SEM committee



# ANNUAL REPORT

## October 2022 to September 2023

SEM committee

The decision-making authority for the Single Electricity Market on the island of Ireland

# Contents

# 1. Foreword from the SEM Committee

Across the past year, energy prices continue to dominate the headlines and people are looking closely at the ever-evolving future of energy.

Although we have seen some welcome falls in the recent historic highs of international wholesale fuel prices, end consumer bills remain high and market prices remain significantly above historic norms. We have worked to respond to these market challenges and ensure that the Single Electricity Market (SEM) continues to operate in the best interests of consumers, not only in terms of price, but also in ensuring security of supply and that the market is equipped to meet the challenges of meeting net zero commitments.

The average price in the day-ahead market (DAM) was 40% lower compared to the same period last year. This reduction has been primarily driven by a fall in the wholesale price of gas, which makes up the majority of the thermal generation in the SEM. We continue to feel the effects of the unprecedented high prices following Russia's invasion of Ukraine. Record-breaking temperatures across Europe during the spring/summer of 2022 also pushed energy demand to new levels, adding additional pressure on electricity generation which contributed to higher end market prices.

We have taken steps in response to these external market forces to ensure the SEM continues to operate as it should. Making changes to the directed contracts and strike price processes, we helped ensure market participants could continue to operate efficiently in the market. These steps, along with the effective delivery of our capacity auctions, also helps to protect security of supply for all consumers.

New capacity continues to be of paramount importance. As our market responds to the net zero challenge and older, carbon intensive generation retires, new generation must come forward to ensure supply is maintained. Twelve auctions have now been run in total with three taking place this reporting year. We welcome the new generation these auctions have brought forward but we recognise the capacity challenges that remain. Working with the regulators and governments in both Ireland and Northern Ireland, we have taken steps to ensure the auctions encourage the development of new generation by

adapting the auction parameters in response to market signals. We also made amendments to take account of requirements of the Clean Energy Package to bring forward carbon reduction measures. We will continue to take appropriate steps to ensure upcoming auctions are a success and this work will form a central role in our forward work programme.

Our work on developing a competitive and robust framework for the delivery of system services took significant steps forward this year. We published our decision on procurement arrangements for low carbon inertia services and consulted on the phased implementation of the Layered Procurement Framework. This work, along with the achievements already delivered through our DS3 programme, will help integrate more renewables onto the system and help deliver both government targets and bring consumer benefits.

Despite emerging challenges and new work areas that were not in our planned work programme, we completed or partially completed 91% of the projects we set out to achieve across this year. In addition to the deep breadth of routine work carried out by our teams, this exemplifies the agility, professionalism and responsiveness of our Regulatory Authority teams. We thank them for their ongoing commitment to market improvements and the protection of consumers. We also thank Paul McGowan for his unwavering commitment to the SEM Committee over many years as he retires from his role as a Commissioner at CRU. We wish him well for the future as he also leaves his role with the Committee.

We also recognise the commitment and co-operation of our partners in government departments in Ireland and Northern Ireland, market participants and other key stakeholders as we work to achieve our common goals. This collective effort continues to ensure the effective operation of the SEM as we look forward to another challenging year ahead.

