

# PRICING & SCHEDULING FREQUENTLY ASKED QUESTIONS

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## WHAT IS PRICING & SCHEDULING?

The Single Electricity Market (SEM) is a mandatory gross Pool. In a given Trading Period the price per MWh applicable to the purchase of electricity from the Pool is equal to the price per MWh applicable to the sale of energy into the Pool. This price is known as the System Marginal Price (SMP) and pricing and scheduling is effectively the process whereby the market operator produces a schedule of half hourly SMPs and Market Schedule Quantities (MSQs) for each unit for a Trading Day.

Only Price Maker Generator Units (which are not under test) are represented individually within the Market Scheduling & Pricing (MSP) software. Non-Price Maker Generator Units are scheduled either based on submitted nominations or forecast data in the case of wind units. Once the load met by generation from Non-Price Maker Generator units has been removed, then Price Maker Generator Units are scheduled in merit order (see '[What is Merit Order](#)') according to their bids to meet the remaining load.

The MSP software is used to determine what dispatch of units will meet the remaining load requirement with the lowest production costs (whilst also ensuring that each unit is scheduled within its technical capabilities as detailed in their Technical Offer Data (TOD)). In doing this a series of half hourly MW generation values is produced for each Generator Unit. A series of half hourly System Marginal Prices (SMP) which are applicable to all generation and supply during the half hour Trading Period for which they apply is also produced for the Trading Day being scheduled.

Five Pricing & Scheduling runs are carried out each day (see '[What are the pricing runs?](#)') where interconnector nominations are determined and fixed ahead of the next scheduled run and SMP as well as MSQ determined during the Ex-Post Initial MSP Software Run are used for invoicing for the energy market.

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## WHAT IS MERIT ORDER?

A unit shall be merited based on its bid price per MW, production costs as well as demand throughout the Trading Day; at all times acknowledging that the main objective of the SEM is to keep production costs to a minimum.

The merit order of a unit can be determined by looking at the figures within the Market Schedule (which indicates the unit Market Schedule Quantity) and Generator Offers (which shall indicate the price per MW produced as well as the production costs attributed to the unit).

Within the Central Market Systems the unconstrained unit commitment functionality automatically identifies the units, placing them in the relevant merit order according to the above factors.

Merit order is based on each generators bid steps in each Trading Period in each run i.e. it can vary per Trading Period per run.

There are no daily tables/charts that indicate the merit order of Generator Units within the Market.

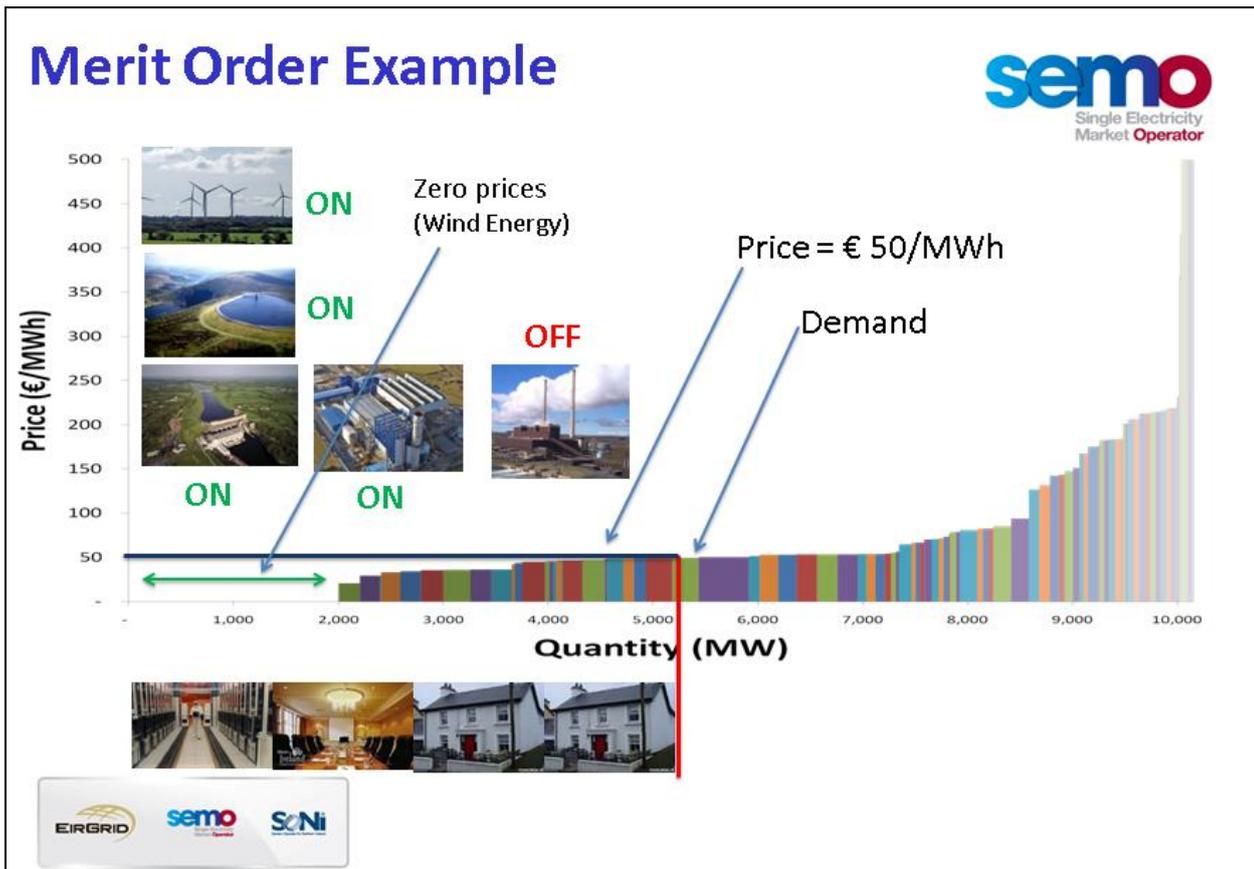
In order to work out merit order manually, you need to determine the costs attributed to each unit throughout the day, for each Trading Period along with bid price (how much it can produce and when) and place this in ascending order against every other unit. Then you will be able to view the merit order for a specific unit in 1 Trading Period. This needs to be carried out for each Trading Period throughout each day (48 across the Trading Day and 60 across the Optimization Time Horizon).

To calculate the merit order for a Trading Period, the following [Dynamic Reports](#) and [Static Reports](#) are required:

- The utilization of a unit can be found in the "Market Schedule Quantity" Dynamic Report
- The availability of units can be found in the "Actual Availability" Dynamic Report
- Metered Generation can be found in the "Metered Generation by Unit" Dynamic Report

- Historical bids (Commercial Offer Data) can be found in the “Commercial Offer Data...” reports under Static Reports

Participant IDs and Unit IDs can be found in the list of registered units in the SEM: <http://www.sem-o.com/Publications/General/Registered%20Participants.pdf>



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## HOW DOES THE MARKET RUN EACH DAY?

### INTRODUCTION

The SEM is a gross mandatory Pool. Under the Pool arrangements, the sale and purchase of electricity occurs on a gross basis with all generators receiving and all suppliers paying the same price for electricity sold into and bought via the pool in a given Trading Period. Below is a brief overview of how the Market runs, from initial Commercial Offer Data (COD) and Technical Offer Data (TOD) submissions by Participants commencing up to 29 days before Trading Day until publishing of the Ex-Post Initial Schedule four days after Trading Day.

### BEFORE THE TRADING DAY

#### Before D-1

From D-29: COD and TOD for the relevant Trading Day can be submitted from this point onwards by Participants in respect of their generator units.

10:00 D-2: the Market Operator (MO) must publish the Available Transfer Capacity (import and export) for each Interconnector.

#### D-1

##### Ex-Ante One (EA1):

17:00 D-1: Daily Trading Day Exchange Rate published by MO

09:20 D-1: VTOD set selection and Forecast Demand submitted by Participants for EA1

09:30 D-1: Excluded Bids Report for EA1 published by MO

09:20 D-1: TOD, VTOD set selection; Forecast Data must be submitted by the Participant to the MO

09:30 D-1: COD for EA1 MSP Software Run for the relevant Trading Day must be submitted by this point by Participants in respect of their Generator Units

09:30 D-1: the Interconnector Administrator provides Active Interconnector Unit Capacity Holdings Data to the MO

11:00 D-1: the MO carries out the EA1 MSP Software Run

11:00 D-1: based on the output of the EA1 MSP Software Run Modified Interconnector User Nominations (MIUNs) are calculated and published by the MO to each Interconnector User

11:00 D-1: based on the output of the EA1 MSP Software Run, the MO publishes indicative SMP values, an EA1 Market Schedule Summary and the EA1 Market Schedule

11:00 D-1: Available Credit Cover Report for EA1 published by the MO.

### **Ex-Ante Two (EA2)**

11:20 D-1: VTOD set selection and Forecast Demand submitted by Participants for EA2

11:30 D-1: COD for EA2 MSP Software Run for the relevant Trading Day must be submitted by the Participant

11:30 D-1: Excluded Bids Report for EA2 MSP Software Run published by MO

13:00 D-1: The MO carries out the EA2 MSP Software Run

13:00 D-1: Based on the output of the EA2 MSP Software Run MIUNs are calculated and published by the MO to each Interconnector User

13:00 D-1: Based on the output of the EA2 MSP Software Run, the MO publishes indicative SMP values, an EA2 Market Schedule Summary and the EA2 Market Schedule

13:00 Available Credit Cover Report for EA2 published by the MO

16:00 D-1: Ex-Ante Indicative Operations Schedule produced by SO and published by MO

---

## **DURING THE TRADING DAY**

Dispatch Instructions are issued by the SOs to Generator Units in real time.

### **Within Day One (WD1)**

08:00: Participants can submit COD and Forecast Data for WD1 for the relevant Trading Day

08:00: Excluded Bids Report for WD1 MSP Software Run published by MO

09:30: The MO carries out the WD1 MSP Software Run

09:30: Based on the output of the WD1 MSP Software Run MIUNs are calculated and published by the MO to each Interconnector User

09:30: Based on the output of the WD1 MSP Software Run, the MO publishes SMP values, a WD1 Market Schedule Summary and the WD1 Market Schedule

09:30: Available Credit Cover Report for WD1 published by the MO

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## **AFTER THE TRADING DAY**

### **D+1**

#### **Ex-Post Indicative (EP1)**

14:00 D+1: the MO carries out the EP1 MSP Software Run  
16:00 D+1: EP1 Market Schedule Summary published by MO  
17:00 D+1: EP1 Market Schedule by Participant issued by MO

D+4

#### Ex-Post Initial (EP2)

14:00 D+4: the MO carries out the EP2 MSP Software Run  
17:00 D+4: EP2 Market Schedule Summary published by MO  
17:00 D+4: EP2 Market Schedule by Participant issued by MO

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## WHAT ARE PRICING AND SCHEDULING RUNS?

