



Single Electricity Market Performance

01 July 2020 – 30 September 2020

SEM-20-085

SEM Monitoring Report

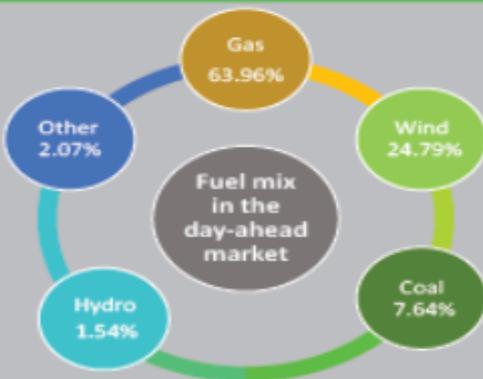
1 July 2020 - 30 September 2020

SEM
committee

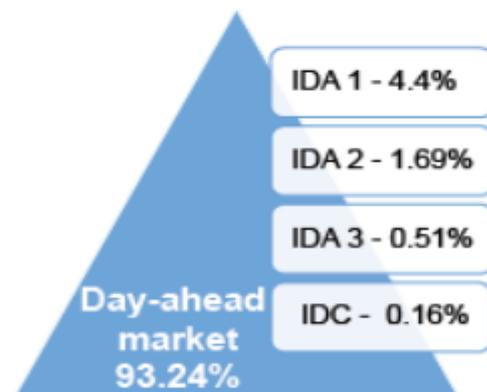
Key Highlights

- ✓ Prices in the day-ahead market were 20.7% 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 93% of ex-ante volumes traded with an overall value of over €367m.
- ✓ Interconnectors continue to flow efficiently between the SEM and GB.
- ✓ We continue to monitor the impact of the COVID-19 pandemic on the market with demand during the quarter rising.

Fuel Mix



Market share by volume



DC contracts



Prices and impact of wind

- ✓ In periods of high wind, the day ahead price dropped significantly
- ✓ The highest prices are associated with a low wind forecast
- ✓ Increase in average day-ahead price from €25.81 in previous quarter to €37.02

Average daily price in DAM €37.02
Lowest price in hourly period -€1.99
Highest price in hourly period €192.84



Highest prices during 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 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) buy and sell power from market participants to ensure that the demand and supply of power is exactly matched.

This report covers the third quarter of 2020 from 1 July to 30 September.

