

## Residential Flexibility Market Design

This covers work packages **10** “Design of a residential flexibility market” and **13** “Develop high-level residential flexibility platform”.

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# Design of a residential flexibility market

## Background

Cenergise met with both ESB Networks and Eirgrid several times in 2024 to design a blueprint for a residential flexibility market.

## Discussions with ESB Networks

It became evident that ESB Networks are interested in procuring flexibility on a locational basis, as opposed to a nationwide basis, and are more interested in longer term contracts. ESB Networks have run several pilots including:

- Pilot 1: the payment structure consisted of availability and utilisation payments depending on the flexibility product.
- Pilot 2 involved the introduction of “dynamic instruction sets” – week ahead and day ahead forecasts.
- Pilot 3b: Pilot of Scale in Mullingar and surrounding areas. An external software solution Piclo was used, which provides an online map of where flexibility services are required. It was found to be a very manually intensive process to populate the coordinates onto the platform.
- Pilot 4: This pilot saw the first engagements with renewable generation developers.

**Beat the Peak:** Beat the Peak initiatives were on a nationwide basis.

- Beat the Peak Business
- Beat the Peak Domestic - Is this a Good Time

ESB Networks initially considered that price discovery would be the best approach but found that a combination of price discovery and fixed price services is needed. Pilot 1 and Pilot 3b were pay-as-bid markets to facilitate price discovery. Beat the Peak initiatives are fixed price.

The lessons learned from Beat the Peak Business were:

- The tender application process was onerous. Industry voiced that it found it challenging to navigate e-Tenders.
- The absence of penalties was welcomed by participants and is key to reducing barriers to entry. However, this contributed to customers underperforming in certain instances.
- The certainty regarding the delivery window and when customers could be called was welcomed by participants.
- A more frequent settlement process and a simpler method of calculating remuneration was welcomed.

## Discussions with Eirgrid

In the discussions with Eirgrid, it became clear that if a residential flexibility market were to be designed, it could only operate within a modified version of the current Demand Side Unit (DSU) framework or as part of a new future system service market design or similar future market. This is because currently, any unit wishing to participate in either the capacity or DS3 market needs to be registered in the balancing market. This is a barrier to entry for smaller participants. As all of the markets are intertwined, any change to one market would have a knock-on effect on the other markets.

While current demand flexibility can be registered under DSUs, the assets tend to be large and have half-hourly meters. They can also respond to a set of instructions and must go through testing with Eirgrid to be registered under a DSU. For this to work on a residential scale, the rules would need to be changed to accommodate smart meters and a separate testing process for residential flexibility based on automated signals.

Therefore, there is the potential to design this market as part of the scoping of the Day Ahead System Services Auctions (DASSA) and to scope out what a residential flexibility market could look like and include this as part of the design. For a residential flexibility market, it is strongly suggested that customers do not need to be registered under a balancing market unit but can operate outside of it based on smart meter data relative to a baseline.

A good example is the Demand Flexibility Service (DFS) in Great Britain which was introduced by the National Grid in 2022/2023. The DFS aimed to incentivise domestic and Industrial & Commercial customers through suppliers/aggregators to voluntarily reduce or flex their demand. The average price paid for test events was £3,000/MWh. For live events, the average price paid was £4,559/MWh. Over winter 2022/23, the National Grid guaranteed a maximum of 12 dispatch instructions for participants who signed up for the service from November 2022. Each test activation was for a 1-hour duration.

During a test event any participant bid priced at 3,000 £/MWh or lower was guaranteed to be accepted, introducing the concept of a Guaranteed Acceptance Price (GAP). Bids priced higher than the GAP were subject to acceptance during tests events, depending on the marginal Balancing Mechanism price.

Payment was based on the difference between smart metered data and a baseline based on historical data. There was no penalty for non-delivery.

During the 2022/23 winter period in Great Britain, over 1.6 million households and businesses across 31 providers actively participated in 22 service events.

## **Proposed Residential Flexibility Market**

Given the nuances of the Irish market and the lessons learned from the GB market, Cenergise proposes the following design for a residential flexibility market, which will have 4 key phases in its flow: Registration, Auctions, Operations and Settlement.

### **Registration**

As it was found that the tender process for ESB Networks flexibility programmes was onerous, it is proposed to have one platform that can be used by Eirgrid and ESB Networks to centralise the process. There would be central vetting of suppliers / aggregators / Flexibility Service Providers (FSPs) as part of the registration process. This would apply to both ESB Networks and Eirgrid.

Suppliers / aggregators / FSPs would have to go through a registration process including KYC (know-your-customer) information, qualification information, etc., to be able to bid on the platform. This would be a once-off process. They would also register each MPRN and the locational coordinates. This could be updated as customers move. There would also be an opt-in box, which if ticked, means ESB Networks and Eirgrid could get access to the smart meter data of the MPRNs.

There would be separate logins for ESB Networks and Eirgrid so that each could independently submit upcoming auctions on the platform.

In our discussions with ESB Networks and Eirgrid, both were in favour of a streamlined registration process. This was particularly true for ESB Networks, as one of the hurdles with their pilots to date has been the procurement process.

## Auctions

### ESB Networks Auctions

In our discussions with ESB Networks, we learned that they are mostly interested in location specific local network auctions, which are annual or multi-annual contracts for 4 months of the year (3 hours a day) to cover the peak period Nov-Feb at substation level (38kV or 110 kV). Given that the FSPs would have pre-registered all MPRNs on registration, when ESB Networks holds a localized auction, the platform would automatically flag to the FSP what units qualify for the auction based on the coordinates.

It is expected that the ESB local network auctions would want to procure different types of energy products (turn up / turn down). Some would guarantee delivery and have penalties; however, for the residential flex, there would be no penalties, and payment would be based on the difference between smart meter data and a baseline. The baseline would be based on historical behaviour, excluding flexibility events.

FSPs would bid into each auction. For each product it would be known before the auction whether the product had penalties or not, if there was a minimum guaranteed price, and if there was a minimum MW to clear at auction for the auction to go ahead. One of ESB Networks' concerns was that there was no point in holding the auction if they did not clear a minimum volume. Obviously, the products which guarantee delivery and had penalties would achieve higher prices than those without penalties.

Our design of the proposed platform is such that it gives ESB Networks the freedom to submit auctions for different days of the week, different hours of the day and different contract lengths. This gives them the freedom to create bespoke auctions as per their needs.

#### How this would work from a Supplier / Aggregator / FSP perspective:

1. The FSP would register all its MPRNs on initial registration.
2. If ESB Networks holds a localized auction, the platform would notify the FSP which MPRNs can bid into it.
3. The FSP would bid in a price and volume. There would be a minimum reserve price that FSP would get, subject to a total minimum volume clearing at auction. The minimum reserve price gives participants certainty of the floor price if they are successful at auction.
4. The cheapest priced volume to meet demand would be successful at auction.
5. ESB Networks would issue Event Notifications daily indicating to the FSP when to turn down (or turn up).
6. The platform would then calculate the money owed as follows:

During an Event Notification:

- a. Baseline (based on historical smart meter data, not including events)
- b. Smart Meter Data
- c.  $MAX(0, (Baseline - Smart Meter Data) * Auction Bid Price)$

This would only be paid out if there was a minimum 50% reduction in demand per FSP.

7. ESB Networks would then pay out the money owed to the FSP monthly, and the backing calculations would be available on the platform.

## Eirgrid Auctions

The limitation of the ESB Networks auctions is that they are localised. This means if the grid was tight and there was a need for national demand reduction, this would not be achieved via the localized ESB Networks auctions.

Therefore, it is our view that the national demand reduction or demand turn-up auctions should be held by Eirgrid. They would be nationwide and could help to alleviate stress on the grid when the system is tight and wind curtailment when there is more generation than demand. We also propose that the “Is it a good time” pilot run by ESB Networks be moved to under Eirgrid’s control as it is more focused on a nationwide level.

These auctions could be included as part of the scope of the DASSA design or monetary pot. Given that these auctions would be targeting smaller participants with smart meters, it is proposed that the design would not be intertwined with the existing markets, and there would be no requirements for the units to be registered under a separate balancing market unit.

Payment would be made based on dispatch, and the payment would be the difference between the smart meter data and the baseline.

From our meeting with Eirgrid, they were interested in more frequent auctions close to real-time in comparison with ESB Networks, who were more interested in longer term contracts.

### How this would work from a Supplier / Aggregator / FSP perspective:

1. The FSP would register all its MPRNs on initial registration.
2. The FSP would bid in a price and volume. There would be a minimum reserve price that FSP would get. The minimum reserve price gives participants certainty of the floor price if they are successful at auction.
3. The cheapest priced volume to meet demand would be successful at auction.
4. The auction results would be published.
5. Eirgrid would then issue daily dispatch instructions, or there is the option to hold the auctions daily.
6. The platform would then calculate the money owed:

During a dispatch instruction

- a. Baseline (based on historical smart meter data, not including events)
- b. Smart Meter Data
- c.  $MAX(0, (Baseline - Smart Meter Data) * Auction Bid Price)$

This would only be paid out if there was a minimum 50% reduction in demand per FSP.

7. Eirgrid would then pay out the money owed to the FSP monthly, and the backing calculations would be available on the platform.

To ensure sufficient registration, Eirgrid could commit to a guaranteed minimum number of dispatches per year.

It is proposed that demand turn-up can also bid into the auctions and will be given dispatch instructions when the SNSP (System Non-Synchronous Penetration) is  $\geq 75\%$ .

## Operations

This phase involves the activation of the flexibility based on the requirements of the grid operators.

In ESB Networks "[Demand Flexibility Product Proposal](#)" Consultation document, the concept of operating envelopes is introduced, indicating upper and lower MW limits for export and import. For the design of the residential flexibility market, it is our view that these operating envelopes are not appropriate. This is because residential demand does not lend itself to following set points, unlike for example batteries. The main objective of the residential flexibility market is to reduce demand when the system is very tight or increase demand in periods of high renewable curtailment. Therefore for the residential flexibility market, it is proposed dispatch or event notifications be issued, telling customers when to turn down or turn up.

### **1. Dispatch or Event Notifications (Residential flexibility market):**

- Participants will receive dispatch notifications via the platform, which will also be sent through email or SMS.
- Notifications will include details such as the start and end times of the flexibility event, the expected demand reduction or increase, and any specific operational instructions.

### **2. Operating Envelopes (Larger flexibility customers that can follow set points):**

- These envelopes are issued daily, providing participants with clear guidelines on the upper and lower MW limits for export and import.
- In the mock design of the flexibility platform, we have accommodated both dispatch notifications and operating envelopes so that both residential flexibility and larger scale flexibility can use the same platform.

### **3. Monitoring and Compliance:**

- The platform will monitor real-time data to ensure compliance with dispatch notifications and operating envelopes.

### **4. Feedback and Adjustments:**

- After each flexibility event, participants will receive feedback on their performance.
- This feedback will help participants optimise their operations and improve future performance.

## Settlement

For the ESB Networks localised auctions, payment would be on a pay-as-bid approach subject to reserve prices. For the Eirgrid national auctions, payment would be on a pay-as-cleared approach.

## Determining the Baseline

ESB Networks' baseline for initial piloting purposes was:

1. To baseline demand side response using historical meter data. For each flexibility zone, ESB Networks identified the 10 days of highest peak demand in the required service window over the previous year. The baseline for each flexible unit was calculated as their average metered import/export during the delivery period over the specified 10 peak days.
2. To baseline generators and storage units at zero as that is considered the default behaviour before any market incentives are put in place.
3. To baseline auto-producers as either generation or demand, based on whether their characteristics more closely resemble exporting generators or importing demand sites.

In the GB's DFS, the unadjusted baseline was calculated as the consumer's average usage over the previous 10 eligible working days (or the middle 2 of the 4 weekend days, as applicable). For domestic consumers, the baseline included an adjustment to account for the impacts of weather on day-to-day demand patterns. This "in-day" adjustment was based on the difference between their usage in the period from 4 hours to 1 hour before the delivery period and the average usage over that same period on the previous 10 working days.

