



**Single Electricity Market
Performance
01 January 2022 – 31 March 2022
SEM-22-023**

SEM Monitoring Report

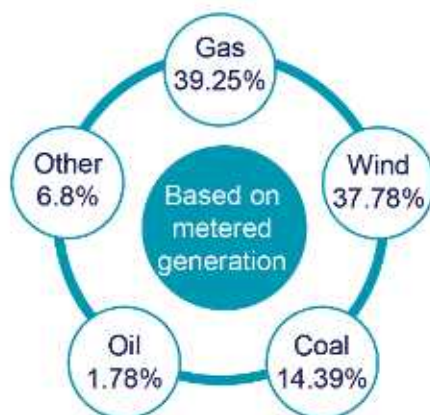
1st January 2022 - 31st March 2022

SEM
committee

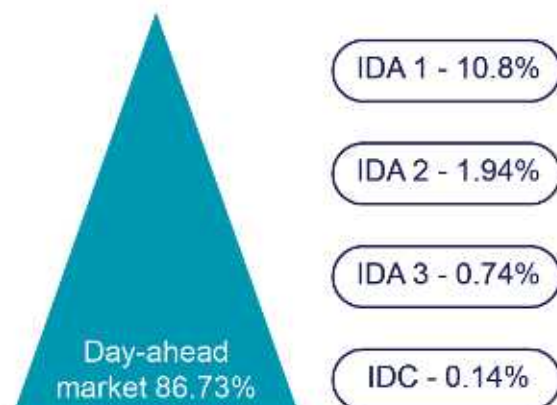
Key Highlights

- Prices in the day-ahead market were €224.86/MWh for Q1 2022. This is on par with Q4 of 2021. This was primarily due to increased input costs (mainly wholesale fuel prices, in particular Gas and Coal prices) and increased carbon costs while an increase in wind did have a slight dampening effect on prices.
- Liquidity continues to be concentrated in the day-ahead market with over 86.73% of ex-ante volumes traded with an overall value of over €2.54 billion.
- Overall, actual system demand across the quarter has remained above the levels seen when compared to the same period in 2021.

Fuel Mix



Ex Ante Market Share by volume



Prices and impact of wind

- In periods of higher wind prices tend to drop
- The highest prices are associated with a lower wind forecast
- The wind forecast across the quarter increased by 12% when compared to the previous quarter.



Average daily price in DAM
€224.86/MWh

Lowest average daily price
€54.62/MWh

Highest average daily price
€450.07/MWh

Highest prices during morning or evening peak demand
Lowest prices overnight

1 INTRODUCTION

The Single Electricity Market (SEM) is the wholesale electricity market for the island of Ireland. This report is compiled by the SEM Market Monitoring Unit (MMU), which closely monitors the market, in particular in relation to bidding controls in place and to the requirements of the Regulation on Wholesale Energy Market Integrity and Transparency (REMIT). The report provides an overview of the performance of the market and of the trading arrangements that exist in a number of different timeframes. These arrangements are shown graphically in Figure 1 below:



Figure 1 - SEM Energy Markets

Trading in the forwards market is financial only and does not entail physical delivery of power. It does however provide market participants with the opportunity to hedge their positions in the Day Ahead Market (DAM) through forward contracts.

The DAM is a daily auction that takes place at 11:00 each day. Participation in the DAM is not mandatory. This market is no longer coupled with Great Britain (GB). Following the DAM, the Intraday Auctions (IDA) enable participants to adjust their physical positions closer to real time. IDA1 and IDA2 are coupled with the GB market.

The Intraday Continuous Market (IDC) also provides market participants with the opportunity to refine their market position and minimise their exposure in the Balancing Market (BM). Through the BM the Transmission System Operators (TSOs) buy and sell power from market participants to ensure that the demand and supply of power is exactly matched.

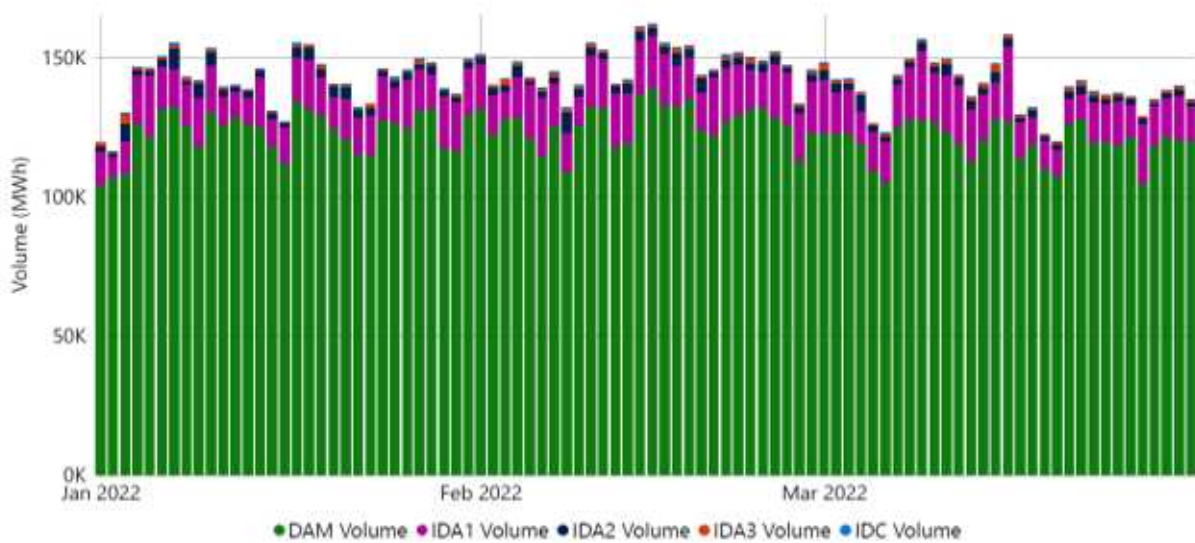
This report covers the first quarter of 2022 from 01 January to 31 March.

