the fact that the respective acts have been done in the form of an electronic data exchange.

Furthermore, each Registered Participant, as well as JAO S.A., state that they shall consider JAO S.A.'s data logs and Messages, as archived by JAO S.A., as a reliable evidence for the purpose of any dispute, unless it is proved otherwise.

#### V Storage of Messages and archiving

The Registered Participant and its User(s) expressly give their consent/agree to the archiving by JAO S.A. of all Messages exchanged for a maximum period of ten (10) years starting from the termination of the contractual obligations, exclusively for the purpose of keeping evidence of their contractual relationship. Once the storage delay passed, the information containing personal data will be treated accordingly to the applicable Luxemburgish law i.e. Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and the free movement of such data.

### 8. Technical assistance

If problems are encountered in accessing or using the Auction Tool, the User shall without undue delay contact the "Auction Tool Service Desk" as specified in the valid Participation Agreement.

### 9. Security of Communication

#### I User registration and Authentication

On the User account set up/modification form, market participants can select between a full access account and a read-only account. Full access accounts allow access to all areas and functionalities of the Auction Tool for market participants. With the read-only account, Users can access information on the offered capacities, auction results, settlement etc. but cannot execute business transactions via the Auction Tool.

Each User is required to use only electronic certificates which comply with the requirements specified in Appendix 2 (Requirements on electronic certificates) for the purposes of accessing the Auction Tool and executing business transactions via the Auction Tool.

The Registered Participant who registered as a User for the purposes of the execution of business transactions via the Auction Tool with an electronic signature other than the electronic certificate specified in Appendix 2 (Requirements on electronic certificates) irrevocably undertakes to indemnify, and to hold fully and effectively harmless JAO S.A. and all third parties from and against any and all liability, loss, claims, demands and/or expenses whatsoever and howsoever arising, which any of them shall incur, at any time, and which arise in connection with any of the Users' use of its electronic signature in connection with executing business transactions via the Auction Tool, save to the extent demonstrably caused by a material breach of the Allocation Rules and/or additional rules defined by the Participation Agreement.

User accounts will be established in the Auction Tool for the Registered Participant upon its request. The Registered Participant shall submit completely filled application forms as per Appendix 4 (Individual User account form) to JAO S.A. for establishing and modifying the User accounts for all its Users. The application form shall be signed by the User that submits to the obligations and rules of conduct set forth in the Information System Rules. All the sections of the application form must contain complete and true information. At the same time, the User shall submit for the registration to the "Auction Tool Service Desk" of JAO S.A. an electronic certificate containing identification of the Registered Participant's User. JAO S.A. will establish a User account or will modify or delete a User account within three (3) Working Days after the receipt of the application form. JAO S.A. will provide the User with a User ID and a Password, in order to access and use the Auction Tool. The Password can be changed by the User. User ID and Password together with the electronic certificate will have to be used by the User each time the User wants to access and use the Auction Tool.

Each new User or existing User with a modified user account is informed about the establishment, modification or deletion of its User account by e-mail, to the contact address provided in the application form.

JAO S.A. shall be entitled to verify the information stated in the application form sent by potential Users and to not establish a User account in case of any discrepancy in the data provided, or a suspicion there of. JAO S.A. shall be entitled to prevent the User from accessing the Auction Tool in case it finds any discrepancy such as, but not limited to, the following: False information about the User or the certificate, expiration of the User's certificate, or suspension or termination of the Participation Agreement between JAO S.A. and the Registered Participant being represented by this User.

The User of the Auction Tool shall execute business transactions and configurations of its User account in the User environment. The User environment provides in particular:

- Information on the Auction Tool system time
- Messages to JAO S.A. (e.g. bids, request for transfer of transmission rights)
- Messages from JAO S.A. (e.g. the confirmation of executed operations)
- Credit limit information

## II Security measures and procedures

The Registered Participant and the User expressly acknowledge that the Authentication is strictly personal and may not be transferred. The Registered Participant takes full responsibility for the Authentication of User(s) registered, Authentication protection and the use made of it. This includes in particular obligation to keep the Authentication confidential and to take any measures necessary to ensure that it is not disclosed to or used by third parties. Consequently, whenever the Authentication is used to access and use the Auction Tool, it is deemed to have been used by the Registered Participant and its respective employee. The Registered Participant shall be liable for any direct and indirect damages resulting from any culpable and unauthorized disclosure of such information by the User. JAO S.A. is not liable for any unauthorized use of Authentication.