Under the Open Networks Project, managed through the Electricity Networks Association (of which ESB Networks is a member), GB distribution network operators have developed standardised flexible product definitions specifically for use in distribution system management.

They have developed a [toolkit](#) to calculate baselines from data uploaded by the user.

There are currently five methodologies available in the tool, two of which are:

- **Mid 8-in-10:** A rolling historical baseline which uses data from the "middle" of the last 8 of 10 days.
- **Mid 8-in-10 with Same Day Adjustment:** A rolling historical baseline which uses data from the "middle" of the last 8 of 10 days but also applies a "same day adjustment".

The following baseline is proposed for the Irish residential flexibility market:

- A rolling historical baseline which uses data from the "middle" of the last 8 of 10 working days but also applies a "same day adjustment".

# Development of a high-level residential flexibility platform

## Platform Mock Ups

The platform would provide a user-friendly interface for registration, auction participation, dispatch notifications and settlement calculations, ensuring transparency and efficiency.

### Technical Overview

The proposed flexibility platform has been prototyped using Streamlit, a Python-based framework for creating data applications. This approach allowed for development of a functional mock-up that demonstrates key features and user interactions.

### Technology Stack

**Frontend Framework:** Streamlit

- Chosen for its rapid development capabilities and data-focused features
- Enables responsive and interactive user interfaces

**Programming Language:** Python

- Provides robust backend processing capabilities
- Extensive library support for energy calculations and data analysis

**Data Visualisation:** Plotly

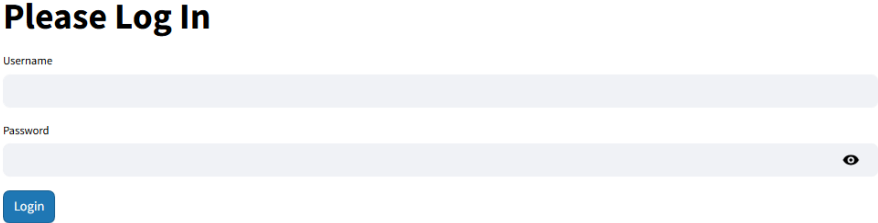
- Interactive charts and graphs
- Real-time data visualisation capabilities

**State Management:** Streamlit Session State

- Maintains user session data
- Enables seamless navigation between different platform features

# FSP Account Management Dashboard Screens

## Log In Screen



The log in screen features a title "Please Log In" in bold black text. Below the title are two input fields: "Username" and "Password". The "Password" field includes a toggle icon for visibility. A blue "Login" button is positioned below the password field.

Figure 1: User Account Log In

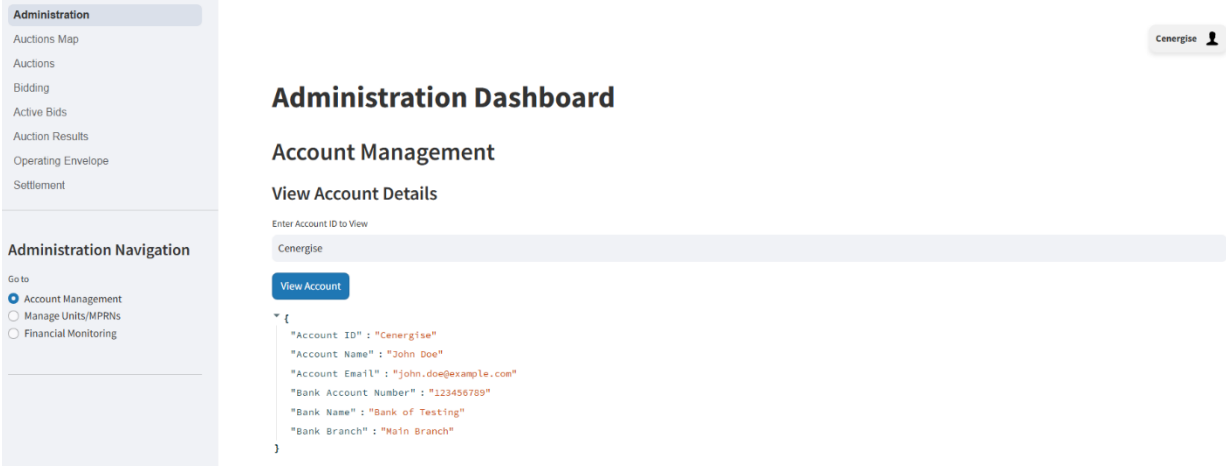
## Administration Page

The administration page serves as the central hub for FSP account management, providing comprehensive control over user accounts, units, and financial monitoring.

## Account Management

The admin dashboard offers a streamlined interface for:

- User account creation and modification
- Role-based access control
- Account status monitoring
- Customer details management



The screenshot shows the "Administration Dashboard" with a sidebar on the left. The sidebar contains "Administration" (with sub-items: Auctions Map, Auctions, Bidding, Active Bids, Auction Results, Operating Envelope, Settlement) and "Administration Navigation" (with sub-items: Account Management, Manage Units/MPRNs, Financial Monitoring). The main content area is titled "Administration Dashboard" and "Account Management". It includes a "View Account Details" section with a search bar containing "Cenergise" and a "View Account" button. Below the button is a JSON object representing account details:

```
{
  "Account ID": "Cenergise"
  "Account Name": "John Doe"
  "Account Email": "john.doe@example.com"
  "Bank Account Number": "123456789"
  "Bank Name": "Bank of Testing"
  "Bank Branch": "Main Branch"
}
```

Figure 2: Admin Dashboard - FSP Platform

## Customer Details

The customer details section enables administrators to:

- Modify contact information
- Update billing details
- Track account history

**Administration**

Auctions Map  
Auctions  
Bidding  
Active Bids  
Auction Results  
Operating Envelope  
Settlement

**Administration Navigation**

Go to

- Account Management
- Manage Units/MPRNs
- Financial Monitoring

**View Account**

**Update Account Details**

Account ID  
Cenergise

Account Name  
John Doe

Account Email  
john.doe@testing.com

**Bank Account Configuration**

Bank Account Number  
2468101214

Bank Name  
Bank of Testing

Bank Branch  
Main Branch

**Update Bank Account**

Account John Doe updated successfully!

**Update Password**

.....  .....  .....  **Update Password**

Figure 3: Admin Dashboard FSP Platform – Update Customer Details

## Manage Units/MPRNs

### Dispatchable Units View

This section provides comprehensive management of dispatchable energy units:

- Real-time unit status monitoring
- Unit management
- Performance metrics
- Unit addition and removal capabilities

The unit distribution visualisation offers insights into:

- Unit size distribution
- Geographic distribution
- Available capacity analysis

**Administration**

- Auctions Map
- Auctions
- Bidding
- Active Bids
- Auction Results
- Operating Envelope
- Settlement

**Administration Navigation**

Go to

- Account Management
- Manage Units/MPRNs
- Financial Monitoring

### View Registered Units/MPRNs

Select view  
Dispatchable Units

**Registered Dispatchable Units**

	Unit ID	Unit Name	Unit Capacity (MW)
0	DU001	Unit A	50
1	DU002	Unit B	75
2	DU003	Unit C	100

Export to CSV

Unit Capacity Distribution

[Add Units](#) [Remove Units](#)

#### Add Dispatchable Units

Unit ID

Unit Name

Unit Capacity (MW)

0.00

[Add Unit](#)

Figure 4: Admin Dashboard FSP Platform – Dispatchable Units View & Add New Units Tab

- Active Bids
- Auction Results
- Operating Envelope
- Settlement

**Administration Navigation**

Go to

- Account Management
- Manage Units/MPRNs
- Financial Monitoring

Unit Capacity Distribution

**Dispatchable Units Capacity**

Unit Name	Unit Capacity (MW)
Unit A	50
Unit B	75
Unit C	100

Figure 5: Admin Dashboard FSP Platform – Unit Capacity Distribution

[Add Units](#) [Remove Units](#)

#### Remove Dispatchable Units

Unit ID to Remove

[Remove Unit](#)

Figure 6: Admin Dashboard FSP Platform – Remove Dispatchable Units Tab

## Residential MPRNs View

The residential MPRN management interface includes:

- Bulk MPRN upload functionality
- Individual MPRN management
- Status monitoring
- Export data functionality to CSV format

**Administration**

- Auctions Map
- Auctions
- Bidding
- Active Bids
- Auction Results
- Operating Envelope
- Settlement

**Administration Navigation**

Go to

- Account Management
- Manage Units/MPRNs
- Financial Monitoring

### View Registered Units/MPRNs

Select View

Residential MPRNs

#### Registered Residential MPRNs

	MPRN ID	Address
0	MPRN001	123 Main St
1	MPRN002	456 Elm St
2	MPRN003	789 Oak St

Export to CSV

MPRN Distribution

Add MPRNs Remove MPRNs

#### Add Residential MPRNs

MPRN ID

Address

Upload MPRNs Metered Volume Data

Drag and drop file here  
Limit 200MB per file • CSV

Browse files

Add MPRN

Figure 7: Admin Dashboard FSP Platform – Residential MPRNs View

The pie chart breakdown visualises MPRN distribution by region.

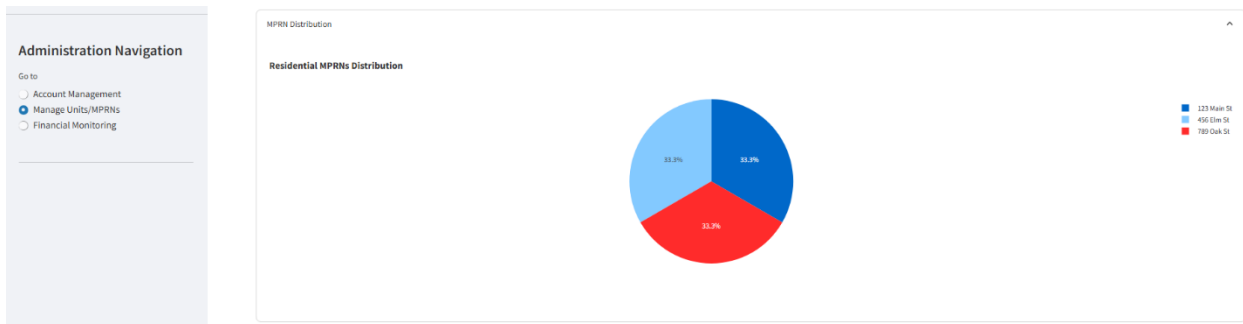


Figure 8: Admin Dashboard FSP Platform – Residential Pie Chart Breakdown

**Administration**

- Auctions Map
- Auctions
- Bidding
- Active Bids
- Auction Results
- Operating Envelope
- Settlement

**Administration Navigation**

Go to

- Account Management
- Manage Units/MPRNs
- Financial Monitoring

### Add Residential MPRNs

MPRN ID: MPRN004

Address: 246 Test St

Upload MPRNs Metered Volume Data

Drag and drop file here  
Limit 200MB per file • CSV Browse files

mpm\_data.csv 2.6KB ×

Uploaded Data:

	Date	MPRN ID	Metered Volumes
0	01/01/2025	MPRN004	-24,828.36
1	02/01/2025	MPRN004	-14,646.17
2	03/01/2025	MPRN004	-159.75
3	04/01/2025	MPRN004	-4,488.92
4	05/01/2025	MPRN004	-12,577.64
5	06/01/2025	MPRN004	-18,274.31
6	07/01/2025	MPRN004	-10,875.11
7	08/01/2025	MPRN004	12,633.02
8	09/01/2025	MPRN004	11,582.55
9	10/01/2025	MPRN004	10,760.23

CSV file must contain 'MPRN ID' and 'Metered Volume' columns.