2 MARKET PERFORMANCE

2.1 OVERALL PERFORMANCE

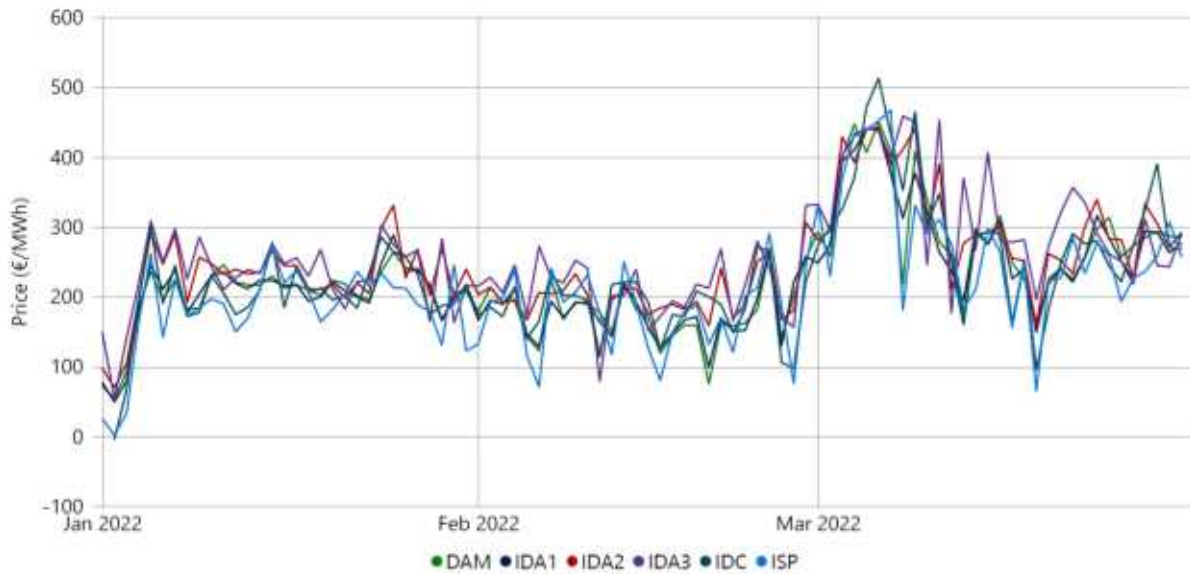
This section summarises overall SEM performance for the period 01 January 2022 to 31 March 2022

The graph below charts the daily volumes in each Ex-Ante market in the SEM during the quarter. The average DAM daily volume for the period was 122,979 MWhs with the average daily volume in IDA1 15,384 MWhs, IDA2 2,762 MWhs, IDA3 1,061 MWhs and IDC 204 MWhs.



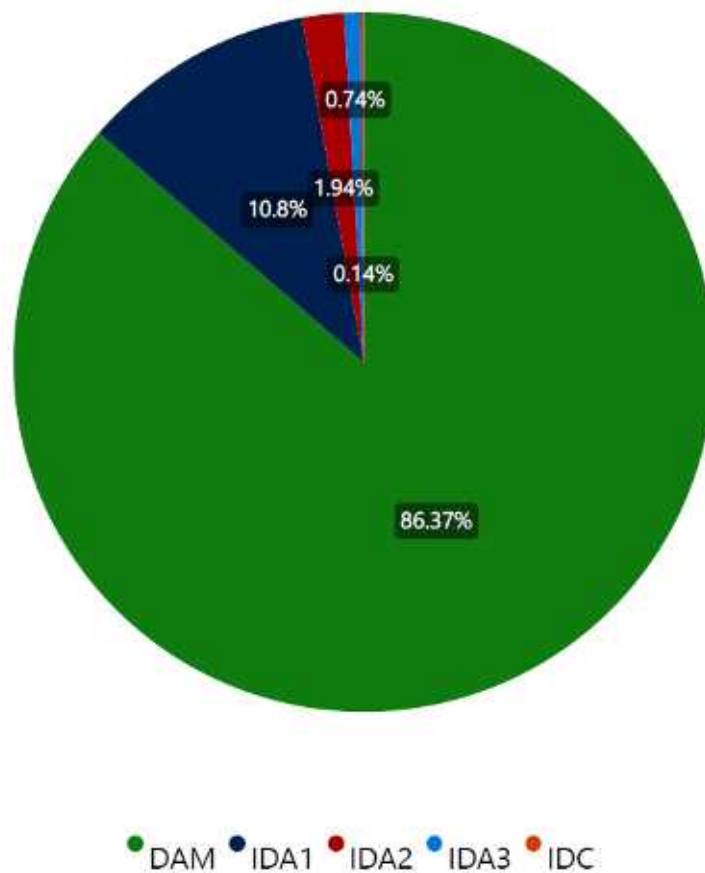
Graph 1 - SEM Ex-Ante Daily Volumes

The graph below shows the daily average Ex-Ante and Balancing Market prices across the quarter. The average daily DAM price was €224.86/MWh, IDA1 €223.47/MWh, IDA2 €246.61/MWh, IDA3 €256.47/MWh, IDC €233.93/MWh and the Imbalance Settlement Price was €211.41/MWh.



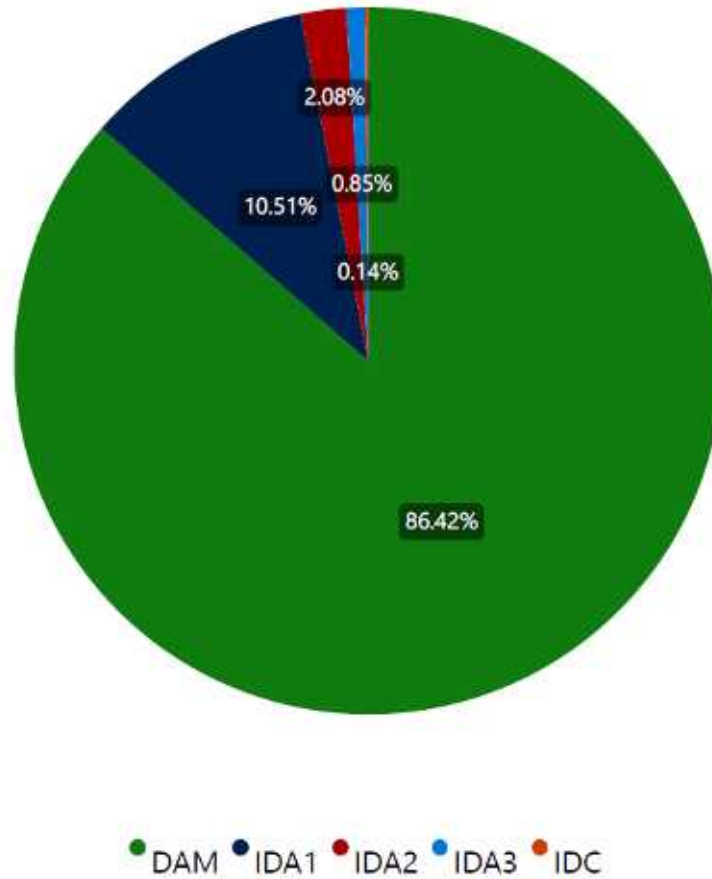
Graph 2 - SEM Ex-Ante & Balancing Market Daily Average Price

Graphs 3 and 4 below show the market share for each Ex-Ante Market by volume and value. By volumes (MWh), the DAM represented 86.73% of volumes traded, followed by IDA1 10.8%, IDA2 1.94%, IDA3 0.74% and IDC 0.14%.



