



**Single Electricity Market  
Performance  
1 January 2019 – 31 March 2019**

# SEM Monitoring Report

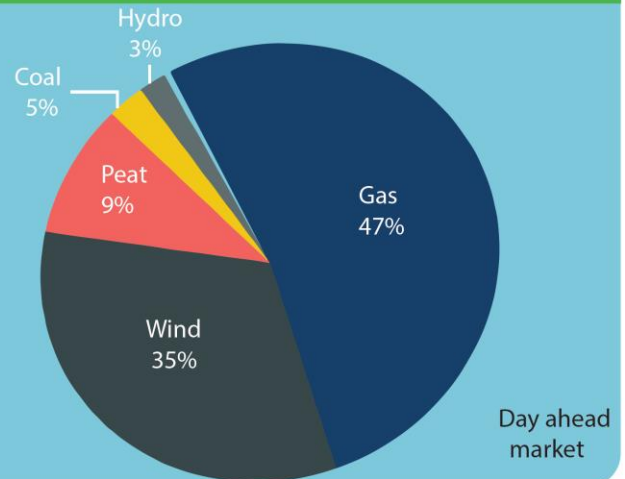
1 January 2019 - 31 March 2019

**SEM**  
committee

## Key Highlights

- ✓ Active engagement in the market from suppliers and generators
- ✓ High liquidity concentrated in the day ahead market - 95% volumes traded
- ✓ Interconnectors flowing efficiently
- ✓ Increased wind generation putting a downward pressure on prices
- ✓ CRM auctions run effectively facilitating security of supply

## Fuel Mix



## CRM Auctions

**LOWER**

Second T-1 auction (2019/2020) clearing price lower than first T-1 capacity auction clearing price.

**1<sup>ST</sup>**

First T-4 auction run for capacity in 2022/2023. Provisional results published.

Sufficient generation capacity secured to ensure security of supply in both auctions

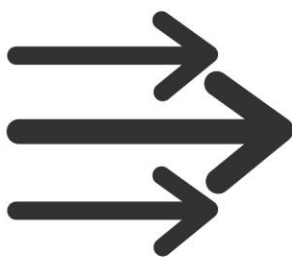
## Prices and impact of wind

- ✓ In periods of high wind, day ahead price dropped significantly
- ✓ The highest prices are associated with a low wind forecast
- ✓ Demand has increased by 9% over the year
- ✓ A significant number of unplanned outages impacted market prices during the period
- ✓ Prices in the day ahead market are c.4% higher than the same period last year

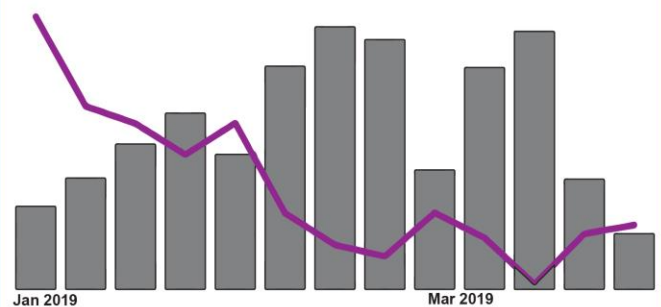
## Interconnector Flows

Interconnectors are flowing efficiently, reflecting the price differentials between markets

**LOWER MARKET PRICE**



**HIGHER MARKET PRICE**



Average daily price in DAM €61.27

Lowest price in hourly period -€10.29

Highest price in hourly period €365.04

## 1 INTRODUCTION

The new 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 new market, in particular in relation to bidding controls in place and to the requirements of REMIT. It provides an overview of the performance of the new 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 forward 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 purchasing forward contracts.

Participation in the DAM is through coupling with the European market and is not mandatory. Following the DAM the Intraday Market (IDM), 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 will 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 2019 from 1 January to 31 March to align with each calendar quarter. This has resulted in some duplication with the previous report which ran from 01 October 2018 to 31 January 2019. Within this report, some of the commentary from the first public report is still applicable but repeated for transparency for this quarter.