## III Authorization

The Registered Participant and JAO S.A. declare that they have obtained all the necessary authorizations and agreements with respect to the regulations applicable to the Computerized Data Exchange. In particular, JAO S.A. respects the obligation to comply with the notification and authorization procedures described in articles 12 to 14 of the Law of 2 August 2002, as amended, as well as with Regulation (EU) 2016/679.

Furthermore, the Registered Participant's User acknowledges that he/she is fully aware of the geographical limits to the rights granted to him/her in accordance with the Information System Rules. The Registered Participant and JAO S.A. undertake to give notice each other as quickly as possible of any modification to these authorizations and agreements.

### 10. Changes to the Information System Rules

The present Information System Rules may be modified when circumstances require so by JAO S.A. Hence, JAO S.A. will use its best efforts to optimize any such changes, in order to limit their frequency. JAO S.A. will notify the Registered Participants and their Users, via its website and by email prior to when the change enters into force. Where these modifications require the Registered Participant's Equipment to be adapted, JAO S.A. ensures a sufficient period of time for these adaptations to be carried out.

### 11. Intellectual and industrial property

#### I Rights

Subject to third parties' rights, JAO S.A. retains all intellectual and industrial property rights pertaining to the Auction Tool, as well as designs, techniques, inventions, procedures, software or projects developed in relation to the Auction Tool, access to, and use of which, is provided hereunder to the Registered Participant's User(s) by JAO S.A.



## II License

JAO S.A. grants to the Registered Participant and their User(s) a non-exclusive, personal and non-transferable license to access and use the Auction Tool, for the sole purpose of the transactions and activities specified in the Allocation Rules and/or additional rules defined by the Participation Agreement. The Registered Participant and its User(s) shall refrain from using, modifying or transferring, decompiling, disassembling or translating the Auction Tool made available to the User(s). JAO S.A. is not liable in the event of an unauthorized access to and/or use of the Auction Tool by a Registered Participant and/or its User(s). The Registered Participant remains liable for all consequences of such use in regard to JAO S.A. and all third parties.

### **12. Confidentiality and protection of data**

Without prejudice to the applicable Allocation Rules and/or additional rules, the parties consider all Messages sent and received, together with their content, to be strictly confidential.

### **13. Effective date and duration of the Information System Rules**

The Information System Rules enter into force on the following Working Day they have been published on JAO S.A.'s website, if not stated otherwise.

## APPENDIX 1: Technical requirements

	Description	Version	Type
<b>Hardware</b>	A computer with an adequate internet connection	N/A	<b>REQUIRED</b>
<b>Operating system</b>	MICROSOFT Windows © or Mac OS ©	Version 7 or later Version 10.11 or later	<b>REQUIRED</b>
<b>Web browser</b>	GOOGLE Chrome © or MOZILLA Firefox ©	88 or later 78.6.0 ESR or later	<b>REQUIRED</b>
<b>Email client</b>	MICROSOFT Outlook © or MOZILLA Thunderbird © or IBM Lotus Notes ©	2000, XP or later 2.0 or later 6 or later	<b>RECOMMENDED</b>
<b>Software</b>	MICROSOFT Excel © in order to run the ECAN bid document converting tool of JAO S.A. for submission of bids via .xml format	2010 or later	<b>RECOMMENDED</b>
<b>Data compression tool</b>	Any data compression tool with the .zip format in order to unzip specific data available for download from the Auction tool	N/A	<b>RECOMMENDED</b>