[Add MPRN](#)

Figure 9: Admin Dashboard FSP Platform – Add Residential MPRNs

Uploaded Data:

	Date	MPRN ID	Metered Volume
0	01/01/2025	MPRN004	-24,828.36
1	02/01/2025	MPRN004	-14,646.17
2	03/01/2025	MPRN004	-159.75
3	04/01/2025	MPRN004	-4,488.92
4	05/01/2025	MPRN004	-12,577.64
5	06/01/2025	MPRN004	-18,274.31
6	07/01/2025	MPRN004	-10,875.11
7	08/01/2025	MPRN004	12,633.02
8	09/01/2025	MPRN004	11,582.55
9	10/01/2025	MPRN004	10,760.23

CSV file uploaded successfully!

Figure 10: Admin Dashboard FSP Platform – New MPRNs Data Successful Upload

Add MPRN

Residential MPRN MPRN004 added successfully along with Metered Data!

Figure 11: Admin Dashboard FSP Platform – Adding New MPRN

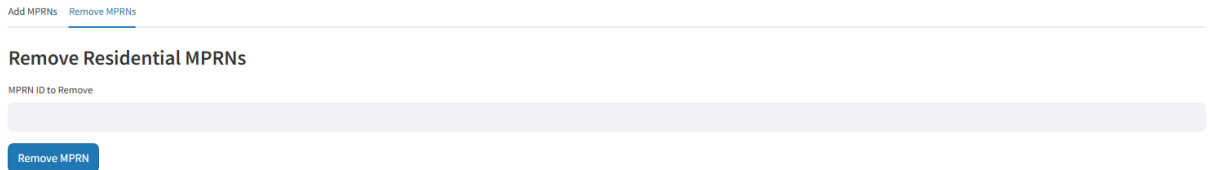


Figure 12: FSP Admin Page – Remove MPRN

## Financial Monitoring

The financial monitoring section would offer detailed insights into:

- Real-time transaction tracking
- Revenue analysis
- Settlement status
- Monthly performance metrics



Figure 13: FSP Admin Page – Financial Monitoring Graph

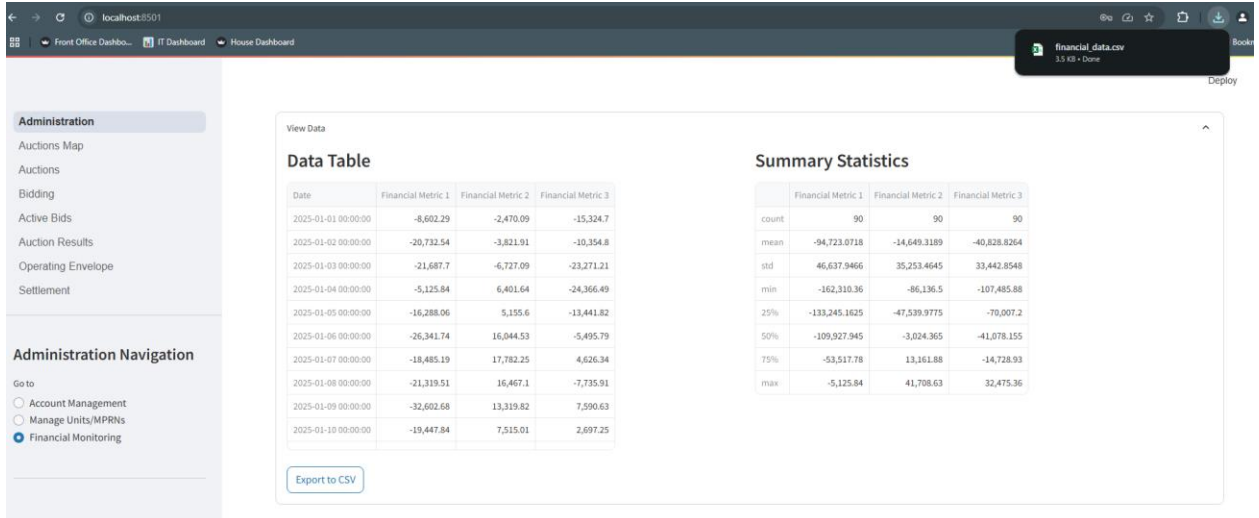


Figure 14: FSP Admin Page – Financial Data View

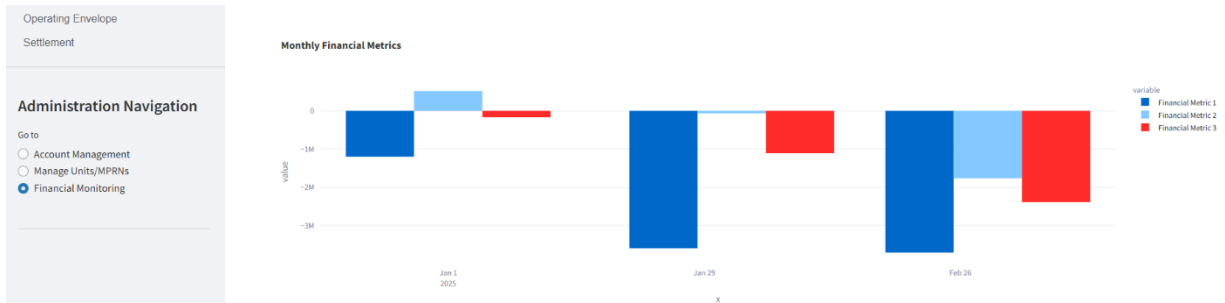


Figure 15: FSP Admin Page – Monthly Financial Insights

# Live Auctions

The live auctions screens facilitate auction management for both ESB and FSPs: ESB can create, view current and upcoming auctions, while FSPs can browse auctions, submit bids, and track their active bidding activity.

## Create Auction Page on ESB Platform

The Auction Creation Page provides a comprehensive interface for ESB operators to design and launch flexibility auctions. Users can configure multiple parameters including service type, geographical area, auction characteristics, and delivery specifications, ensuring control over the creation of flexibility market auctions.

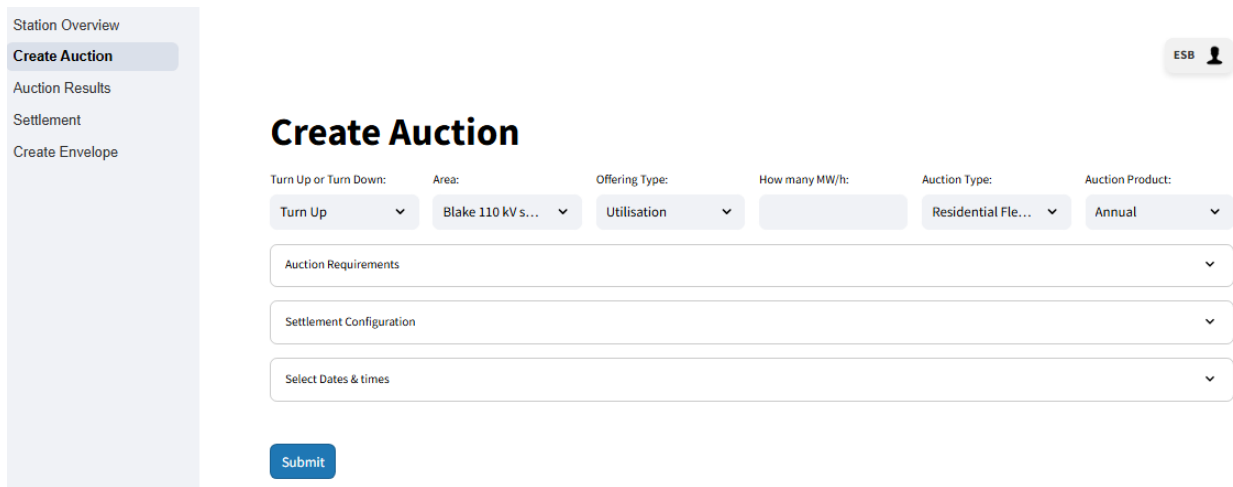


Figure 16: Create Auction Page from ESB Platform

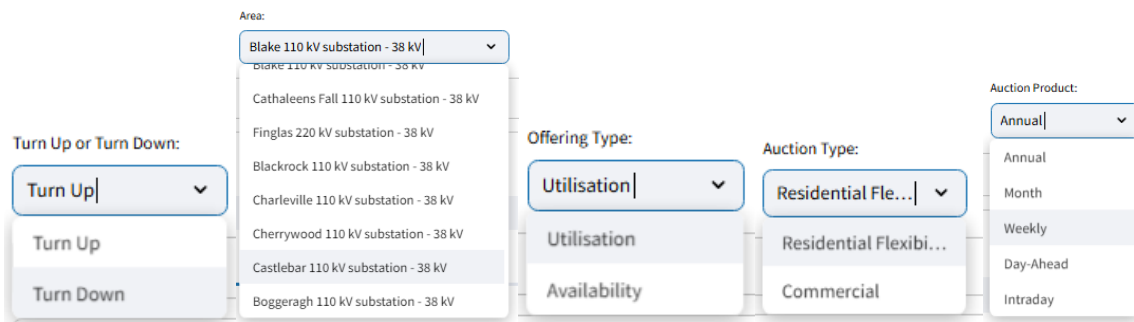
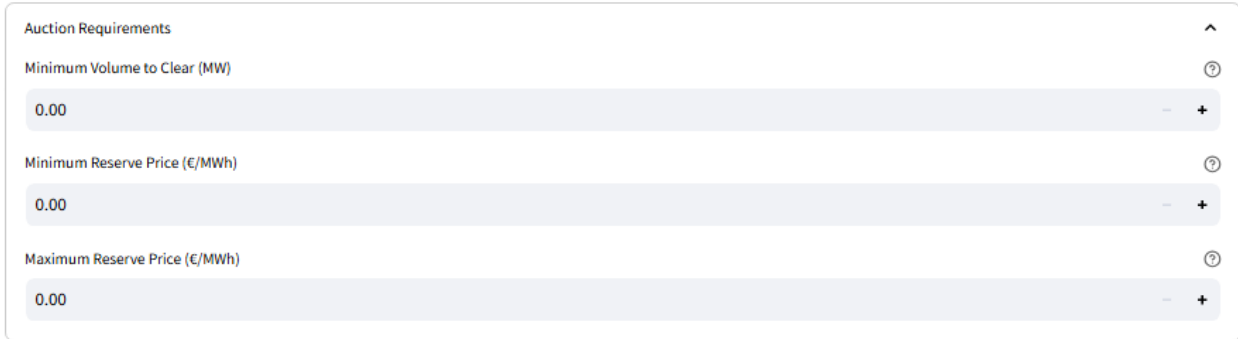


Figure 17: Bespoke Auction Drop Down Options

### Auction Creation Options:

- Select Turn Up or Turn Down
- Choose specific Area
- Auction Characteristics: • Offering Type • Auction Type • Auction Product

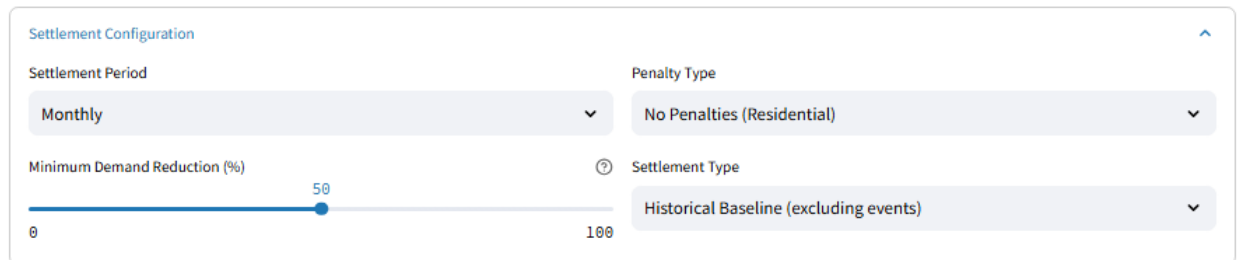


The screenshot shows a panel titled "Auction Requirements" with an expand/collapse arrow in the top right. It contains three input fields, each with a question mark icon to its right. The first field is "Minimum Volume to Clear (MW)" with a value of "0.00". The second field is "Minimum Reserve Price (€/MWh)" with a value of "0.00". The third field is "Maximum Reserve Price (€/MWh)" with a value of "0.00". Each field has a minus sign on the left and a plus sign on the right of the input area.