Ex-Ante One (EA1) MSP Software Run, Ex-Ante Two (EA2) MSP Software Run, Within Day One (WD1) MSP Software Run, Ex-Post Indicative MSP Software Run (EP1) and Ex-Post Initial MSP Software Run (EP2) refer to the five MSP Software Runs that are performed each day in the Market.

Two Ex-Ante (day ahead) runs are performed to provide details of the Unconstrained Economic Dispatch of Generator Units. The first of these Ex-Ante runs is primarily to determine the allocation of Interconnector flows to Interconnector Users with capacity holdings. The second Ex-Ante run will re-optimize the Market and consider bids by non Interconnector Capacity Holders. In essence, the run allows for a more economical utilisation of the Interconnector Capacity.

By completing the two Ex-Ante runs the day ahead of the Trading Day (06:00 hours to 05:59 hours), this gives sufficient time for the Interconnector Users to trade their confirmed Interconnector flows in the UK (Betta) Market.

In addition, Participant bid information is used by the System Operators (SOs) for their Reserve Constrained Unit Commitment (RCUC) runs – which provide Participants with planned SO dispatch of Generators for the following Trading Day. The Ex-Ante Market Schedule and Ex-Ante Indicative Operations Schedule therefore allow Generators to complete required fuel purchasing ahead of the Trading Day.

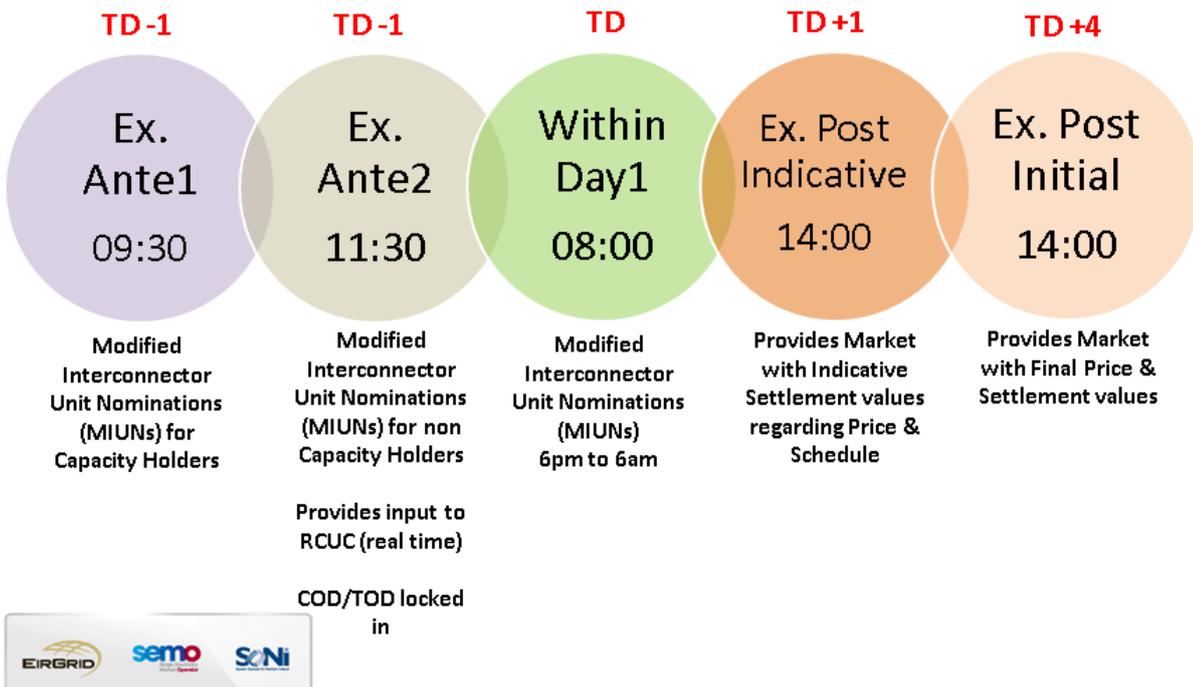
A Within Day One (WD1) MSP Software Run is performed at 08:00 on the actual Trading Day. This run uses revised COD data for the second half of the Trading Day (18:00 to 05:59) to refine the schedule.

In order to revise the schedule the optimisation is performed over the entire Trading Day (06:00am to 5:59am), but only the re-optimised schedule for the second half of the day is valid.

The revised MIUNS and the COD for the second half of the day are used by the System Operator (SO) for revised Operational Schedule and by Interconnector Users for trading.

The Ex-Post Indicative (EP1) MSP Software Run is carried out one day after the Trading Day which is being scheduled. The convention in the Market is to operate on a Trading Day basis which runs from 06:00am to 06:00am, whereas our data providers collect data on a calendar day basis. In light of this, the schedule produced from the EP1 run consists of 18 hours of actual wind and load data and six hours of forecast data for the 24 hour Trading Day/ 12 hours of forecast data for the 30 hour optimisation horizon. Neither the Day Ahead, Within Day or the Ex-Post Indicative schedules of prices are used for invoicing. However, Indicative Settlement Statements calculated using EP1 SMP values are published.

The Ex-Post Initial (EP2) MSP Software Run is carried out four days after the Trading Day which is being scheduled and as such is able to utilise full sets of actual wind and load data with no forecast values. The System Marginal Prices (see '[How is SMP calculated?](#)') produced in the EP2 MSP Software Run are used to produce Initial Settlement Statements which are published and are also the prices used for weekly invoicing.

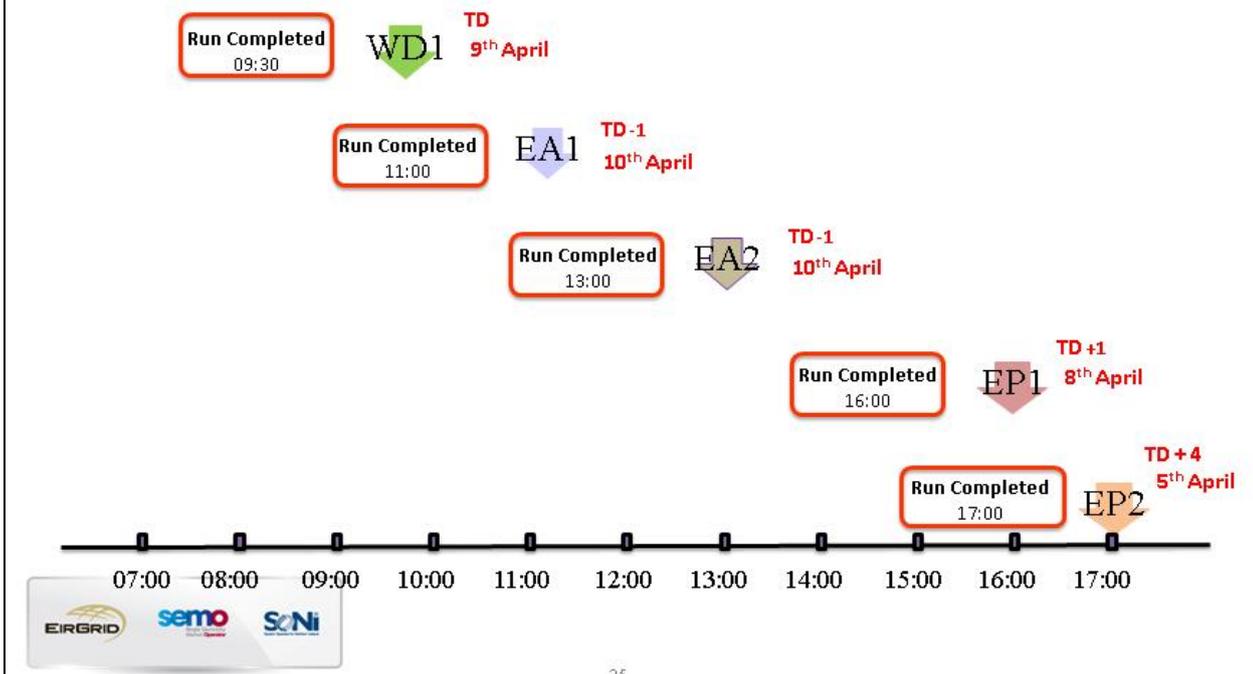


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#### WHAT ARE THE TIMELINES FOR REPORT PUBLICATION?

- The Within Day One (WD1) Market Schedule Quantities (MSQs), indicative System Marginal Prices (SMPs) and indicative Shadow Prices are published by 09:30 on the Trading Day.
- The Ex-Ante One (EA1) MSQs, indicative SMPs and indicative Shadow Prices are published by 11:00 one day before the Trading Day.
- The Ex-Ante Two (EA2) MSQs, indicative SMPs and indicative Shadow Prices are published by 13:00 one day before the Trading Day.
- The Ex-Post Indicative (EP1) MSQs, indicative SMPs and indicative Shadow Prices are published by 16:00 one day after the Trading day.
- The Ex-Post Initial (EP2) MSQs, initial SMPs and initial Shadow Prices are published by 17:00 four days after the Trading Day.

# Pricing Outputs Times



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## WHAT IS THE SYSTEM MARGINAL PRICE (SMP)?

The System Marginal Price (SMP) is:

$$\text{SMP} = \text{Shadow Price} + \text{Uplift}$$

The SMP is a single island-wide price for each half hour Trading Period. Under the gross Pool arrangements for Ireland, all Generator Units receive and all Supplier Units pay the same energy component of price in a Trading Period for electricity i.e. the System Marginal Price (SMP). The SMP is determined via the Market Scheduling and Pricing (MSP) Software for each half hour Trading Period, which is run by the Market Operator.

When the MSP Software calculates the SMP in each Trading Period it calculates:

**Shadow Price** - the cost of the marginal MW required to meet demand in a Trading Period within the context of an unconstrained schedule. A Generator Unit that can increase its generation in order to meet demand is considered to be marginal.