## APPENDIX 2: Requirements on electronic certificates

1. For the purpose of accessing the Auction Tool and executing business by means of it, each User must have one or two certificates fulfilling the conditions specified below.
2. It is possible to use one certificate for both accessing and executing business transactions by means of the Auction Tool; or, two separate certificates – one for accessing the Auction Tool and one for executing business transactions via the Auction Tool is also acceptable.
3. Each certificate used in the Auction Tool must be either:
  - a) An advanced or qualified certificate within the meaning of Regulation (EU) No 910/2014 on electronic identification and trust services for electronic transactions in the internal market.  
or
  - b) A different certificate than that specified in 3.a) above, provided that the certification authority has successfully passed the tests of JAO S.A. and is published in the list of trusted certification authorities on the website of JAO S.A.
4. Each certificate used in the Auction Tool must also meet the following conditions:
  - a) The certificate is RFC 5280 compliant;
  - b) The version of certificate is X.509v3;
  - c) The public key of the certificate must be intended for the RSA algorithm; and

Extension	Content	Object identifiers (OID)	Criticality	Field indication
<b>Key Usage</b>	Digital Signature	-	Critical	<b>Mandatory</b>
<b>Extended Key usage</b>	Client Authentication	1.3.6.1.5.5.7.3.2	Non-critical	<b>Recommended</b>

5. Certificates used for the execution of business transactions via the Auction Tool must be at least intended for the verification of the advanced electronic signatures within the meaning of Regulation (EU) No 910/2014 on the use of electronic signatures.

6. All the electronic certificates used to communicate with the Auction Tool must successfully pass tests operated by the JAO S.A. A list of certification service providers whose certificates have successfully passed the tests are published on the website of JAO S.A.
7. Conditions of communication between the Registered Participant and JAO S.A. via the web services interface of the Auction Tool with use of the PSEUDONYM-type electronic certificate are specified by statement in the Appendix 3. The statement shall be delivered to JAO S.A. by the Registered Participant as a pre-requisite for the use of the PSEUDONYM-type electronic certificate.

## APPENDIX 3: Web services User account form (1/2)

### Specific conditions regarding the use of the PSEUDONYM-type electronic certificate

This statement specifies the conditions of communication between the Registered Participant and JAO S.A. via the web services interface of the Auction Tool.

#### I.

The Information System Rules specify the conditions of use of electronic certificates.

This notification is made only with the intention to allow the Registered Participant to communicate with the Auction Tool while using the PSEUDONYM-type certificate.

#### II.

As a PSEUDONYM-type certificate is considered a certificate that meets the technical conditions specified in the Appendix 2 of the Information System Rules and unlike the procedures applied in the contractual relationships it does not identify a specific User but it only identifies and recognizes the Registered Participant as a legal person.

#### III.

The Registered Participant declares that he/she has implemented a technical device - communication server (web services client) for the purposes of communication with the Auction Tool by means of web services in order to carry out the transactions and to accept obligations specified in the Information System Rules, while using the PSEUDONYM-type certificate, as the Registered Participants' sole communication site, to be operated continuously 7 days a week, 24 hours a day.

#### IV.

As of the signature date of this document by the Registered Participant's representative, all of the Registered Participant's transactions in connection with the use of the Auction Tool identified by its PSEUDONYM-type electronic certificate.

**This form shall be validly signed and delivered in PDF format via [JAO Support Hub](#).**

<b>Name of the Registered Participant</b> (Company name)	
<b>EIC code</b>	

The Registered Participant requests the\*

setup

modification

deletion

Auction results file

*\*select (✓) the pertinent option (choose one)*

of a **web services User account**.

*Only electronically filled forms will be accepted. Handwritten ones will be rejected.*

## Appendix 3: Web services User account form (2/2)

### Web services User account information

<b>Certificate Serial number:</b> (can be found under <i>Details</i> tab as <i>Serial number</i> )	
<b>Certificate valid until (DD/MM/YYYY):</b>	
<b>Certificate issuing authority:</b>	
<b>E-mail address</b> linked to the web services user account:	

### **Signature(s) of the Registered Participant**

(Authorized representative(s) of the company in line with the Commercial extract. In case powers are not clear from the Commercial extract, other official document(s) can be provided in order to evidence the signatory rights as Minutes of the Board of Directors (or applicable), Articles of Association (or applicable), or a Power of Attorney.)