Figure 18: Auction Requirements Expanded

### Auction Financial Parameters:

- Minimum Volume to Clear
- Minimum Reserve Price
- Maximum Reserve Price

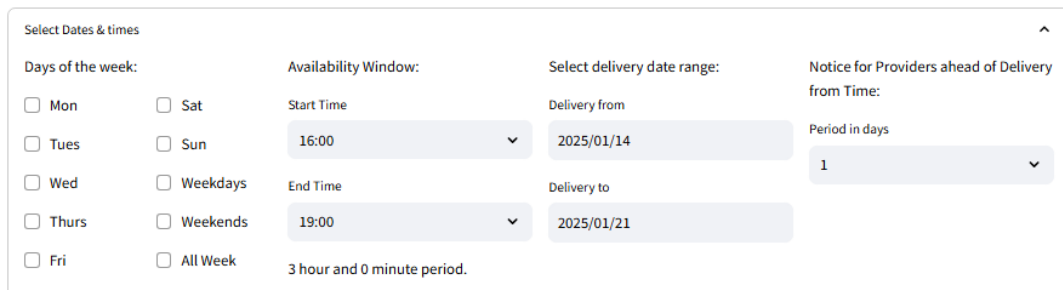


The screenshot shows a panel titled "Settlement Configuration" with an expand/collapse arrow in the top right. It contains four configuration options: "Settlement Period" is a dropdown menu set to "Monthly"; "Penalty Type" is a dropdown menu set to "No Penalties (Residential)"; "Minimum Demand Reduction (%)" is a slider ranging from 0 to 100, currently set at 50; and "Settlement Type" is a dropdown menu set to "Historical Baseline (excluding events)".

Figure 19: Settlement Configuration Expanded

### Settlement Configuration:

- Settlement Period
- Penalty Type
- Minimum Demand Reduction
- Settlement Type

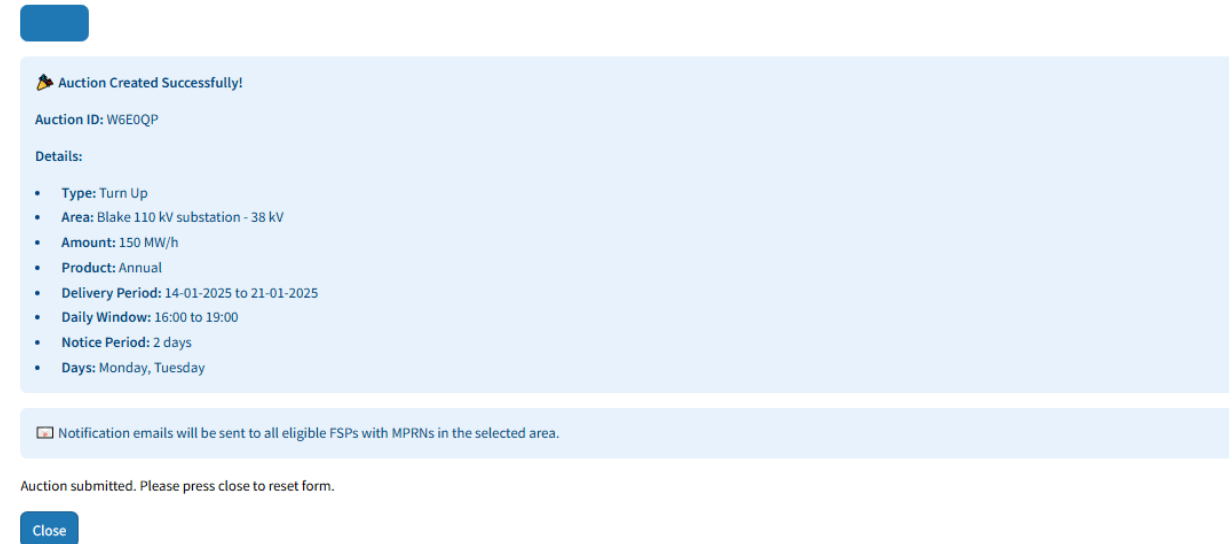


The screenshot shows a panel titled "Select Dates & times" with an expand/collapse arrow in the top right. It is divided into four sections: "Days of the week:" with checkboxes for Mon, Sat, Tues, Sun, Wed, Weekdays, Thurs, Weekends, Fri, and All Week; "Availability Window:" with "Start Time" set to 16:00 and "End Time" set to 19:00, resulting in a "3 hour and 0 minute period."; "Select delivery date range:" with "Delivery from" set to 2025/01/14 and "Delivery to" set to 2025/01/21; and "Notice for Providers ahead of Delivery from Time:" with "Period in days" set to 1.

Figure 20: Date & Time Selection Expanded

## Auction Timing and Availability:

- Days of the Week: Select specific operational days
- Availability Window: Define precise time ranges
- Delivery Date Range: Specify start and end dates
- Provider Notice Period: Set advance notification period for providers



**Auction Created Successfully!**

Auction ID: W6EQP

Details:

- Type: Turn Up
- Area: Blake 110 kV substation - 38 kV
- Amount: 150 MW/h
- Product: Annual
- Delivery Period: 14-01-2025 to 21-01-2025
- Daily Window: 16:00 to 19:00
- Notice Period: 2 days
- Days: Monday, Tuesday

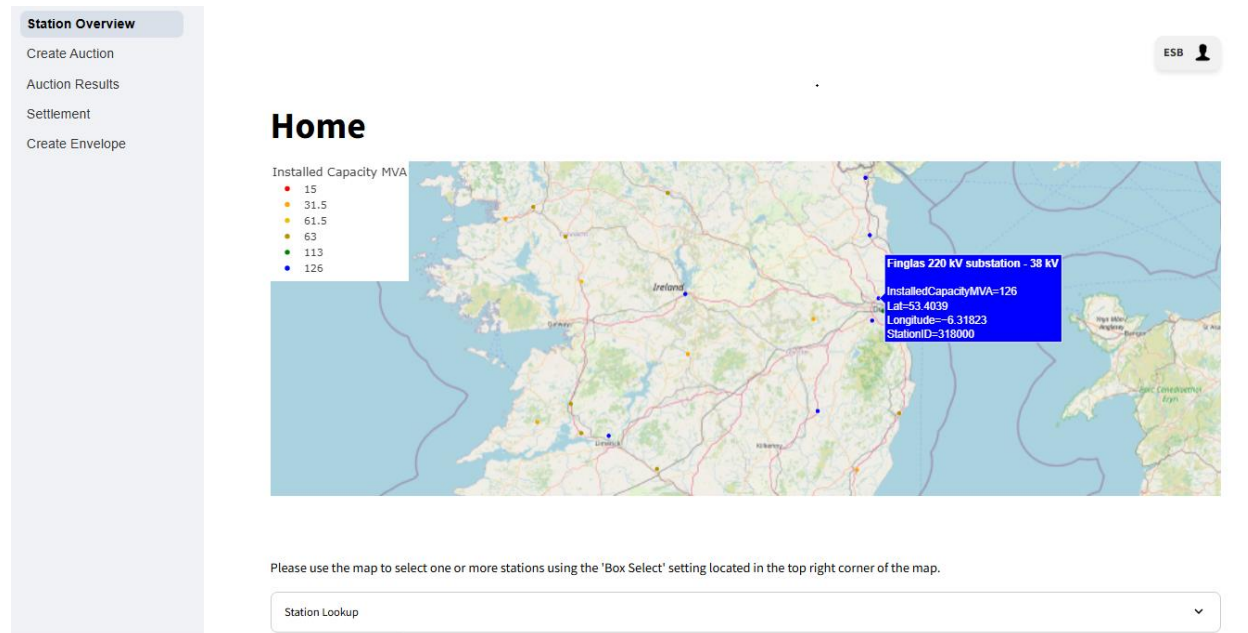
Notification emails will be sent to all eligible FSPs with MPRNs in the selected area.

Auction submitted. Please press close to reset form.

Close


Figure 21: Success Message Pop Up After Successful Auction Submit

## Station Overview Page on ESB Platform



**Station Overview**

- Create Auction
- Auction Results
- Settlement
- Create Envelope

ESB 

### Home

Installed Capacity MVA

- 15
- 31.5
- 61.5
- 63
- 113
- 126

Finglas 220 kV substation - 38 kV

- InstalledCapacityMVA=126
- Lat=53.4039
- Longitude=-6.31823
- StationID=318000

Please use the map to select one or more stations using the 'Box Select' setting located in the top right corner of the map.

Station Lookup

Figure 22: Interactive Station Overview Map on ESB Platform

Station Lookup

### Stations

Search by Station ID:  OR Sort by:  Sort order:  Ascending  Descending

Make sure to clear the search box before clicking Show All Stations button.

[Show All Stations](#)

Station Name	Station ID	Voltage Class	Installed Capacity MVA
Blake 110 kV substation - 38 kV	120000	38 kV	31.5
Cathaleens Fall 110 kV substation - 38 kV	143000	38 kV	31.5
Finglas 220 kV substation - 38 kV	318000	38 kV	126.0

Figure 23: Station Lookup Tab Expanded – Search a Station ID to View Details

This page acts as the Home page for the ESB platform. The map is interactive and allows users to find all substations' respective information. Alternatively, users can search by station ID or sort by station ID, voltage class, and installed capacity in either ascending or descending order.

Below that is the Auctions section where users can view all past, current, and upcoming auctions per location basis.

### Auctions Map on FSP Platform

Administration

**Auctions Map**

Auctions

Bidding

Active Bids

Auction Results

Operating Envelope

Settlement

Cenergise

## Auctions Map

Please use the map to select an Auction

Auction ID	Turn Up or Down	Area	Offering Type	Amount	Auction_Product	Days of the Week	Start Time	End_Time	Delivery From	Delivery To	Notice Period	Bid
1	Turn Up	Grid	Utilisation	7.0	Annual	['Monday']	16:00:00	19:00:00	2024-10-17	2024-10-17	1	<a href="#">Make Bid</a>
2	Turn Up	All Island	Availability	7.0	Annual	['Sunday']	16:00:00	19:00:00	2024-10-17	2024-10-24	7	<a href="#">Make Bid</a>
3	Turn Up	Blake 110 kV substation - 38 kV	Availability	7.0	Annual	['Tuesday', 'Saturday']	16:00:00	19:00:00	2024-10-23	2024-10-26	1	<a href="#">Make Bid</a>

Figure 24: FSP Auctions Map – Displays the Current Auctions in Each Area

On this page, Suppliers can view all Current Auctions open per location and their details. In addition to this, Suppliers can be redirected to each auction’s bidding page by clicking the Make Bid button.

### Auctions View on FSP Platform

Auction ID	Turn Up or Down	Area	Offering Type	Amount	Auction_Product	Days of the Week	Start Time	End Time	Delivery From	Delivery To	Notice Period
27	Turn Up	Grid	Utilisation	10.0	Annual	['Monday', 'Tuesday', 'Wednesday', 'Thursday']	16:00:00	19:00:00	2024-11-13	2024-11-19	1
26	Turn Down	All Island	Utilisation	7.0	Intraday	['Weekdays']	05:00:00	10:00:00	2024-11-12	2024-11-18	2
25	Turn Down	All Island	Utilisation	7.0	Intraday	['Weekdays']	05:00:00	10:00:00	2024-11-11	2024-11-18	2
24	Turn Down	Finglas 220 kV substation - 38 kV	Availability	15.0	Weekly	['Weekdays', 'All Week']	12:00:00	15:30:00	2024-11-12	2024-11-18	1
23	Turn Up	Grid	Utilisation	30.0	Annual	['All Week']	16:00:00	19:00:00	2024-11-12	2024-11-18	1

Figure 25: FSP Auctions List – A list View of All Auctions, Upcoming, Current and Past

### Make Bid Page on FSP Platform

The bid submission process enables FSPs to enter auction bids with exact MW and euro values. The system incorporates real-time validation, providing immediate feedback and successful submission confirmations, which streamlines the bidding experience.