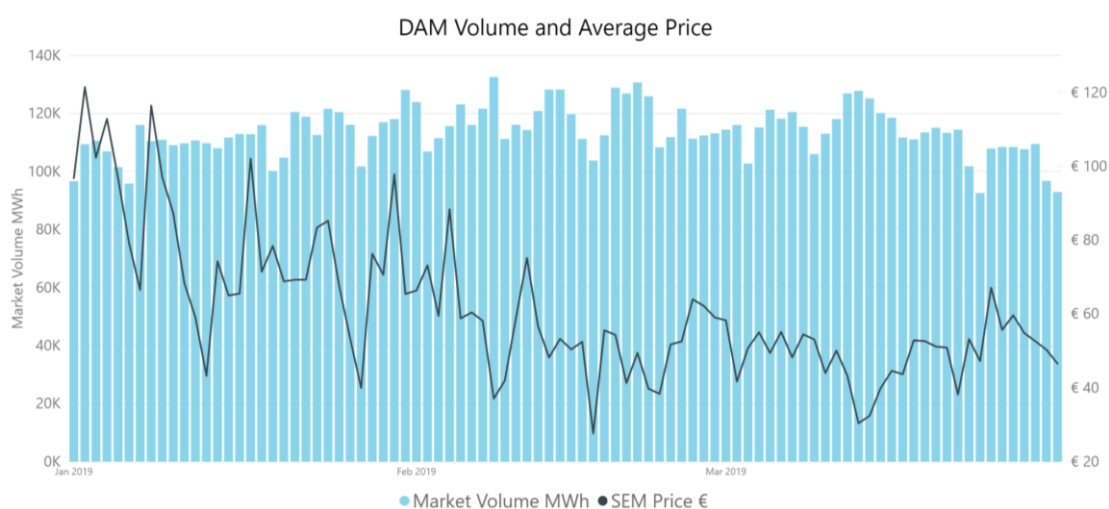
## 2 MARKET PERFORMANCE

The SEM was designed to allow the efficient coupling of the wholesale market on the island of Ireland with the wholesale electricity market across Europe through a single marketplace and common rules. The trading arrangements have been designed to achieve this through a liquid DAM on the island coupled with the DAM across Europe and the effective linking of the two through efficient use of the two interconnectors that link Ireland and Northern Ireland with Wales and Scotland respectively.

Further coupling has been effected in the Intra-day market timeframe and currently two auctions during this time link the SEM to the wholesale market in Great Britain. Finally the design of the SEM allows a market solution to the balancing of the demand and supply of electricity through a balancing market which takes place in real time.

### 2.1 DAY AHEAD MARKET

Over the period the DAM market has operated effectively and efficiently in line with the expectations of the market design. The graph below shows the daily average DAM price and volume for the first seventy days of the market. In total the value of the DAM market during the period was over €645m.