**\*\*In case of updating an existing user account with a new certificate, or an email address, the document does not need to be signed.**

### Authorized representative(s)

Name: Date: Place: Signature: _____	Name: Date: Place: Signature: _____
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*Only electronically filled forms will be accepted. Handwritten ones will be rejected.*

## APPENDIX 4: Individual User account form

This form shall be validly signed and delivered in PDF format via [JAO Support Hub](#).

<b>Name of the Registered Participant</b> (Company name)	
<b>EIC code</b>	

The Registered Participant requests an individual User account with the following details\*:

<input type="checkbox"/> Setup of a new account	<input type="checkbox"/> User rights modification	<input type="checkbox"/> User account update**	<input type="checkbox"/> User account deletion
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\* select (✓) the pertinent option (choose one)

### Requested User Account Type

<input type="checkbox"/> Full access	<input type="checkbox"/> Read only access	Auction results file
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### Individual user account information

<b>Name and surname of the User:</b>	
<b>Username:</b> (not required in case of setup of a new account)	
<b>Certificate Serial number:</b> (can be found under <i>Details</i> tab as <i>Serial number</i> )	
<b>E-mail address of the user:</b>	
<b>Phone number of the user:</b>	

On the basis of the applicable Allocation Rules and/or additional rules defined by the Participation Agreement, the content of which is known to the aforementioned person, the person with full access is authorized to perform operations and execute business transactions in the Auction Tool in accordance with the User's rights, and in such a case, represents the Registered Participant specified above.

The aforementioned person with full access is also authorized to execute business transactions with the JAO S.A. outside of the Auction Tool in the event of fallback procedure application introduced in accordance with the Allocation Rules and/or additional rules defined by the Participation Agreement to the extent this fallback procedure replaces the communication via the Auction Tool.

### Signature(s) of the Registered Participant

(Authorized representative(s) of the company in line with the Commercial extract. In case powers are not clear from the Commercial extract, other official document(s) can be provided in order to evidence the signatory rights as Minutes of the Board of Directors (or applicable), Articles of Association (or applicable), or a Power of Attorney.)

**\*\*In case of updating an existing user account with a new certificate, or an email address, or a telephone number, the document does not need to be signed.**

Authorized representative(s)		User
Name:	Name:	Name:
Date:	Date:	Date:
Place:	Place:	Place:
Signature:	Signature:	Signature:

Only electronically filled forms will be accepted. Handwritten ones will be rejected.

## APPENDIX 5: Auction Algorithm

### Introduction

- (1) Joint Allocation Office S.A. (hereinafter JAO) carry out Auctions in line with “Allocation Rules for Forward Capacity Allocation” (hereinafter the Allocation Rules).
- (2) Capitalized terms defined in the Allocation Rules shall have the meaning ascribed to them in the Allocation Rules unless otherwise defined herein.
- (3) High level requirements on Auction Algorithm behaviour are specified Article 35 of the Allocation Rules.

### Selection of winning Bids

JAO is using an optimisation function aiming at maximisation of the sum of the Registered Participants’ Surplus and the Congestion Income generated by the winning Bids. Theory of Linear Programming (Linear Optimization) is used. It is a technique for the optimization of a linear objective function, subject to linear equality and inequality constraints.

The objective can be expressed in the mathematical notation as follows

$$\max \left( \sum_B [p_b](b) \times d_a(b) \right)$$

Where:

- $b$  Bid  $b$  within the Auction
- $p_b(b)$  Bid Price for Bid  $b$
- $d_a(b)$  accepted Bid Quantity for Bid  $b$

The optimization respects simultaneously all the network constraints defined by TSOs for respective Auction and determines winning Bids. The form of constraints recently used is either a constraint applicable to a single Bidding Zone border and direction or combined constraint which affects jointly several Bidding Zone borders (Technical Profiles defined for CEE region). A singles border can be therefore subject to several constraints.