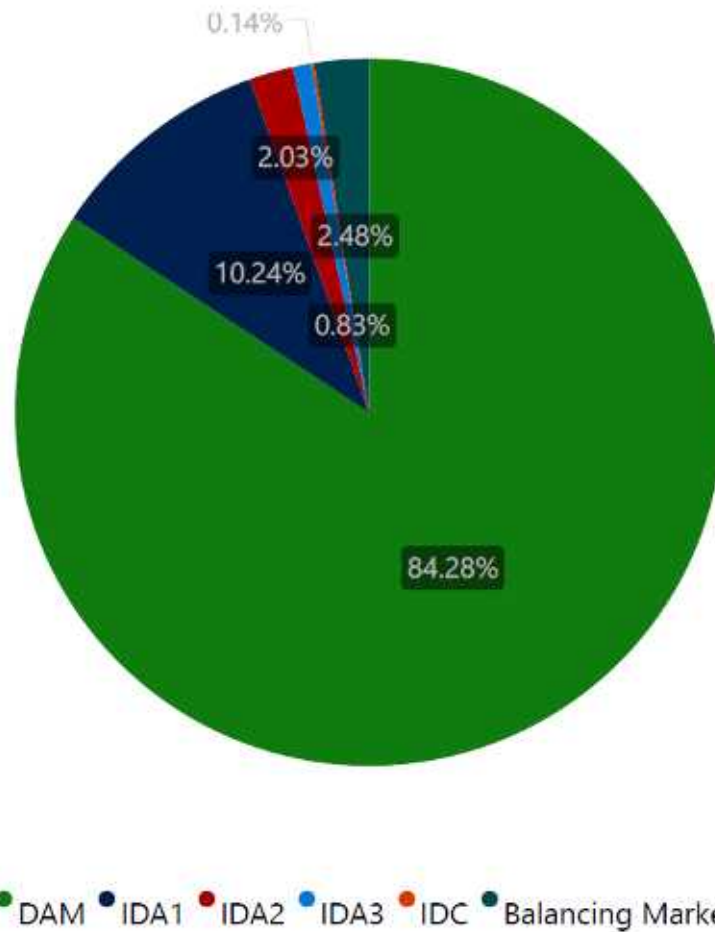
Graph 3 - Market (Ex-Ante) Share by Volume (MWh)

By value, the DAM represents 86.42%, IDA1 10.51%, IDA2 20.8%, IDA3 0.85% and IDC 0.14%.



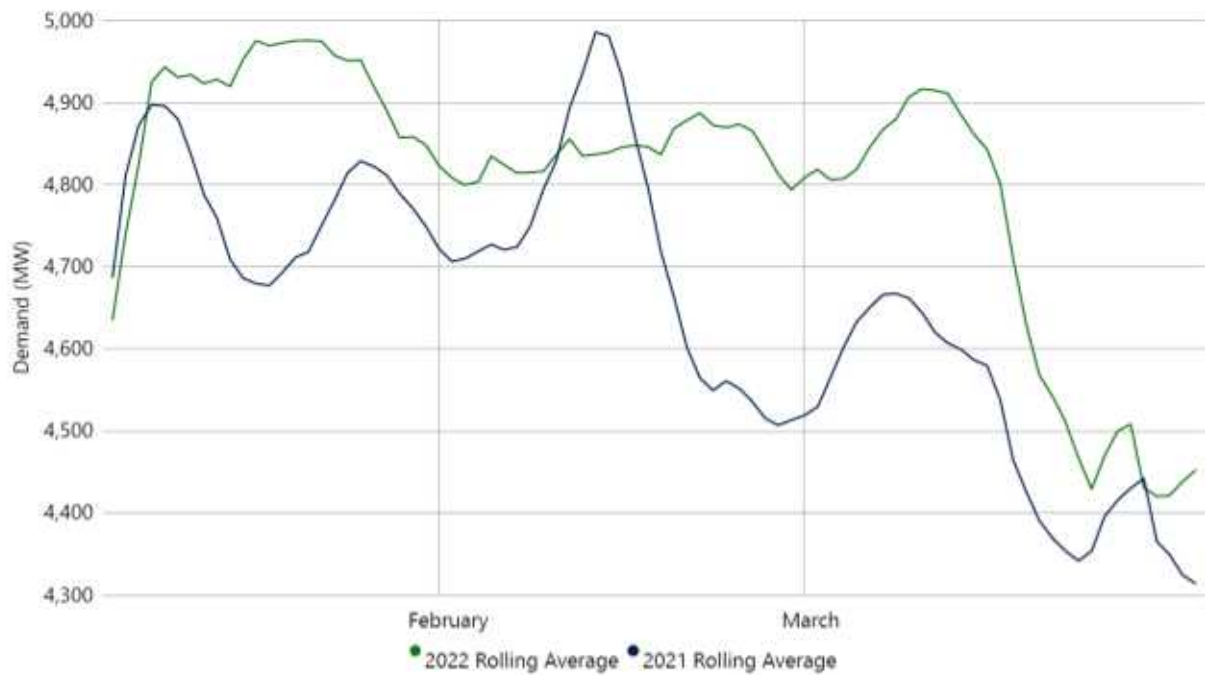
Graph 4 - Market (Ex-Ante) Share by Value (€)

The graph below shows, when the Balancing Market value is included with the Ex-Ante Markets, the DAM represents 84.28% of the market, followed by the IDA1 with 10.24%, Balancing Market with 2.48%, IDA2 with 2.03%, IDA3 with 0.83% and the IDC with 0.14%.



