



Single Electricity Market

Performance

1 April 2020 – 30 June 2020

SEM-20-062

SEM Monitoring Report

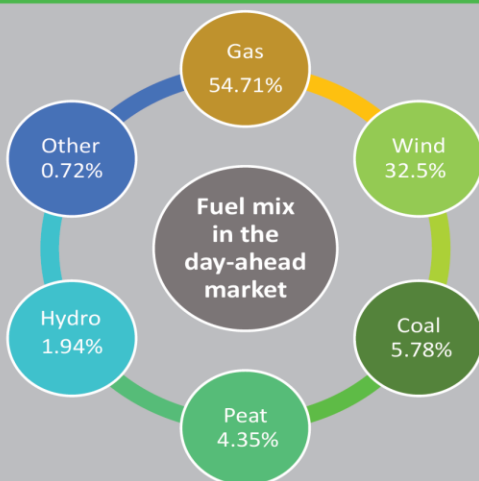
1 April 2020 - 30 June 2020

SEM
committee

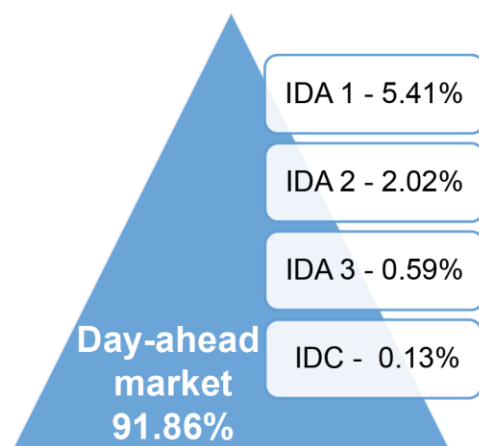
Key Highlights

- ✓ Prices in the day-ahead market were 58.55% lower than in the equivalent period last year. Decreased gas prices along with increased wind forecast in the day-ahead market contributed to the reduction.
- ✓ High liquidity concentrated in the day-ahead market with over 91% of ex-ante volumes traded with an overall value of over €236m.
- ✓ Interconnectors continue to flow efficiently between the SEM and GB.
- ✓ A notable drop in demand was observed across the market as a result of COVID 19 restrictions.

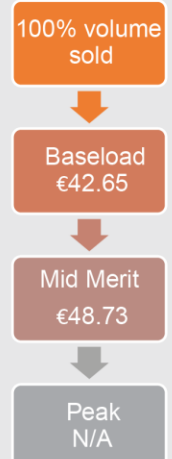
Fuel Mix



Market share by volume



DC contracts



Prices and impact of wind

- ✓ In periods of high wind, the day ahead price was at its lowest
- ✓ The highest prices are associated with a low wind forecast
- ✓ Reduction in average day-ahead price from €36.56 in previous quarter to €25.81

Average daily price in DAM €25.81
Lowest price in hourly period -€41.09
Highest price in hourly period €81.00



Highest prices during evening peak demand with just one exception
Lowest prices overnight

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 market, in particular with relation to bidding controls in place and to the requirements of 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 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 (TSOs) will buy and sell power from market participants to ensure that the demand and supply of power is exactly matched.

This report covers the second quarter of 2020 from 1 April to 30 June.