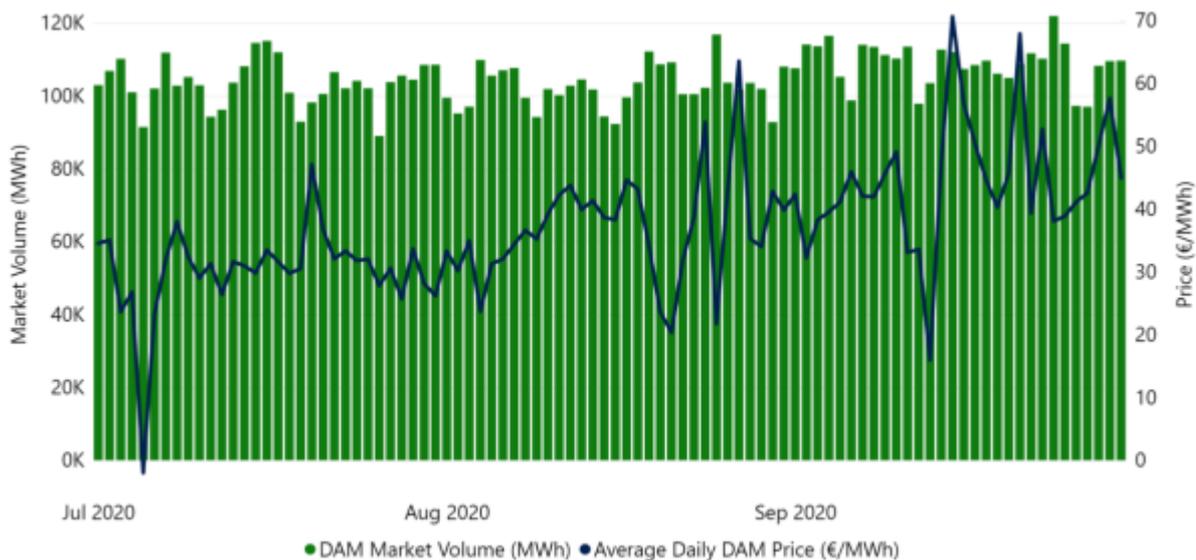
2 MARKET PERFORMANCE

The SEM is 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 are been designed to achieve this though 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 intraday 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

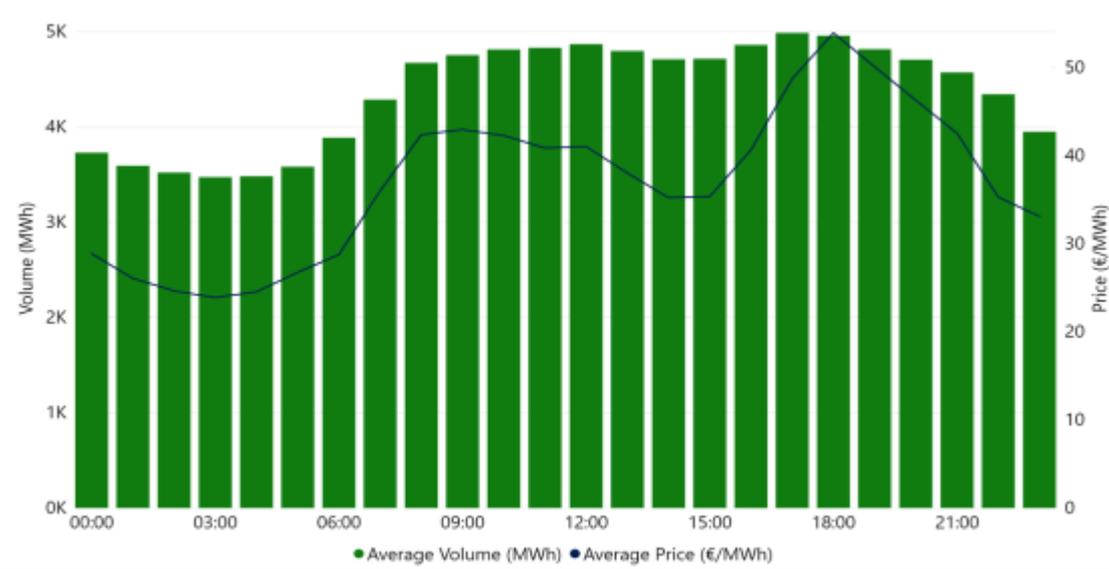
Over the period the DAM market has continued to operate effectively and efficiently in line with the expectations of the market design. The graph below shows the daily average DAM price and volume for market in Q3 2020. In total the value of the DAM market during the period was over €367.38M.



Graph 1 - DAM Market Volume and Average Daily DAM Price

The average daily price in the DAM was €37.02 during the period, up from €25.81 in Q2 2020. The lowest average daily price was -€1.99 with the highest average daily price €70.59. The lowest price recorded in an individual hourly period was -€19.18 whilst the maximum price recorded in a single period was €192.84.