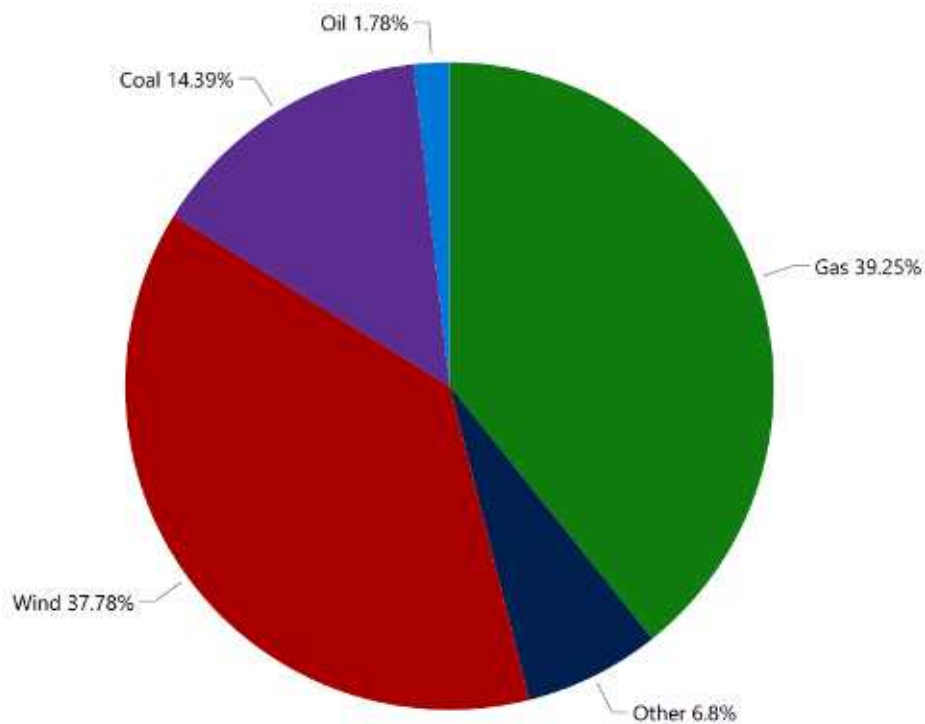
Graph 5 - Market Share by Value (inc. Balancing Market) (€)

Overall, as shown in the graph below, actual system demand in across the quarter has remained above the levels seen when compared to the same period in 2021.



Graph 6 – 7 Day Rolling System Demand Average

Demand is being met by a number of fuel types. The below graph shows the fuel mix of metered generation across the Island in Q1 2022.



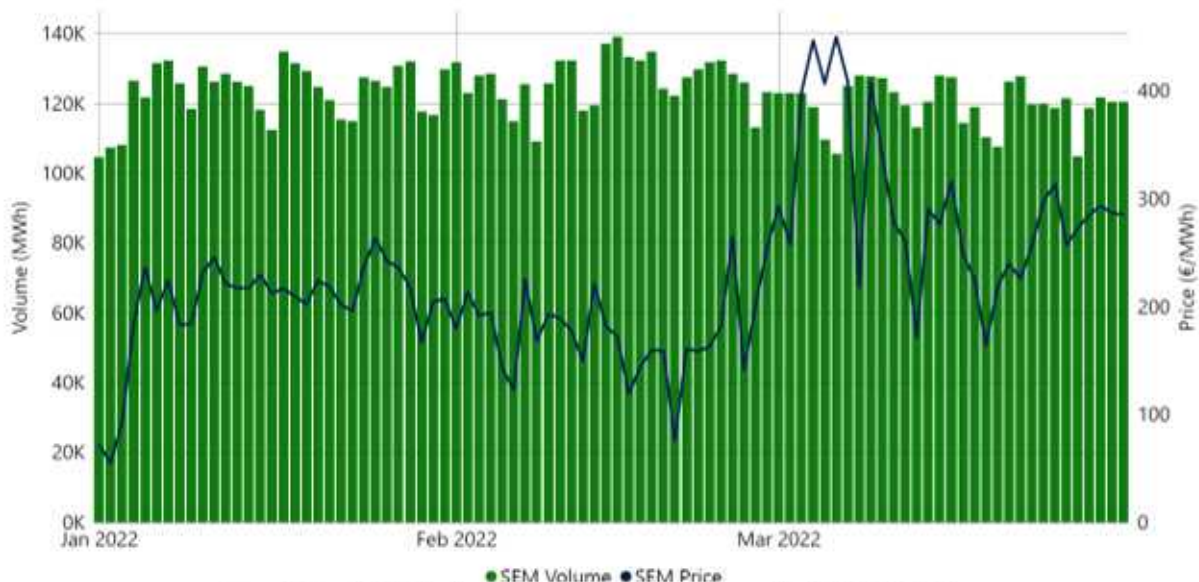
Graph 7 – Fuel Mix Metered Generation

This quarter gas represented 39.25%, Wind 37.78%, Coal 14.39%, Oil 1.78% with the remainder 6.8% made up of Biomass, Distillate, Peat, Hydro and Pumped Storage.

2.2 DAY AHEAD MARKET

The graph below shows the daily average DAM price and volume for the market in Q1 2022. In total, the value of the DAM market during the period was €2.54 billion. The average daily price in the DAM was €224.86/MWh during the period which is on par with the last quarter (Q4 2021). This is also a 221% increase on the average price in Q1 2021 (€69.98/MWh). The lowest average daily price was €54.62/MWh seen on 2 January, with the highest average daily price €450.07/MWh seen on 6 March. The lowest price recorded in an individual hourly period was (-)€25.78/MWh at 03:00 on 3 January whilst the maximum price recorded in a single period was €705.47/MWh at 18:00 & 19:00 on 9 March.

Higher market prices over the period have been driven primarily by increased input costs (mainly wholesale fuel prices, in particular Gas and Coal prices which increased throughout the period) and increased carbon costs while an increase in wind did have a slight dampening effect on prices.



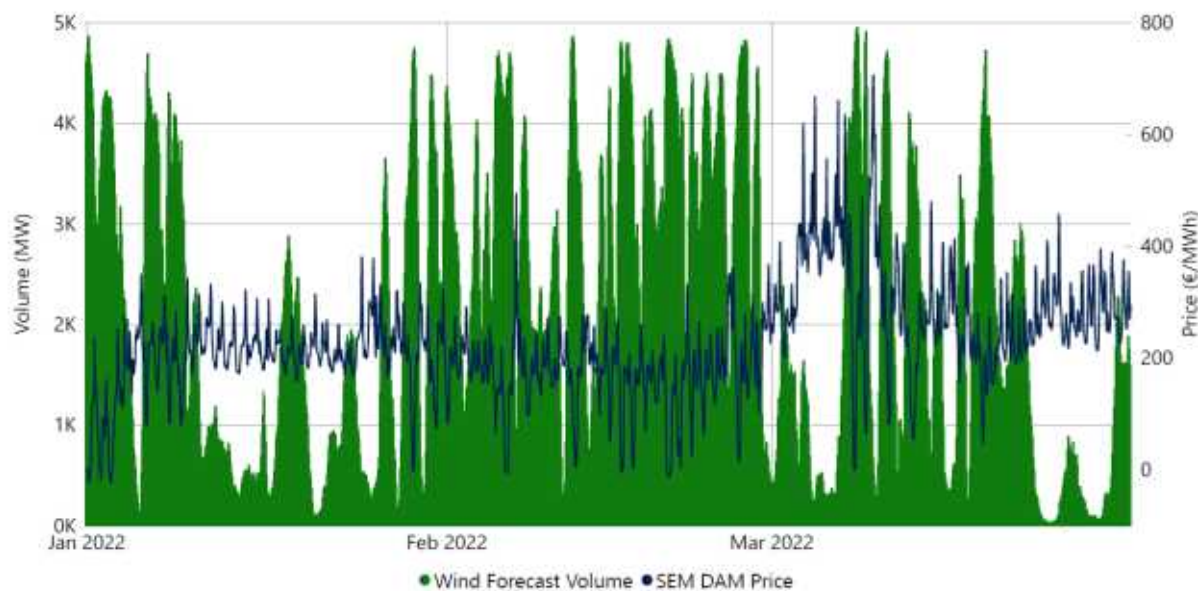
Graph 8 - DAM Market Volume and Average Daily DAM Price