**Uplift** - operating costs associated with Start Up Costs and No Load Costs that a generator will need to recover.

Thus the resultant formula for the derivation of SMP in a Trading Period is:

$$\text{SMP} = \text{Shadow Price} + \text{Uplift}$$

SMP is bounded by a [Market Price Cap and a Market Price Floor](#), which are set by the Regulatory Authorities.

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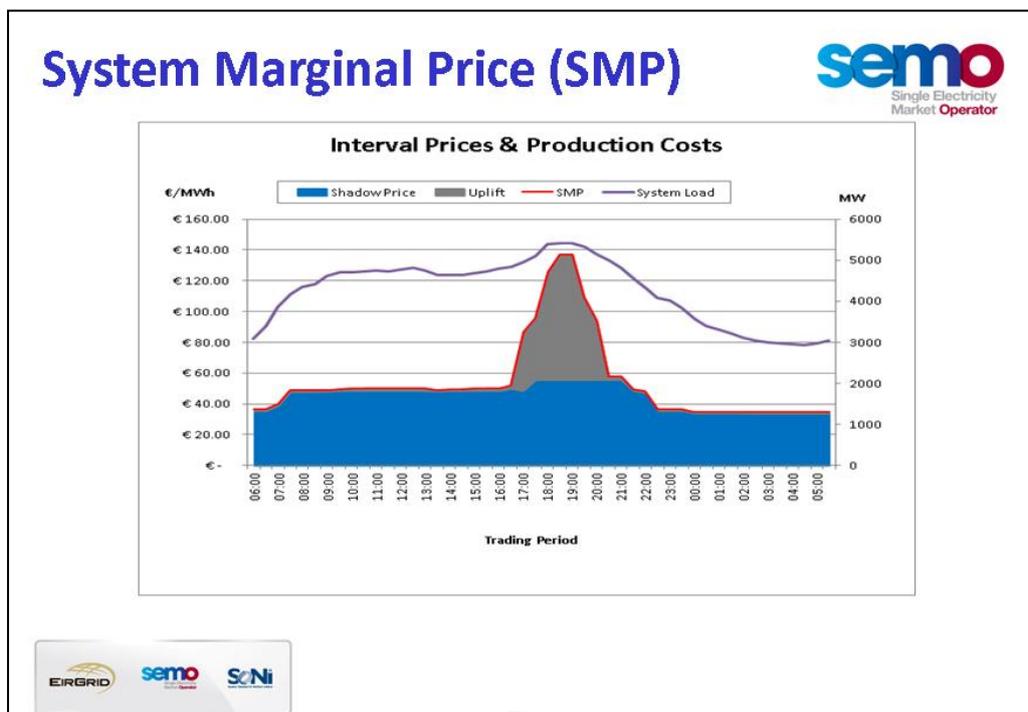
## HOW IS SMP CALCULATED?

### SMP = Shadow Price + Uplift

When the MSP (Market Scheduling & Pricing) Software calculates the System Marginal Price (SMP) and the Market Schedule Quantity (MSQ) it assumes that there are no unconstrained schedules that may occur in reality – these are used during the scheduling planning by the Transmission System Operators. The MSP Software considers all Price Maker Generator Units that are not Under Test (i.e. are operating as normal) for each Trading Period and calculates the SMP as follows:

1. Determine the Unit Commitment Schedule for each Trading Period in the Optimisation Time Horizon (30 hour period), which denotes whether or not each Price Maker Generator Unit that is not Under Test will be scheduled to run. The Optimisation Time Horizon begins at 6am on a Trading Day and ends at midday of the following Trading Day.
2. Based on the Unit Commitment Schedule, determine the Shadow Price (see '[What is the Shadow Price](#)') values and the MSQ values for each Price Maker Generator Unit that is not Under Test for each Trading Period in the Optimisation Time Horizon.
3. Calculate Uplift (see '[What is Uplift](#)') for each Trading Period in the Optimisation Time Horizon.
4. Calculate SMP for each Trading Period in the Trading Day based on the Shadow Price values plus the Uplift values, within the bounds of the Market Price Floor (PFLOOR) and the Market Price Cap (PCAP).
5. In determining Unit Commitment Schedules and MSQ values, the high-level objective of the MSP Software Run is to minimise the sum of MSP Production Costs (see '[How are production costs calculated?](#)') (being the production costs of each Price Maker Generator Unit that is not Under Test & which is scheduled to run) subject to the following constraints:
  - a. To schedule output by Price Maker Generator Units that are not Under Test to meet demand; and
  - b. To schedule each Price Maker Generator Unit that is not Under Test within its capacities and technical capabilities.

For full details, please refer to Appendix N in the Trading & Settlement Code [Appendices](#).



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## WHAT IS UPLIFT?

SMP is set at a level that is sufficient for Participants to recover full costs of production. The Uplift element of the SMP pertains to the recovery by Generator Units of their production costs.

Uplift consists of Start Up Costs and No Load Costs. Start Up Cost represents the cost of starting up the Unit which may be in a Cold, Warm or Hot state. No Load Cost represents the cost of running the Unit at OMW.

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## WHAT IS THE SHADOW PRICE?

Shadow Prices form the basis of the SMP calculation for each half hour Trading Period. However, paying for generation at shadow prices will mean that Generator Units will not recover the full costs of production as the Shadow Price does not reflect the Start Up and No Load Costs of the Generator Unit.

The Shadow Price only reflects the cost of supplying an infinitesimal change in demand. As a result, situations can arise where Units do not recover their “full” costs over a continuous period of running.

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## WHAT IS MARKET PRICE CAP (PCAP) & MARKET PRICE FLOOR (PFLOOR)?

System Marginal Price (SMP) is bounded by a Market Price Cap (PCAP) and a Market Price Floor (PFLOOR), which are set by the Regulatory Authorities. The SMP cannot go beyond these limits and the MSP Software will not calculate an SMP beyond these.

Price Cap (PCAP) is the maximum allowed Shadow Price and System Marginal Price in any half hour Trading Period. It is a parameter which is set in the MSP Software so that should the running of the MSP Software result in a Shadow Price higher than PCAP for a particular Trading Period then the Shadow Price for this Trading Period will automatically be set equal to PCAP (currently set at €1000). As such PCAP is also the maximum allowable bid for Price Maker Generators.

Price Floor (PFLOOR) is the minimum allowed Shadow Price and System Marginal Price in any half hour Trading Period. It is a parameter which is set in the MSP Software so that should the running of the MSP software result in an Shadow Price lower than PFLOOR for a particular Trading Period then the Shadow Price for this Trading Period will automatically be set equal to PFLOOR (currently set at - €100). As such PFLOOR is the minimum allowable bid for Price Making Generators. It is worth noting that negative bid data typically refers to Interconnector Units exporting electricity to the BETTA market.

Price Caps and Price Floors are usually due to a system constraint breach such as an Over-Generation or Under-Generation Event, breach of interconnector ramp rates or a breach of energy limits for energy limited generator units, see paragraph N 17.4 of the [Trading and Settlement Code](#).

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## MIP/LR SOLVER POLICY

Lagrangian Relaxation (LR) is the Primary Solver algorithm used in the SEM to determine what Generator Unit Commitment is required to meet the System Load (see [How are Production Costs Calculated?](#)). There is an alternate solver available to the Market Operator known as Mixed Integer Programming (MIP) however the MIP solver is only used under certain, specific, pre-defined conditions as described below. Both solvers are certified for use in the market. Further information on the Market Operator Solver Policy may be found [here](#).

## TRIGGERS FOR CHECKING WITH MIP:

- 1) System Margin Price (SMP) > €500/MWh and Shadow Price ≠ Price Cap (currently = €1,000/MWh)
- 2) Shadow Price = Price Cap (currently = €1,000/MWh)
- 3) Shadow Price = Price Floor (currently = -€100/MWh)
- 4) Infeasible Solution

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## CRITERIA TO PUBLISH WITH MIP

Scenario	Optimal	Production Costs	Price Event	Publication
Scenario 1	Yes	Lower	N/A	MIP
Scenario 2	No	Lower	Removed	MIP
Scenario 3	No	Lower	Not removed	LR
Scenario 4	N/A	Higher or equal	Equal N/A	LR

### Optimality

Whether or not the MIP solver has found an Optimal Solution is also taken into consideration. An 'Optimal' solution means the MIP solver has identified the schedule which results in the lowest possible MSP production costs.

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## WHAT IS COMMERCIAL OFFER DATA (COD)?

Commercial Offer Data (COD) is submitted by Participants and includes:

### Price Quantity Pairs:

Incremental price/quantity pairs for generation and demand side unit bids. For generators these values provide a measure of incremental running costs and are net of unit load (i.e. net of "load behind the meter").

- A total of 10 Price Quantity Pairs can be submitted
- Please ensure these Prices and Quantities shall each be strictly monotonically increasing (ie are in increasing order)

Price Quantity Curve	
Add Step	Remove Step
Price <b>33.27</b>	Quantity <b>195.0</b>
Price <b>33.58</b>	Quantity <b>280.0</b>

### No Load Cost:

Fixed cost per Trading Period involved in running a generation unit at zero net output. These are not applied to demand side units.

- Cost of running at 0 MW
- Submitted in GBP/EUR per hour

No Load Costs
No Load Cost <b>869.45</b>

### Start Up Costs:

- At least 1 field must be entered, up to 3 allowed
- Cost of starting up in hot, warm and cold states
- Submitted in GBP or EUR

Start Up Costs
Hot: <b>41454.67</b> Warm: <b>65205.8</b> Cold: <b>143378.9</b>

### Nomination Profile:

Non-price sensitive generation offer which is a declaration of intended output level for each Trading Period.