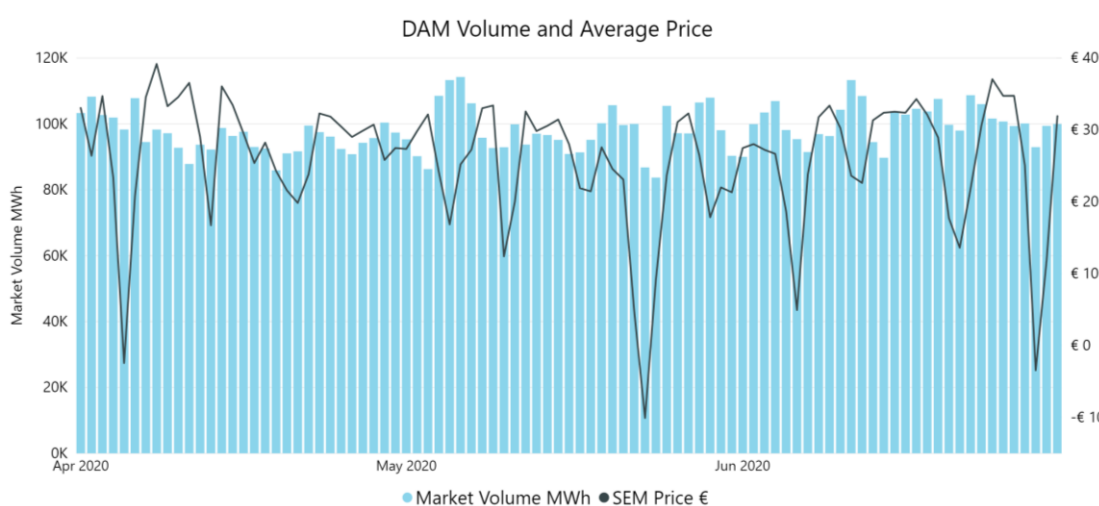
2 MARKET PERFORMANCE

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 continued to operate effectively and efficiently in line with the expectations of the market design. The graph below shows the daily average DAM price and volume for market in Q2 2020. In total the value of the DAM market during the period was over €236m.



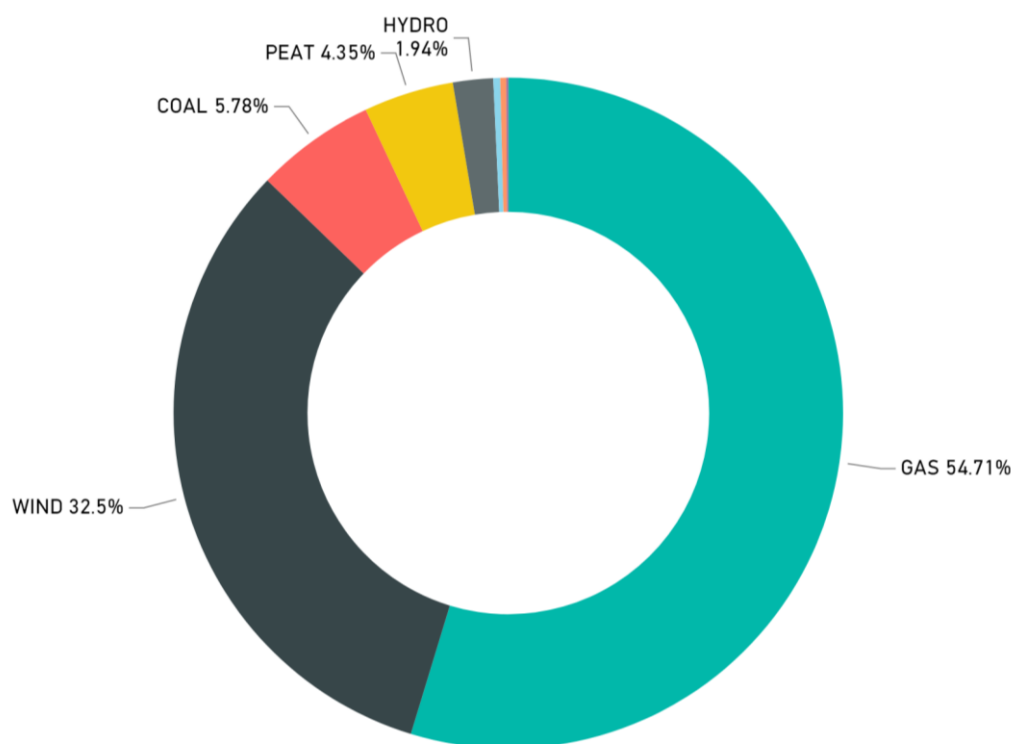
Graph 1 DAM

The average daily price in the DAM was €25.81 during the period, down from €36.56 in Q1 2020. The lowest price recorded in an hourly period was -€41.09 whilst the maximum price recorded in a single period was €81.00.

