
FTR Trading Information Pack
October 2017

Moyle and East West Interconnectors

27 October 2017 – Version 1

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1. Introduction

The Moyle and East West Interconnectors link the electricity grids of the island of Ireland and Great Britain via submarine cables running between converter stations in Northern Ireland / Scotland and Ireland / Wales, respectively. Both of the High Voltage Direct Current (HVDC) connections are capable of providing capacity of 500 MW, flowing in both directions (import / export).

To date, physical capacity on the Interconnectors has been sold in long-term and daily auctions on an Auction Management Platform (AMP) specifically built to facilitate allocating capacity on Moyle and EWIC.

As part of new wholesale electricity market arrangements for Ireland and Northern Ireland, the Integrated Single Electricity Market (I-SEM) arrangements, the interconnectors will allocate long-term (or 'forward') transmission rights in the form of Financial Transmission Rights (FTRs).

An FTR is a hedging instrument that entitles the holder to receive payments based on the hourly price difference between two interconnected and coupled¹ markets.

FTRs on Moyle and EWIC will be allocated in auctions facilitated by the Joint Allocation Office (JAO), a Luxembourg based entity established for the purpose of auctioning capacity on most interconnectors throughout Europe.

Ahead of the I-SEM arrangements going live, this Trading Pack seeks to provide interested parties with the necessary information to allow them to take the necessary steps to participate in auctions of FTRs on Moyle and EWIC. It provides an overview of how the new market arrangements will work on the Interconnectors, explains how to register with JAO to participate in auctions and provides links to relevant documents such as the applicable auction rules. The Trading Pack also provides provisional auction calendars, relevant parameters, frequently asked questions and a list of contact details for Moyle, EWIC and JAO.

This trading pack includes the following attachments:

- JAO Registration Guide (see Section 1.2 for more information); and
- Worked examples (excel sheet on examples of calculating payouts and compensations in the FTR auction process).

¹ Coupling is the auctioning process where collected orders on power exchanges are matched and cross-zonal capacity is allocated simultaneously for different bidding zones for a specific market timeframe, typically day-ahead.

List of terms and abbreviations

Term / Abbreviation	Explanation
AMP	Auction Management Platform (existing auction participation platform to be retired)
Coupling	The auctioning process where collected orders on power exchanges are matched and cross-zonal capacity is allocated simultaneously for different bidding zones for a specific market timeframe, typically day-ahead
DAM	Day-Ahead Market
eCAT	JAO Auction Platform (new platform for participating in auctions on the interconnectors)
EWIC	East West Interconnector
FTR	Financial Transmission Rights (in this document, "FTR" will refer more specifically to the FTR Options)
GB	Great Britain (Northern Ireland forms a part of the Irish market, SEM)
HAR	Harmonised Allocation Rules
HVDC	High-Voltage Direct Current
ICMP	Interconnector Management Platform (new platform for TSO capacity management, part of I-SEM go live)
ICO	Interconnector Owner
Interconnectors	In this document refers to both Moyle and EWIC interconnectors, unless otherwise stated
I-SEM	Integrated-Single Electricity Market (on-going project)
JAO	Joint Allocation Office
Moyle	Moyle Interconnector
Participants	Entities participating in the auctions (existing and prospective market participants)
SEM	Single Electricity Market (existing market on the island of Ireland)
SEMO	Single Electricity Market Operator
TLAF	Transmission Loss Adjustment Factor
TSO	Transmission System Operator

2. I-SEM and The Forwards Electricity Market

Moyle and EWIC currently sell a form of physical transmission rights available between the SEM and GB markets. These rights enable a participant to buy interconnector capacity in a long-term/forwards auction and/or at the day-ahead stage to nominate a flow of electricity across the interconnector within the participant's capacity holding, via the Single Electricity Market Operator (SEMO) for the island of Ireland. The participant will buy energy equivalent to the flow in one market and sell it in the other in order to earn the market spread i.e. the price difference between the two markets.

Under the I-SEM arrangements, the forwards electricity market will be strictly financial and the interconnectors will sell FTR Options (referred to elsewhere as simply "FTRs" in this document). FTR Options are a form of one-way contract for difference, entitling the holder to receive the positive day-ahead market spread in the direction of the FTR option. This section sets out what the new environment will look like for the I-SEM arrangements.

2.1 New market arrangements

Market coupling

A key aspect of the I-SEM arrangements is the introduction of day-ahead market (DAM) coupling. What this entails is a process whereby interconnector flows are determined by the day-ahead electricity prices in the connected markets. This implicit allocation of capacity is viewed as more efficient than the current explicit allocation where capacity holders nominate an interconnector flow which can often be counter intuitive i.e. against the positive market spread so apparently inefficient.