The below graph shows the average volume and price across each hourly period in the trading day. It continues to show that the highest volumes are traded across peak morning and evening periods where the highest prices are seen. However, the dip in volumes between these periods is less than in previous quarters indicating a more steady DAM demand volume across the day.



Graph 9 – Average Volume and Price per Hourly Period

DAM price formation continues to be impacted by the level of wind in the system and the forecast of wind at the day ahead stage, with periods of high wind associated with a reduction in DAM prices. The highest prices continue to be affected by low wind forecast while the lowest prices occurred during periods of much higher expected levels of wind. The average wind forecast across the quarter was 2097 MW compared to 1872 MW in the previous quarter.



Graph 10 – Hourly Wind Forecast and Hourly DAM Price

Table 1 and 2 below illustrates the relationship between prices and the forecast level of wind at day-ahead stage. It shows the highest prices over the period covered occurred during morning or evening peak demand and the lowest prices occurring

overnight. Higher forecasted wind overnight was observed to have a noticeable effect on lowering prices however.

Date/Time	DAM Price (€/MWh)	Wind Forecast Volume (MW)
09/03/2022 18:00:00	705.47	668.00
09/03/2022 19:00:00	705.47	573.00
04/03/2022 18:00:00	668.00	246.00
06/03/2022 18:00:00	661.13	885.00
09/03/2022 17:00:00	640.00	832.00

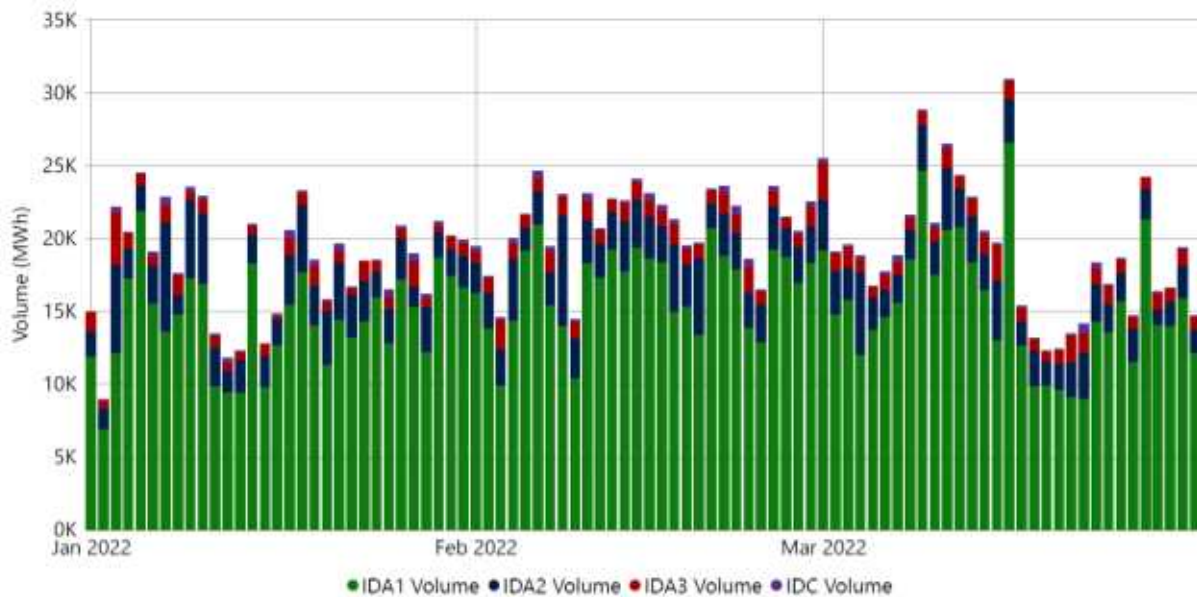
Table 1- High DAM Price and Wind Forecast

Date/Time	DAM Price (€/MWh)	Wind Forecast Volume (MW)
03/01/2022 03:00:00	-25.78	4,187.00
01/01/2022 06:00:00	-23.72	4,770.00
03/01/2022 04:00:00	-19.70	4,136.00
02/01/2022 06:00:00	-19.60	3,698.00
03/01/2022 02:00:00	-18.88	4,237.00

Table 2- Low DAM Price and Wind Forecast

2.2 INTRADAY MARKET

During Q IDA1 accounted for 10.8% of ex-ante traded volumes down from 11.63% in Q4 2021, IDA2 accounted for 1.94%, IDA3 accounted for 0.74% of trades by volume and the IDC accounted for 0.14% of traded volumes of the ex-ante markets. The share of the market by value is similar, with IDA1 accounting for 10.51% of total ex-ante market value, IDA2 2.08%, IDA3 0.85% and IDC 0.14%.



Graph 11 – Total Intraday Volumes

Average prices in each auction have risen when compared to last quarter. Average price in the IDA1 in Q1 2022 was €223.47/MWh, compared to €221.03/MWh in Q4 2021, IDA2 €246.61/MWh compared to €239.96/MWh in Q4 2021, IDA3 €256.47/MWh compared to €247.48/MWh in Q4 2021 and the IDC market €233.93/MWh compared to €241/MWh in Q4 2021. The total value of these markets over the period was €309.3M in IDA1, €61.2M in IDA2, €25.14M in the IDA3 and €4.1M in the IDC market. The IDA2 and IDA3 cover a smaller timeframe and are closer to peak hours (where prices are generally higher to meet the increased level of demand and thus the average prices would be expected to be higher). However, all the rise of prices in all intraday actions follows a similar trend and reasoning to that seen in the DAM.

Graph 12 below illustrates the generally lower prices in the IDA1 with the higher prices in the IDA3 market. Prices in all markets generally move in a similar direction.