Graph 1 DAM

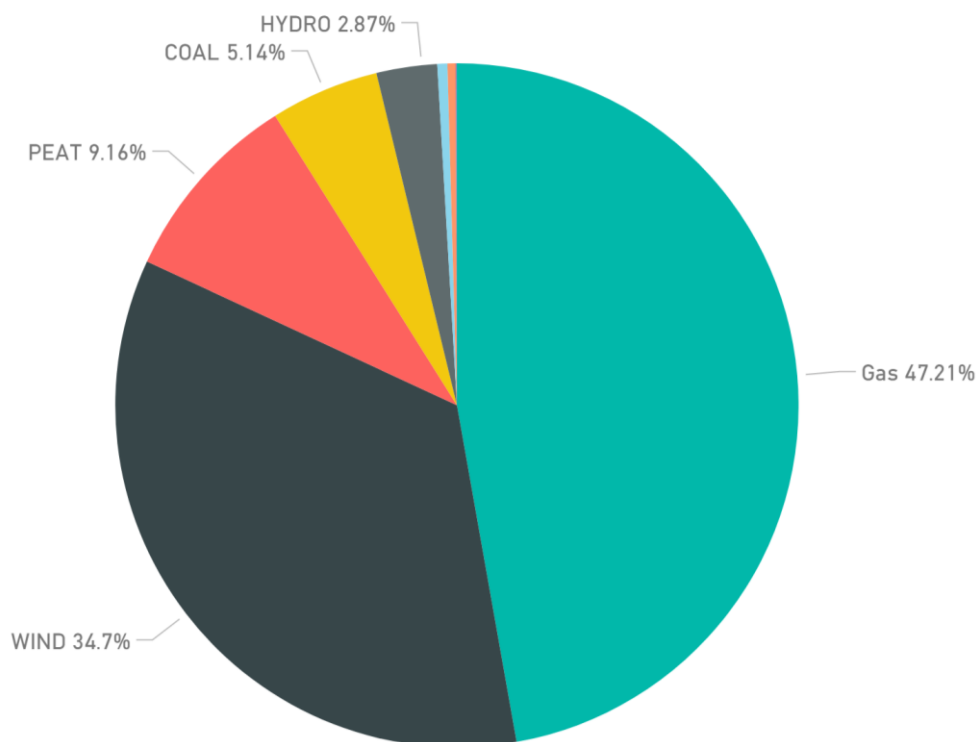
The average daily price in the DAM was €61.27 during the period with the lowest price recorded in an hourly period of -€10.29 and a maximum price in a single period of €365.04.

Prices in the DAM are slightly higher than the equivalent period one year ago (increase of 4%) which can broadly be accounted for by an increase in demand of 9% over the

year, and significant unplanned generation outages in January. These forced outages included Ballylumford, Great Island and Moneypoint generators.

The share of generation by fuel mix is shown in Graph 2 below.

### Generator Day Ahead Sell Order Results by Fuel Type



Graph 2 DAM Generation by Fuel

DAM prices are significantly 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.

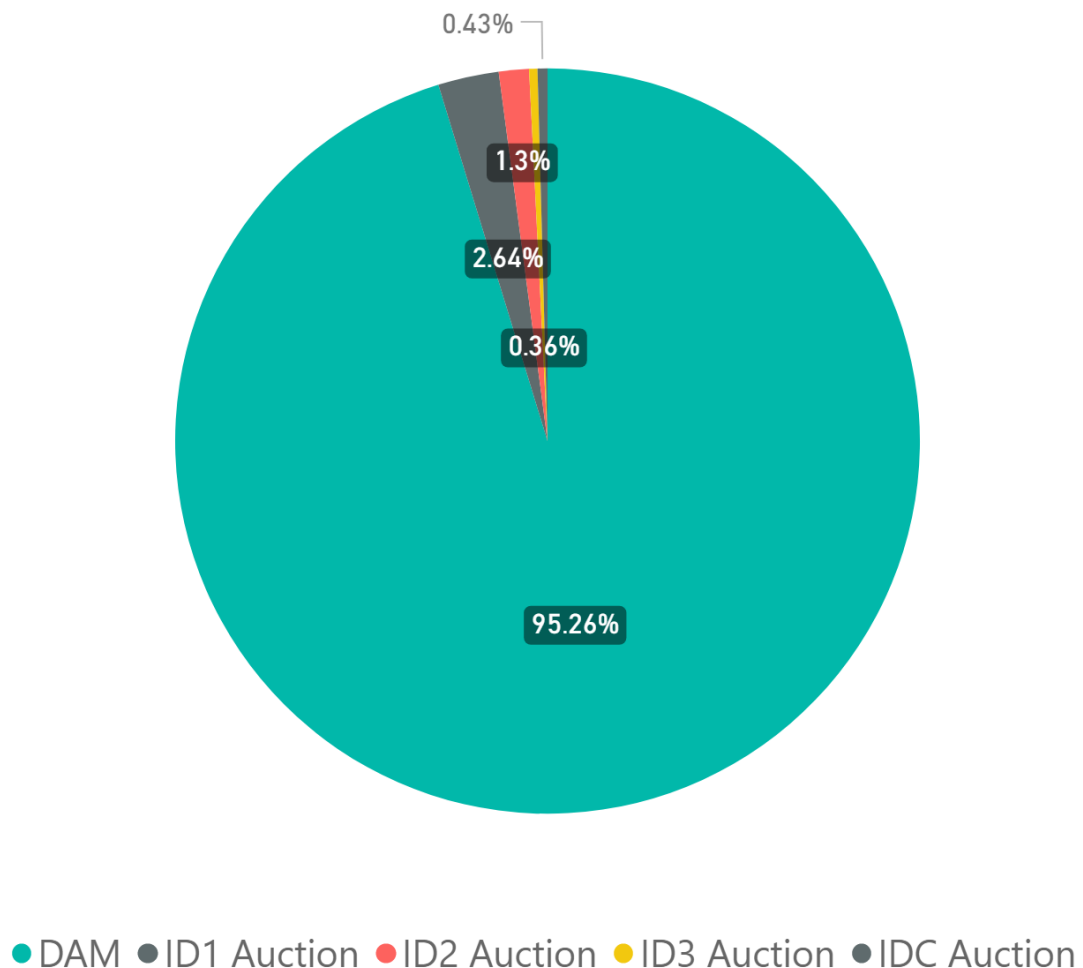
Table 1 below illustrates the relationship between prices and the forecast level of wind. It shows the highest prices during the Report period occurring at 17:00 (during evening peak demand) and lowest prices overnight. The highest prices are associated with a low wind forecast while the lowest prices occurred in periods of much higher expected levels of wind.