In a coupled market, energy transactions involving sellers and buyers from different bidding zones are centrally collected and cleared to maximise the efficient matching of trades. Trades from one bidding zone to another (such as from GB to the SEM) are only restricted by cross-border capacity, subject to allocation constraints.

Market coupling involves system and market operators working together to simultaneously allocate cross-border capacity and optimise cross-border flows, without the need for explicit auctions. In theory, as long as energy can flow freely, there will be a single price across all coupled markets. When the network is congested between bidding zones, prices diverge between those zones.

With market coupling, the available interconnector capacity is made available to the market and, where congestion exists between bidding zones, the interconnector is scheduled to flow from the low-priced market to the high-priced market². The result will be that 'congestion rent' is generated:

² Subject to ramping constraints which mean that an interconnector may not immediately be able to reverse its flow direction in response to the positive market spread direction changing from one period to the next.

Congestion rent =

MW delivered into high price market * DAM price in high price market

minus

MW flow out of low price market * DAM price in low price market

Due to electrical losses across the Interconnectors, the MW delivered to the importing market will be lower than the MW taken from the exporting market. These congestion rents are collected by the interconnector owner and these underpin the sale of FTRs in forward or long-term timeframes.

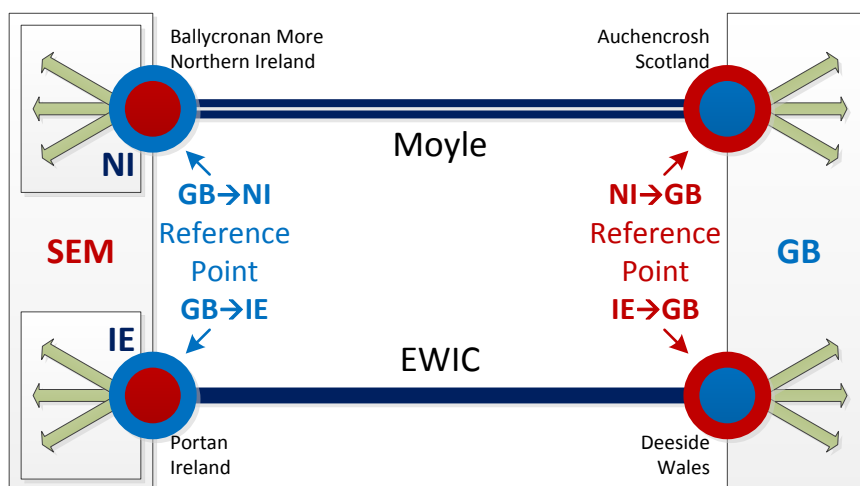
Financial Transmission Rights

As described above, FTRs entitle the holder to receive payments based on the hourly DAM price difference between two coupled markets during a specified period of time in a specific direction.

FTRs on the SEM-GB border will be auctioned on a 'per-interconnector' rather than a 'per-border' basis, i.e. there will be separate auctions for Moyle FTRs and EWIC FTRs. They will also be sold by direction, i.e. there will be SEM-GB FTRs and GB-SEM FTRs - the former entitling the holder to a payment when the GB DAM price is higher and vice versa for the latter.

The payment that an FTR holder is entitled to is the positive loss-adjusted day-ahead market spread. A payment to an FTR holder is due when the market spread is positive in the direction of the FTR, i.e. for a SEM-GB FTR, when the SEM DAM price is higher, no payment will be due.

Payouts will also be adjusted to reflect the impact of electrical losses.



← Flow to SEM (NI/IE) ←	→ Flow to GB →
The loss-adjusted market spread (€ per MW), with reference to receiving side is calculated as follows	
${}_{GB \rightarrow NI}^{GB \rightarrow NI} LAMS = MAX \left[\left(SEMp - \frac{GBP}{\{1 - ICLF\}} \right), 0 \right]$	${}_{IE \rightarrow GB}^{NI \rightarrow GB} LAMS = MAX \left[\left(GBP - \frac{SEMp}{\{1 - ICLF\}} \right), 0 \right]$

- *LAMS* = Loss-adjusted market spread (€ per MW)
- *SEMp* = SEM day-ahead market price, in Euro
- *GBP* = GB day-ahead market price, in Euro
- ICLF is the loss factor for the relevant interconnector, 4.68% for EWIC and 2.36% for Moyle³

For reference, the Quantity at either side can be calculated as follows:

$$InQty = OutQty * (1 - ICLF) \quad OutQty = \frac{InQty}{(1 - ICLF)}$$

- *InQty* = Inbound / Receiving / Import side quantity (MW)
- *OutQty* = Outbound / Sending / Export side quantity (MW)

The applicable Interconnector Loss Factor will be different for Moyle and EWIC and will be a simple percentage figure. More information is contained in Section 4.