**Bill Emery**

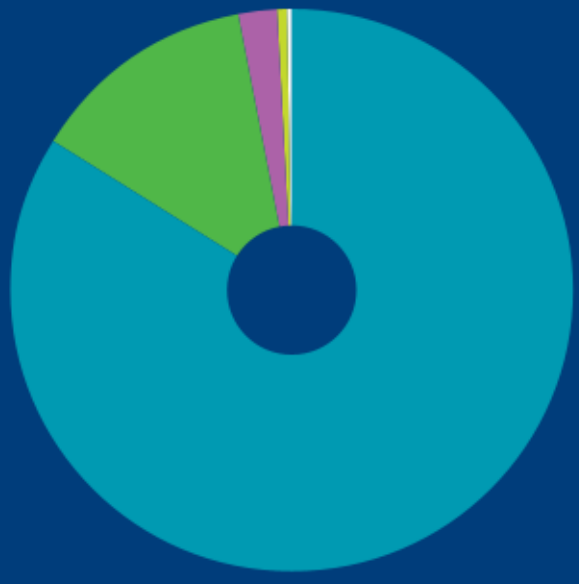
SEM Committee Chair

# 2. The Year in Summary

## KEY HIGHLIGHTS

- A reduction in the price wholesale gas has seen prices in the day-ahead market fall by 40%
- The day-ahead market is worth over €6 billion
- Over 84% of ex-ante volumes were traded through the day-ahead market
- Gas prices were 47% lower at the day-ahead-stage with the six-month forward price 39% lower compared to the year prior
- The total average availability of conventional generation was 73.8% and DSU total average availability was 23.2%
- Three capacity auctions ran across the year for delivery of capacity one and four years in advance

### Ex-ante market share by volume



- DAM - 83.93%
- IDA1 - 13.17%
- IDA2 - 2.13%
- IDA3 - 0.71%
- IDC - 0.06%

## DS3

**Progression of SNSP increased from 50% to 75% since 2015**

## Interconnectors

Interconnectors flowing in the right direction, electricity moving from the higher market price to the lower market price

# 67%

of the interconnector flows have been allocated from the GB to SEM direction.

# PRICES

Prices in the day-ahead market were down 40%

The total value for each market is:
€907 million in IDA1;
over €156 million in IDA2; €58 million in the IDA3;
and over €4.5 million in the IDC market.

# CRM

Three auctions completed across the year:

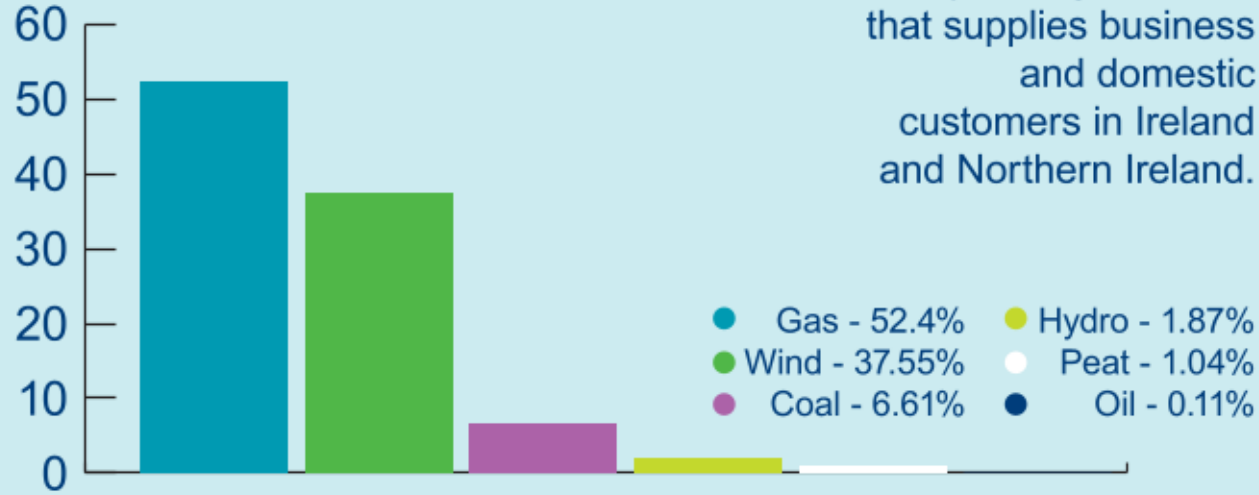
**T-1 2023/2024**
Procured 638.809 MW of capacity
Total cost circa €94million

**T-4 2026/2027**
Procured 7,204 MW of capacity
Total cost circa €700million

**T-4 2027/2028**
Procured 5,469 MW of capacity
Total cost circa €600million

# Fuel Mix in the DAM

The fuel mix illustrates the type of generation that supplies business and domestic customers in Ireland and Northern Ireland.



# 3 How the SEM works

The SEM is the wholesale market on the island of Ireland where electricity generators and suppliers trade the power used by homes and businesses across the island of Ireland.