In case of Bids with the same Bid Price and the same impact to use of constraints additional criteria shall be introduced to decide on accepted Bid Quantity of individual Bid. The additional criteria are introduced by Article 35(5) of the Allocation Rules. The additional criteria are equally applied in situation when two or more Bids are placed on Bidding Zone borders affected by combined constraint (see Example A).

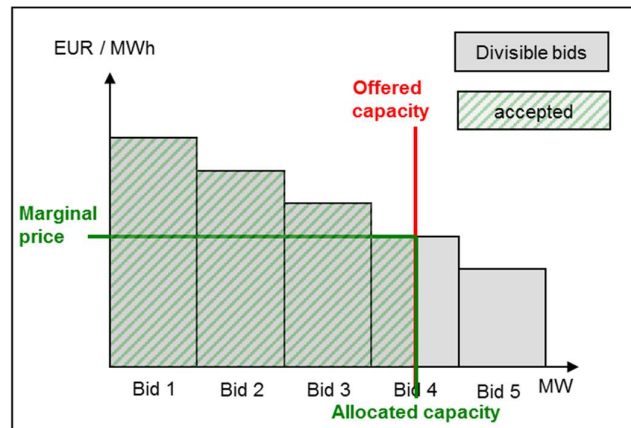
### Marginal Price creation

For each constraint there is a separate shadow price and if to one border/interconnector more constraints apply the Marginal Price will be calculated as a sum of the respective shadow prices. Shadow prices represent a change in the value of the objective function connected with marginal change of the constraint value.

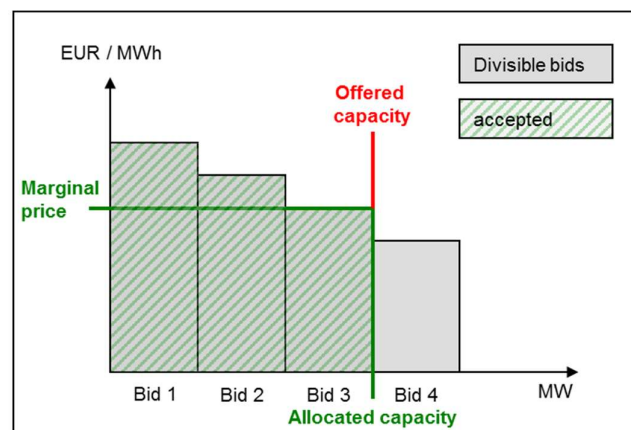
Price creation principles are illustrated on following schemas being based on a rule of the “demand” and “supply” curve intersection.



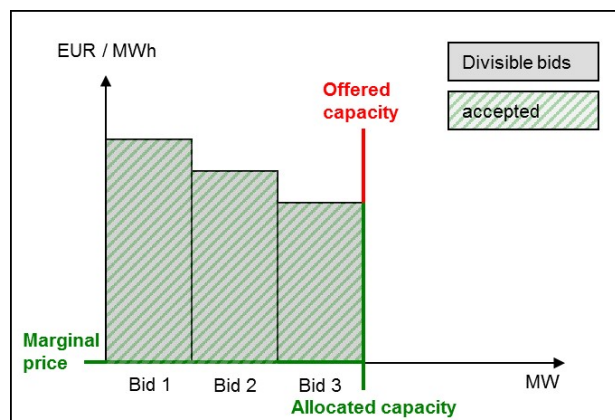
**Case 1: Marginal bid partially accepted - marginal bid sets Marginal Price**