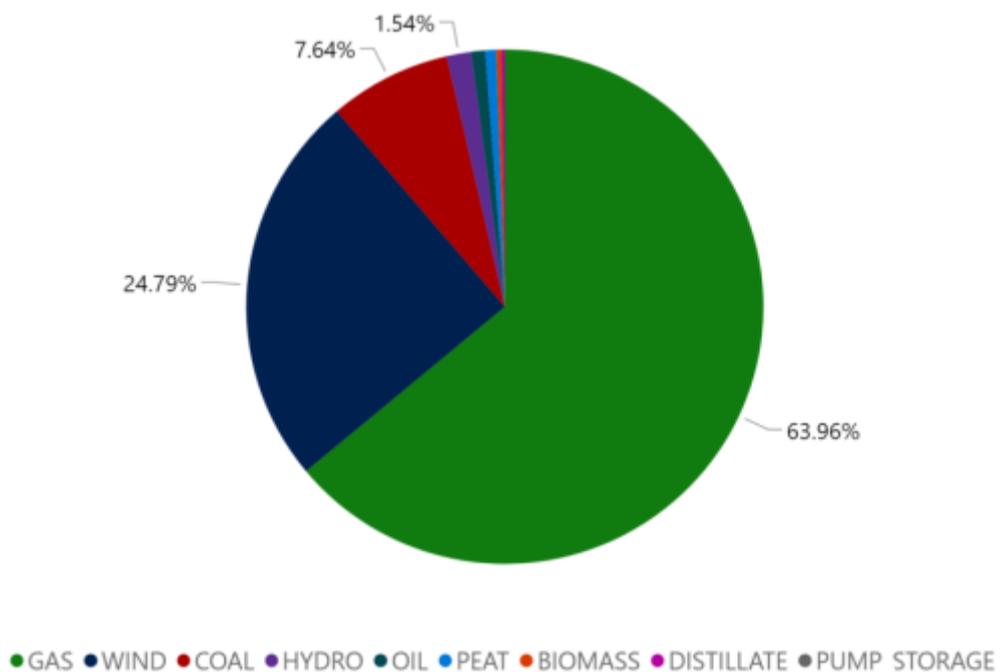
The below graph shows the average volume and price across each hourly period in the trading day in the quarter.



Graph 2 – Average Volume and Price per Hourly Period

Prices in the DAM are lower than the equivalent period one year ago (decrease of 20.7%) 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.

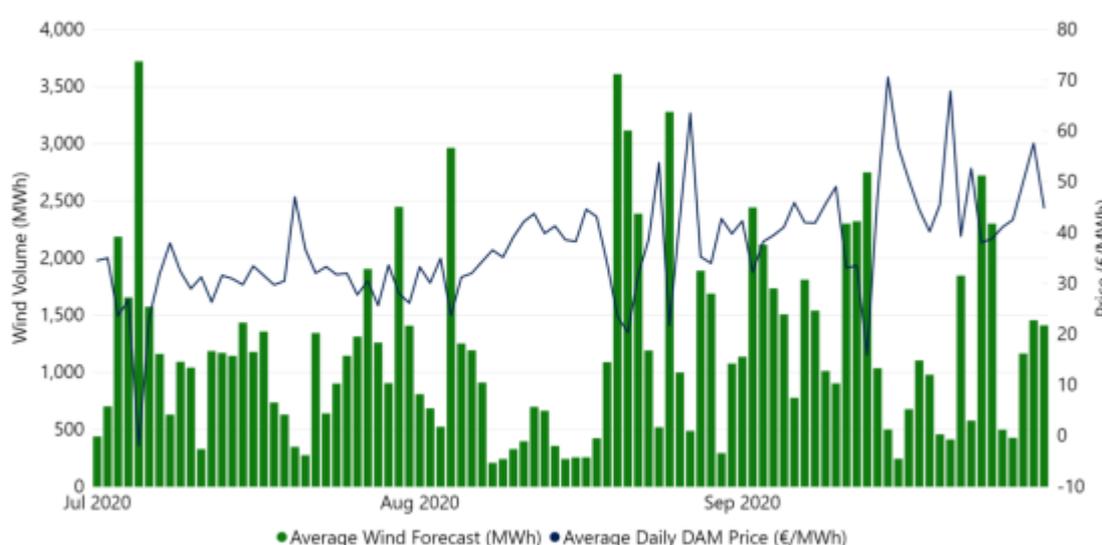
The share of DAM metered generation by fuel mix is shown in Graph 3 below.