Prices in the DAM are lower than the equivalent period one year ago (decrease of 58.55%) which can broadly be accounted for by a decrease in gas prices and increasing levels of forecasted volumes of power being provided by wind at the Day-Ahead Stage.

The reduced system demand due to the impact of Covid-19 has also greatly contributed to the decrease in price.

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



Graph 2 Metered Generation by Fuel

Gas represents 54.71%, Wind 32.5%, Coal 5.78% and Peat 4.35% with the remainder made up of Hydro, Oil, Biomass and Distillate.

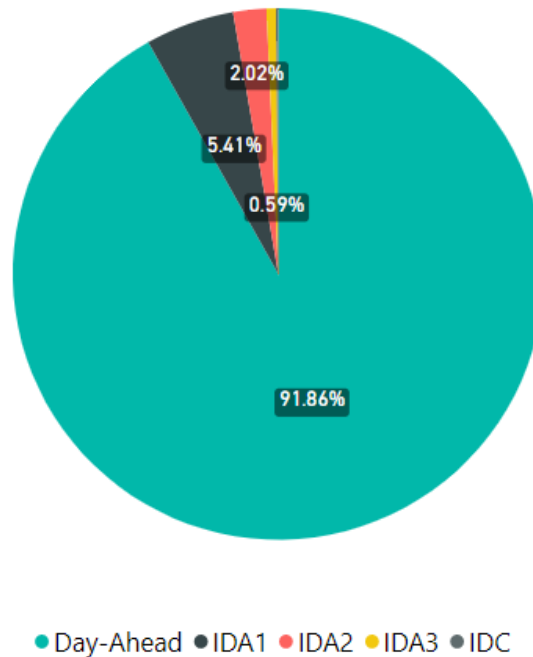
Table 1 below illustrates the relationship between prices and the forecast level of wind at day-ahead stage. It shows the highest prices over the period covered occurred during evening peak demand with one exception on the 2nd June (23:00) and the lowest prices occurring overnight. This has been consistent from the beginning of the market. 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. The highest prices continue to be associated with a low wind forecast while the lowest prices occurred during periods of much higher expected levels of wind.

High Price-Low Wind				Low Price-High Wind			
Date	Time	Price €	Wind Forecast MWh	Date	Time	Price €	Wind Forecast MWh
02-Jun-20	23:00	€81.00	335.91	23-May-20	05:00	-€41.09	4,039.58
08-Apr-20	17:00	€53.61	144.18	23-May-20	04:00	-€39.97	4,064.35
08-Apr-20	18:00	€53.61	128.56	23-May-20	06:00	-€33.52	4,018.93
08-Apr-20	19:00	€53.61	123.49	23-May-20	03:00	-€29.81	4,050.83
08-Apr-20	20:00	€52.00	124.86	24-May-20	05:00	-€28.11	2,208.82

Table 1 DAM Price and Wind Forecast

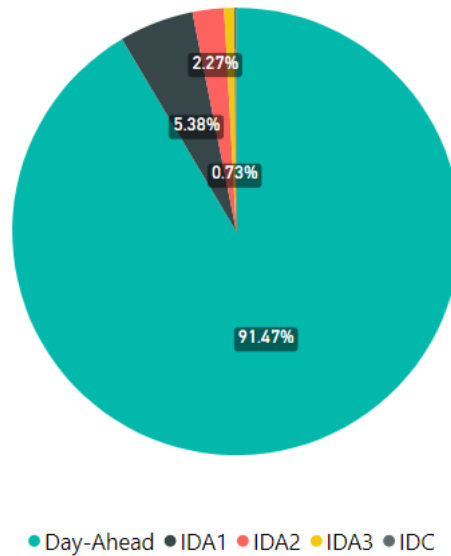
The concentration of trading in the DAM is demonstrated in Graphs 3 and 4 below which shows that over 91% of ex-ante volumes are traded through the DAM. Suppliers of electricity to business and domestic customers continue to cover the majority of their demand in this market. Graph 4 also shows the relative value of each ex-ante market.