Joint Allocation Office

JAO is a joint service company of 20 European Transmission System Operators (TSOs), performing auctions of transmission rights on 28 borders in Europe. Moyle and EWIC are putting arrangements in place such that JAO will run auctions of FTRs on their behalf.

JAO will be the single point of contact for the FTR market—that is, they handle registration, systems, auctions, and manage all settlement. Parties wishing to participate in auctions of Moyle and EWIC FTRs will contract directly with JAO.

JAO will operate billing and settlement arrangements with respect to FTR auctions, including:

- JAO holds collateral from participants in respect of participation in FTR auctions
- JAO collects the proceeds of FTRs cleared at auction from participants.
- JAO settles the FTR option pay-out with FTR holders.
- All amounts and payments with JAO are in Euros for both Moyle and EWIC

Collateral put in place with JAO can be in the form of cash (held in a bank account), or a letter of credit. The collateral is considered for all trading with JAO, which may be on multiple European

³ [2017/2018 Approved TLAFs](#)

borders. Before considering auction bids, the participant's credit cover is checked and bids above the level of collateral may be excluded.

Auction rules

FTR auctions will be conducted in line with Harmonised Allocation Rules for long-term transmission rights ("HAR")⁴ and the SEM-GB border specific annex ("Regional Annex")⁵. Please note that while this document provides an overview of some of the content of these documents, in the case of any inconsistency, the HAR and Regional Annex shall prevail.

3 Registering on JAO

In order to participate in FTR Options auctions organised by JAO, you will need to complete certain registration steps.

The first stage is to get your company registered with JAO. Subsequently, users for IT systems can be set-up along with the authorisations for financial payments.

There are several documents that are required to be signed and submitted to JAO.

The full suite of documents can be found on the JAO Resource Centre here: <http://www.jao.eu/support/resourcecenter/overview>

The JAO Registration Guide is included as Appendix 5 of this Trading Pack and provides a step-by-step guide.

Please send all documents to the following address, no later than 7 working days before the close of the first auction in which you intend to participate:

**Joint Allocation Office
2 Rue Bitbourg
L-1273 Luxembourg-Hamm**

An electronic certificate is required to access and use the JAO platform, e-CAT (please see FAQs on electronic certificates).

There are no fees associated with participating in FTR auctions on JAO, however an initial charge of €250 for the establishment of a bank account is required to be paid directly to JAO.

⁴http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/ANNEXES_HAR_DECISION/Annex%20I_171002.pdf

⁵<http://www.eirgridgroup.com/site-files/library/EirGrid/Annex-7-to-the-Harmonised-Allocation-Rules>

For any queries on registration, refer to Appendix 2 on FAQ, or use the JAO contact details listed in Section 2 of this Trading Pack.

For reference note that all market participants (including FTR holders) can sign up (self-service) for market notifications in I-SEM in the same way they currently do for SEM⁶. This should allow them to receive notification in relation to market performance including day ahead fall back notification.

3.1 Trial and Training

In advance of the first auctions, there are a number of trial, test, and training activities planned as illustrated below.



The first phase was the initial trial which facilitated an early sight of the IT systems so that participants could assess and validate their requirements to interact with the JAO platform.

The second phase is for participant training on the allocation platform. A survey of participant training needs is included in this trading information pack to help identify specific training requirements. Training dates in January are shown above for illustration but are to be determined based on the Training Survey feedback received, and as close to the formal FTR market trial as practical.

The third phase is the formal FTR market trial. It's expected that participants will have registered in advance of participating in this trial. This trial will be similar to the initial trial but covering the full scope of products available.

The key phase 3 dates are:

- 02/01/2018 – 19/02/2018: Web services tests/connectivity
- By 17/08/2018: User connectivity to JAO's trial environment

⁶ <http://www.sem-o.com/Publications/General/Participant%20Readiness%20Information%20publication.pdf>

- 22/01/2018 – 26/01/2018: Intensive week of interactive scenarios
- 05/02/2018 – 09/02/2018: Placeholder in case of scenario re-run
- During 02/2018: Settlement scenarios

The 'Financial Transmission Rights Auction: Trial and Participant Test Plan' and 'Financial Transmission Rights Auction: Initial Trial Report' are available from: <http://jao.eu/support/resourcecenter/overview?parameters=%7B%22IsMoyleEwicInterconnectorsProject%22%3A%22True%22%7D>

4 Provisional Auction Calendars - 2018

The go-live for Moyle and EWIC on the JAO platform is planned for March 2018. From this point Moyle and EWIC will be shown on the JAO platform, the auction calendar will begin to be populated in the system, and participants can enter default bids.