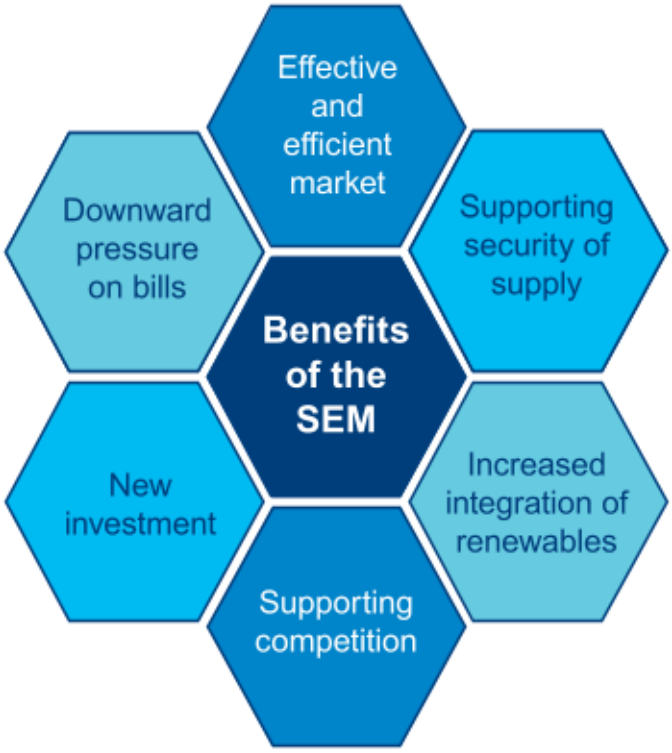
Much has changed since the SEM was established in 2007, not least the significant increase of renewable generation, introduction of new technologies and the increased advantages to be gained from interconnection with other markets.

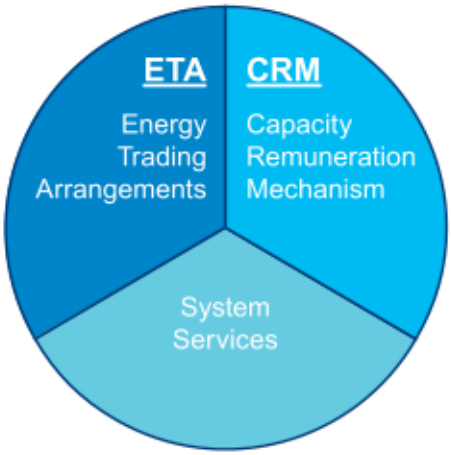
To take advantage of new opportunities and to improve the efficiency, competitiveness and operation of the market, new operational arrangements were put in place from 1 October 2018. This project, known as ISEM, sought to make best use of all the power on the system and ensure that interconnectors operate in the most efficient way. Compliance with the EU target model and alignment of cross border trading arrangements within the region was also at the core of the project.

## Benefits of the SEM

The SEM brings significant benefits for all consumers. It provides trading opportunities for generators, suppliers and investors while delivering an efficient and competitive electricity market.

The market is designed to support competition, allow increased renewables on the system, encourage new investment and support security of supply, all while placing a downward pressure on prices.



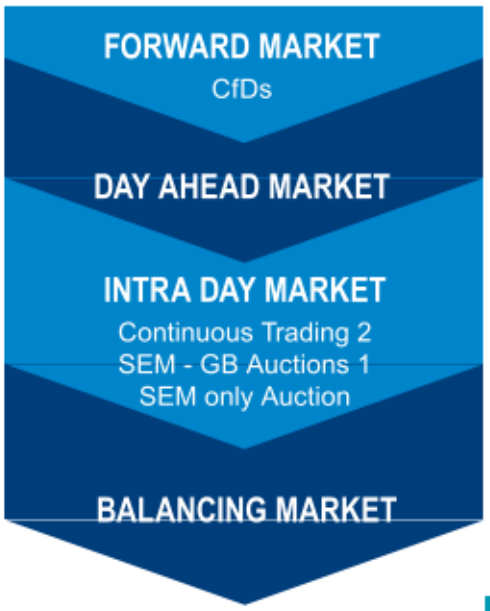




The SEM comprises three distinct areas that provide revenue streams relating to the services provided by market participants. The Energy Trading Arrangements (ETA), Capacity Remuneration Mechanism (CRM) and System Services make up the three main pillars of the market.