High Price-Low Wind				Low Price-High Wind			
Date	Time	Price €	Wind Forecast MW	Date	Time	Price €	Wind Forecast MW
02 January 2019	17:00	365.04	383	17 February 2019	05:00	-10.29	3,069
30 January 2019	17:00	285.00	267	17 February 2019	01:00	-10.24	3,467
04 February 2019	17:00	285	193	17 February 2019	02:00	-10.19	3,430
30 January 2019	18:00	281.15	236	17 February 2019	04:00	-10.03	3,201
04 January 2019	17:00	270.50	896	17 February 2019	06:00	-10.03	2,935

Table 1 DAM Price and Wind Forecast

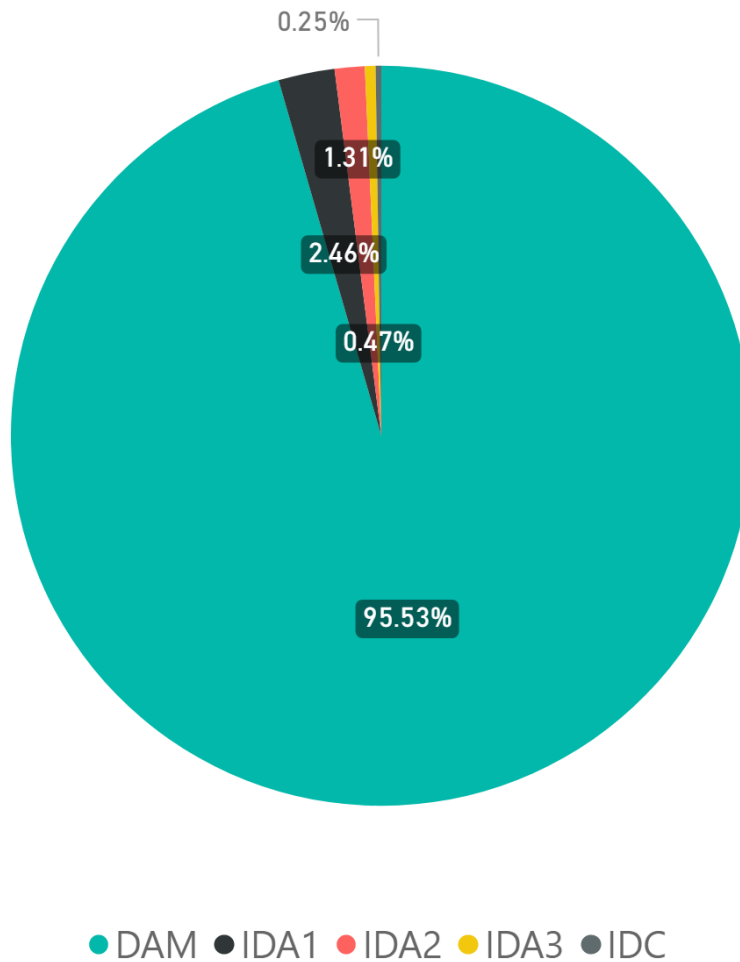
The concentration of trading in the DAM is demonstrated in Graphs 3 and 4 below which shows that over 95% of ex-ante volumes are traded through the DAM. Suppliers of electricity to business and domestic customers are in general seeking to cover their requirements in this market. Graph 4 also shows the relative value of each market.