- One Nomination Profile (MW) for each interval range i.e. Start Hour, Start Int, End Hour and End Int (1:1 -24:2)

Nomination Profile	Add Interval Ranges
Start Hour: <b>1</b> Start Int: <b>1</b> End Hour: <b>24</b> End Int: <b>2</b> Nomination Profile(MW) <b>21.6</b>	[ Interval Range ]: ( 1: 1- 24: 2)

### Decremental Profile:

Decremental price within Trading Period

- One Decremental Price (€) for each interval range i.e. Start Hour, Start Int, End Hour and End Int (1:1 -24:2)

Decremental Prices	Add Interval Ranges
Start Hour: <b>1</b> Start Int: <b>1</b> End Hour: <b>24</b> End Int: <b>2</b> Decremental Price(€) <b>0.0</b>	[ Interval Range ]: ( 1: 1- 24: 2)

## Energy Limited Details

- Energy Limit MWh
- Energy Limit Factor
- Energy Limit Period Flag for each interval range i.e. Start Hour, Start Int, End Hour and End Int (1:1 – 24:2)

Energy Limited Details

Details

Energy Limit MWh: 80.0 Energy Limit Factor: 0.25

Energy Limit Period Flags

Start Hour: 1 Start Int: 1 End Hour: 24 End Int: 2 Flag: true

Add Interval Ranges

Interval Range: ( 1: 1- 24: 2)

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## TIMELINES FOR COD SUBMISSION

COD gate closes at:

- 09:30am D-1 for Ex-Ante One (EA1) MSP Software Run
- 11:30am D-1 for Ex-Ante Two (EA2) MSP Software Run
- 8:00am D for Within Day (WD1) MSP Software Run

Gate is open 29 days in advance of EA1 Trading Day

Default Commercial Offer Data must be submitted to provide cover in the instance that bids are not submitted on time.

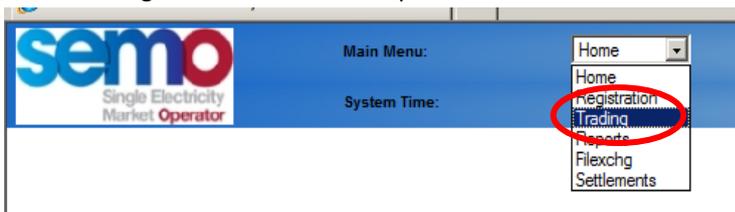
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## HOW TO SUBMIT COMMERCIAL OFFER DATA

Participants submit their COD via the Market Participant Interface (MPI) as follows:

Open your Internet Browser and login to the MPI: [https://market.allislandmarket.com/mi\\_webapps/](https://market.allislandmarket.com/mi_webapps/)

1. Select Trading in the Main Menu dropdown box



2. Browse to your pfx digital cert and enter pfx password



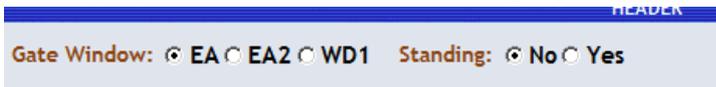
3. Select Data Type dependent on unit type (Generator Offers, Demand Offers or Interconnector Offers)



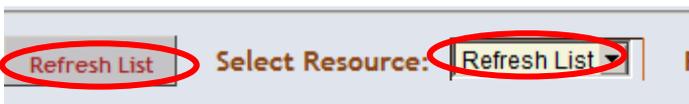
4. Enter External ID if applicable



5. Select appropriate Gate Window & set Standing flag as appropriate



6. Click Refresh List button and select unit



7. The resulting COD screen will depend on the resource selected (see screenshots below)

The SEM does not differentiate between generators by fuel type. Rather generators are classified into the following generator types (or resource types):

- Predictable Price Maker (PPMG)
- Variable Price Maker (VPMG)
- Predictable Price Taker (PPTG)
- Variable Price Taker (VPTG)
- Autonomous Price Taker (APTG)

Hour	Interval	Time Start	Time End	Calendar Day	Trading Day
7	1	06:00	06:29	D	D
7	2	06:30	06:59	D	D
8	1	07:00	07:29	D	D
8	2	07:30	07:59	D	D
9	1	08:00	08:29	D	D
9	2	08:30	08:59	D	D
10	1	09:00	09:29	D	D
10	2	09:30	09:59	D	D
11	1	10:00	10:29	D	D
11	2	10:30	10:59	D	D
12	1	11:00	11:29	D	D
12	2	11:30	11:59	D	D
13	1	12:00	12:29	D	D
13	2	12:30	12:59	D	D
14	1	13:00	13:29	D	D
14	2	13:30	13:59	D	D
15	1	14:00	14:29	D	D
15	2	14:30	14:59	D	D
16	1	15:00	15:29	D	D
16	2	15:30	15:59	D	D
17	1	16:00	16:29	D	D
17	2	16:30	16:59	D	D
18	1	17:00	17:29	D	D
18	2	17:30	17:59	D	D
19	1	18:00	18:29	D	D
19	2	18:30	18:59	D	D
20	1	19:00	19:29	D	D
20	2	19:30	19:59	D	D
21	1	20:00	20:29	D	D
21	2	20:30	20:59	D	D
22	1	21:00	21:29	D	D
22	2	21:30	21:59	D	D
23	1	22:00	22:29	D	D
23	2	22:30	22:59	D	D
24	1	23:00	23:29	D	D
24	2	23:30	23:59	D	D
1	1	00:00	00:29	D+1	D
1	2	00:30	00:59	D+1	D
2	1	01:00	01:29	D+1	D
2	2	01:30	01:59	D+1	D
3	1	02:00	02:29	D+1	D
3	2	02:30	02:59	D+1	D
4	1	03:00	03:29	D+1	D
4	2	03:30	03:59	D+1	D
5	1	04:00	04:29	D+1	D
5	2	04:30	04:59	D+1	D
6	1	05:00	05:29	D+1	D
6	2	05:30	05:59	D+1	D
7	1	06:00	06:29	D+1	D+1
7	2	06:30	06:59	D+1	D+1

**Trading Day and Calendar Day configuration**

Please click [here](#) for Excel format

### Sample Price Taker Generator Offer Screen

Price Taker Details

**Start Up Costs**  
 Hot: 5519.81 Warm: 6899.76 Cold: 8279.71

**No Load Costs**  
 No Load Cost: 0.01

**Price Quantity Curve**

Price	Quantity
3.58	40.0
8.05	60.0
8.06	80.0

**Nomination Profile** Add Interval Ranges  
 Start Hour: 1 Start Int: 1 End Hour: 24 End Int: 2 Nomination Profile(MW): 87.0  
[ Interval Range ]: ( 1: 1- 24: 2)

**Decremental Prices** Add Interval Ranges  
 Start Hour: 1 Start Int: 1 End Hour: 24 End Int: 2 Decremental Price(€): 0.0  
[ Interval Range ]: ( 1: 1- 24: 2)

### Sample Price Maker Generator Offer Screen

Price Maker Details

**Start Up Costs**  
 Hot: 22334.18 Warm: 37750.2 Cold: 74934.38

**No Load Costs**  
 No Load Cost: 2756.41

**Price Quantity Curve**

Price	Quantity
66.23	120.0
71.68	190.0
72.3	258.0

### Sample Variable Price Taker Generator Offer Screen

**Price Taker Details**

**Nomination Profile** Add Interval Ranges

Start Hr: 1 Start Int: 1 End Hr: 24 End Int: 2 Nomination Profile(MW) 11.05 [ Interval Range ]: ( 1: 1- 24: 2)

**Decremental Prices** Add Interval Ranges

Start Hr: 1 Start Int: 1 End Hr: 24 End Int: 2 Decremental Price(€) 0.0 [ Interval Range ]: ( 1: 1- 24: 2)

### Sample Interconnector Offer Screen

**Capacity Details** Add Interval Ranges

Start Hr: 1 Start Int: 1 End Hr: 24 End Int: 2 [ Interval Range ]: (1:1 -24:2)

Maximum Import MW: 500.0 Maximum Export MW: -61.0

**Price Curve Details**

**Price Quantity Curve** Add Remove Interval Ranges

Start Hr: 1 Start Int: 1 End Hr: 1 End Int: 2

Add Step Remove Step

Price 10.0 Quantity 0.0

Price 51.0 Quantity 500.0

[Interval Range]: (1:1 -1:2)  
 [Interval Range]: (2:1 -3:2)  
 [Interval Range]: (4:1 -5:2)  
 [Interval Range]: (6:1 -6:2)  
 [Interval Range]: (7:1 -7:2)  
 [Interval Range]: (8:1 -8:2)  
 [Interval Range]: (9:1 -19:2)  
 [Interval Range]: (20:1 -20:2)  
 [Interval Range]: (21:1 -21:2)  
 [Interval Range]: (22:1 -22:2)  
 [Interval Range]: (23:1 -23:2)  
 [Interval Range]: (24:1 -24:2)

### Sample Demand COD Parameters

**Forecast Details** Add Remove Interval Ranges

**Details**

Start Hr: 1 Start Int: 1 End Hr: 8 End Int: 2 [Interval Range]: (1:1 -8:2)

Avail Profile: 31.0 Min Stable: 1.0 Min Profile: 0.0 [Interval Range]: (9:1 -21:2)

[Interval Range]: (22:1 -24:2)

**Price Maker Details**

**Shutdown Costs**

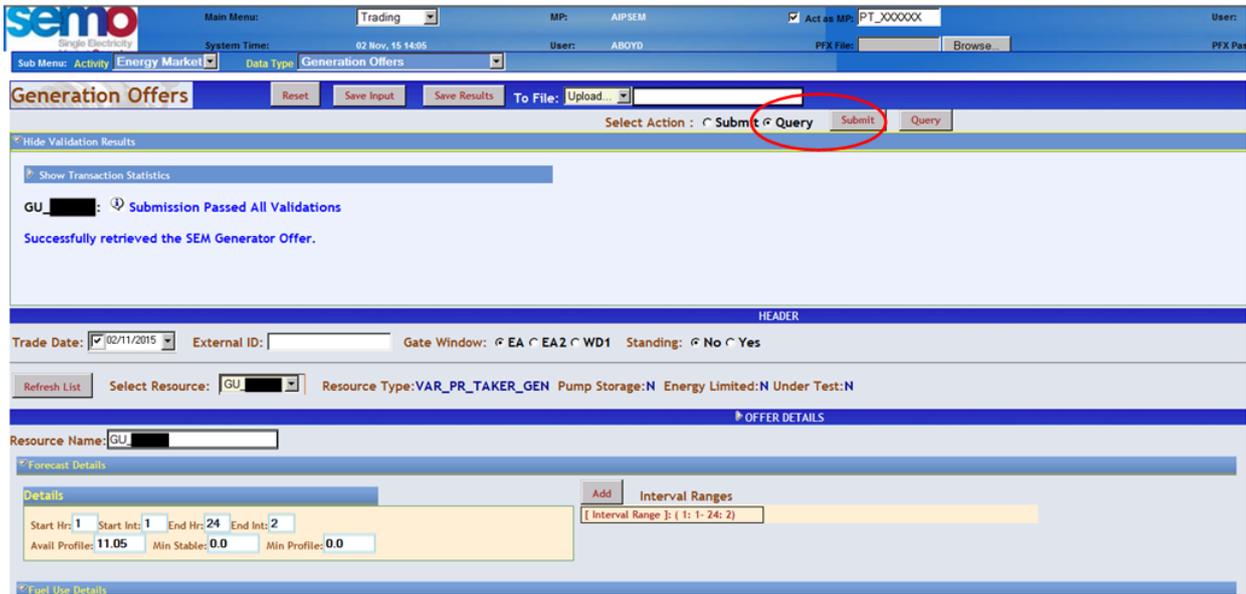
Shutdown Cost: 5728.0

**Price Quantity Curve**

Add Step

Price: 350.0 Quantity: 33.0

After submitting bids please run market query to ensure all bids entered have successfully completed.