## Energy Trading Arrangements (ETA)

The ETA are the activities comprising wholesale energy trading, which make up the major portion of revenue and cost for the majority of market participants. A key principle of the SEM is the flexibility it offers for those who wish to sell and purchase power. A number of markets each spanning different trading time frames, have been designed to enable increasing levels of competition that place a downward pressure on prices whilst ensuring that the supply of power matches demand.

The SEM Energy Markets are broken down between forward, Day Ahead, Intraday and Balancing.



## Forwards market

To manage wholesale electricity price risk and achieve longer-term certainty, forward contracts allow generators and suppliers to contract publicly via Contract for Differences (CfDs). This allows generators to sell a fixed volume for an agreed upon price covering a specific period of time which provides both generators and suppliers with more wholesale price certainty. In the SEM there are regulated and unregulated forward contracts.

## Day Ahead Market

| | Market Opening | Market Close | Delivery Periods | Coupling |
|---|---|---|---|---|
| Day Ahead Market (DAM) | 11:00 (D-19) | 11:00 (D-1) | 23:00 - 23:00 (24 * 1 hr.) | SEM Only |

The day ahead market (DAM) is the largest ex-ante market by volume and value. Bids and offers can be submitted 19 days before the market closes at 11am the day before delivery. An algorithm, call Euphemia (the acronym for Pan-European Hybrid Electricity Market Integration Algorithm), determines the market price and position for all participants on an hourly basis.

Participation in the DAM is not mandatory, but it is the only way of achieving a day-ahead position in the SEM that will minimise exposure in the balancing market. Participants have opportunities to adjust their position by trading in the intraday market.

## Intraday Market

| Market Name | Order Book Opening | Order Book Closing | Delivery Periods | Coupling |
|---|---|---|---|---|
| IDM Continuous Trading | 11:45 (D-1) | 1hr before real time (t-1) | 48 * ½ hours | SEM only |
| IDA-1 | 23:00 (D -19) | 17:30 (D-1) | 23:00 - 23:00 (48* 1/2hrs) | SEM – GB |
| IDA-2 | 23:00 (D -19) | 08:00 (D) | 11:00 - 23:00 (24* 1/2hrs) | SEM –GB |
| IDA-3 | 23:00 (D -19) | 14.00 (D) | 17:00 - 23:00 (12* 1/2hrs) | SEM auction only |

The intraday market (IDM) allows participants to adjust their physical positions closer to the time power is delivered. The IDM runs right up to one hour before trading and takes account of up to date market information including, for example, unscheduled plant outages or congestion on interconnectors.

The market consists of three daily auctions with IDA-1 and IDA-2 coupled with the GB market via the interconnectors. The third Intraday Auction (IDA-3) is a local SEM auction that is not coupled with the GB bidding area.

## Balancing Market

| Market Name | Market Opening | Market Close | Delivery Periods | Coupling |
|---|---|---|---|---|
| Balancing Market | 13.30 (D-1) | 1hr before real time (t-1) | 23:00 – 23:00 (48*1/2 hrs) | I-SEM only |

The Balancing Market (BM) is different from the other markets in that it reflects actions taken by the TSO to keep the system balanced and secure. Unlike the other ex-ante markets, participation in the Balancing Market is mandatory.

The BM trading day is divided into 48 (30 minute) imbalance settlement periods, within which are six (five minute) imbalance pricing periods. The submission window for market data opens 19 days ahead of the trading day and closes one hour before the start of each 30-minute imbalance settlement period. The imbalance prices for each five minute imbalance pricing period are used to calculate the imbalance settlement price for each 30-minute imbalance settlement period.

A rules-based, flagging-and-tagging process is used to determine the initial imbalance price in each five minute imbalance pricing period. The flagging-and-tagging process prevents bids and offers that are scheduled due to a system constraint, or where units are operating at a unit constraint, from influencing the imbalance price.

## Capacity Market

The Capacity Remuneration Mechanism (CRM) allows generators to recover their fixed costs. It also helps to ensure there is enough capacity to meet demand and that this capacity is purchased at a competitive price via an auction.