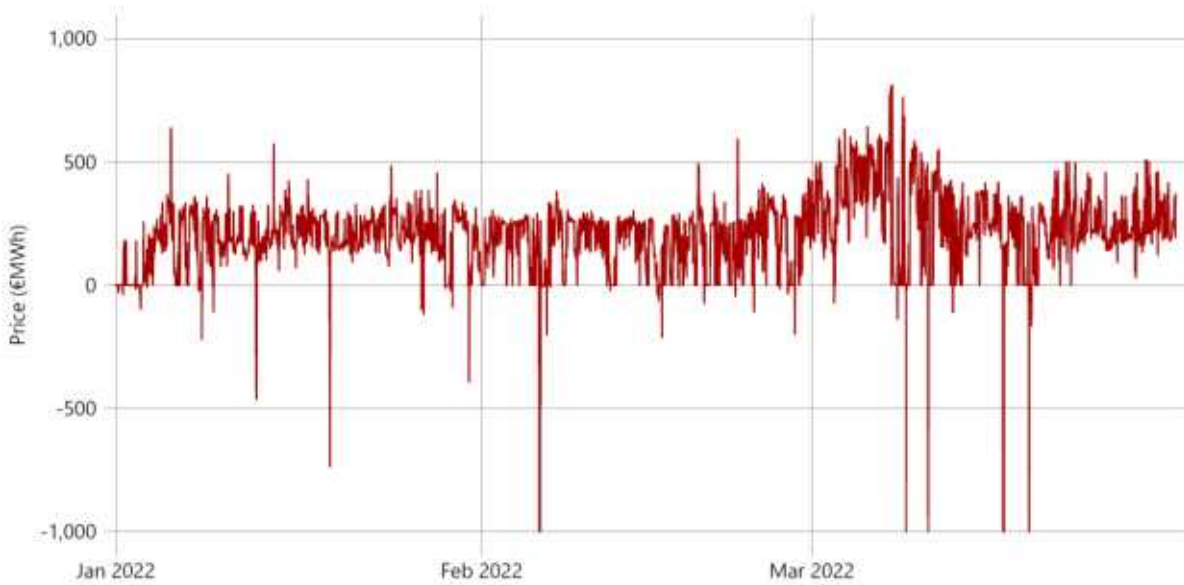
Graph 12 – Average Daily Intraday Prices

2.3 BALANCING MARKET

The balancing market is a complex market that determines the Imbalance Settlement Price for settlement of the TSO's balancing actions and any uninstructed deviations from a participant's notified ex ante position. It is made up of numerous energy/non energy actions, charge and payment components. Using these components to calculate the value of balancing, we can show the value of the overall Balancing Market value for Q1 2022 was €74.76M.

Imbalance Prices for 5 minute and 30 minute periods are set out below, showing relatively higher volatility in the market.

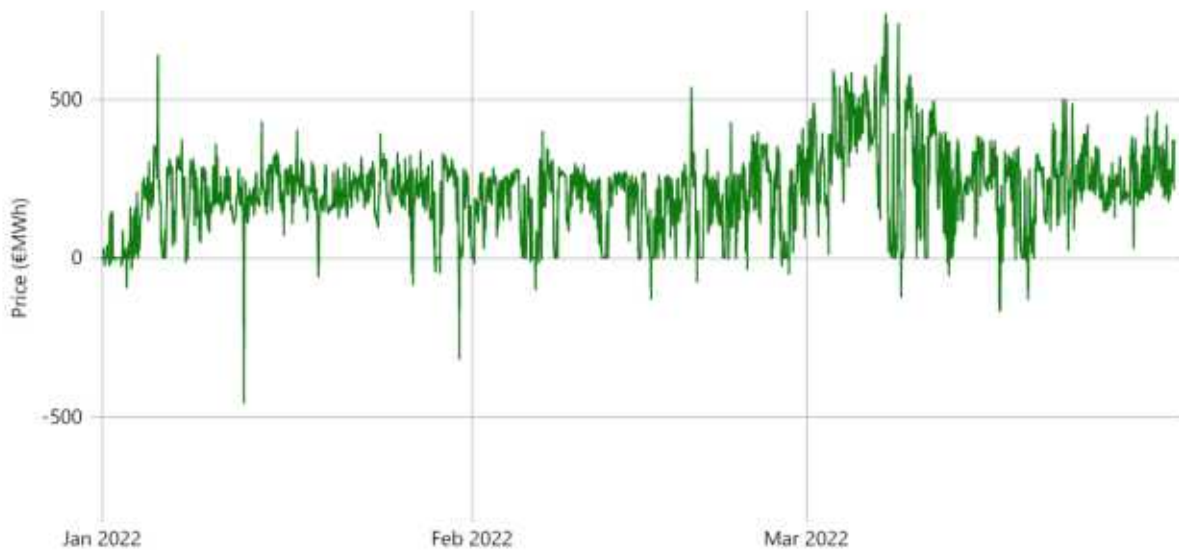
The graph below shows the price for each 5 minute Imbalance Price Period, highlighting the underlying price volatility in the Balancing Market. The average 5 minute price across the quarter was €212.17/MWh compared to €218.18/MWh in Q4 2021.



Graph 13 – 5 Minute Imbalance Price

The highest settlement 5 minute Imbalance Price occurred on 7 March at 20:20 of €812.76/MWh. The lowest 5 minute Imbalance Price of (-)€1000 occurred on 5 February at 22:30, 6 February at 00:20 and at several periods in March.

The 5 minute Imbalance Price is used in the 30 minute Imbalance Price formation. In the below graph the Imbalance Settlement Price across the quarter can be seen.



Graph 14 – 30 Minute Imbalance Settlement Price

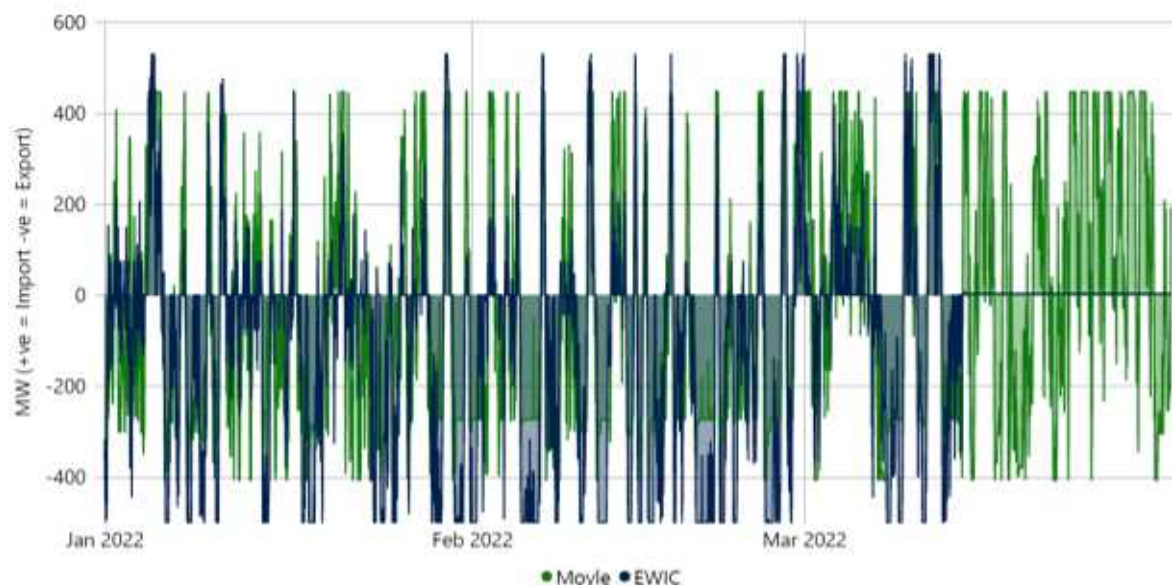
During the quarter, the highest 30 minute Imbalance Settlement Price was €767.41/MWh at 17:30 on 7 March. The lowest 30-minute settlement price was (-)