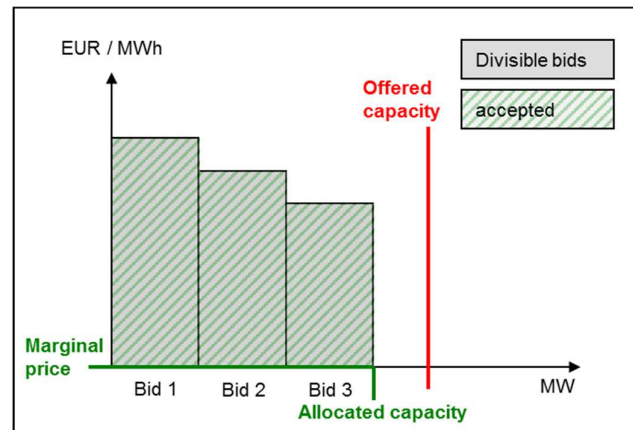
**Case 2: Marginal bid fully accepted - marginal bid sets Marginal Price**



**Case 3: Total requested capacity is equal to Offered Capacity**



**Case 4:** Total requested capacity is smaller than Offered Capacity



For avoidance of doubts, in case the accepted Bid Quantity of winning Bids selected according to Article 35(5) of the Allocation Rules is rounded down to zero MW according to Article 35(7), the Marginal Price is set also in this case by these winning Bids (see Example B).

**Example A**

Bidding Zone border and direction	Registered Participant	Bid Quantity (MW)	Bid Price (EUR/MW.h)	Accepted Quantity
PSE → 50Hertz	RP1	50	5	50
PSE → 50Hertz	RP2	35	4	10
PSE → CEPS	RP3	9	3	9
PSE → SEPS	RP4	5	2	3
PSE → CEPS	RP5	5	2	3
PSE → CEPS	RP6	10	1	0

Offered Capacity	
PSE → 50Hertz+SEPS+CEPS	100 MW
PSE + CEPS → 50Hertz	60 MW

Bidding Zone border and direction	Allocated LTRs (MW)	Marginal Price (EUR/MW.h)
PSE → 50Hertz	60	4
PSE → CEPS	12	2
PSE → SEPS	3	2

**Example B**

Bidding Zone border and direction	Registered Participant	Bid Quantity (MW)	Bid Price (EUR/MW.h)	Accepted Quantity (before rounding)	Accepted Quantity (after rounding)
A → B	RP1	50	5	50	50
A → B	RP2	40	4	40	40
A → B	RP3	9	3	9	9
A → B	RP4	5	2	0.5	0
A → B	RP5	5	2	0.5	0
A → B	RP6	10	1	0	0
				100	99

Offered Capacity	
A → B	100 MW
Allocated LTRs (MW)	Marginal Price (EUR/MW.h)
99	2

## APPENDIX 6: Potential liabilities calculation

Potential liabilities correspond to the sum of potential commitment of bids that have been placed by one market participant in auctions, for which auction results have not been published yet. Potential liabilities of one market participant are computed based on the following formula (\*):

$$\sum_{\text{oriented border}} \sum_{\text{hour}} \frac{(1 \text{ or } 2)}{\text{Nb of months}} * RC_{\text{hour}} * \text{Max}( \text{Bid price}_1 * \text{Bid amount}_1; \text{Bid price}_2 * \sum_{i=1}^2 \text{Bid amount}_i ; ...; \text{Bid price}_{n-1} * \sum_{i=1}^{n-1} \text{Bid amount}_i ; \text{Bid price}_n * \sum_{i=1}^n \text{Bid amount}_i )$$

- For each oriented allocation corridor, the bids placed by one market participant are ranked by bid price in descending order: bid 1 is the bid with the highest bid price, bid N is the bid with the lowest bid price.
- Bid values are summed over each delivery hour of the auction product.
- Reduction periods are taken into account as follows:
  - A pro-rata reduction is made on the bid value by applying a reduction coefficient *RC* (reduced Offered Capacity / base value of Offered Capacity);
  - In case of several allocation constraints affecting the oriented allocation corridor with overlap of reduction periods, the lowest reduction coefficient is applied on the given delivery hour.
- *x/N* rule (1/*N* rule or 2/*N* rule, where *N* is the number of months within the product delivery period, depending on the Contestation period end of a given auction) is applied for long-term auction products with more than one month:
  - If the Contestation period end of a given auction is before the liabilities calculation for the first month of the auction delivery period (e.g. liabilities calculation in December for January in case of a yearly calendar auction):
    - 1/*N* rule is applied, where one monthly instalment is taken into account and rounded to two decimal places (rounded down if the third decimal is lower or equal to 5 and rounded up if above 5).
  - If the Contestation period end of a given auction is after the liabilities calculation for the first month of the auction delivery period (e.g. liabilities calculation in December for January and February in case of a yearly calendar auction):
    - 2/*N* rule is applied, where two monthly instalments are taken into account and rounded to two decimal places (rounded down if the third decimal is lower or equal to 5 and rounded up if above 5).