The provisional auction calendar dates with indicative volumes for both interconnectors are outlined below.

The bidding windows for auctions will typically be as follows:

- Yearly: 5 working days
- Seasonal/half-yearly: 4 working days
- Quarterly: 3 working days
- Monthly: 2 working days

These working days are based on the Luxembourg calendar and holidays.

For the first auctions, which are for June 2018 products, the bidding windows will be open for 5 working days. This is based on participant requests to allow additional time for credit adjustments for the initial auctions.

1. Moyle Provisional Auction Calendar (2018)

Month	End Date	GB to NI (Import)		NI to GB (Export)	
		Product	Volume	Product	Volume
March	29 th March	Monthly 1 [June]	80	Monthly 1 [June]	20
April	19 th April	Monthly 2 [June]	100	Monthly 2 [June]	20
May	3 rd May	Monthly 3 [June]	120	Monthly 3 [June]	20
	28 th May	Monthly 4 [June]	100	Monthly 4 [June]	20
June	5 th June	Monthly 1 [July]	80	Monthly 1 [July]	20
	6 th June	Quarterly [July-Sep]	100	Quarterly [July-Sep]	20
	14 th June	Monthly 2 [July]	120	Monthly 2 [July]	20
	19 th June	Monthly 3 [July]	100	Monthly 3 [July]	20
July	5 th July	Monthly 1 [Aug]	80	Monthly 1 [Aug]	20
	10 th July	Monthly 2 [Aug]	120	Monthly 2 [Aug]	20
	11 th July	SEM Annual 1 [Oct-Sep]	70	SEM Annual 1 [Oct-Sep]	0
	26 th July	Monthly 3 [Aug]	100	Monthly 3 [Aug]	20
August	8 th August	SEM Annual 2 [Oct-Sep]	70	SEM Annual 2 [Oct-Sep]	0
	15 th August	Seasonal [Oct-Mar]	50	Seasonal [Oct-Mar]	20
	22 nd August	Quarterly [Oct-Dec]	60	Quarterly 1 [Oct-Dec]	20

Month	End Date	GB to NI (Import)		NI to GB (Export)	
		Product	Volume	Product	Volume
	7 th August	Monthly 1 [Sep]	80	Monthly 1 [Sep]	20
	16 th August	Monthly 2 [Sep]	120	Monthly 2 [Sep]	20
	21 st August	Monthly 3 [Sep]	100	Monthly 3 [Sep]	20
	29 th August	SEM Annual 3 [Oct-Sep]	70	SEM Annual 3 [Oct-Sep]	20
September	6 th Sep	Monthly [Oct]	80	Monthly [Oct]	20

2. EWIC Provisional Auction Calendar (2018)

Month	End Date	GB to IE (Import)		IE to GB (Export)	
		Product	Volume	Product	Volume
April	3 rd April	Monthly 1 [June]	100	Monthly 1 [June]	130
	11 th April	Monthly 2 [June]	150	Monthly 2 [June]	130
	25 th April	Quarterly 1 [July-Sep]	100	Quarterly 1 [July-Sep]	100
May	9 th May	Monthly 3 [June]	150	Monthly 3 [June]	120
	22 nd May	Quarterly 2 [July-Sep]	100	Quarterly 2 [July-Sep]	100
	25 th May	Monthly 4 [June]	100	Monthly 4 [June]	120
June	7 th June	Monthly 1 [July]	100	Monthly 1 [July]	100
	13 th June	Monthly 2 [July]	100	Monthly 2 [July]	100
	20 th June	Monthly 3 [July]	100	Monthly 3 [July]	100
July	4 th July	Monthly 1 [Aug]	100	Monthly 1 [Aug]	100
	12 th July	Monthly 2 [Aug]	100	Monthly 2 [Aug]	100
	18 th July	SEM Annual [Oct-Sep]	50	SEM Annual [Oct-Sep]	50
	24 th July	Monthly 3 [Aug]	100	Monthly 3 [Aug]	100
	31 st July	Seasonal [Oct-Mar]	50	Seasonal [Oct-MAr]	50
August	3 rd August	Quarterly 1 [Oct-Dec]	100	Quarterly 1 [Oct-Dec]	100
	9 th August	Monthly 1 [Sep]	100	Monthly 1 [Sep]	100