### Market Share by Volume



Graph 3 Market Shares by Volume

## Market Share by Value



Graph 4 Market Share by Value

### 2.2 INTRA-DAY MARKET

The Intra-Day markets have allowed market participants to refine their market position by buying or selling nearer to real time. Volumes however have been relatively low, and have generally declined through the IDM1, IDM2 and IDM3 auctions and the Intra-Day Continuous market. The IDM1 and IDM2 are coupled markets with GB while the IDM3 and IDC are local SEM-only markets. The IDM1 auction accounted for 2.64% of the total ex-ante market by value; the IDM2 auction accounted for 1.3%, the IDM3 auction for 0.36% and the Intra-Day Continuous market (IDC) for 0.46%.

Average prices show a tendency to rise during the Intra-Day timeframe as it becomes closer to real time, with average prices in IDM1 being €60.02; IDM2 €70.89 and IDM3



€79.88 and the IDA Continuous market €70.04. The total value of these market over the period has been €32.90m in IDM1; over €17m in IDM2; €6m in the IDM3 and over €3.4m in the IDC market.

Graph 5 below illustrates the generally lower prices in the IDA 1 market and the IDC market with the higher prices in IDA 3 market. Prices in all markets generally move in a similar direction with the IDA 3 market showing the largest movement.

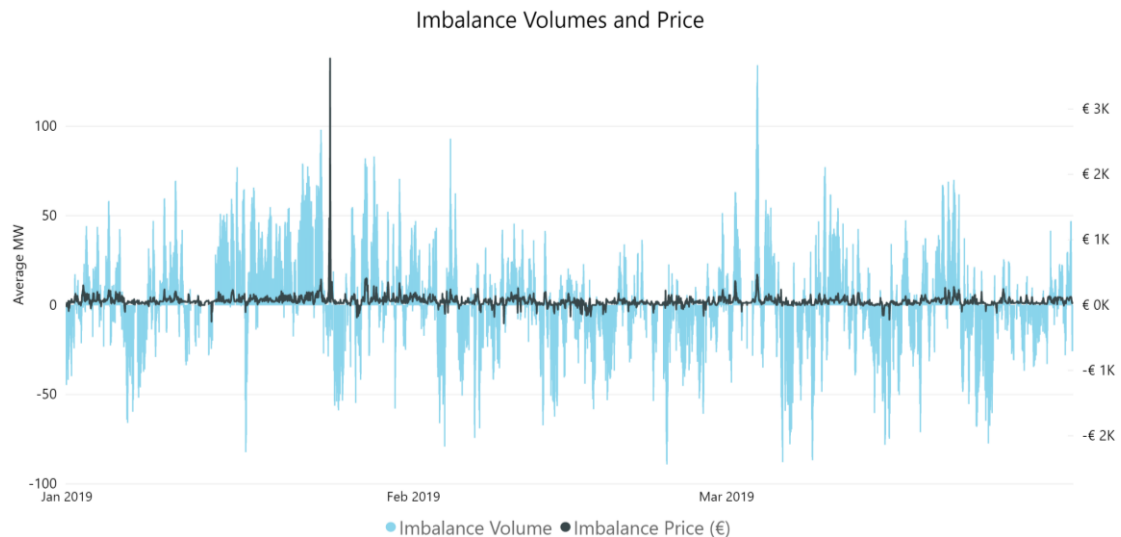


Graph 5 IDM Prices

### 2.3 BALANCING MARKET RESULTS

Imbalance Settlement Volumes and Prices are set out below, showing relatively higher volatility in the market in both volumes and prices.