- Potential liabilities are increased by taxes and levies. The total value of these taxes is computed by applying the tax rate of the market participant to the potential liabilities.
- Potential liabilities are computed as described above for all oriented allocation corridors and all time horizons.
- Potential liabilities are released at the start of the auction evaluation, because the auction tool will then compute the actual liabilities (please refer to Appendix 7 for further details) arising from the bid(s) placed by one market participant in the auction product.

**(\*) Limitation:**

Applying the formula for potential liabilities, the actual liabilities might become higher than the potential liabilities **in the very specific case of Long term auctions with a reserve price, reduction periods with reduced ATC > 0, and without any congestion**, as illustrated in the numeric example below.

**Numeric example:**

- Monthly auction for product delivery in January 2020:
  - Reserve price: 1€ per MW
  - Base Offered Capacity: 100 MW
  - Reduced Offered Capacity: 50 MW on reduction period 11/01 – 31/01/2020
- Bid submitted by market participant A (hereafter “mpA”):
  - Bid quantity: 90 MW
  - Bid price: 1€ per MW
- Potential liabilities of mpA =  $90 * 1 * 10 + (50 / 100) * 90 * 1 * 21$   
 $= 90 * 1 * 10 + 45 * 1 * 21$   
 $= 900 + 945$   
 $= 1\,845\text{€}$
- Auction results: mpA = 90 MW at 1€ per MW (auction price is set to reserve price since there is no congestion), 50 MW is allocated to mpA on the reduction period
- Actual liabilities of mpA =  $90 * 1 * 10 + 50 * 1 * 21$   
 $= 900 + 1\,050$   
 $= 1\,950\text{€}$

The reserve price is used here over the full delivery period, since the auction price is equal to the reserve price due to lack of congestion.

## APPENDIX 7: Actual liabilities calculation

Actual liabilities correspond to the remaining blocked amount of awarded bids that have been placed by one market participant in auctions, for which auction results have already been published.

Actual liabilities of one market participant are computed based on following formula:

$$\sum_{\text{oriented border}} \sum_{\text{auction product}} \sum_{\text{hour}} \frac{x}{N} * \text{Allocated Quantity}(h) * \text{Marginal price}(h)$$

- Liabilities are summed over each delivery hour of the auction product.
- x/N rule (1/N rule or 2/N rule, where N is the number of months within the product delivery period, depending on the Contestation period end of a given auction) is applied for long-term auction products with more than one month:
  - Between the auction closing and the reception of payment confirmation of the first monthly instalment:
    - If the Contestation period end of a given auction is before the liabilities calculation for the first month of the auction delivery period (e.g. liabilities calculation in December for January in case of a yearly calendar auction):
      - ✓ 1/N rule is applied, where one monthly instalment is taken into account and rounded to two decimal places (rounded down if the third decimal is lower or equal to 5 and rounded up if above 5).
    - If the Contestation period end of a given auction is after the liabilities calculation for the first month of the auction delivery period (e.g. liabilities calculation in December for January and February in case of a yearly calendar auction):
      - ✓ 2/N rule is applied, where two monthly instalments are taken into account and rounded to two decimal places (rounded down if the third decimal is lower or equal to 5 and rounded up if above 5).
  - Between the reception of payment confirmation of the first monthly instalment and the reception of payment confirmation of the last monthly instalment: 1/N rule, where one monthly instalment is taken into account and rounded to two decimal places (rounded down if the third decimal is lower or equal to 5 and rounded up if above 5).
  - After the reception of payment confirmation of the last monthly instalment: no outstanding actual liabilities, because the corresponding auction product is fully paid.
- Information about the applicable x/N rule is included in the auction parameters screen of the auction tool and is published in the auction description on the website of JAO S.A. for long-term auction products with more than one month.
- Actual liabilities are increased by taxes and levies. The total value of these taxes is computed by applying the tax rate of the market participant to the actual liabilities.
- Actual liabilities are computed as described above for all oriented allocation corridors and all time horizons.