Auctions for capacity required four years before delivery help to encourage new investment by providing a clear and pre-determined revenue stream. By promoting competition between market participants, it ensures payments more closely reflect the value provided by the capacity

Those generators that do not deliver the capacity when needed are subject to a financial penalty.

## Governance arrangements and market structure

The SEM Committee are the decision making authority for all Single Electricity Market matters. Established in 2007 following the introduction of the SEM, legislation required the establishment of SEM governance in the form of a SEM Committee.

The Committee consists of three Commission for Regulation of Utilities (CRU) (currently only two) and three Utility Regulator (UR) representatives along with an independent and a deputy independent member appointed jointly by the Department for the Economy and Department of the Environment, Climate and Communications.

On 25th February 2014 the UR and CRU signed a Memorandum of Understanding that outlines how the two organisations will maintain and facilitate effective and beneficial co-operation and collaboration. This signifies the ongoing commitment of both regulatory authorities to work together to ensure the effective delivery of both joint and separate statutory remits and for the customers of the energy and water sectors they regulate. They are separately responsible for the licensing of market participants, implementation of market codes as well as the regulation of the network operators.

The SEM is operated by the Single Electricity Market Operator (SEMO). This is a joint venture between the transmission system perators in Ireland (EirGrid) and Northern Ireland (SONI). EirGrid and SONI are also the Nominated Electricity Market Operators (NEMOs) for Ireland and Northern Ireland respectively. The NEMO is designated a responsible for the day-ahead and intraday market coupling in each national or regional bidding zone.

Detailed market rules and procedures govern the SEM with market behaviour scrutinised by the RAs market monitoring unit.

# 4 Market Performance

The SEM ex-ante markets are traded via several auctions at the day ahead and intraday stage. These auctions are complemented by continuous intraday trading. For each trading day, there are four auctions: Day Ahead (DAM), Intraday 1 (IDA1), Intraday 2 (IDA2) and Intraday 3 (IDA3).

The DAM and IDA3 are local auctions in the sense that only orders originated by market participants established in the SEM are matched. The IDA1 and IDA2 are coupled auctions, which means that orders originated in the SEM and GB are matched. Because of the coupling process, the capacity of the SEM interconnectors is allocated in these two auctions. Interconnector flows are allocated in the direction of the higher price zone.

The SEM Trading Day starts at 23:00 (GMT) D-1 and ends at 23:00 (GMT) D. The SEM DAM and IDA1 take place in the day ahead of the delivery while the IDA2 and IDA3 take place within the day of the delivery and clear volumes for the remaining hours within the day D.

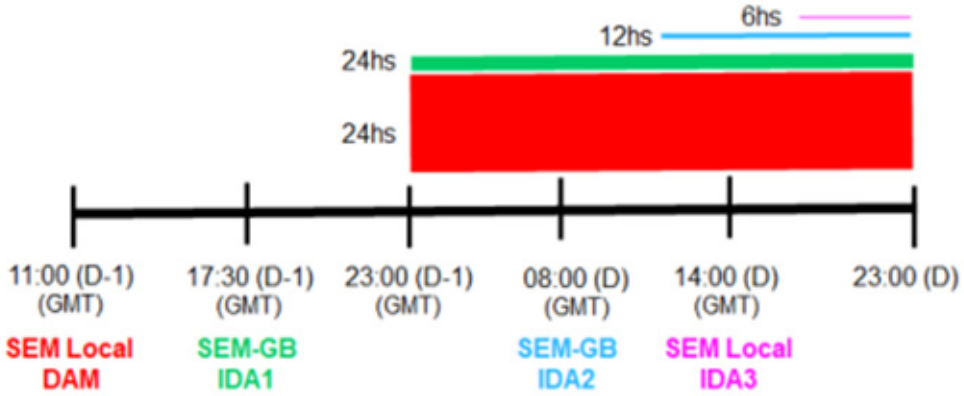



**Figure 1:** Timeframes and approximate volumes traded in SEM ex-ante markets

**Figure 2**. provides a snapshot of the overall market outcomes across the year. Explained in more detail across this report, this year saw significant volatility in wholesale gas costs, peaking in December at 264.54p/therm and dropping to a monthly low of 70.76p/therm in July. This corresponds to peak monthly DAM prices in December of €276.52/MWh and monthly DAM low price of €96.24/MWh.