Graph 6 below shows Imbalance volumes and price for each 30 minute Imbalance Price Settlement Period.



Graph 6 Imbalance Volumes and Prices

The volatility of the balancing market is illustrated in the chart above. The highest prices can be observed on 24 January at €3,773.69 and the lowest price of €-280.45 observed on 09 February.

As previously discussed in the last public report, there was a spike in imbalance prices on the 24 January. During this period an Amber alert was issued for Northern Ireland. The alert was a consequence of plant outages at the Coolkeeragh site, coupled with low wind in Northern Ireland and exports on the Moyle Interconnector. These events led to the North South tie-lines flowing from South to North, to the point where such flows were maximized and all units in ROI were System Operator-flagged with a binding constraint. This meant that only NI generators could solve any marginal increase in load anywhere on the system and resulted in a high priced unit (which was being kept at minimum output) becoming marginal in the dispatch algorithm. As a result, some 5 minute prices were set at €5,636.62 for a number of Imbalance Pricing Periods.

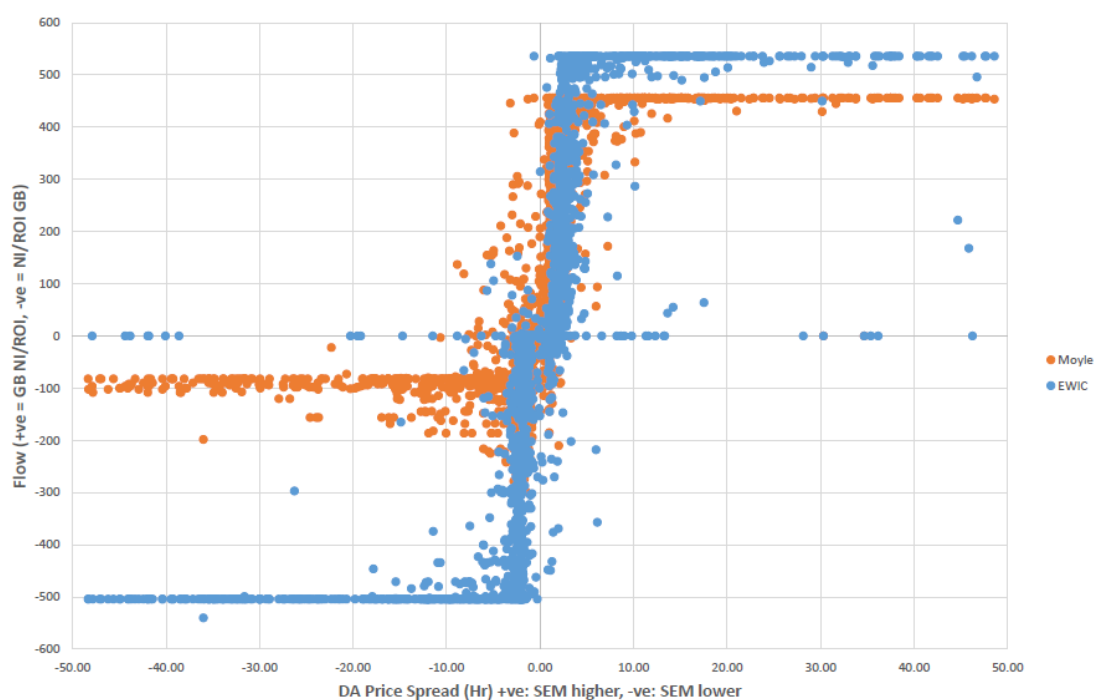
Some issues that have arisen in the balancing timeframe over the level of volatility and resulting prices and the Regulatory Authorities' Market Monitoring Unit will continue to monitor the application of bidding controls in the Balancing Market and market outcomes more generally.