Ex Ante Market Share by Volume Traded



Graph 3 Market Shares by Volume

Ex Ante Market Share by Value



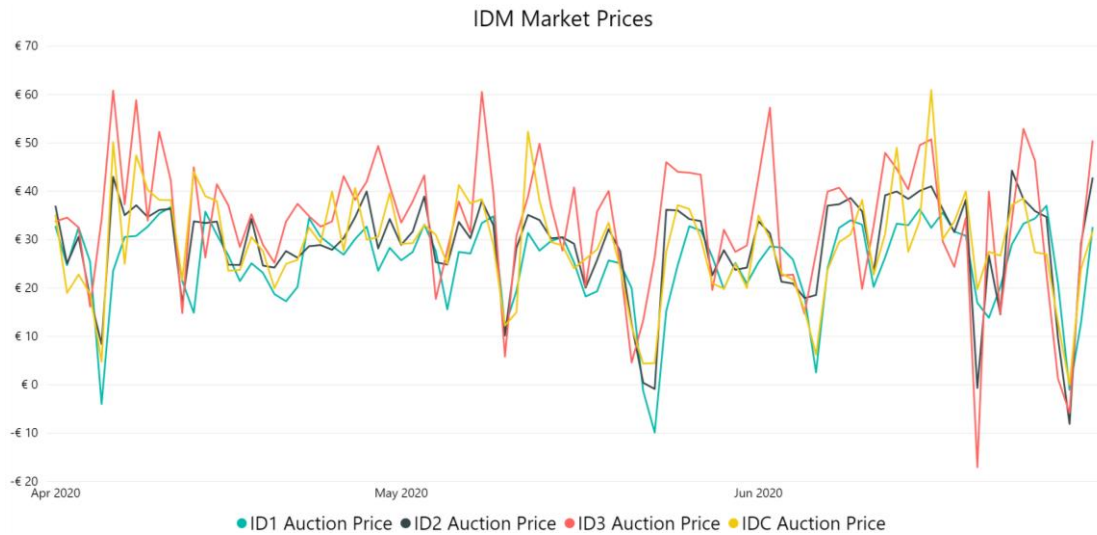
Graph 4 Market Share by Value

2.2 INTRA-DAY MARKET

The Intra-Day markets have allowed market participants to refine their market position by buying or selling closer 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 (IDC). The IDM1 and IDM2 are coupled markets with GB while the IDM3 and IDC are local SEM-only markets. The IDM1 auction accounted for 5.41% of the total ex-ante market by volume; the IDM2 auction accounted for 2.02%, the IDM3 auction for 0.59% and the IDC for 0.13%.

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 €25.13; IDM2 €28.66 and IDM3 €33.10 and the IDC market €30.28, all of which are significantly lower than Q4 2019 and Q1 2020 averages. The total value of these markets over the period was €13.9m in IDM1; over €5.8m in IDM2; €1.8m in the IDM3 and over €194k in the IDC market. The IDM2 and IDM3 auctions 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).

Graph 5 below illustrates the generally lower prices in the IDM1 with the higher prices in IDM3 market. Prices in all markets generally move in a similar direction with the IDM3 and IDC markets showing the largest movement.