Default Commercial Offer Data must be submitted to provide cover in the instance that bids are not submitted on time.

Participants shall not submit Commercial Offer Data in respect of any Interconnector Residual Capacity Unit.

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## PRICE QUANTITY PAIRS

Please ensure that Prices and Quantities are strictly monotonically increasing (i.e. are in increasing order).

NB: If bids are not submitted in this fashion, an error message will occur not allowing you to proceed and you must go back and start from the beginning.

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## PROBLEMS SUBMITTING BIDS

Please contact the Market Operator immediately. Contact details for the Helpdesk and Market Operations Hotline can be found [here](#)

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## HOW ARE PRODUCTION COSTS CALCULATED?

Generator production cost is the total cost a generator unit incurs in producing exported electricity and is calculated on a half hourly basis by the MSP software.

**The production cost** for a given generator consists of incremental operating cost, no-load cost and the start-up cost of the generator.

**Operating cost** - the cost associated with producing exported power at a particular MW generation level.

**No Load Cost** - the cost associated with a unit being on and exporting but not including the cost associated with this exported power.

**Start Up Cost** – the cost of bringing a Generator Unit to a Synchronised state, from a Cold, Warm or Hot state.

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## WHAT IS TECHNICAL OFFER DATA (TOD)

Technical Offer Data (TOD) is data submitted by a Participant that describes the technical capabilities and limits of generators and demand side units.

- Participants submit request to change primary data set with alternative data set.
- This is reviewed by Market Operator.
- Participant enters data through the MPI and gate is open 29 days in advance of the Trading Day
- Image below shows the list of TOD fields that can be changed.
- Participants shall not submit Technical Offer Data in respect of any Interconnector Residual Capacity Unit.

The screenshot shows a web form titled "GENERATOR INFORMATION". At the top, there is a dropdown for "Old Flag" set to "No" and a text field for "Old Facility Name". Below this is a section for "Fuel Type" set to "Gas" and a dropdown for "Minimum Stable Generation". The form contains numerous input fields for technical parameters, organized in two columns. The left column includes fields for synchronization time, ramp down rate, pump storage unit, sustained period above maximum capacity, restricted loading range starts, fixed unit load, hot state notification startup time, hot state block loads, warm state load up rates, hot state load up rates, warm state load up curve break point, hot state soak time, cold state soak time, warm state soak time trigger point, startup period end point, ramp up curve MW/min, and ramp in curve break. The right column includes fields for minimum generator capacity, elapsed synchronization time, energy limit unit, minimum on time, restricted loading range ends, unit load scalar, block loading characteristics, cold state load up rates, warm state load up rates, hot state load up rates, warm state load up curve break point, hot state soak time, cold state soak time, warm state soak time trigger point, ramp up curve MW/min, and ramp in curve break.

All submissions will contain an indicator to identify to which Gate Window they relate (e.g. EA1, EA2 and WD1).

Run Type	Registration Data (RD)	Forecast Data (FD)	Technical Offer Data (TOD)	Validation Technical Offer Data (VTOD)
EA1	Y	Y	Y	Y
EA2	N	Y	N	Y

WD1	N	Y	N	N
-----	---	---	---	---

## HOW DO I SUBMIT GENERATION TECHNICAL OFFER SETS VIA THE MPI?

Go to MPI homepage and enter the following details:

**Main Menu:** Trading

**Act as MP:** the PT is usually defaulted

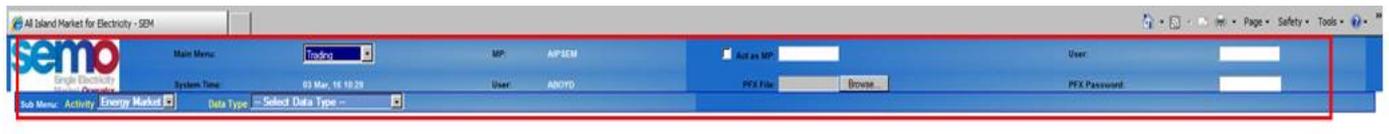
**User:** Username

**PFX Password:** Password

**PFX file:** this is your digital cert which you will have saved down locally

**Sub Menu:** Activity: select Energy Market

**Data Type:** select Generation Technical Offers Set



Once the above fields have all been updated, the screen should show as below:



Update the fields as follows:

**Select Action:** Select Submit radio button

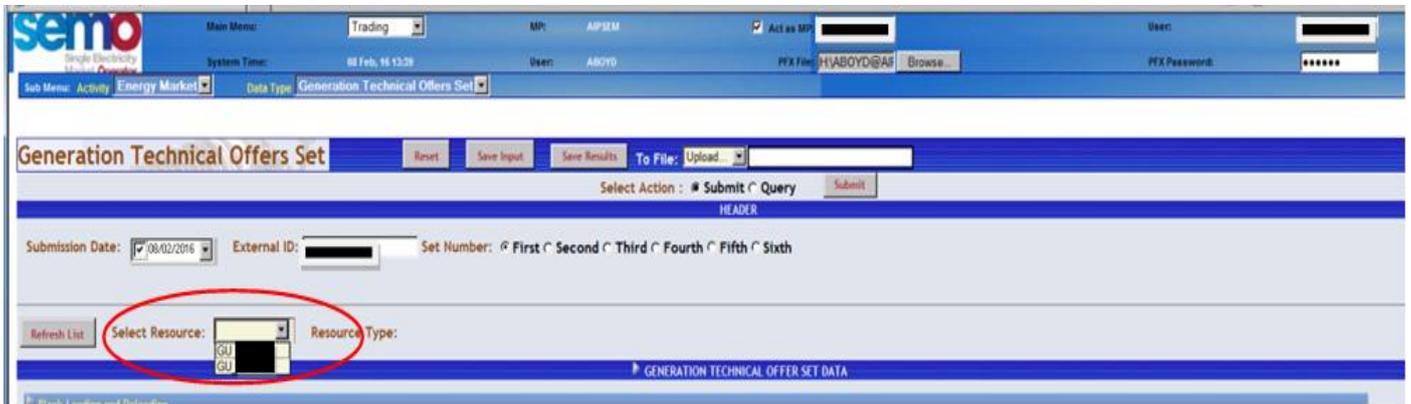
**Submission Date:** Operational Date

**External ID:** Enter PT ID

**Set Number:** Select the set that you are wanting to submit

Click **Refresh List** to populate a dropdown list in the **Select Resource** field

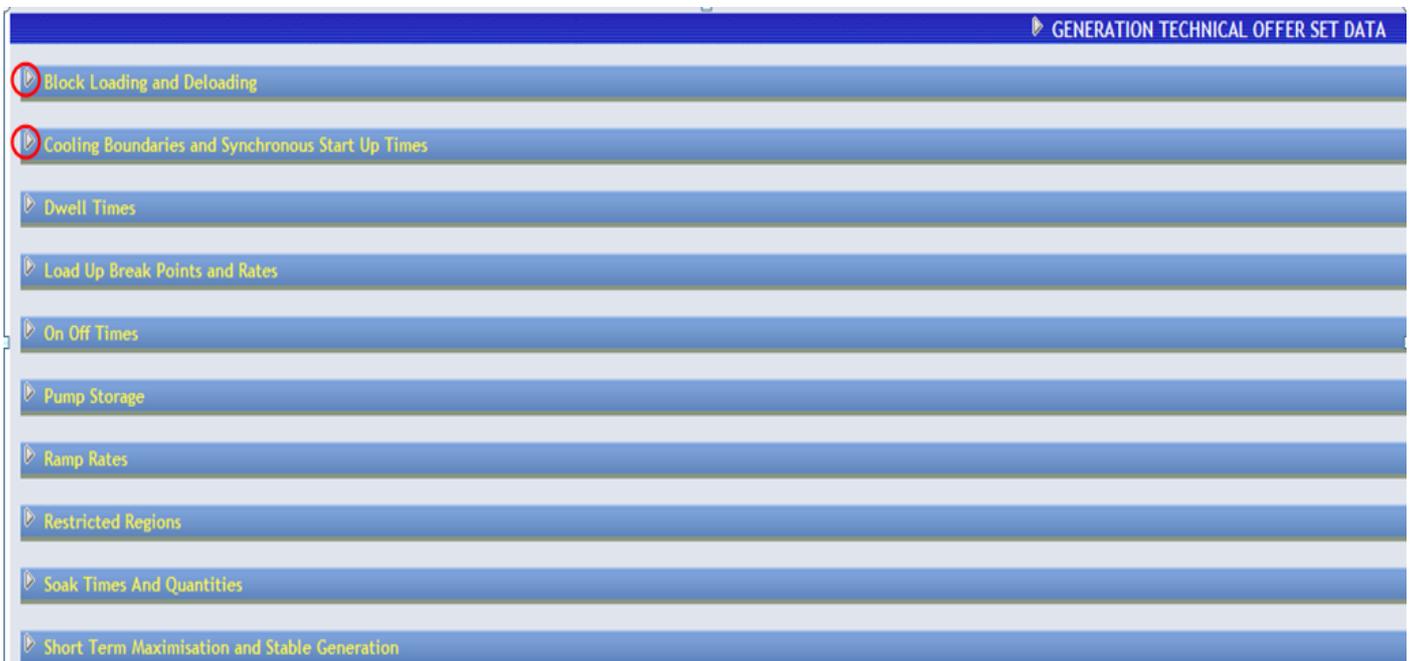
**Select Resource:** Select the GU ID that you wish to enter VTOD details for



The below sections must be completed in full – **no null values will be accepted on the TSO side.**