Month	End Date	GB to IE (Import)		IE to GB (Export)	
		Product	Volume	Product	Volume
	14 th August	Monthly 2 [Sep]	100	Monthly 2 [Sep]	100
	22 nd August	Quarterly 2 [Oct-Dec]	100	Quarterly 2 [Oct-Dec]	100
	24 th August	Monthly 3 [Sep]	100	Monthly 3 [Sep]	100
September	5 th Sep	Monthly 1 [Oct]	100	Monthly 1 [Oct]	100
	19 th Sep	Monthly 2 [Oct]	100	Monthly 2 [Oct]	100

5. Interconnector Loss Factors

The current SEM method for attribution of a Transmission Loss Adjustment Factor (TLAF) provides separate TLAF figures for day and night for each month for the annual period from October to September by which the energy provided by units on the Moyle and EWIC interconnectors is adjusted for transmission system losses for settlement purposes.

For the I-SEM arrangements an annual single loss factor is to be determined for each interconnector. This same loss factor per interconnector will be used for all of the SEM-GB coupled day-ahead and intraday markets, imbalance settlement in the SEM market, and adjustment of market spread for FTR remuneration.

With this approach there should be consistency between the loss factors used in the various market timeframes and the process of valuing and settling FTRs will be simplified.

The loss factors applicable for Moyle and EWIC will be⁷:

	Applicable interconnector loss factor
Moyle	2.36%
EWIC	4.68%

⁷ Further information available at <http://www.eirgridgroup.com/site-files/library/EirGrid/I-SEM-Interconnector-Losses-Information-Paper-v1.0.pdf> and <http://www.eirgridgroup.com/site-files/library/EirGrid/2017-18-Approved-TLAFs-PDF-Version.pdf>

6. Contact information

Moyle Interconnector

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85 Ormeau Road
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East West Interconnector

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D04 FW28

Tel: +353 (0)1 677 1700
Fax: +353 (0)1 661 5375
Email: eastwestinterconnector@eirgrid.com



Joint Allocation Office

2 Rue Bitbourg
L-1273 Luxembourg-Hamm

Tel : +352 (0)27 62 38 01
Fax : +352(0)27 62 38 99
Email : helpdesk@jao.eu



Appendix 1 – Relevant documents / links

EWIC

<http://www.eirgridgroup.com/customer-and-industry/interconnection/>

Moyle

<http://www.mutual-energy.com/>

JAO

<http://www.jao.eu/main>

<http://www.jao.eu/support/resourcecenter/overview>

<http://www.jao.eu/support/resourcecenter/overview?parameters=%7B%22IsMoyleEwicInterconnectorsProject%22%3A%22True%22%7D>

SEMO / I-SEM

<http://www.sem-o.com/Pages/default.aspx>

<http://www.sem-o.com/isem/Pages/Home.aspx>

HAR

https://electricity.network-codes.eu/network_codes/fca/har/

http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/ANNEXES_HAR_DECISION/Annex%20I_171002.pdf

<http://www.eirgridgroup.com/site-files/library/EirGrid/Annex-7-to-the-Harmonised-Allocation-Rules.PDF>

Appendix 2 – FAQ

1. Where should the loss adjustment factor be applied?

The SEM-GB HAR Annex which notes the formula for the loss-adjusted market spread and confirms the receiving side as the reference point (art. 2.7).

For example, if there is a maximum flow from IE to GB on EWIC, the sending side MW is about 530 and the receiving side is 500. Some interconnectors also consider a mid-channel approximation (515). The loss-adjusted price spread needs to be calculated consistent with the reference point used and the receiving side will apply for Moyle and EWIC.

2. When is settlement for FTRs completed?

Settlement is on a Monthly basis:

- Once a month invoices or self-billings are issued to participants
- The market periods invoiced in M+1 are typically the following (where M = month):
 - Yearly, seasonal and quarterly auctions for M+2
 - Monthly auctions for M+1
 - Returns for M+1
 - Rights remunerations (FTR Payout) for M-1
 - Any other compensations for M

For example:

Invoicing Run in April 2016 (M+1) – JAO invoice
Yearly auctions for May 2016 (M+2)
Monthly auctions for April 2016 (M+1)
Daily and ID auctions for March 2016 (M)
Resale for April 2016 (M+1)
Any other compensations (FTR Payout, Curtailment compensation)

3. Will there be any FTR market trials before go-live?

Yes. We intend to test the main scenarios in the week from 22 to 26 January 2018. It is likely that users will need to be dedicated to interacting with this, albeit one per company is sufficient. Depending on the results from this we have a second week for scenarios from 05 to 09 February 2018. During this second week it's likely that some of the system outputs would be simulated for users to access, e.g. FTR payout and settlement.