Graph 3 – DAM Metered Generation by Fuel Mix

Gas represents 63.96%, Wind 24.79%, Coal 7.64% and Hydro 1.54% with the remainder made up of Oil, Peat, Biomass, Distillate and Pumped Storage.

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.



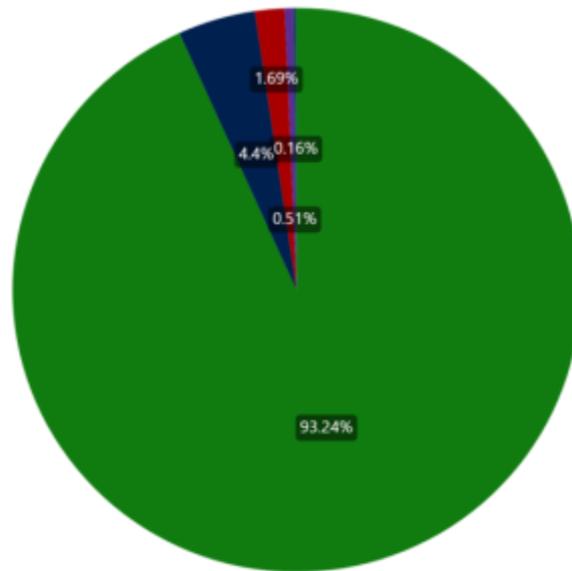
Graph 4 – Average Daily Wind Forecast and Average Daily DAM Price

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 and the lowest prices occurring overnight with one exception on the 05 July (14:00). This has been consistent from the beginning of the market.

High Price-Low Wind				Low Price-High Wind			
Date	Time	Price (€/MWh)	Wind Forecast (MWh)	Date	Time	Price (€/MWh)	Wind Forecast (MWh)
21-Sep-20	18:00	€ 192.84	457.67	05-Jul-20	14:00	-€ 19.18	4355.37
15-Sep-20	18:00	€ 176.22	140.06	13-Sep-20	03:00	-€ 15.63	3183.29
21-Sep-20	19:00	€ 141.49	487.17	13-Sep-20	04:00	-€ 15.63	3068.75
15-Sep-20	17:00	€ 138.25	142.25	05-Jul-20	01:00	-€ 15.42	3592.93
15-Sep-20	19:00	€ 131.20	172.62	13-Sep-20	05:00	-€ 15.38	2933.60

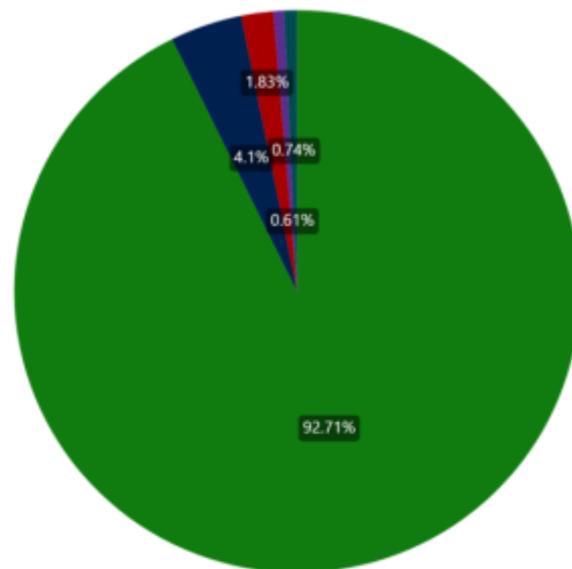
Table 1- DAM Price and Wind Forecast

The concentration of trading in the DAM is demonstrated in Graphs 5 and 6 below. Graph 5 shows that over 93% 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 5 also shows the relative value of each ex-ante market.