**View Auction 12048 Details**

Timing & Dates | Price & Volume | Additional Details

Time Window: 16:00 - 19:00 | Product: Monthly | Start Date: 2025/01/15 | End Date: 2025/01/15

Auction ID: 12048 | Product: Monthly | Time Window: 16:00 - 19:00 | Days: Mon

Volume (MW) - Auction 12048: 100.0 | Price (€/MW) - Auction 12048: 53.12

**Submit Bid**

Figure 26: FSP Submit a Bid Screen: Select Auction and Bid in MW and € Value

**Auction ID:** 12048      **Product:** Monthly      **Time Window:** 16:00 - 19:00      **Days:** Mon

Volume (MW) - Auction 12048      Price (€/MW) - Auction 12048

75.0      46.50

Submit Bid

Your bid for Auction 12048 has been submitted successfully!

```

{
  "Auction ID" : 12048
  "Volume" : 75
  "Price" : 46.5
  "Timestamp" : "2025-01-14 13:55:52"
}

```

Figure 27: FSP Bid Successful Message

## Active Bids Page on FSP Platform

- Administration
- Auctions Map
- Auctions
- Bidding
- Active Bids**
- Auction Results
- Operating Envelope
- Settlement

Cenergie

### Active Bids

**My Current Bids**

Auction ID	Type	Area	Offering	MW Required	Start Date	End Date	Volume Bid (MW)	Price Bid (€/MW)	
12048	Turn Up	Substation 338000	Utilisation	100	21 Oct 2024	21 Oct 2024	10	65.8	<a href="#">View Bid</a>
12049	Turn Down	Substation 120000	Utilisation	150	17 Oct 2024	17 Oct 2025	10	65.8	<a href="#">View Bid</a>

Figure 28: List of Current Active Bids FSP has in Live Auctions

## Active Bids

### My Current Bids

Auction ID	Type	Area	Offering	MW Required	Start Date	End Date	Volume Bid (MW)	Price Bid (€/MW)	
12048	Turn Up	Substation 338000	Utilisation	100	21 Oct 2024	21 Oct 2024	18	65.0	<a href="#">View Bid</a>
12049	Turn Down	Substation 120000	Utilisation	150	17 Oct 2024	17 Oct 2025	18	65.0	<a href="#">View Bid</a>

### Auction 12049 Details

[X Close](#)

Timing & Dates
 Volume & Price
 Additional Details

Time Window 09:00 - 12:00	Product Annual	Start Date 17 Oct 2024	End Date 17 Oct 2025
------------------------------	-------------------	---------------------------	-------------------------

### My Bids

Volume: 25 MW	Price: €54/MW
Status: Accepted	

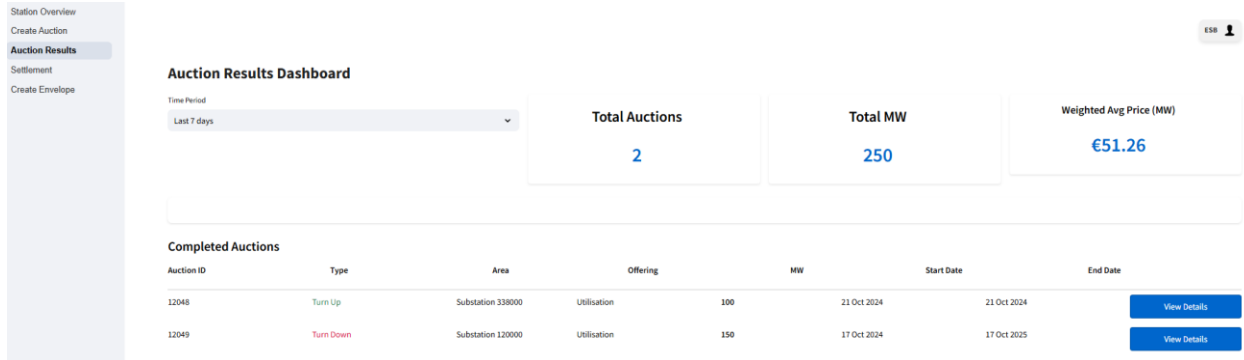
*Figure 29: FSP Live Auction details View*

The FSP has the option to view the details on any active bids they have in live auctions. This screen provides a breakdown of the auction information and the FSP's most recent bid.

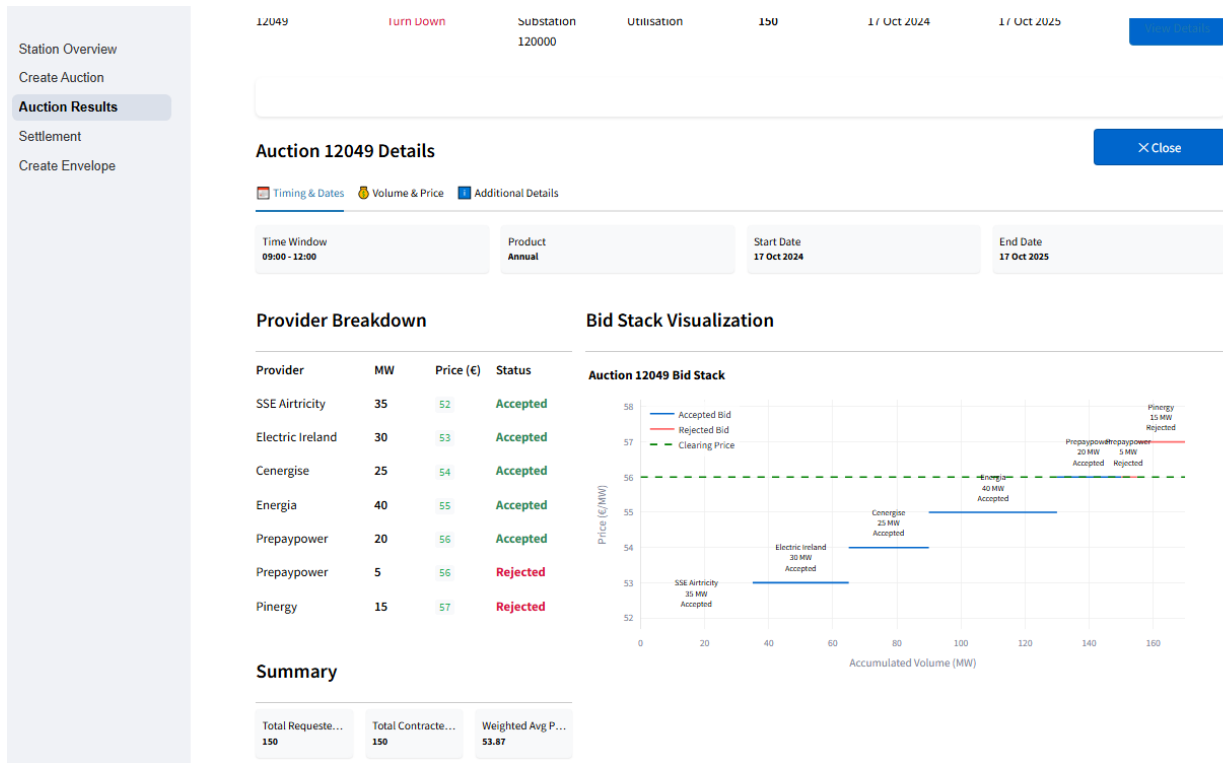
# Auction Results

Once the auction has completed, its details become available in the results section of the platforms. The ESB can view what specific FSPs were successful in each auction, along with a weighted average price and total volume cleared.

*Auction Results on ESB Platform*



*Figure 30: ESB Auction Results Mock Up*



*Figure 31: ESB Auction Results View Auction Details Screen*

ESB can filter auction results and view detailed auction information including Timing & Dates, Volume & Price, and Additional Details. The provider breakdown displays accepted and rejected bids with attempted Volume and Price, while the graph shows the breakdown and marginal price. The summary highlights Total Requested MW, Total Contracted MW and Weighted Average Price.

## Auction Results Page on FSP Platform

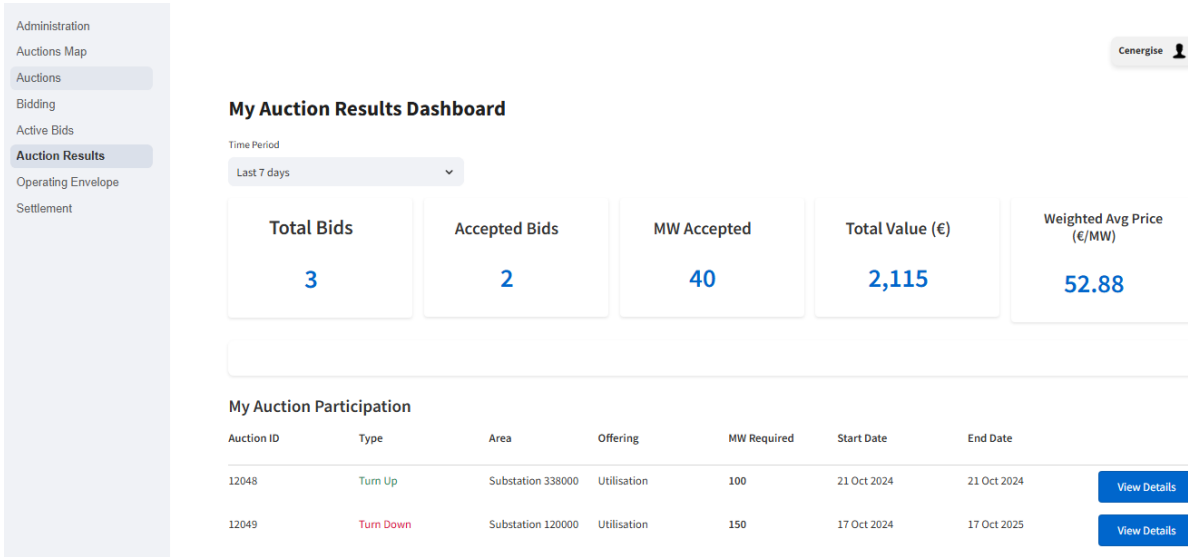


Figure 32: FSP Auction Results Page – Ability to View Completed Auctions in X Period

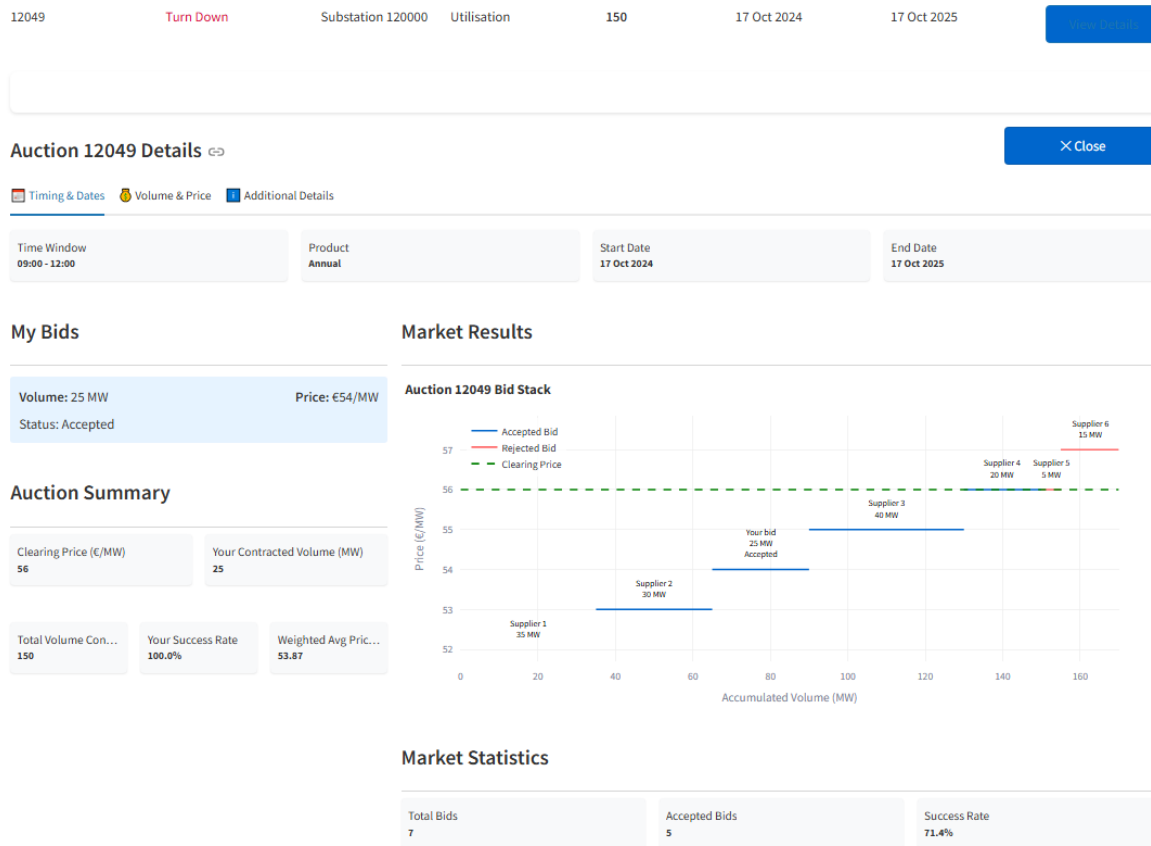


Figure 33: FSP Auction Results: Auction Details Dropdown

## Dispatch Events (applicable to residential flexibility)

The dispatch screens enable ESB to instruct FSPs at specific locations to Turn Up or Turn Down based on relevant auctions within the selected date range.