- If there are values to be added for Block Loading (in the first section) check the 'Block Loading Flag' check box so the Hot, Warm and Cold fields are displayed
- For each section that has an Add button, **you must add the maximum amount of fields and enter data in each field** - Click on the Add button until all the maximum additional fields are added

Expand each section by clicking on the arrow 



The table should now show as below (with maximum boxes added)

**Block Loading and Deldoading**

Block Loading Flag:

Hot:  Warm:  Cold:

Deloading Details

Rate:  Quantity:

**Cooling Boundaries and Synchronous Start Up Times**

Cooling Boundary Details

Hot:  Warm:  Cold:

Start Up Time Details

Hot:  Warm:  Cold:

**Dwell Times**

Dwell Up Time Details

Time:	Quantity:	Add	Remove
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>

Dwell Down Time Details

Time:	Quantity:	Add	Remove
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>

**Load Up Break Points and Rates**

Load Up Hot Details

Rate:	Quantity:	Add	Remove
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>

Load Up Warm Details

Rate:	Quantity:	Add	Remove
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>

Load Up Cold Details

Rate:	Quantity:	Add	Remove
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>

**On Off Times**

On Off Time Details

Min On Time:  Max On Time:  Min Off Time:

**Pump Storage**

Pump Storage Details

Storage Cycle Efy:  Load Capacity:

**Ramp Rates**

Max Ramp Rate Details

Up:  Down:

Ramp Rate Up Details

Rate:	Quantity:	Add	Remove
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>

Ramp Rate Down Details

Rate:	Quantity:	Add	Remove
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>

**Restricted Regions**

Restricted Region Details

Start:  End:

<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

**Soak Times And Quantities**

Soak Hot Details

Time:	Quantity:	Add	Remove
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>

Soak Warm Details

Time:	Quantity:	Add	Remove
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>

Soak Cold Details

Time:	Quantity:	Add	Remove
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>
<input type="text"/>	<input type="text"/>	<input type="button"/>	<input type="button"/>

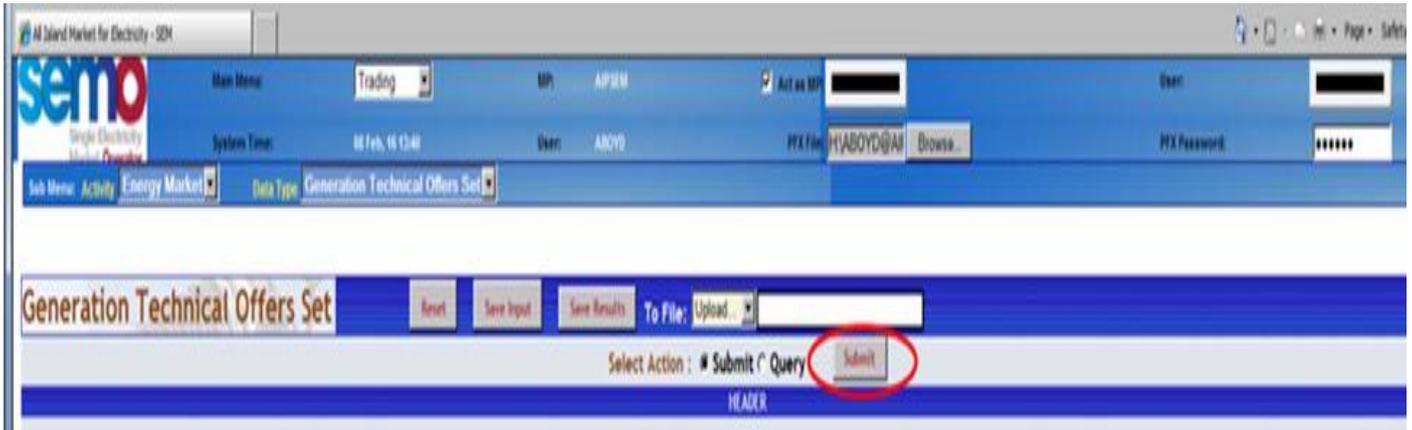
**Short Term Maximisation and Stable Generation**

Short Term Maximisation and Stable Generation

Short Term Max Quantity	Short Term Max Time:	Min Stable Generation Quantity:
<input type="text"/>	<input type="text"/>	<input type="text"/>

When all fields have been updated the VTOD set can be submitted.

Scroll to the top of the screen and click Submit:



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## HOW DO I SUBMIT DEMAND TECHNICAL OFFER SETS VIA THE MPI?

Go to [https://market.allislandmarket.com/mi\\_webapps/](https://market.allislandmarket.com/mi_webapps/)

**Act as MP:** (your PT\_400144 should be defaulted)

**User:** Username (this should default to your username)

**Password PFX file:** - Browse and select a copy of your digital cert which you will have saved down locally

**PFX Password:** - enter the password for your digital cert

**Sub Menu:**

**Activity:** select Energy Market

**Data Type:** select Demand Technical Offers Set



Once the above fields have all been updated, the screen should show as below:

semo  
Single Electricity Market Operator

Main Menu: Trading  
System Time: MP: APBEM  
User: LPLUNKETT  
Act as MP: PT\_400144  
PFX File: Browse...  
User: PFX Password:

Sub Menu: Activity Energy Market Data Type Demand Technical Offers Set

**Demand-Side Technical Offers Set** Reset Save Input Save Results To File: Upload...  
Select Action: Submit Query Submit

Submission Date: 03/08/2016 External ID: Set Number: First Second Third Fourth Fifth Sixth

Refresh List Select Resource: Refresh List Resource Type:

DEMAND TECHNICAL OFFER SET DATA

Down Times  
Maximum Ramp Rates

Update the fields as follows:

**Select Action:** Select Submit radio button

**Submission Date:** Operational Date

**External ID:** Enter PT ID

**Set Number:** Select the set that you are wanting to submit

Click Refresh List to populate a dropdown list in the Select Resource field Select Resource: Select the **DSU ID** that you wish to enter VTOD details for

The below sections must be completed in full – no null values will be accepted on the TSO side. I

DEMAND TECHNICAL OFFER SET DATA

Down Times

Down Time Details

Min: Max:  
0.5 2

Maximum Ramp Rates

Ramp Rate Details

Up: Down:  
0.13 0.13

## HOW DO I PUT A UNIT UNDER TEST IN THE MARKET?

### UNIT UNDER TEST PROCESS

A Unit Under Test request must be sent to the TSO ([TestRequest@sem-o.com](mailto:TestRequest@sem-o.com)) 5 Working days before proposed date.

#	Procedural Step	Timing	Mechanism	By / From	To
1	Submit a Generator Unit Under Test Request specifying in all cases the: <ul style="list-style-type: none"> <li>- Unit Under Test Resource Name</li> <li>- Unit Under Test Start Date</li> <li>- Unit Under Test End Date</li> </ul>	At least five Working Days before the proposed Unit Under Test Start Date  Or with the agreement of the relevant System Operator no later than 09:00 two Working Days before the proposed Unit Under Test Start Date.	Email to <a href="mailto:TestRequest@sem-o.com">TestRequest@sem-o.com</a>	Market Participant	Market Operator
2	Open request and issue receipt	On receipt of Generator Unit Under Test Request email	Email	Market Operator	Market Participant
3	All emails to <a href="mailto:TestRequest@sem-o.com">TestRequest@sem-o.com</a> are automatically forwarded to the System Operators	On receipt of Generator Unit Under Test Request email	Email	Market Operator	System Operators
4	Submit a Nomination Profile for all Trading Dates as per Generator Unit Under Test Request.	Within 1 hour of the submission of the Generator Unit Under Test Request as outlined in Step 1	Email	Market Participant	System Operator
5	Verify feasibility of proposed test with the relevant System Operator. If test details are not feasible, resubmit updated test dates and/or Nomination Profiles as required.	Up to 11:00 two Working Days in advance of the Unit Under Test Start Date	Phone/Email	Market Participant	Relevant System Operator
6	If the test is verified by the relevant System Operator, as set out in step 5, submit a Generator Unit Under Test Notice specifying in all cases the:	By 12:00 two Working Days in advance of the Unit Under Test Start Date	MPI	Market Participant	Market Operator

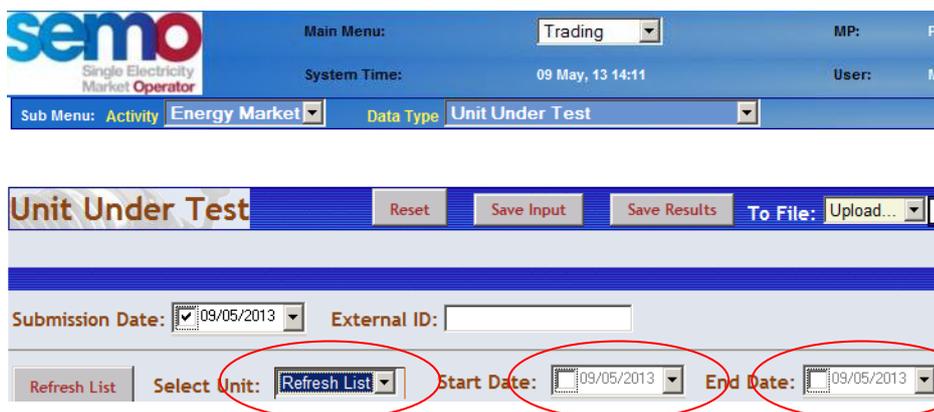
	<ul style="list-style-type: none"> <li>· Unit Under Test Resource Name</li> <li>· Unit Under Test Start Date</li> <li>· Unit Under Test End Date</li> <li>· Effective date (of test)</li> </ul> <p>N.B. – the effective date is a Market Participant Interface (MPI) requirement and must be the same as the Unit Under Test Start Date</p>				
7	Send Generator Unit Under Test Notice to relevant System Operator	By 12:30 two Working Days in advance of the Unit Under Test Start Date	Email	Market Operator	Relevant System Operator
8	Accept or reject the Generator Unit Under Test Notice & send a notification to the Market Operator	By 16:00 two Working Days in advance of the Unit Under Test Start Date	Email	System Operator	Market Operator
9	Process the Generator Unit Under Test Notice: <ul style="list-style-type: none"> <li>· if accepted, change the Generator Unit's status to Under Test</li> <li>· Otherwise, reject request and end process</li> </ul>	By 16:30 two Working Days in advance of the Unit Under Test Start Date	MPI	Market Operator	
10	Close request and alert that the Generator Unit Under Test Notice has been processed	By 17:00 two Working Days in advance of the Unit Under Test Start Date	Email	Market Operator	Market Participant and System Operators
11	Submit Nomination Profiles (as specified in 5.12 to 5.14 and in accordance with the relevant Grid Code).	By 09:30 on TD-1	MPI	Market Participant	Market Operator

## HOW TO SUBMIT UNIT UNDER TEST IN MPI

1. Log into the Market Participant Interface: [https://market.allislandmarket.com/mi\\_webapps/](https://market.allislandmarket.com/mi_webapps/)
2. Enter your digital certificate and password
3. Select Trading from the Main Menu > select Activity 'Energy Market' > select Data Type 'Unit Under Test'



4. Select Unit from drop down list > Enter Start Date and End Date



6. Press Submit

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## HOW DO I EXTEND, DECREASE OR CANCEL A UNIT UNDER TEST END DATE?