For anyone who has registered with JAO by December, they'll have connectivity to the live JAO environment so configuring access to the test environment should be trivial. We'd hope to complete that by 17 January for all participants.

There is an addition for anyone who will be using web services as at least one participant has confirmed use of these. We're trying to line up web service testing from the start of January if not before. If you intend to use these, please let us know so that we can plan accordingly.

4. How do I get an electronic certificate? The current certificate comes from SEMO for use on AMP – will this still be the same for JAO?

SEMO will not support the use of certificates as occurs today on AMP. With JAO it is up to the individual participants to source the certificates that they wish to use. If you already have a supplier that is not on the JAO approved list, we can get them to test it and add if appropriate.

Often the certificates can only be provided on a per user level as they are a form of individual user identity, however there are exceptions such as a company cert for web service (computer-based) access. It's best to tease this out directly with JAO or try it when requesting user access.

When JAO set-up users they can be set-up as update users, or read-only users.

See FAQ 15.

5. Does the Participation Agreement get updated with new borders? What does this mean for me, do I need to re-sign it? How does this work for Ireland-GB specifically?

There won't be a GB-Ireland annex in the participation agreement. These are just for PTR borders where there are additional qualification criteria in each market.

Signing up to the participation agreement means the HAR rules will apply.

6. How does curtailment apply for FTRs?

In the current market arrangements, where an interconnector has unplanned reduced capability, all capacity holders have their rights reduced pro-rata. Under the HAR and Regional Annex, FTRs are significantly more firm. FTRs may only be 'curtailed' in limited circumstances and in the vast majority of cases this will have no impact on the payment received by FTR holders. A cap applies for the total amount of curtailment compensations that will be paid out in one month and FTR payments will only be impacted if this cap is breached.

7. Why aren't the Moyle and EWIC borders mentioned in the Participation Agreement?

Moyle and EWIC use the standard allocation rules for long-term products, as per article 1 of the Participant Agreement). The border specific rules references are for short-term products (daily, intraday or shadow auctions) that do not apply for Moyle and EWIC.

8. Is the Participation Agreement changing? Do I need to fill out the Amendment to the Participation Agreement?

There was a change previously to the Participation Agreement and some existing JAO Registered Participants would have needed to fill out the 'Amendment No. 1 to Participation Agreement'. This is not relevant for new registrations.

A known future change to the Participation Agreement is to modify the rules references on the Swiss borders. JAO Registered Participants wishing to continue trading on the Swiss borders will be asked to sign an Amendment as part of that process.

9. Can you clarify the options in Appendix 1 section 2 of the JAO Participation Agreement?

The combination of answers in the box are YES and NO, or NO and YES. To participate in auctions the correct combination is NO and YES. The bank account details in this section should also be completed – these are the company's own details to which payments are to be made.

10. Is an Auction Tool User account form needed for each user? Is there a limit to the number of users?

You need to fill out one form per user. There is no limit on the number of users. Most companies would have about 5 users, with the biggest having 15.

11. What Certificate serial number should be included on the user account form?

The serial number from the digital certificate should be input here (you may find it in the public part of the certificate under the Details tab as Serial number). In addition a cer file with the public key should be provided.

These should be submitted through the JAO Service Desk (<http://helpdesk.jao.eu>), pdf and cer file together.

12. Is the signature card intended for the people who will draw down funds from the business account and therefore the people who have been given power of attorney?

Yes – it is for those receiving delegated authority (i.e. will be signing for transfers).

13. Is a Power of Attorney (POA) form required per person?

Yes – one per person for anyone signing for a funds transfer. Typically there would be 2 or 3 signatories per company. A company signatory would need to delegate authority to themselves also if they will sign for a funds transfer.

If required, JAO can also set it up that at least two signatures are needed

14. Is the 'funds transfer request form' only required when funds need to be transferred or does the Participant need to complete this in advance of "Go-live" to have the transfer details in place?

The form would typically be filled out as required, i.e. after go-live when funds are received and to be withdrawn. The transfer is to the bank account specified in the participation agreement

15. Where do I get a Digital Certificate?

A digital certificate is an electronic 'passport'. As part of user registration with JAO, the digital certificate you intend to use needs to be identified.