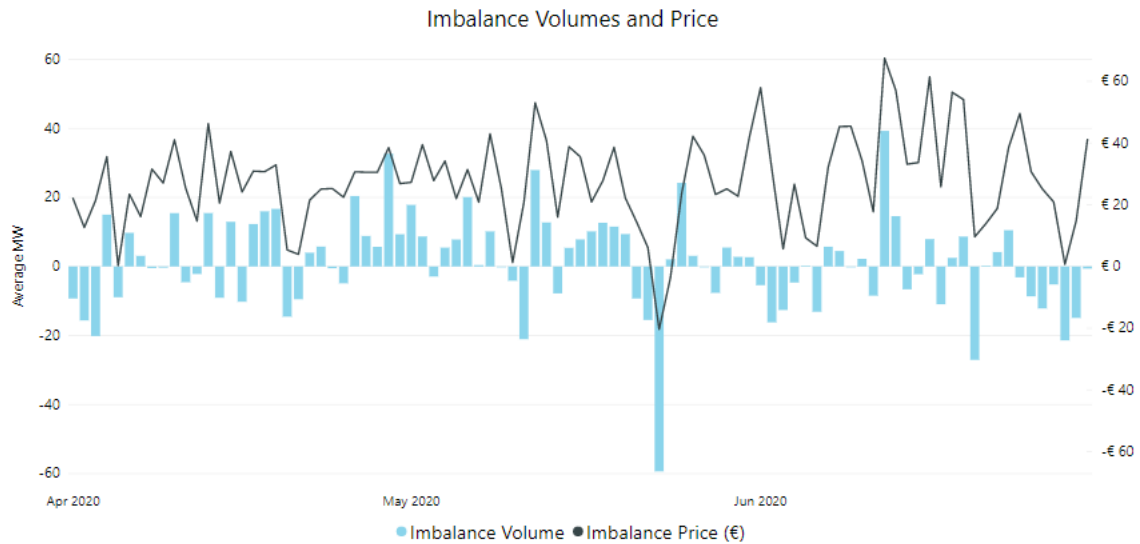
Graph 5 IDM Prices

Two slight price spikes in the IDM3 can be observed from the graph above on 6 April and 8 May. On 6 April, the average price was €60.85 with a price peak of €71.40 at 19:00. On this day, there was a significant variation between the forecast wind output and actual wind output, which contributed to increasing prices through the IDM markets. On 8 May, a similar scenario resulted in the forecast wind being higher through the whole trading day with an average difference of 100MW. Here, the price peaked in two hourly periods (18:00 and 19:00) at €68.07.

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 the average Imbalance volumes and price for each trading day over a 30 minute Imbalance Price Settlement Period.



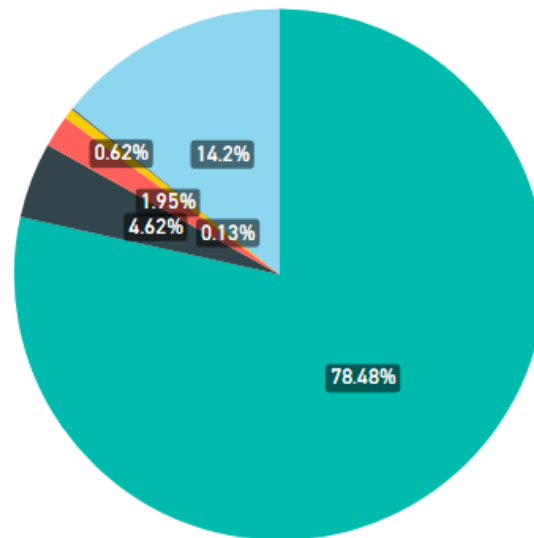
Graph 6 Imbalance Volumes and Prices

The highest settlement 30 minute settlement price occurred on 12 June at €268.29 and the lowest 30 minute price of €-390.13 occurred on 27 June.

2.3.1 BALANCING MARKET COSTS

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 cost/value of Balancing, we can show the market share of the Balancing Market in comparison to the ex-ante markets. This is illustrated in the graph below.