Send Dispatch Notification Page on ESB Platform

Notification Type	Start Time	End Time	MW Value
Turn Up	11:00	12:00	5.06

Figure 34: Create Dispatch Notification ESB Platform

The Dispatch Event Functionality consists of two main interfaces: the ESB Dispatch Event Creation Screen and the FSP Dispatch View Screen. This system enables ESB operators to send dispatch instructions and allows FSPs to view and monitor their received dispatch notifications.

Current Instructions
Turn Up   Time: 17:00 - 18:00   MW: 5.0 <span>Remove</span>
Turn Up   Time: 20:15 - 20:30   MW: 5.0 <span>Remove</span>
Turn Up   Time: 22:45 - 23:45   MW: 3.5 <span>Remove</span>

Figure 35: Multiple Instructions for Selected Day Added – Option to Remove

The screens provide the operator with the ability to send several Turn Up / Turn Down instructions for defined periods to a specific FSP of their choice, with the option to specify the location.

```
{
  "fsp_name": "Preppower",
  "area": "Lake 110 kv substation - 38 kv",
  "date": "2020-01-22",
  "instructions": [
    {
      "type": "Turn Up",
      "start_time": "17:00",
      "end_time": "18:00",
      "mw_value": 5
    },
    {
      "type": "Turn Up",
      "start_time": "20:15",
      "end_time": "20:30",
      "mw_value": 5
    },
    {
      "type": "Turn Up",
      "start_time": "22:45",
      "end_time": "23:45",
      "mw_value": 3.5
    }
  ]
}
```

Figure 36: ESB Auction Results View Auction Details Screen

After clicking submit a JSON of the message is created and printed to the screen for the operator. The message is then sent over to the specified FSP.

## FSP Dispatch Notification Page

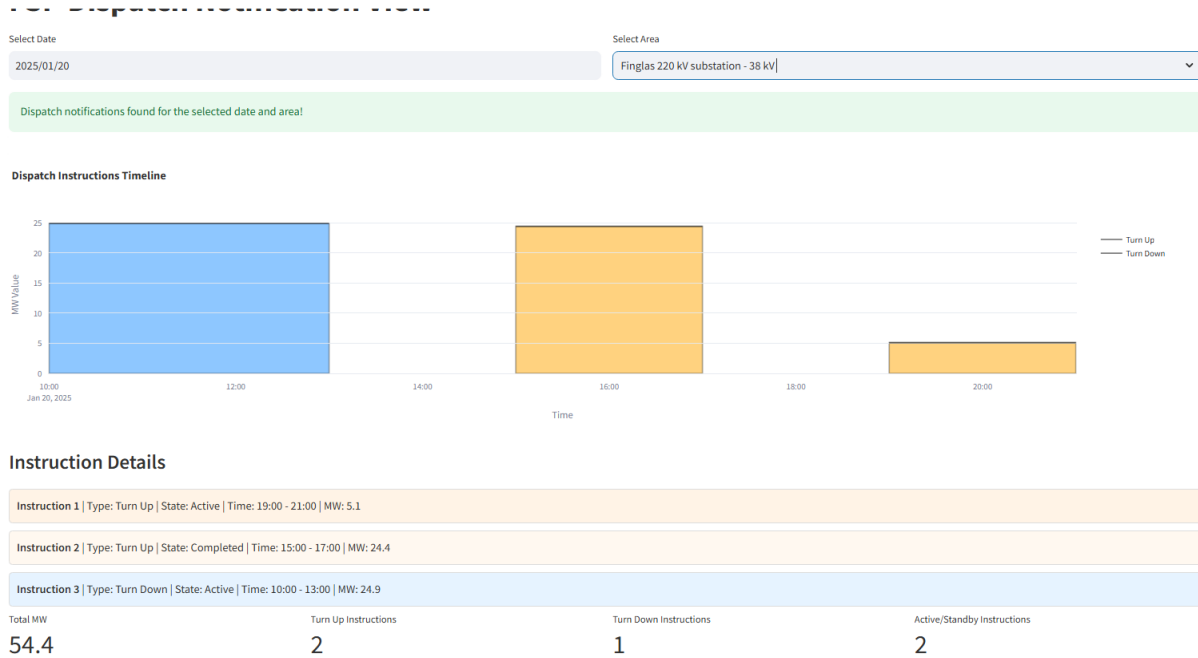


Figure 37: FSP View of A dispatch Message for Selected Date and Location

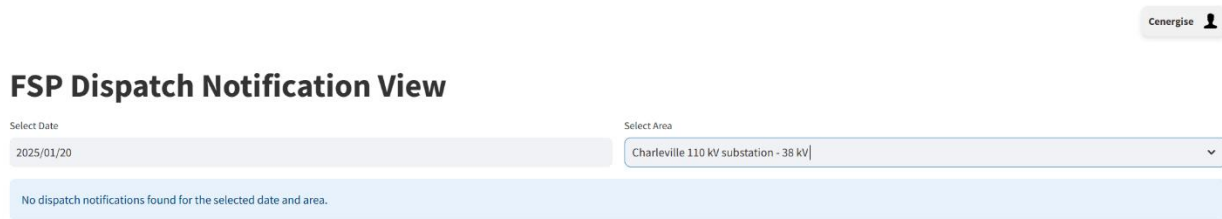


Figure 38: FSP View When No Dispatch Message Received for Given Day

This screen allows an FSP to select view the dispatch messages received from the operator for a given day and location, if no message exists for that combination a message will appear notifying the FSP of such.

# Commercial Auctions Envelope Feature

The Operating Envelope feature provides an alternative method for scheduling commercial flexibility, distinct from residential flexibility. This feature of the system enables ESB to define operating boundaries for successful Flexibility Service Providers (FSPs) and allows FSPs to view their operational boundaries in real-time.

### Create Envelope Page on ESB Platform

- Station Overview
- Create Auction
- Auction Results
- Settlement
- Create Envelope**

## Operating Envelope Viewer

[Envelope Chart](#) [Settings](#)

Select Start Date: 2025/01/17 | Select FSP: Cenergise | Select Start Time: 00:00 | Select Area: Blake 110 kV substation - 38 kV

**FSP Information**

Capacity (MW): 15 | Price: €51/MWh | Status: ACCEPTED

**Relevant Auctions**

Auction ID: 12828 - Product: Monthly

**Operating Envelope - Cenergise**

Time	Op env ul (MW)	Op env ll (MW)	Max Import Asset Capacity (MW)	Max Export Asset Capacity (MW)
00:00	7.5	-4	10	-10
03:00	7.5	-4	10	-10
06:00	7.5	-5	10	-10
09:00	6	-4	10	-10
12:00	7.5	-5	10	-10
15:00	4	-4	10	-10
18:00	4	-5	10	-10
21:00	4	-5	10	-10

Figure 46: ESB Create Envelope Page – Cenergise Selected

- Station Overview
- Create Auction
- Auction Results
- Settlement
- Create Envelope**

## Operating Envelope Viewer

Envelope Chart Settings

Select Start Date: 2025/01/17

Select FSP: SSE Airtricity

Select Start Time: 00:00

Select Area: Blake 110 kV substation - 38 kV

### FSP Information

Capacity (MW)	Price	Status: ACCEPTED
25	€48/MWh	

### Relevant Auctions

Auction ID: 12100 - Product: Day Ahead

Auction ID: 12145 - Product: Weekly

### Operating Envelope - SSE Airtricity

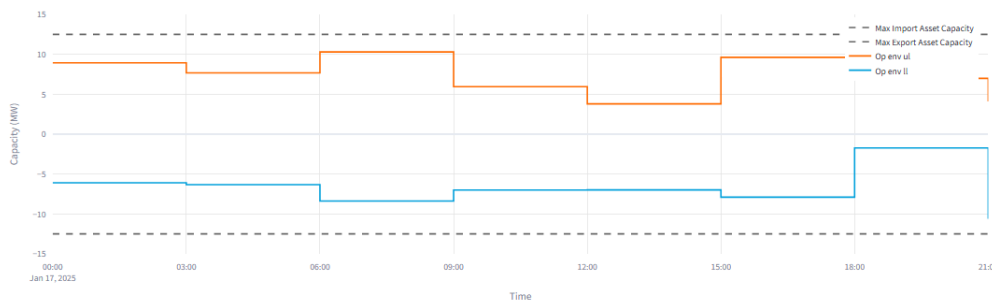


Figure 47: ESB Create Envelope Page – SSE Selected

The ESB platform provides a comprehensive interface for creating and managing operating envelopes with the following key features:

### FSP Selection and Filtering

- Filter envelopes by specific FSP
- Select date ranges for envelope application
- Choose specific network locations
- View existing envelopes for selected criteria

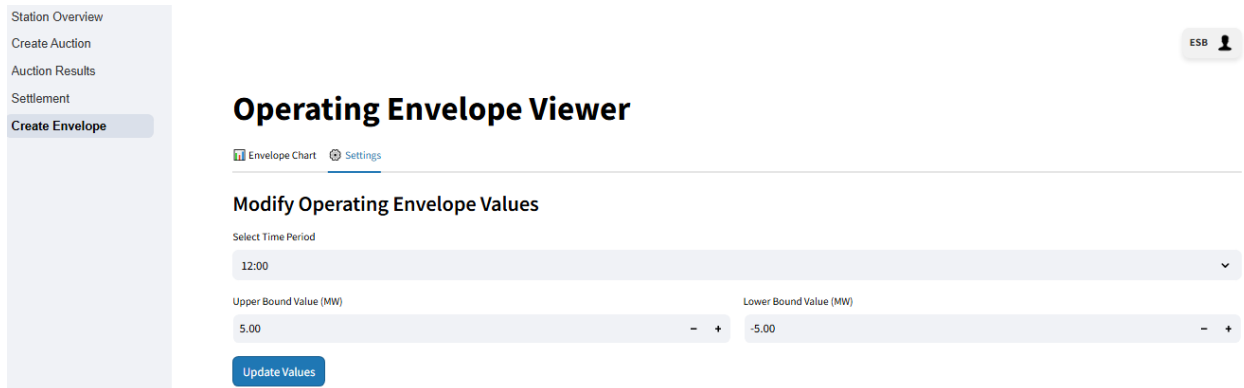


Figure 48: ESB Create Envelope Setting Tab– Modify Upper / Lower Bound Values for a given datetime

If changes need to be made, ESB can edit the envelope for certain periods ahead of start delivery time.