Changes to Unit Under Test dates must be requested via the MPI. Requests must meet the following criteria:

1. Request must be submitted D-2 from test end date as per the Trading and Settlement Code
2. D-1 Cancellations must be received no later than 07:30
3. The Ex-Ante for the prior date must be completed before new request is accepted
4. The TSO must approve any changes

Enter change requests as follows:

1. Log into the Market Participant Interface:[https://market.allislandmarket.com/mi\\_webapps/](https://market.allislandmarket.com/mi_webapps/)
2. Enter your digital certificate and password
3. Select Trading > Select Activity 'Energy Market' > Select Data Type 'Unit Under Test'
4. Select Unit from drop down list > Enter Start Date & End Date > Press Submit

For cancellations please choose the dates already submitted and then click Cancel and submit.

For D-1 cancellations the request MUST be received via Email to [TestRequest@sem-o.com](mailto:TestRequest@sem-o.com) & [GridOpsDBE@Eirgrid.com](mailto:GridOpsDBE@Eirgrid.com) and also received via the MPI no later than 07:30 D-1.

The Market Operator will notify the participant by 08:00 of Approval or Denial.

If D-1 Cancellation has been Approved, the Participant is to submit Commercial Offer Date by 09:30 D-1.

If D-1 Cancellation has been denied, the original UUT still remains.

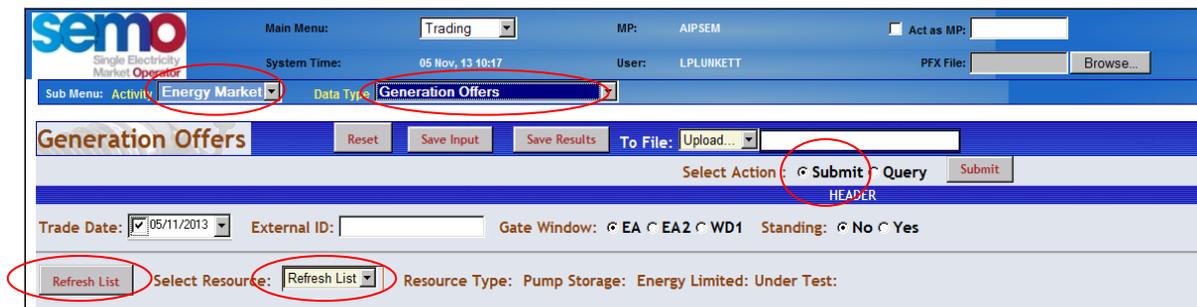
Standing Commercial Offer Data will be used if no Commercial Offer Data is submitted.

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## HOW TO SUBMIT UNDER TEST NOMINATIONS

Once the Under Test request has been approved by the TSO, and updated in the Central Market Systems, the Participant should submit the Under Test nominations for the relevant trade dates before gate window closure as follows:

1. Log into the Market Participant Interface:[https://market.allislandmarket.com/mi\\_webapps/](https://market.allislandmarket.com/mi_webapps/)
2. Enter your digital certificate and password
3. Select Main Menu 'Trading' > select Activity 'Energy Market' > select Data Type 'Generator Offers'
4. Select Action 'Submit'
5. Select relevant 'Trade Date' & 'Gate Window'
6. Click Refresh List
7. Select Unit from Select Resource List



8. Enter the following information
  - a. 'Forecast Details'
    - i. Avail Profile (MW) for each interval range i.e. Start Hour, Start Int, End Hour and End Int (1:1 -24:2) as agreed with the TSO
    - ii. Min Stable
    - iii. Min Profile
  - b. 'Fuel Use Details'
    - i. Fuel for each interval range
  - c. 'Price Taker Details' –
    - I. Nomination Profile (One Nomination Profile (MW) for each interval range i.e. Start Hour, Start Int, End Hour and End Int (1:1 -24:2)
    - II. Decremental Prices (Decremental Price €0 for each interval range i.e. Start Hour, Start Int, End Hour and End Int (1:1 -24:2)
9. Click 'Submit' Button in the Select Action Row

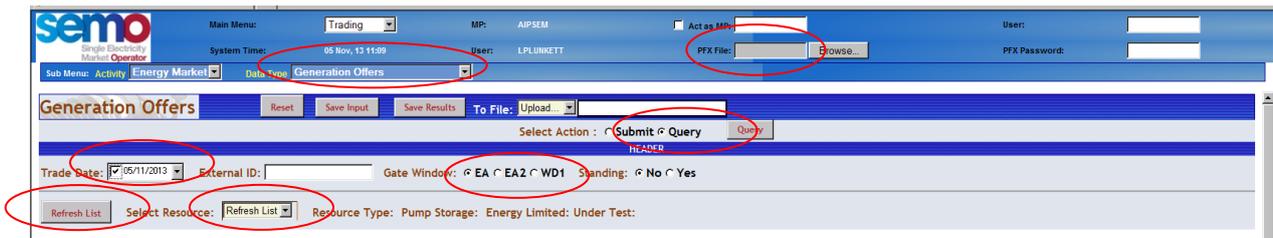


*Note: it is required that after each change in any of the search, query or submit functions that the "Refresh List" button is clicked before selecting a GU\_XXXXXX unit under your PT\_XXXXXX. If this is not done then the MPI will not reflect the correct unit details and they will remain the same as the previous GU\_XXXXXX selected.*

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## HOW TO QUERY PREVIOUSLY SUBMITTED UNDER TEST DATA

1. Log into the Market Participant Interface: [https://market.allislandmarket.com/mi\\_webapps/](https://market.allislandmarket.com/mi_webapps/)
2. Enter your digital certificate and password
3. Select Main Menu 'Trading' > select Activity 'Energy Market' > select Data Type 'Generator Offers'
4. Select Action 'Query'
5. Select relevant 'Trade Date' & 'Gate Window'
6. Click Refresh List
7. Select Unit from Select Resource List



8. Click 'Query' Button in the Select Action Row

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## COMMUNICATION OR SYSTEM FAILURE

A communication or system failure may result in Participants not being able to submit bids via the usual methods. Limited Communication Failure (LCF), General Communication Failure (GCF) and General Systems Failure (GSF) are shown below.

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### WHAT IS A LIMITED COMMUNICATION FAILURE (LCF)?

Limited Communication Failure (LCF) occurs when a Participant's (but not all Participants') system cannot communicate with the Market Operator system. This results in the Participant's inability to submit their required data e.g. they cannot submit Commercial Offer Data.

If a Participant cannot re-establish communication to the Market Operator system the Participant should follow the Limited Communication Failure (LCF) process as per the latest version of Agreed Procedure (AP) 7 "Emergency Communication": <http://www.sem-o.com/MarketDevelopment/MarketRules/AP07.docx>

Where a LCF relates to Offer Data for a Gate Window scheduled to close within 1 hour, the Participant should follow the procedural steps set out in Section 5.3 of AP7 – Offer Data Limited Communication Failure. Otherwise, the Participant should follow the procedural steps set out in Section 5.4 of AP7 – Standard Limited Communication Failure.

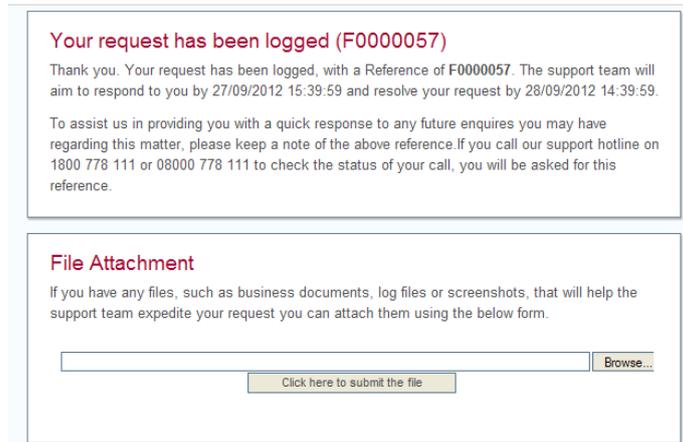
#### Offer Data Limited Communication Failure

If a Participant cannot submit Commercial Offer Data via Type 3 or via Type 2 communication channels, and the LCF relates to Offer Data for a Gate Window scheduled to close within 1 hour, please contact the Market Operations Hotline immediately on +353 1 2370573 to inform the MO of the LCF.

The next action taken by the Participant will depend if the SEMO Online Helpdesk is available or not.

*If the SEMO Online Helpdesk is available:*

The Participant should submit offer data by providing an xml file or by completing the electronic LCF forms provided on the Online Helpdesk. (The electronic forms on the Online Helpdesk generate an xml file which the MO will load to the Central Market System on the Participant's behalf). Once offer data has been submitted via the Online Helpdesk, a transaction ID (e.g. F00xxxxxx) will be generated and relayed back to the Participant (See figure below for illustration).



The screenshot displays two distinct sections within a web interface. The top section, titled "Your request has been logged (F0000057)", contains a thank-you message and a specific reference number (F0000057). It provides a timeline for the support team's response, stating they will respond by 27/09/2012 15:39:59 and resolve the request by 28/09/2012 14:39:59. Below this, it asks the user to keep the reference number for future inquiries and provides contact information for the support hotline (1800 778 111 or 08000 778 111). The bottom section, titled "File Attachment", explains that users can attach business documents, log files, or screenshots to expedite their request. It features a text input field, a "Browse..." button, and a "Click here to submit the file" button.

For more information on the Online Helpdesk submission process please see the guide [here](#).