● DAM ● IDA1 ● IDA2 ● IDA3 ● IDC

Graph 5 - Market Shares by Volume



● DAM ● IDA1 ● IDA2 ● IDA3 ● IDC

Graph 6 - Market Share by Value

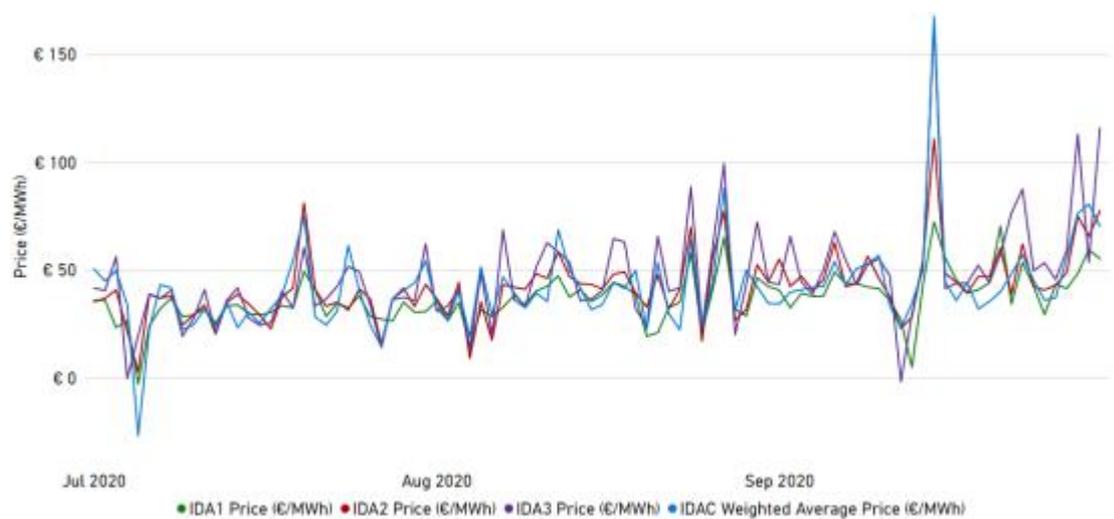
2.2 INTRADAY MARKET

The intraday 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 IDA1, IDA2 and IDA3 auctions and the Intraday Continuous market (IDC). The IDA1 and IDA2 are coupled markets with GB while the IDA3 and IDC are

local SEM-only markets. The IDA1 auction accounted for 4.4% of the total ex-ante market by volume; the IDA2 auction accounted for 1.69%, the IDA3 auction for 0.51% and the IDC for 0.16%.

Average prices show a tendency to rise during the intraday timeframe as it becomes closer to real time, with average prices in IDA1 being €36.72; IDA2 €42.19 and IDA3 €46.73 and the IDC market €41.52. The total value of these markets over the period was €18.48M in IDA1; €7.96M in IDA2; €2.63M in the IDA3 and €1.95M in the IDC market. The IDA2 and IDA3 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 7 below illustrates the generally lower prices in the IDA1 with the higher prices in IDA3 market. Prices in all markets generally move in a similar direction with the IDM3 and IDC markets showing the largest movement.