### **Envelope Configuration**

- Set upper and lower bound values for specific time periods
- Define multiple time blocks within a single envelope
- Update location-specific constraints

## View Envelope on FSP Platform

### Cenergise Envelope Viewer

Select Start Date: 2025/01/15

Select Area: Blake 110 kV substation - 38 kV

Select Start Time: 10:49

Capacity (MW): 15

Price Accepted: €51/MWh

#### Relevant Auctions

Auction ID: 12045 - Product: Yearly

Auction ID: 12123 - Product: Daily

#### Operating Envelope - Cenergise

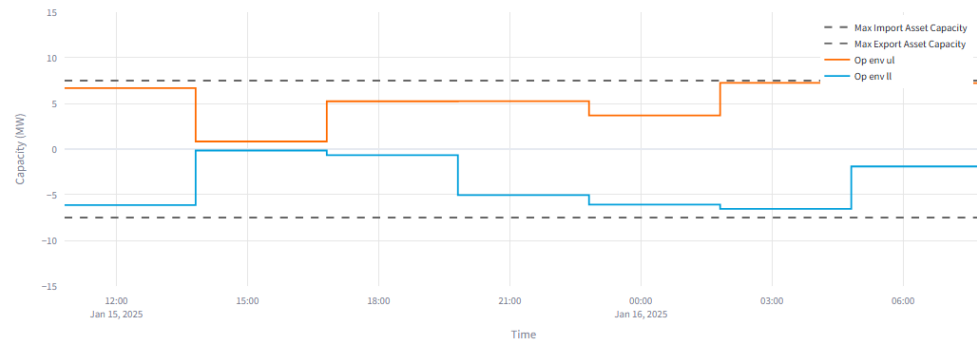


Figure 49: FSP View Envelope for Given Date Range

The view on the FSP's platform displays their operating envelope for a selected day and location.

# Settlement

Settlement screens analyse dispatch event compliance for a selected month, determining whether FSPs followed instructions and calculate the corresponding payments.

## Settlement Page on ESB Platform

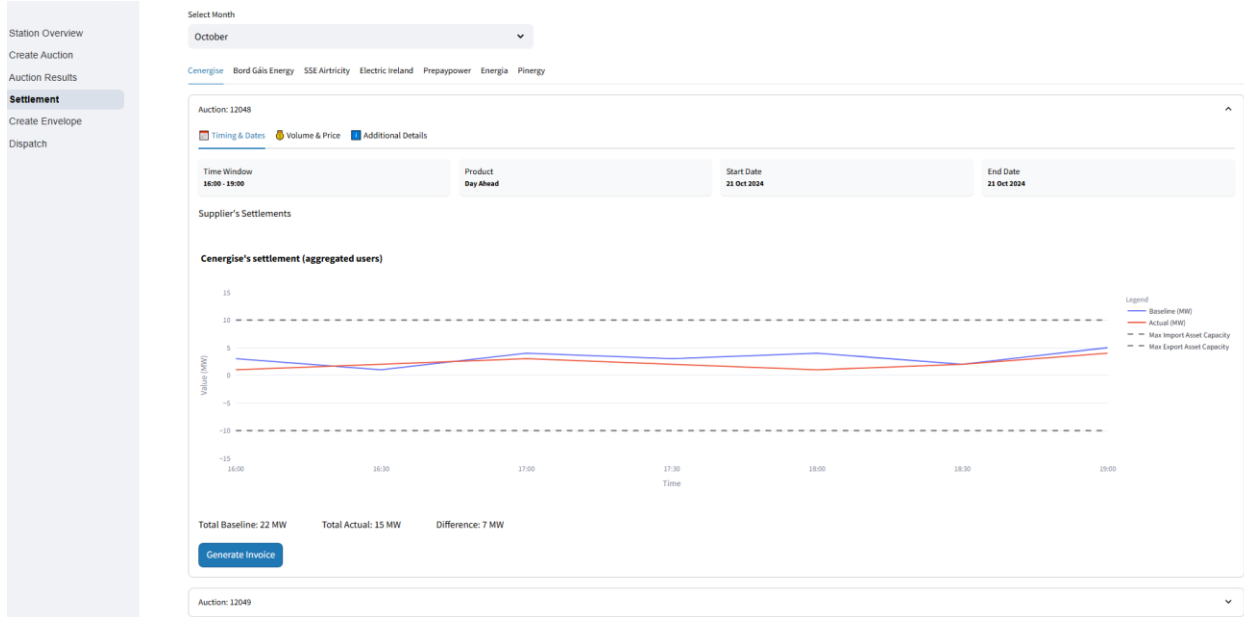


Figure 19: Settlement Page from ESB Platform



Figure 2: Zoomed in version of Figure 1

ESB can view each auction participated by a FSP, filtered by month. Details on the auction are listed above the graph to show information like the **Timing & Dates**, **Volume & Price**, **Additional Details**.

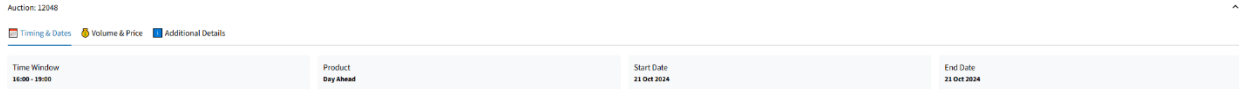


Figure 31: Timings & Dates. Time Window (Leftmost), Product (Middle Left), Start Date (Middle Right), End Date (Rightmost).



Figure 42: Volume & Price. Minimum Volume (Leftmost), Minimum Price (Middle Left), Total MW (Middle Right), Min Reduction (Rightmost)

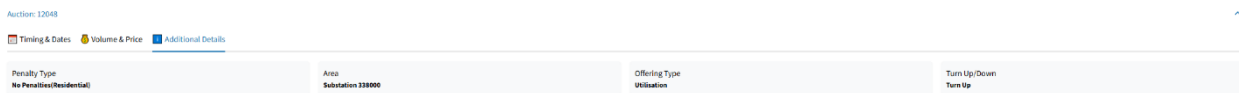


Figure 53: Additional Details. Penalty Type (Leftmost), Area (Middle Left), Offering Type (Middle Right), Turn Up/Down (Rightmost)

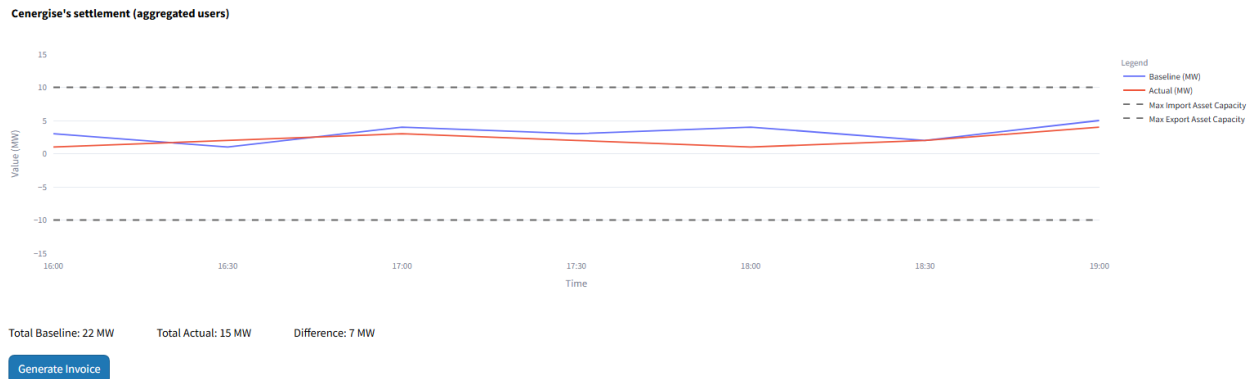


Figure 6: Graph of a Supplier's Auction Envelope with their Baseline and Actual usage.

The settlement graph shows the black dotted lines indicating the Max Import and Export Capacity respectively for that auction. The blue line indicates the baseline usage for that location (relevant to residential flexibility market). The red line indicates the actual usage for that location for that auction in that time window.

Total Baseline is the total baseline usage for that time window. Total Actual is the total actual usage for that time window. Difference is the Total Baseline – Total Actual. Generate Invoice button issues the FSP their invoice for that auction.

## Settlement Page on Supplier Platform (Baseline)

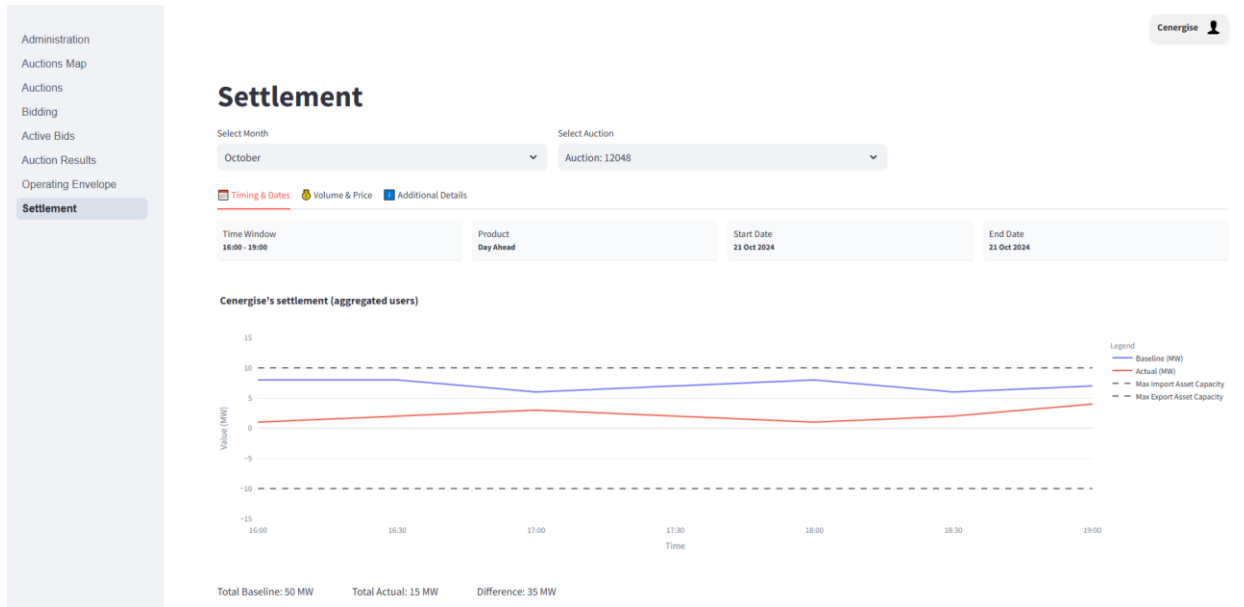


Figure 45: Settlement Page from Supplier Platform.

On the Supplier Platform, the Suppliers will be able to view their participated auctions, filtered by month and auction ID. They will also be able to view the auction details like Timing & Dates, Volume & Price, Additional Details. The settlement graph shows the black dotted lines indicating the Max Import and Export Capacity respectively for that auction. The blue line indicates the baseline usage for that location. The red line indicates the actual usage for that location for that auction in that time window.

Total Baseline is the total baseline usage for that time window. Total Actual is the total actual usage for that time window. Difference is the Total Baseline – Total Actual. Generate Invoice button sends the FSP their invoice for that auction.