€456.34/MWh at 22:30 on 12 January. The average Imbalance Settlement Price across the quarter was €211.65/MWh compared to €218.32/MWh in Q4 2021.

2.4 INTERCONNECTION

As mentioned in previous reports, from 1 January 2021 cross border capacity is no longer coupled through the DAM. Cross border trading has however continued in the intraday timeframe via the IDA1 and IDA2 auctions. As with the previous coupling arrangement, scheduling of the flows on each of the interconnectors is determined by the price spread between SEM and GB in the IDA 1 and IDA 2. A spread where the SEM is priced higher than GB the interconnectors should import and where the SEM is priced lower than GB the interconnectors should be exporting.

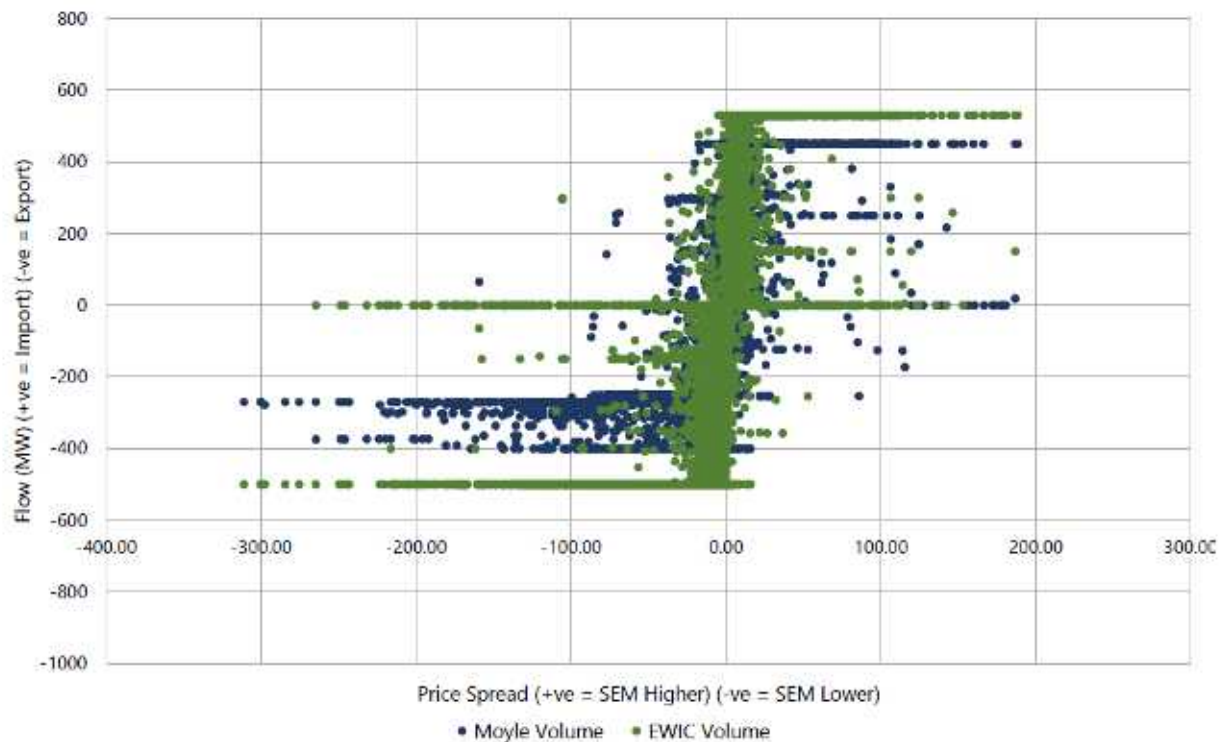
In the graph below, the actual flows of each interconnector are shown across the quarter. A positive flow on the top half of the graph shows the interconnectors importing, indicating that the intraday SEM prices are higher than the intraday GB price. A negative flow in the bottom half of the graph shows that the SEM is exporting, indicating that the SEM price is lower.



Graph 15 – Actual Interconnector Flows (15 Minute Intervals)

In the graph below, the X-axis shows the difference in IDA1 prices between the SEM and GB so that the positive price difference on the right of the graph is when the SEM price is higher than the GB price and the interconnector should be importing. The negative values on the left of the graph is when the SEM price is lower and the interconnectors should be exporting. The Y-axis shows the auction result flow on the day and their direction so that in the upper half of the graph, in which values are