## APPENDIX 8: Credit limit calculation

The credit limit of one market participant corresponds to the part of credit cover instruments which is considered as being available to cover any future bid(s) of the market participant. The credit limit is calculated and continuously updated in respect of each subsequent auction.

The credit limit of one market participant is computed based on the following formula:

$$\begin{aligned}
 \text{Credit limit (in EUR)} &= \text{Sum of all credit cover instruments} && (a) \\
 &\quad - \text{Actual liabilities} && (b) \\
 &\quad - \text{Potential liabilities} && (c)
 \end{aligned}$$

The different components of the formula are detailed below:

- *(a) Sum of all credit cover instruments* corresponds to the sum of the total amount of cash deposits (in EUR) available on the dedicated Business Bank account of the market participant and the total amount of Bank guarantees (in EUR) of the market participant considering the Bank guarantee's validity period;
- *(b) Actual liabilities* correspond to the remaining blocked amount of awarded bids that have been placed by one market participant in auctions, for which auction results have already been published (for further details, please refer to Appendix 7);
- *(c) Potential liabilities* correspond to the sum of potential commitment of bids that have been placed by one market participant in auctions, for which auction results have not been published yet (for further details, please refer to Appendix 6).

Long term auctions allow conditional acceptance of bids even if the credit limit is insufficient (potential liabilities of submitted bid(s) exceed the current credit limit). In such cases, a warning with the missing amount of collateral (in EUR) is issued in the acknowledgement file upon receipt of the bid(s). The market participant may then update its bid(s), increase cash deposits on the dedicated Business Bank account and/or increase the total amount of Bank guarantee(s). If no action is taken and the credit limit is still insufficient at the end of the bidding period, bids are fully rejected one by one starting with the one having the lowest bid price until the credit limit is sufficient.

## APPENDIX 9: Remuneration/compensation calculation in case Market Time Unit of the long-term transmission rights and the price used for remuneration/compensation is different

This appendix aims to clarify the calculation method for long-term transmission rights remuneration/compensation in cases where the Market Time Unit (MTU) of the long-term product and the MTU of the day-ahead product that provides the prices for the remuneration/compensation (e.g. market spread, marginal price of the daily explicit auction, etc., according to the relevant allocation rules) differ.

In such cases, the following formula is used to determine the hourly remuneration/compensation of long-term transmission rights per oriented bidding zone border by averaging the prices for all MTUs within the given hour:

$$LT\ Remuneration_H = Quantity * \sum_{i=1}^n Price_{HMTUi} * \frac{1}{n}$$

Where:

***LT Remuneration<sub>H</sub>***: long-term remuneration/compensation for a given hour on an oriented bidding zone border [EUR]

***Price<sub>HMTUi</sub>***: market spread<sup>1</sup> or marginal price of the daily auction for the i-th MTU within the given hour on an oriented bidding zone border [EUR/MWh]

***n***: the number of day-ahead MTUs within the hour (e.g., 4 for 15-minute MTU, 2 for 30-minute MTU, etc.) [1/h]

***Quantity***: the compensated long-term allocated quantity [MW]

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<sup>1</sup> As per Article 48/1(a) and 59/1(a) of the HAR, only positive market spreads are to be considered for the calculation. In case market spread for an MTU is negative, 0 EUR/MWh is considered for that certain MTU.