## Settlement Page on Supplier Platform (Operating Envelope)

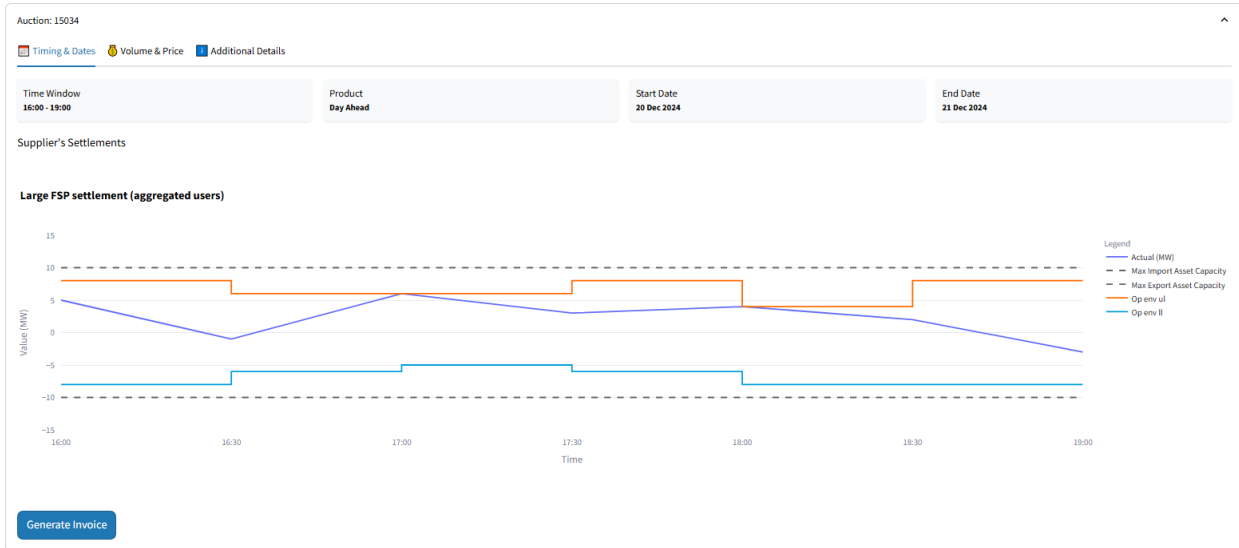


Figure 46: Settlement Page from Supplier Platform Larger Customer – Operating Envelope

In the above example, larger FSP's that can bid into auctions configured to use operating envelopes are provided with a different settlement graph to display their 'Actual MW' value compared to the operating envelope received.

## User Stories

ESB Platform:

Creating an Auction:

As a system administrator at ESB, I want to create an auction to Turn Up for 30 MW/h at Castlebar 110kV substation, so that suppliers can participate in providing capacity with defined parameters.

**Acceptance Criteria:**

1. **Navigation:**
  - 1.1. Navigate to the “Create Auction” page.
2. **Set Auction Parameters:**
  - 2.1. Configure the following
    - 2.1.1. Auction Type: **Turn Up**.
    - 2.1.2. Area: **Castlebar 110kV substation**.
    - 2.1.3. Offering Type.
    - 2.1.4. Volume: **30 MW/h**.
    - 2.1.5. Auction Type.
    - 2.1.6. Auction Product.
3. **Set Auction Requirements:**
  - 3.1. Set the following:
    - 3.1.1. Minimum Volume to Clear.
    - 3.1.2. Minimum Reserve Price.
    - 3.1.3. Maximum Reserve Price.
4. **Set Settlement Configuration:**
  - 4.1. Configure the following:
    - 4.1.1. Settlement Period.
    - 4.1.2. Penalty Type.
    - 4.1.3. Minimum Demand Reduction.
    - 4.1.4. Settlement Type.
5. **Select Dates & Times:**
  - 5.1. Define the following.
    - 5.1.1. Days of the week.
    - 5.1.2. Availability Window.
    - 5.1.3. Delivery Date Range.
    - 5.1.4. Notice for Providers ahead of Delivery Time.
6. **Submit Auction:**
  - 6.1. Submit the auction.
  - 6.2. Receive confirmation of successful creation.

## Viewing Auction Results:

As a system administrator at ESB, I want to view the results from completed auctions from the last week, so that I can analyse the outcomes, including bid details, provider breakdown, and auction summaries.

### Acceptance Criteria:

1. **Navigation:**
  - 1.1. Navigate to the "Auction Results" page.
2. **Filter Results:**
  - 2.1. Apply the filter for the **last 7-day** period to view completed auctions.
  - 2.2. Click "View Details" for a specific auction.
3. **View Auction Details:**
  - 3.1. Timing & Dates,
  - 3.2. Volume & Price,
  - 3.3. Additional Details.
4. **View Provider Breakdown:**
  - 4.1. Provider name,
  - 4.2. Bid amount in MW,
  - 4.3. Bid price in €,
  - 4.4. Status (Accepted or Rejected).

Example:  
Bord Gáis Energy: 30 MW at €47 (Accepted),  
Pinery: 15 MW at €58 (Rejected).
5. **View Bid Stack Visualisation:**
  - 5.1. Clearing Price.
  - 5.2. Accepted bids.
  - 5.3. Rejected bids.
6. **View Auction Summary:**
  - 6.1. Total Requested Amount (e.g. 100 MW).
  - 6.2. Total Contracted Amount (e.g. 100 MW).
  - 6.3. Weighted Average Price (e.g. €48.65).

### Creating an Operating Envelope:

As a system administrator at ESB, I want to create an operating envelope for tomorrow, at Blake 110kV Substation, for Cenergise, to instruct what capacity to operate at and at what time.

#### Acceptance Criteria:

1. **Navigation**
  - 1.1. Navigate to “Create Envelope” page.
2. **Select Details**
  - 2.1. Start Date: **Tomorrow**
  - 2.2. FSP: **Cenergise**
  - 2.3. Start Time
  - 2.4. Area: **Blake 110kV Substation**
3. **Inspect Operating Envelope**
  - 3.1. Asset Capacity
    - 3.1.1. Maximum Import
    - 3.1.2. Maximum Export
  - 3.2. Operating Envelope Limit
    - 3.2.1. Upper Limit
    - 3.2.2. Lower Limit
4. **Submit Envelope**
  - 4.1. Confirm Details
  - 4.2. Click “Submit”
  - 4.3. Receive confirmation of successful creation.

## Editing an Operating Envelope:

As a system administrator at ESB, I want to edit an operating envelope for tomorrow, at Blake 110kV Substation, for Cenergise, to instruct what capacity to operate at and at what time.

### Acceptance Criteria:

1. **Navigation**
  - 1.1. Navigate to “Create Envelope” page.
2. **Select Details**
  - 2.1. Start Date: **Tomorrow**
  - 2.2. FSP: **Cenergise**
  - 2.3. Start Time
  - 2.4. Area: **Blake 110kV Substation**
3. **Modify Operating Envelope Viewer**
  - 3.1. Select “Settings” tab.
  - 3.2. Modify Settings
    - 3.2.1. Time Period
    - 3.2.2. Upper Bound Value (MW)
    - 3.2.3. Lower Bound Value (MW)
4. **Update Envelope**
  - 4.1. Confirm Details
  - 4.2. Click “Update Values”
  - 4.3. Receive confirmation of successful creation.

## Sending an Invoice:

As a system administrator at ESB, I want to generate and send an invoice to Cenergise for their participation in auction 12048 from October, so that they can be compensated based on their actual deliverables and settlement details.

### Acceptance Criteria:

1. **Navigation:**
  - 1.1. Navigate to the "Settlement Page."
  - 1.2. Apply filters for:
    - 1.2.1. Month: **October**.
    - 1.2.2. Supplier Name: **Cenergise**.
  - 1.3. Locate auction 12048 and view its details.
2. **View Auction Details:**
  - 2.1. Timing & Dates.
  - 2.2. Volume & Price.
  - 2.3. Additional Details.
3. **View Settlement Graph:**
  - 3.1. Asset capacity,
    - 3.1.1. Maximum Import.
    - 3.1.2. Maximum Export.
  - 3.2. Operating envelope,
    - 3.2.1. Upper limits.
    - 3.2.2. Lower limits.
  - 3.3. Baseline usage.
  - 3.4. Actual usage.
4. **View Usage Data:**
  - 4.1. Total Baseline (e.g. 22 MW).
  - 4.2. Actual Usage (e.g. 15 MW).
  - 4.3. Difference (e.g. 7 MW).
5. **Generate Invoice:**
  - 5.1. Confirm the reviewed details.
  - 5.2. Click "Generate Invoice" button.
  - 5.3. Receive confirmation of successful invoice generation.

FSP Platform:

Making a Bid:

As a system administrator at Cenergise, I want to bid on auction 12048, so that I can participate in the auction to secure capacity.

**Acceptance Criteria:**

**1. Navigation**

- 1.1. Navigate to the "Auctions Map" page.
- 1.2. Locate auction 12048 in the list by the Auction ID column.
- 1.3. Click "Make Bid" to proceed to the "Bidding" page.

**2. View Auction Details**

- 2.1. Timing & Dates
- 2.2. Price & Volume
- 2.3. Additional Details

**3. Make Bid**

- 3.1. Select the desired amount of Volume (MW).
- 3.2. Select the desired bid Price (€/MW).

**4. Submit Bid**

- 4.1. Click "Submit Bid"
- 4.2. Receive confirmation of successful bid.

## Viewing Auction Results:

As a system administrator at Cenergise, I want to view the results from my completed auctions from the last week, so that I can analyse the outcomes, including bid details, market results, and auction summaries.

### Acceptance Criteria:

1. **Navigation:**
  - 1.1. Navigate to the “Auction Results” page.
2. **Filter Results:**
  - 2.1. Apply the filter for the last **7-day** period to view completed auctions.
  - 2.2. Click “View Details” for a specific auction.
3. **View Auction Details:**
  - 3.1. Timing & Dates,
  - 3.2. Volume & Price,
  - 3.3. Additional Details.
4. **View Bids:**
  - 4.1. Volume,
  - 4.2. Price in (€),
  - 4.3. Status (Accepted or Rejected).

Example:  
30 MW at €47 (Accepted).
5. **View Market Results Visualisation:**
  - 5.1. The Clearing Price.
  - 5.2. Accepted bids.
  - 5.3. Rejected bids.
6. **View Auction Summary:**
  - 6.1. Clearing Price.
  - 6.2. Contracted Volume.
  - 6.3. Total Volume Contracted.
  - 6.4. Success Rate.
  - 6.5. Weighted Average Price.
7. **View Market Statistics:**
  - 7.1. Total Bids.
  - 7.2. Accepted Bids.
  - 7.3. Success Rate.

## Viewing Envelopes:

As a system administrator at Cenergise, I want to view my Operating Envelope for Blake 110kV Substation tomorrow, so that I can determine what capacity to operate at.

### Acceptance Criteria:

- 1. Navigation**
  - 1.1. Navigate to “Operating Envelope” page.
- 2. Filter Results**
  - 2.1. Start Date: **Tomorrow**
  - 2.2. Area: **Blake 110kV Substation.**
  - 2.3. Start Time
- 3. View Details**
  - 3.1. Capacity (e.g. 15 MW).
  - 3.2. Price Accepted (e.g. 51/MWh).
  - 3.3. Relevant Auctions.
    - 3.3.1. Auction ID
    - 3.3.2. Product Type
- 4. View Operating Envelope Graph**
  - 4.1. View Asset Capacity
    - 4.1.1. Max Import
    - 4.1.2. Max Export
  - 4.2. View Operating Envelope Limits
    - 4.2.1. Upper Limit
    - 4.2.2. Lower Limit

## Viewing Settlements:

As a system administrator at Cenergise, I want to view my settlement for auction 12048 from October, so that I can analyse the outcomes.

### Acceptance Criteria:

1. **Navigation:**
  - 1.1. Navigate to the "Settlement" page.
  - 1.2. Apply filters for:
    - 1.2.1. Month: **October**.
    - 1.2.2. Supplier Name: **Cenergise**.
  - 1.3. Locate auction **12048**.
2. **View Auction Details:**
  - 2.1. Timing & Dates.
  - 2.2. Volume & Price.
  - 2.3. Additional Details.
3. **View Settlement Graph:**
  - 3.1. Asset capacity.
    - 3.1.1. Maximum Import
    - 3.1.2. Maximum Export
  - 3.2. Baseline usage.
  - 3.3. Actual usage.
4. **View Usage Data:**
  - 4.1. Total Baseline (e.g. 50MW).
  - 4.2. Total Actual (e.g. 15 MW).
  - 4.3. Difference (e.g. 35 MW).