The JAO 'Information System Rules' document is available from:

JAO Resource Center > eCAT – New Auction Tool > Information System Rules

Appendix 1 outlines the desktop software requirements to access the JAO auction tool while Appendix 2 provides details on the digital certificates that are supported by JAO. The JAO list of trusted certificate authorities is available from:

JAO Resource Center > eCAT – New Auction Tool > ListTrustedCA

16. Can I use a SEM or I-SEM digital certificate?

As part of the Moyle & EWIC implementation project the current SEM and new I-SEM certificates will be testing and if successful will be added to the list of trusted certificate authorities. Note that these certificates are provided by EirGrid Group under other market agreements. To have full control over certificate expiry and security it may be better for registered participants to source their own certificates for interacting specifically with JAO.

Appendix 3 – Training survey

To allow us to understand your needs for training on e-CAT and FTR markets, please fill in this short survey and send back to moyle-ewic@jao.eu.

We will assess the needs of individual companies and on the whole, in order to propose a training programme that works for everyone.

Company name	
Contact person (to organise employee training)	Name: Email: Phone:
Company type (please circle, where “other” please provide detail)	Energy Finance Commodities Other:
Number of employees who require training	
System	
Skill level of employees *current Auction Management Platform for EWIC and Moyle auctions **new Joint Allocation Office platform for EWIC and Moyle auctions	Casual AMP* user Expert AMP user Casual JAO** user Expert JAO Other auction system experience:

Market	
Knowledge level of employees (familiarity with Harmonised Allocation Rules and Annexes)	Basic understanding Good working knowledge Expert / in-depth understanding
Location preferred for training sessions (please circle)	Dublin Belfast Luxembourg Web-based
Any other comments or requirements	

Appendix 4 – FTR Worked Examples

Ordinary course of business calculation of FTR payouts (loss-adjusted market spread)

The FTR payout for each hour is the positive loss adjusted market spread in the relevant direction

SEM Price	GB Price	Losses	LAMS	
			GB-SEM	SEM-GB
x	y	z%	$\max(0, x-y(1-z))$	$\max(0, y-x(1-z))$
50.00	40.00	2.36%	9.03	0.00
40.00	50.00	2.36%	0.00	9.03
50.00	40.00	4.68%	8.04	0.00
40.00	50.00	4.68%	0.00	8.04

Calculation of FTR payouts - trip after day-ahead firmness deadline

FTRs are firm after the day ahead firmness deadline so a trip has no impact on FTR payouts for the trading day D in which the trip occurs

SEM Price	GB Price	Losses	LAMS GB-SEM	SEM-GB
x	y	z%	$\max(0, x-y(1-z))$	$\max(0, y-x(1-z))$
50.00	40.00	2.36%	9.03	0.00
40.00	50.00	2.36%	0.00	9.03
50.00	40.00	4.68%	8.04	0.00
40.00	50.00	4.68%	0.00	8.04

The FTR payout for each hour is still the positive loss adjusted market spread in the relevant direction
i.e. FTR holders are not impacted by a 'within day trip' as curtailment may not occur

Calculation of curtailment compensations (pro-rata loss-adjusted market spread) - trip before day-ahead firmness deadline

FTRs can be curtailed before the day ahead firmness deadline so a trip *may* impact on FTR payouts (curtailment compensation) for the trading day D+1 after a trip occurs

The default position is that FTR holders should still receive curtailment compensation equal to the loss adjusted market spread but curtailment compensations are capped

The cap is broadly equal to the interconnector's total auction and congestion income in that month less FTR payouts made in that month (please refer to HAR for further detail)

If an interconnector has an outage meaning that the curtailment compensations exceed the monthly cap, the curtailment compensations will be reduced pro-rata:

SEM Price	GB Price	Losses	LAMS		Uncapped expected curtailment compensation in month (a)	Interconnector income available for compensation cap in month (b)	Pro rata adjustment: $\min(1, (b)/(a))$	Curtailment compensation (LAMS pro-rata)	
			GB-SEM	SEM-GB				GB-SEM	SEM-GB
x	y	z%	$\max(0, x-y(1-z))$	$\max(0, y-x(1-z))$					
50.00	40.00	2.36 %	9.03	0.00	108,398.20	150,000.00	1.00	9.03	0.00

Scenario assumes a curtailment for 24 hours.