Market Share by Value (inc. Balancing Market)



● Day-Ahead ● IDA1 ● IDA2 ● IDA3 ● IDC ● Balancing
Graph 7 Market Share (including Balancing Market)

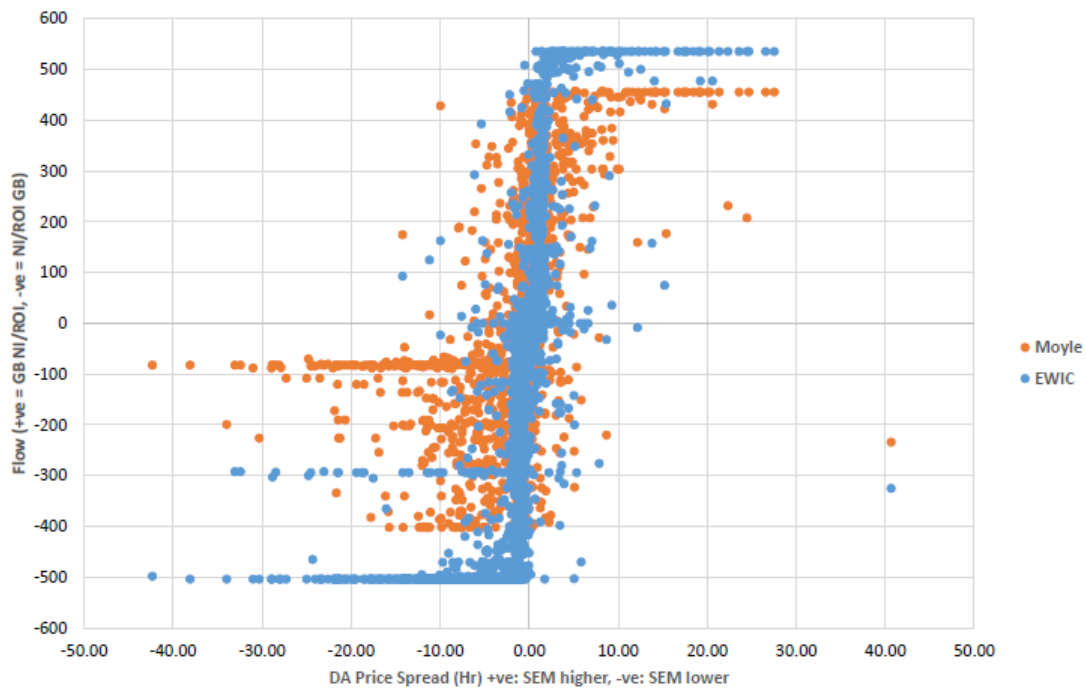
As the graph above shows, the DAM represents 78.48% of the market value, followed by the Balancing Market with 14.2%, IDM1 with 4.62%, IDM2 with 1.95%, IDM3 with 0.62% and IDC with 0.13%.

2.4 INTERCONNECTOR FLOWS

In the 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 unless GB is also experiencing high levels of wind.

A common means of graphing this relationship is presented in Graph 8 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 8 Interconnector Efficiency

For there to be evidence of efficient trading the scatter graph should show the periods of flow in the upper right quadrant of the graph and bottom left quadrant. 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 prices in the SEM are lower than in GB.