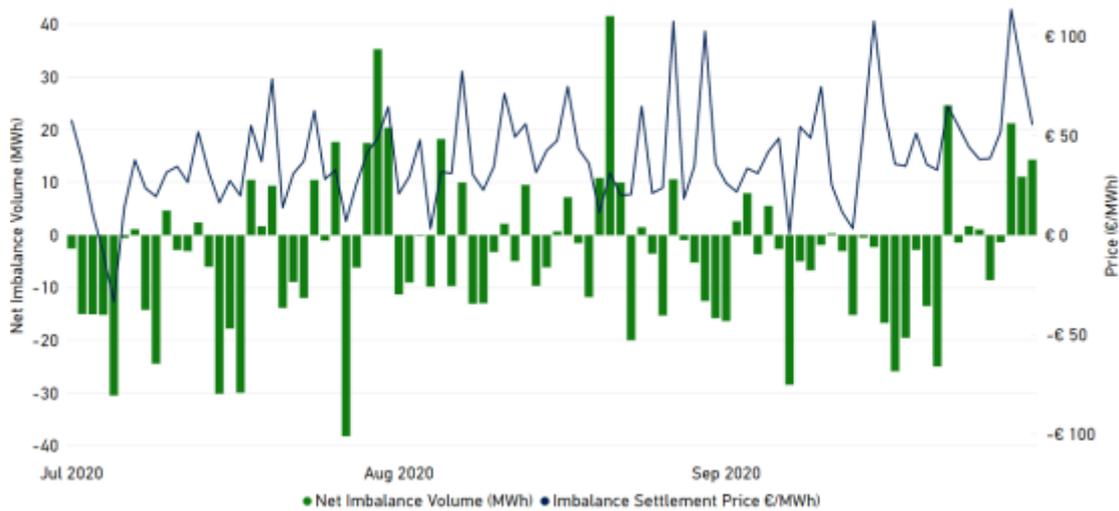


Graph 7 – Average Daily Intra-Day Prices

2.3 BALANCING MARKET RESULTS

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

Graph 8 below shows the daily average 30 Minute Net Imbalance Volumes and price for each trading day over the quarter.

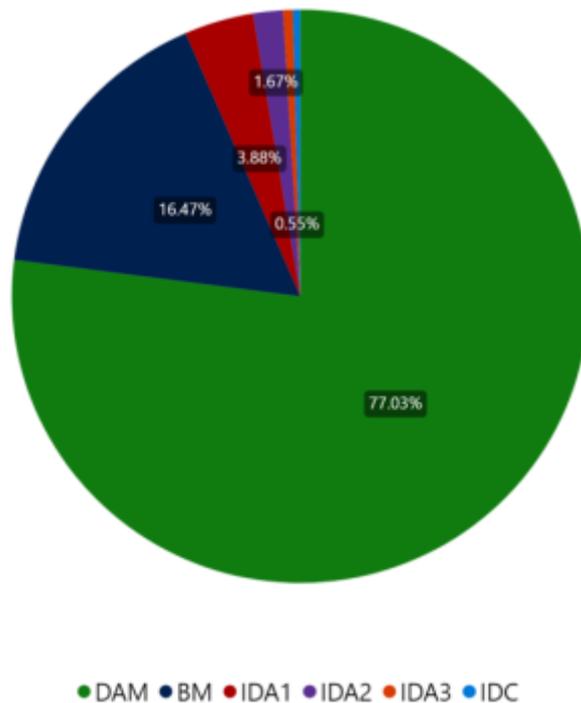


Graph 8- Average Daily Net Imbalance Volumes and Prices

The highest settlement 30 minute Imbalance Settlement Price occurred on 30 August at 11:00 of €486.74 and the lowest 30 minute Imbalance Settlement Price of €-335.81 occurred on 12 September at 13:00. The average Imbalance Settlement Price across the quarter was €39.23 which brings it to a similar level to the ex-ante markets.

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.