To ensure the user submitting the offer data via the Online Helpdesk is authorised to do so on behalf of the Participant, they are required to submit, via Type 1 (Fax), a Transaction Notification Form which should include:

- Category D Authorised Person's name, signature and password
- Transaction ID from the Online Helpdesk.

The Transaction Notification Form must be sent to both the ROI (+353 1 2370035) and NI (+44 2890 707555) fax numbers before gate closure; otherwise the LCF will be rejected.

Provided the offer data and Transaction Notification Form are received before gate closure and the user is a category D Authorised Person; the MO will upload the offer data to the Central Market System on behalf of the Participant.

*If the SEMO Online Helpdesk is unavailable:*

The Participant shall be required to submit offer data via Type 1 (fax).

The Participant must print out the official LCF form and manually enter the bids on the form. The LCF forms and Transaction Notification Form can be found in the Emergency Communications Pack here: <http://www.sem-o.com/Publications/General/Emergency%20Communications%20Pack.zip>

There is a form for each unit type:

LCF COD Form for Demand Units

LCF COD Form for Energy Limited Units

LCF COD Form for Interconnector Units

LCF COD Form for Price Maker Generator Units

LCF COD Form for Price Taker Generator Units and Unit Under Test

LCF COD Form for Price Taker Generator Units

LCF COD Form for Pump Storage Units

It is imperative that the relevant form is fully completed, legible and details the username and password for a category D Authorised Person; otherwise the LCF form will be rejected.

The LCF Form must be sent to both the ROI (+353 1 2370035) and NI (+44 2890 707555) fax numbers and followed up with a phone call on the operations hotline; the form must be received by the MO before gate closure; otherwise the LCF will be rejected

When an LCF is received, the Market Operator will carry out certain checks prior to accepting it.

Please see the internal policy for expired digital certificates for more information: <http://www.sem-o.com/Publications/General/SEMO%20Internal%20Policy%20For%20Expired%20Digital%20Certs%20%20LCFs.pdf>

If any data is received after the closure of a gate, this data will not be processed. Default Commercial Offer Data will be utilised automatically. For this reason, it is very important than all Participants have Default Commercial Offer Data entered for each of their generators.

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## WHAT IS A GENERAL COMMUNICATION FAILURE (GCF)?

A “General Communication Failure” is a situation where the Market Operator’s Isolated Market System is operational but the normal communication interfaces between all Parties, (other than the System Operators or the Meter Data Providers) and the Market Operator are unavailable, leading to a failure of all such Parties to comply with the data submission requirements.

In the event that of a General Communication Failure (GCF):

1) The Market Operator (MO) will

- a) Complete Part 1 of the Emergency Communication Form on page 32 of Agreed Procedure 7 ‘Emergency Communications’; <http://www.sem-o.com/MarketDevelopment/MarketRules/AP07.docx>
- b) notify each impacted Party of the GCF by Fax. The MO will fax Participants listed as category J Authorised Persons ‘Person to be notified in event of General System Failure and/or General Communication Failure’. For details on how to update Authorised Persons listings please see section 2.5 of [Agreed Procedure 11](#)).

2) All impacted Parties will acknowledge receipt of notification of GCF by completing Part 2 of the Emergency Communication Form and faxing it back to the MO, ROI Fax Number +353 1 2370035 and NI Fax Number +442890707555

3) The MO will

- a) Complete the ‘Alternative Communication Method’ and, if necessary, the ‘Emergency Transaction Timeline’ section of the Part B of the Transaction Notification Form

- b) Communicate to impacted Parties by Fax (category J Authorised Persons)
- 3) Following receipt of Transaction Notification Form, impacted Parties will invoke internal procedures to switch to alternative communication methods
- 4) The MO will notify all impacted Parties of best estimate of when the MO Isolated Market System will be available via the normal Communication Channels by completing and faxing Part 3 of the Emergency Communication Form
- 5) Following restoration of Communication Channels, the MO will notify all impacted Parties by completing and faxing Part 4 of the Emergency Communication Form
- 6) All impacted Parties will acknowledge receipt of return to normal Communication Channels by completing Part 5 of the Emergency Communication Form and faxing it back to the MO (fax numbers as above).

This procedure can be found in section 5.2 of [Agreed Procedure 7 "Emergency Communication"](#):

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## WHAT IS A GENERAL SYSTEM FAILURE (GSF)?

‘General System Failure’ is a period during which the Market Operator’s Isolated Market System is unable, under normal operation, to process data as required under the Code and such inability has caused or will cause the Market Operator to fail to meet any applicable deadline under the Code for:

- (i) calculation or publication of the System Marginal Price or any component thereof for any Trading Period, or
- (ii) Settlement of any Unit for any Billing Period, or
- (iii) calculation, or publication of Capacity Payments, or the issuance of a Settlement Statement for Capacity Payments and Capacity Charges for any Capacity Period.

In the event that a deadline under a General System Failure is missed or in the opinion of the Market Operator is expected to be missed:

- 1) The Market Operator (MO) will notify all impacted Parties of the situation immediately by;
- a) Publishing a Market Message on the Market Operator website <http://www.sem-o.com/MarketMessages/Pages/Default.aspx> and by issuing an e-mail alert to subscribers of the Market Message distribution list. The web site e-mail alerts are subscribed to by Participants as part of the web site functionality. (For details on how to subscribe please see section 3.1.4 ‘Email Alerts’ of the [GPUD](#)..
  - b) If the Market Operator website is unavailable then the Market Operator will use e-mail to notify Participants. The Market Operator will e-mail Participants listed as category J Authorised Persons ‘Person to be notified in event of General System Failure and/or General Communication Failure’
  - d) In the unlikely event that both the Market Operator web site and e-mail are unavailable then the Market Operator will use fax to notify and update Participants. The Market Operator will fax Participants listed as category J Authorised Persons.

2) The MO will inform impacted Parties whether or not Administered Settlement is expected to be implemented and notify them of Communication Channel alternatives.

3) The MO will notify all impacted Parties of alternative communication method and any associated timelines

4) The MO will notify all impacted Parties of best estimate of when the MO Isolated Market System will become available.

A step by step procedure can be found in section 5.1 of [Agreed Procedure 7 "Emergency Communication"](#)

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## WHEN IS PUMPED STORAGE USED?

Pumped Storage Units are Predictable Price Maker Generators (PPMGs) and as such are scheduled using the Economic Commitment engine in the MSP Software. Pumped storage units submit Price Quantity Pair(s), Start Up Costs and No Load Costs equal to zero and as such effectively they make no bids but rather adopt a price for a given half hour Trading Period from the marginal Price Maker Unit which has set the price in that Trading Period.

Since there are no submitted prices the scheduling of pumped storage units is performed by the MSP Software to minimise the total MSP Production Cost over all scheduled Generator Units across the thirty hour Optimisation Horizon while ensuring that the pumped storage units maximum and minimum storage capacity (which are Technical Offer Data submissions) are not breached. In the case where total production costs for the Market are equal for alternate schedules for a group of Generator Units which includes a pumped storage unit, the MSP Software will schedule the units randomly without any tie-break criteria being used, see paragraph N49 in the [Trading and Settlement Code](#).

Although pumped storage units do not submit prices they do submit a target reservoir level for the end of the Trading Day and as well as a target reservoir level percentage. The target reservoir level is used as a lower limit for the reservoir level at the end of the Trading Day so that, where feasible, the MSP Software shall ensure that the reservoir level at the end of the Trading Day is greater than or equal to this limit. Target reservoir level multiplied by target reservoir level percentage provides a similar lower limit for reservoir level at the end of the Optimisation Horizon which is also observed by the MSP Software.

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## WHEN IS AN INTERCONNECTOR USED?

Interconnector units are Predictable Price Maker Generator Units whose generation is scheduled and fixed ahead of the next scheduled run. The Interconnector Administrator (IA) provides Active Interconnector Unit Capacity holdings (AICH) data to the Market Operator (MO) by 09:30am the day before the Trading Day. This data defines the maximum import and export capacities for each Interconnector Unit for each Trading Period which is used during the Ex-Ante One (EA1) MSP Software Run to set Interconnector Unit Nominations

After the EA1 MSP Software Run a prompt is sent to start the Modified Interconnector Unit Nominations (MIUN) Calculator. The MIUN calculator takes the Interconnector Unit Nominations (IUNs), Available Transfer Capacity (ATC), Active Interconnector Unit Capacity Holding (AICH), and proposed trades as inputs before processing and returning MIUNs which are then sent from the MO to the IA.

MIUNs are effectively the interconnector capacity available to each Interconnector Unit.

Only Interconnector Units with Active Capacity Holdings will be scheduled in EA1 MSP Software Run.

The MIUN calculator will run again after the Ex-Ante Two (EA2) MSP Software Run and again after the Within Day One (WD1) MSP Software Run, allowing Participants the opportunity to utilise unused Interconnector Capacity in each schedule as well as superposition.

Superposition means *“the mechanism which ensures that the net flow on an interconnector must not exceed the physical capacity, yet allows trading in excess of the physical limits on flows of energy”*.

MIUNs for each Gate Window Interconnector Unit will be firm (fixed) for all subsequent runs providing the ATC is not reduced.

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## QUERIES REGARDING MODIFIED INTERCONNECTOR UNIT NOMINATIONS (MIUNS)

There have been a number of queries submitted recently on the effect on Modified Interconnector Unit Nominations (MIUNs) as a result of a change in Available Transfer Capacity, ATC - also referred to Net Transfer Capacity or NTC in the Auction Management Platform.

In the specific event of a forced outage of an Interconnector, the ATC will be set to 0 MW in both the import and export directions (i.e. into and out of the SEM).

Where the ATC is reduced before the EA1 calculation, and there is no restoration of ATC up to and including the WD1 calculation run, then MIUNs for all Ex-Ante and Within Day Runs (EA1, EA2 and WD1) will be set to zero for the affected trading periods.

If, however, the ATC is reduced after the EA1, EA2 or WD1 runs, then attempts will be made to preserve the previously calculated MIUNs in any subsequent recalculation. Any revision of MIUNs will take account of the constraint that the total aggregate MIUNs must equal the zero ATC. This may allow MIUNs to be retained for periods where the ATC is zero. e.g. where import and export MIUNs can be netted off to zero. This is consistent with the principle of Superposition, one of the fundamental principles introduced as part of the Intra-Day Trading updates to calculation of MIUNs.

Please note however that whenever an MSP Run is cancelled (applicable to EA2 and WD1 only) there will be no MIUNs produced.