(a) LAMS for 24 hours, and 500MW of curtailment

(b) illustrative amount, to demonstrate pro-rata approach

In the above, curtailment compensation for each curtailed hour is still the loss adjusted market spread as the cap on curtailment compensations has not been reached
i.e. there is no pro-rata adjustment and FTR holders are not impacted by the outage and subsequent curtailment

In the below example, the curtailment compensation is reduced pro-rata as the cap on curtailment compensations has been exceeded:

SEM Price	GB Price	Losses	LAMS		Uncapped expected curtailment compensation in month (a)	Interconnector income available for compensation cap in month (b)	Pro rata adjustment: $\min(1, (b)/(a))$	Curtailment compensation (LAMS pro-rata)	
			GB-SEM	SEM-GB				GB-SEM	SEM-GB
x	y	z%	$\max(0, x-y(1-z))$	$\max(0, y-x(1-z))$					
50.00	40.00	2.36 %	9.03	0.00	108,398.20	100,000.00	0.92	8.33	0.00

Due to the monthly cap, FTR payouts would only be expected to be reduced where there is a long unplanned outage of an interconnector.
Otherwise, FTR holders can expect to receive the full positive LAMS, regardless of short duration outages.

Appendix 5 – JAO Registration

JAO Registration Process:

[In order to register new Market Participants, JAO needs the following documents \(available on our website http://www.jao.eu/support/resourcecenter/overview\):](http://www.jao.eu/support/resourcecenter/overview)

- 2 original copies from the Participation Agreement
- 2 original copies from the Financial Agreement
- Commercial Extract/ Constitution Deed
- User Account form(s)
- Public parts of the electronic certificates

Further documents needed:

- ID copy
- Power of Attorney
- Signatory Specimen Form
- Bank Guarantee

Detailed process for registration:

1. First of all JAO requires *two original copies from the Financial Agreement* and *two original copies from the Participation Agreement*. These can be found on www.jao.eu under [Support/resource center/JAO Registration](http://www.jao.eu/support/resourcecenter/JAORegistration).

JAO also requires *one copy from the market participants' Commercial Extract or Constitution Deed* not older than three months, notarized (an official English translation of these documents is also required if needed). Prints from Commercial Extracts from official websites (which are almost always in English) are also accepted as long as JAO is able to check those on those specific platforms.

JAO need to be able to identify the person(s) who signed the Agreements within the commercial Extract.

2. Once the documents have been provided to JAO, JAO checks and countersign them within seven (7) working days in order to have market participants registered.
Next, the following steps are needed in order to create user accounts.
Seven (7) working days are also requested to create user accounts on our platform once documents have been received.

User Account form:

MPs need to send filled-out *User Account Forms* available on www.jao.eu under [Support/resource center/JAO Registration](http://www.jao.eu/support/resourcecenter/JAORegistration). The Market Participant needs to provide this (filled and signed), but a soft copy is also fine. We require one user account form per user.

Public part of the electronic certificate:

On JAO website www.jao.eu under [Support/Resource center/eCAT - New Auction Tool](http://www.jao.eu/support/Resource%20center/eCAT%20-%20New%20Auction%20Tool) open the Information System Rules (20160414_InformationSystemRules_V1.2.pdf). On the 12th page you will find the requirements regarding the certificate.

Market Participants have to provide these requirements to the certificate issuing authority who will let them know whether they would be able to issue a certificate based on these requirements. You can find a list of the

Recommended Certificate issuing authorities (20160503_OPE_P_ListTrustedCA_V2.pdf) on our website under the same section as above.

Participants might have one certificate per person or a pseudonym certificate for all users of the company.

3. During the registration process JAO opens a dedicated Business Account for the Parties. In order to initiate a Fund Transfer Request JAO requires the following documents to be found on www.jao.eu under [Support/resource center/JAO Registration](#) :
 - Fund Transfer Request Form- duly filled and signed
 - Power of Attorney Form (if the person who gives the power and the person who receives it is the same, then that person should give power to himself/herself)
 - Copy of ID Card(s)- Of the person who to whom the power was given to in the Power of Attorney Saved (who signed the Fund Transfer Request form)
 - Signatory Specimen Form- Of the person who to whom the power was given to in the Power of Attorney Saved (who signed the Fund Transfer Request form)

4. Bank Guarantee, Market Participants can provide one or two original copies to be found on www.jao.eu under [Support/resource center/JAO Registration](#)
If only one copy is sent and accepted by JAO it will be kept.

5. Bank Charges: 125€ annual fee + 10,42€ monthly management fees.
Market Participants only pay charges once they start trading on JAO platforms.

As a general practice, if the Agreements/Amendment are countersigned, we send back one copy to the Participants (to the General correspondence contact within the Participation Agreement).