## 2.4 INTERCONNECTOR FLOWS

In the new SEM, physical flows on Moyle and EWIC Interconnectors are linked to the SEM Day Ahead market and the price difference between it and the DAM price in GB. Where the DAM price in the SEM is higher than in GB the interconnectors will import power into the SEM. Where the SEM price is lower, for example because there are high levels of wind on the island, the interconnectors will export power to GB.

A common means of graphing this relationship is presented in Graph 7 below. The X-axis shows the difference in DAM 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 volume of the flow and its direction so that in the upper half of the graph, in which values are positive, the Interconnectors are importing into the SEM from GB. In the lower half the negative values indicate an export.



Graph 7 Interconnector Efficiency

For there to be evidence of efficient trading the scatter graph should show the periods of flow in the upper right of the graph and bottom left. In the upper right quadrant the SEM price is higher than the GB price and the Interconnectors are importing. In the bottom left quadrant the SEM price is lower than the GB price and the interconnectors are exporting.

Efficient flows on the Interconnectors were a key objective of the SEM market design and the pattern shown on the graph shows that flows on Moyle (red) and EWIC (blue) are overwhelmingly in the correct direction.

Ramping constraints, which limit the speed of change in the direction of flow, have not so far entailed significant flows in the wrong direction and market coupling has been successful in ensuring efficient interconnection between the SEM and GB markets. The benefits of these flows are reduced prices when the price level is higher in the SEM than in GB and higher exports and use of wind power when price in the SEM are lower than in GB.

### 3 CAPACITY AUCTIONS

#### 3.1 T-1 CAPACITY AUCTION FOR 2019/2020 RESULTS

The T-1 Capacity Auction for Capacity Year 2019/2020 took place on 13<sup>th</sup> December 2018 with the final results published on 1<sup>st</sup> February 2019. A total of 8,266 MW was successfully procured with an Auction Clearing Price of €40,645.66 €/MW per year and £36,890.00 £/MW per year. A total of 95 units out of 105 qualified units were allocated Awarded Capacity for 2019/2020.

#### 3.2 T-4 CAPACITY AUCTION FOR 2022/2023 PROVISIONAL RESULTS

The T-4 Capacity Auction for Capacity Year 2022/2023 took place on 28<sup>th</sup> March 2019 with provisional results published on 4<sup>th</sup> April 2019. The provisional awarded capacity for the year was 7,412 MW at an Auction Clearing Price of €46,150 €/MW per year and £43,030.26 £/MW per year. Provisionally 93 units will be allocated Awarded Capacity for the capacity year 2022/2023.

## 4 SUMMARY

The market continues to exhibit many of the features specified in the design, including a liquid Day Ahead Market and efficient interconnection. This facilitates the formation of efficient prices, a competitive market and the maximisation of renewable generation and its export to GB.

As expected with the implementation of a new market design a number of issues have arisen that are being addressed by the Single Electricity market Operator (SEMO) and the TSOs. These issues are generally focused on the operation of the Balancing Market. These include data issues that impinge on the timely and accurate publication of data and technical issues related to the operation of the new systems. Pricing and settlement issues have also arisen in a number of periods and the resolution of these are being progressed by the Market Operator.

A number of issues have been identified in the Balancing Market and the SEM Committee have directed SEMO to raise an Urgent Modification to the Trading and Settlement Code to make a change to the imbalance pricing process. A consultation paper on further potential changes is due to be published before the end of Q2 2019. However, the SEM Committee continues to be encouraged by the performance of the market overall and will continue to report on market performance in future reports, including the impact of future changes.