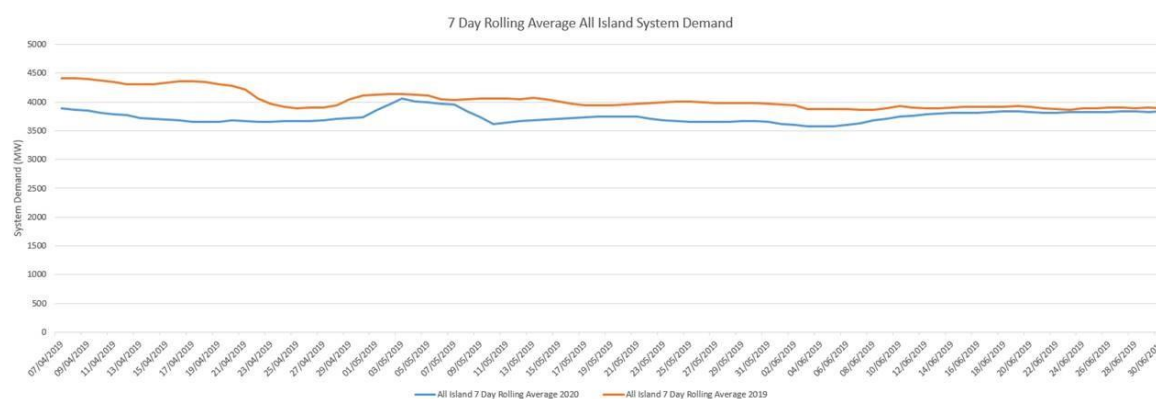
Two outlying points can be observed in the bottom right quadrant on both EWIC and Moyle which occurred on 3rd June at 23:00. On this occasion the SEM DAM price spiked at €81.00 for this one hour period after which the SEM price returned to a level below

that of GB and so the interconnector flow showed to be exporting with a lower SEM price compared to GB was seen again.

2.5 COVID-19 AND IMPACT ON DEMAND ACROSS THE SEM

COVID-19 has had a profound impact across all economies and countries, including Ireland, Northern Ireland and the SEM. One impact has been the resulting lower demand for electricity within the SEM. This section highlights changes observed in system demand over the period 1st April to 30th June.

The graphs below show the 7 day rolling average actual system demand on the island for the period comparing it to the same period in 2019.



Graph 9 7 Day Rolling Average of Demand for Ireland (1st April – 30th June)

Demand can be observed to decrease across the island as the lockdown was imposed by both governments. The MMU notes that towards the end of the quarter, demand levels have begun to rise and are now approaching the same levels seen in 2019 as government restrictions were lifted in both jurisdictions. The SEM Committee continues to monitor the overall market and a further analysis will be carried out in the next Quarterly Update (covering the July-September period).

3 DIRECTED CONTRACTS Q2 2020

3.1 DIRECTED CONTRACTS Q2 2020 ROUND 11

The tables and figures below show the price and volume of Directed Contracts subscriptions for the latest DC Round 11, which was held in June 2020 and covers the period Q4 2020 to Q3 2021.

Quarters on offer	Q4 2020 to Q3 2021		
Primary subscription dates	16-18 June 2020		
Supplementary subscription date	25 June 2020		
Volume sold	1 TWh		
% Volume Sold	100 %		
Average price / MWh	Baseload	Mid Merit	Peak
	€42.65	€48.73	N.A.

Table 2 Round 11 Key Information

A breakdown of the volumes sold in the Round 11 Primary and Supplemental windows are shown in Table 2:

MW	Offered in Primary Window			Sold in Primary Window			% Sold in Primary Window		
	Baseload	Mid-Merit	Peak	Baseload	Mid-Merit	Peak	Baseload	Mid-Merit	Peak
2020 Q4	28	0	0	26	0		93%		
2021 Q1	202	48	0	186	35		92%	73%	
2021 Q2	16	99	0	14	90		92%	91%	
2021 Q3	41	124	0	37	112		90%	90%	
							91%	85%	0%

MW	Offered in Supplemental Window			Sold in Supplemental Window			% Sold is Supplemental Window		
	Baseload	Mid-Merit	Peak	Baseload	Mid-Merit	Peak	Baseload	Mid-Merit	Peak
2020 Q4	2	0		2	0		100%		
2021 Q1	16	13		16	13		100%	100%	
2021 Q2	1	9		1	9	0	100%	100%	
2021 Q3	4	12		4	12	0	100%	100%	
							100%	100%	