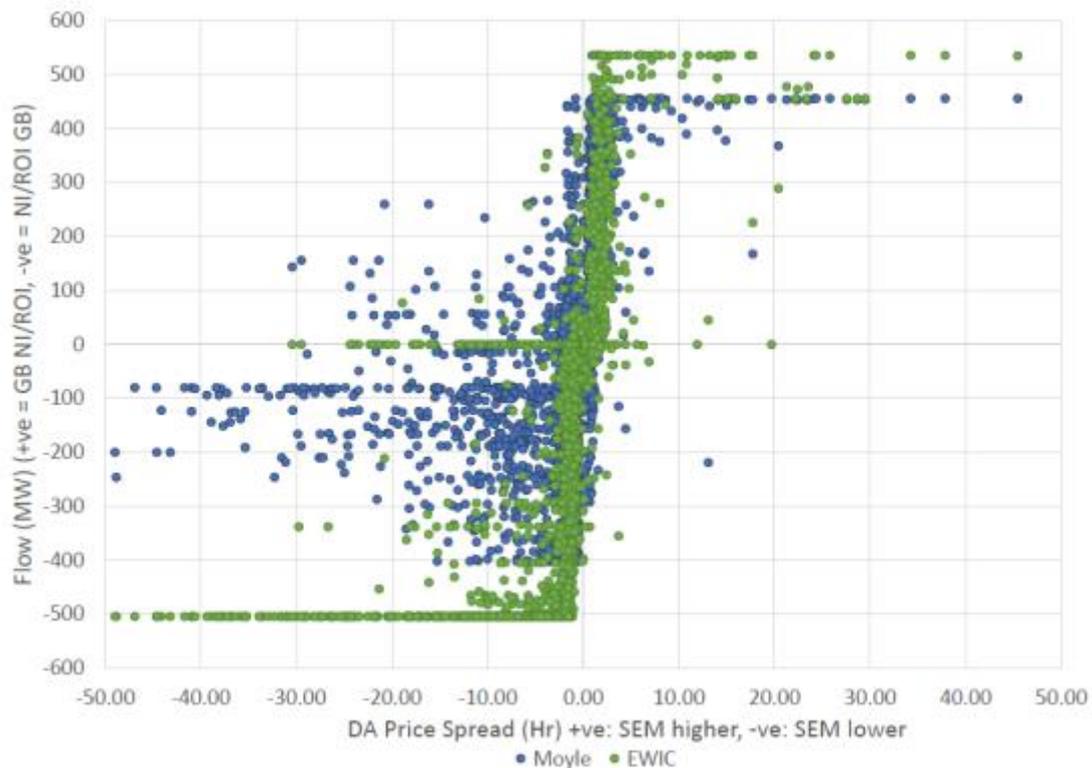
Graph 9 - Market Share by Value (including Balancing Market)

As the graph above shows, the DAM represents 77.03% of the market value, followed by the Balancing Market with 16.47%, IDA1 with 3.88%, IDA2 with 1.67%, IDA3 with 0.55% and IDC with 0.41%.

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 10 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 10 - 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 is a key objective of the SEM market design and the pattern shown on the graph shows that flows on Moyle and EWIC 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 to reduce prices in SEM when the price level is higher in the SEM than in GB and higher when prices in the SEM are lower than in GB, which generally coincides with periods of high wind in the SEM

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 01 July to 30 September.

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



Graph 11 - 7 Day Rolling Average of All Island System Demand (01 July – 30 September)

Demand through July can be observed to be at a similar level compared to 2019 and in some days below this. The MMU notes that towards the end of the quarter, demand levels have begun to rise above the levels observed in 2019. The SEM Committee will continue to monitor the overall market and further analysis will be carried out in the next Quarterly Update (covering the October - December period).

3 DIRECTED CONTRACTS Q3 2020

3.1 DIRECTED CONTRACTS Q3 2020 ROUND 12

The tables and figures below show the price and volume of Directed Contracts subscriptions for the latest DC Round 12, which was held in September 2020 and covered the period Q1 2021 to Q4 2021.

Quarters on offer	Q1 2021 to Q4 2021		
Primary subscription dates	15-17 September 2020		
Supplementary subscription date	24 September 2020		
Volume sold	0.85 TWh		
% Volume Sold	81 %		
Average price / MWh	Baseload	Mid Merit	Peak
	€53.68	€60.78	€92.22

Table 2 - Round 12 Key Information

A breakdown of the volumes sold in the Round 12 Primary and Supplemental windows are shown in Table 3:

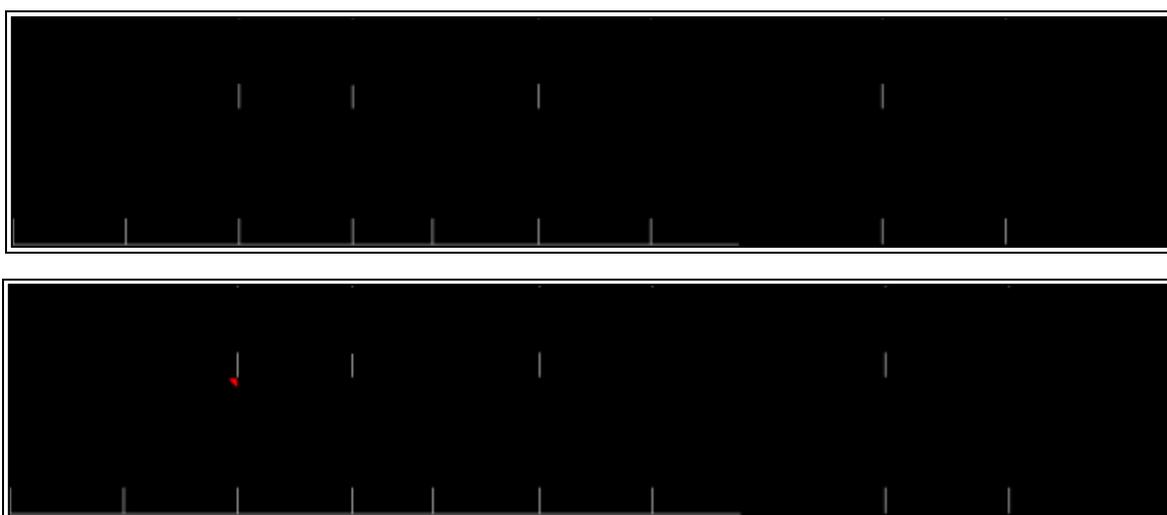


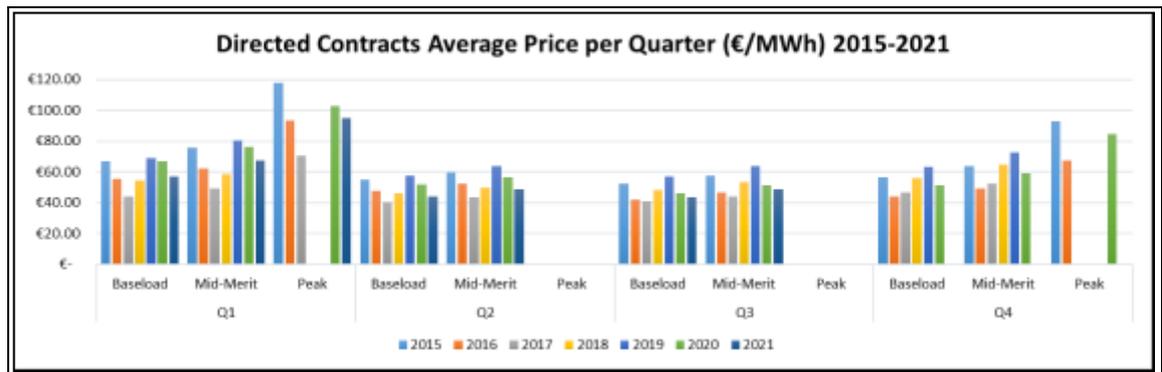
Table 3 - Primary and Supplemental Window volumes

During Round 12, 65 % of Baseload, 60 % of Mid-Merit and 43 % of Peak product was sold in the Primary Subscription Window. The remaining volumes were all taken up in the Supplementary Window except Q1 2021 Mid-Merit, where 25 % was taken up.

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	€ 56.97	€ 67.58	€ 94.73	€ 43.92	€ 48.88		€ 43.37	€ 48.69		-	-	-

Directed Contracts average price (€/MWh), 2015-2021



Directed Contracts volumes (GWh), 2015-2021

DC Volumes (GWh, 2015-2021)															
Year	Q1			Q2			Q3			Q4			Total		
	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	309	405	0	573	511	14	2637	1547	21
2021	637	226	1	157	451	0	257	278	0	116	147	1	1166	1102	2

Directed Contracts volumes (GWh), 2015-2021