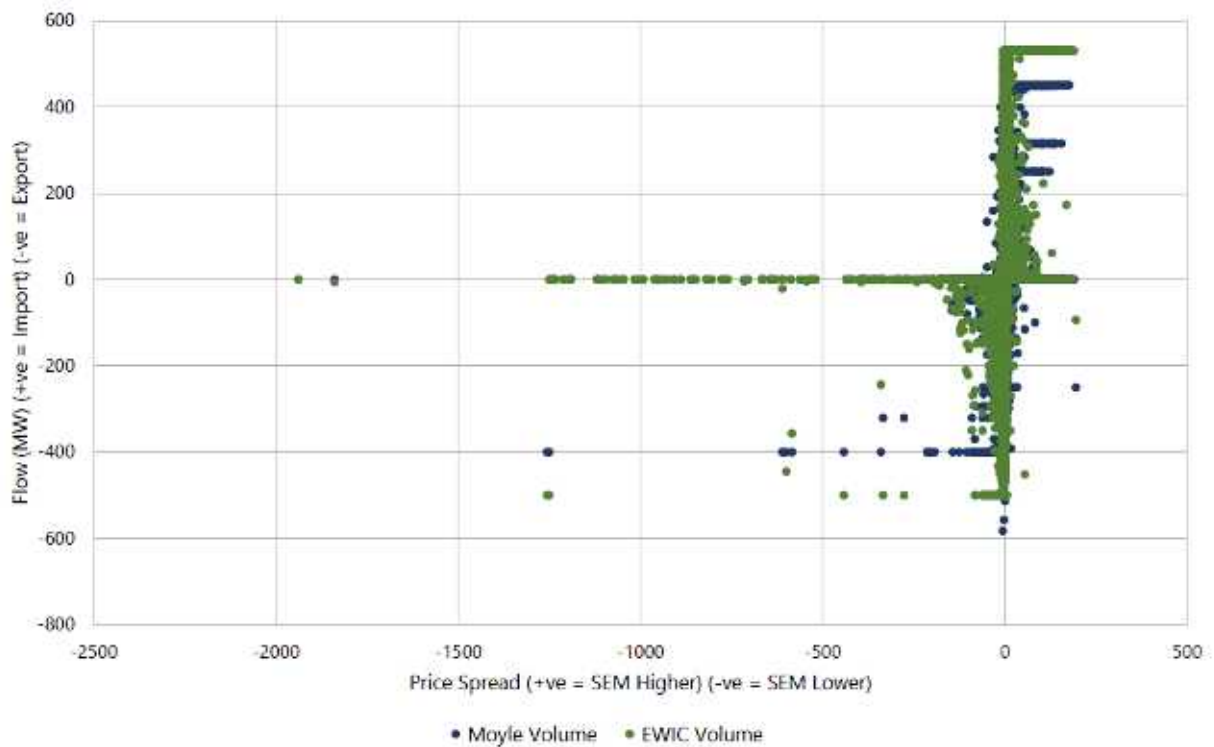
positive, the interconnectors are scheduled to be importing into the SEM from GB. In the lower half the negative values indicate scheduled export.



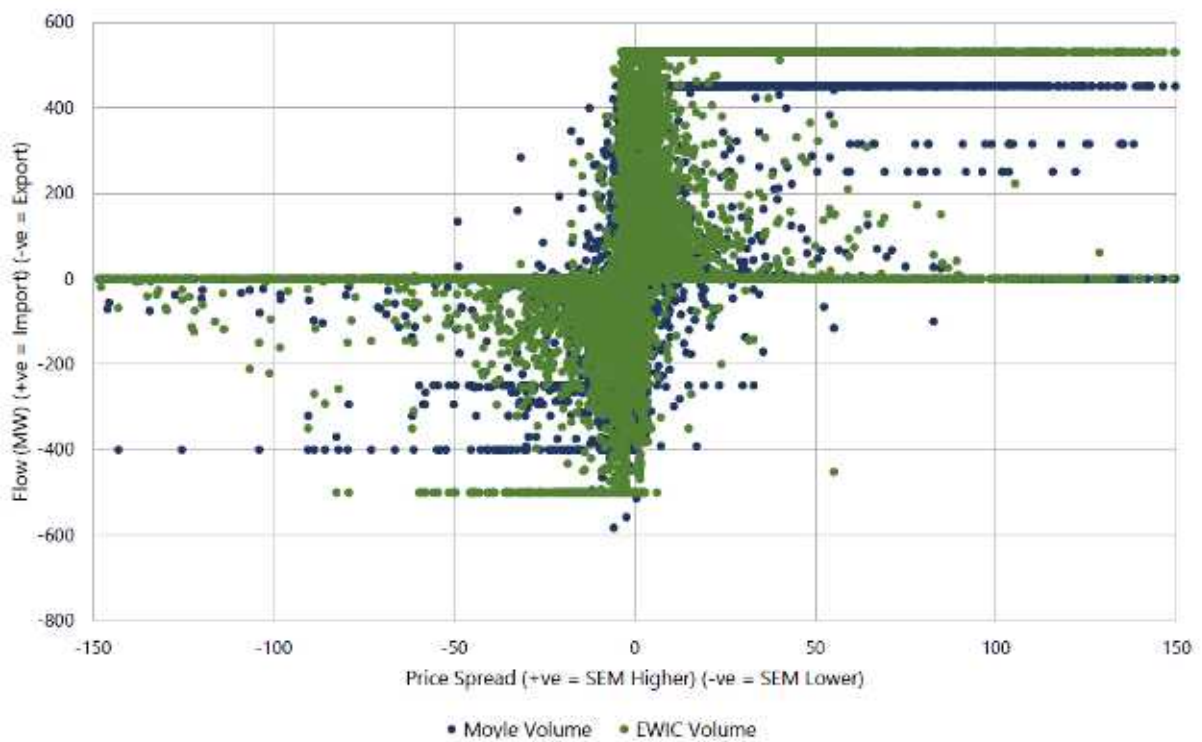
Graph 16 – IDA1 Interconnector Schedule Efficiency

In the graph above there are points in the top left and bottom right quadrants that appear to show flows in the counter-intuitive direction based upon the SEM/GB price spread. These points are due to the interconnectors either scheduled to export or import across a number of periods in the expected direction based on the SEM/GB price spread, then the price spread inverts for one period or small number of periods before reverting back to the previous positive or negative spread. The interconnectors are also ramping up or down from high imports or exports where the price differential has already inverted thus the points appear counter-intuitive.

The graphs below show the interconnector flows based on the IDA2 results. The IDA2 covers periods across peak evening times and the flow volumes are based upon a combination of IDA1 and IDA2 with the direction being determined by the price spread. This graph also shows that due to some high prices seen across these periods in GB, the price spread becomes highly negative (SEM lower than GB) which would indicate that SEM should be scheduled to export and also highly positive (SEM higher than GB) which would indicate that SEM should be scheduled to import.



Graph 17 – IDA2 Interconnector Schedule Efficiency



Graph 18 – IDA2 Interconnector Schedule Efficiency (Cropped (-)€150/MWh)

3 DIRECTED CONTRACTS Q1 2022

3.1 DIRECTED CONTRACTS Q1 2022 ROUND 18

DC Round 18 which was due to take place in March has been postponed ([SEM-22-008 Postponement of Round 18 of Quarterly Directed Contracts - Q3 2022 to Q2 2023 | SEM Committee](#)).

A further update was provided by the RA's 4 April 2022 ([SEM-22-11 Update of the Postponement of Directed Contract Round 18 | SEM Committee](#)).

An information paper was also published on 6 May 2022 ([SEM-22-020 Directed Contract Round 18: Q3 2022 to Q2 2023 | SEM Committee](#))

4 REPORT UPDATE

This will be the final quarterly report published. Going forward these will be published on a monthly basis covering the previous month starting with review periods April 2022.