Table 3 Primary and Supplemental Window volumes

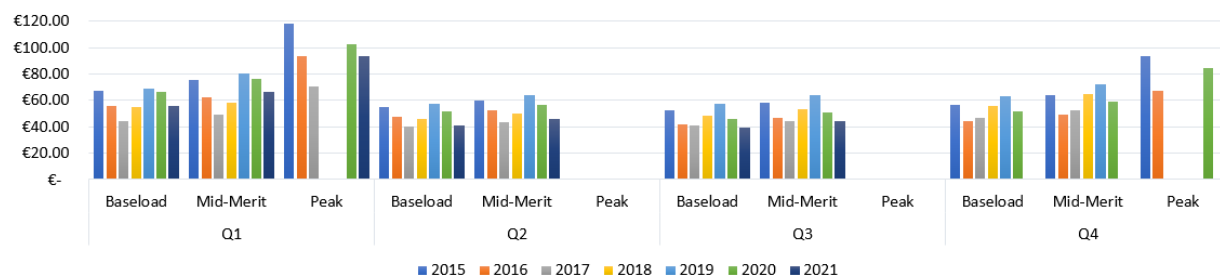
During Round 11, 91 % of Baseload, 85 % of Mid-Merit product was sold in the Primary Subscription Window. The remaining volumes were taken up in the Supplementary Window.

Directed Contracts Average Price (€/MWh) 2015 – 2021

DC Average Price per Quarter (€/MWh, 2015-2021)												
Year	Q1			Q2			Q3			Q4		
	Baseload	Mid-Merit	Peak	Baseload	Mid-Merit	Peak	Baseload	Mid-Merit	Peak	Baseload	Mid-Merit	Peak
2015	€ 67.02	€ 75.51	€ 117.97	€ 54.77	€ 59.74		€ 52.42	€ 57.80		€ 56.64	€ 63.96	€ 93.09
2016	€ 55.61	€ 62.31	€ 93.18	€ 47.85	€ 52.55		€ 41.91	€ 46.67		€ 44.25	€ 49.31	€ 67.30
2017	€ 44.09	€ 49.12	€ 70.73	€ 40.27	€ 43.65		€ 40.69	€ 44.12		€ 46.49	€ 52.16	-
2018	€ 54.51	€ 58.48	-	€ 46.30	€ 49.68		€ 48.20	€ 53.56		€ 55.90	€ 64.66	-
2019	€ 68.92	€ 80.20	-	€ 57.76	€ 63.94		€ 57.22	€ 63.73		€ 63.46	€ 72.44	-
2020	€ 66.72	€ 76.03	€ 102.60	€ 51.62	€ 56.74		€ 46.14	€ 51.18		€ 51.28	€ 59.00	€ 84.46
2021	€ 55.68	€ 66.54	€ 93.29	€ 41.33	€ 46.07		€ 39.30	€ 44.21		-	-	-

Directed Contracts Average Price (€/MWh) 2015 – 2021

Directed Contracts Average Price per Quarter (€/MWh) 2015-2021



Directed Contracts Volumes (GWh) 2015 – 2021

DC Volumes (GWh, 2015-2021)																
Year	Q1			Q2			Q3			Q4			Total			
	Baseload	Mid-Merit	Peak	Baseload	Mid-Merit	Peak	Baseload	Mid-Merit	Peak	Baseload	Mid-Merit	Peak	Baseload	Mid-Merit	Peak	
2015	902	48	74	891	63	0	935	7	0	984	15	11	3711	133	84	
2016	877	10	47	1142	7	0	1247	3	0	956	7	0	4222	26	47	
2017	853	27	12	1152	160	0	689	190	0	1014	171	0	3708	549	12	
2018	1390	0	0	1964	321	0	786	576	0	721	653	0	4861	1550	0	
2019	813	619	0	612	364	0	532	732	0	447	863	0	2403	2578	0	
2020	1235	193	7	521	439	0	341	405	0	573	511	14	2669	1547	21	
2021	518	111	1	146	387	0	90	169	0	0	0	0	754	666	1	

Directed Contracts Volumes (GWh) 2015 – 2021

Directed Contracts Volumes (GWh 2015-2021)