| Monthly Averages | Oct-22 | Nov-22 | Dec-22 | Jan-23 | Feb-23 | Mar-23 | Apr-23 | May-23 | Jun-23 | Jul-23 | Aug-23 | Sep-23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAM (€/MWh) | 136.09 | 143.12 | 276.52 | 162.16 | 159.19 | 145.25 | 125.57 | 105.19 | 117.11 | 96.24 | 106.46 | 111.62 |
| % Change from previous month | -52% | 5% | 93% | -41% | -2% | -9% | -14% | -16% | 11% | -18% | 11% | 5% |
| % Change from previous year | -37% | -30% | 10% | -20% | -9% | -50% | -42% | -27% | -36% | -64% | -73% | -61% |
| Actual System Demand (MW) | 4330 | 4621 | 4885 | 4885 | 4782 | 4833 | 4469 | 4276 | 4189 | 4101 | 4185 | 4335 |
| % Change from previous month | 3% | 7% | 6% | 0% | -2% | 1% | -8% | -4% | -2% | -2% | 2% | 4% |
| % Change from previous year | -1% | -2% | 2% | 1% | -1% | 3% | 1% | 2% | 0% | 0% | 2% | 3% |
| Actual Wind Generation (MW) | 2047 | 2233 | 1647 | 1987 | 2026 | 1748 | 1545 | 884 | 878 | 1316 | 1401 | 1384 |
| % Change from previous month | 89% | 9% | -26% | 21% | 2% | -14% | -12% | -43% | -1% | 50% | 6% | -1% |
| % Change from previous year | 33% | 45% | -16% | 18% | -27% | 12% | 8% | -38% | -22% | 54% | 71% | 28% |
| Gas Price p/therm | 102.32 | 128.91 | 264.54 | 155.16 | 133.65 | 110.96 | 100.32 | 72.41 | 77.87 | 70.76 | 82.87 | 91.52 |
| % Change from previous month | -57% | 26% | 105% | -41% | -14% | -17% | -10% | -28% | 8% | -9% | 17% | 10% |
| % Change from previous year | -49% | -35% | -3% | -22% | -29% | -64% | -38% | -24% | -44% | -68% | -77% | -61% |
| Carbon Price (€/Tonne) | 70.46 | 75.84 | 85.61 | 79.91 | 91.82 | 89.41 | 89.98 | 84.18 | 85.51 | 86.57 | 84.61 | 82.09 |
| % Change from previous month | 0% | 8% | 13% | -7% | 15% | -3% | 1% | -6% | 2% | 1% | -2% | -3% |
| % Change from previous year | 19% | 15% | 8% | -5% | 1% | 20% | 11% | -1% | 2% | 6% | -4% | 17% |
| Coal Price ($/tonne) | 275.16 | 212.52 | 243.46 | 173.25 | 136.71 | 134.95 | 137.83 | 119.57 | 112.56 | 111.02 | 115.57 | 120.40 |
| % Change from previous month | -19% | -23% | 15% | -29% | -21% | -1% | 2% | -13% | -6% | -1% | 4% | 4% |
| % Change from previous year | 16% | 48% | 78% | 14% | -27% | -61% | -55% | -63% | -67% | -71% | -67% | -65% |
| EWIC % Import Periods | 30.51% | 18.61% | 30.58% | 49.03% | 38.91% | 50.00% | 50.56% | 75.86% | 77.72% | 67.11% | 68.11% | 73.75% |
| EWIC % Export Periods | 46.24% | 54.10% | 35.08% | 23.66% | 27.19% | 16.47% | 13.65% | 8.28% | 4.06% | 9.21% | 11.96% | 8.89% |
| EWIC % Not Flow Periods | 23.25% | 27.29% | 34.34% | 27.32% | 33.89% | 33.86% | 30.80% | 15.88% | 18.22% | 22.68% | 19.93% | 17.36% |
| Moyle % Import Periods | 40.52% | 29.51% | 44.19% | 62.05% | 53.65% | 64.68% | 77.50% | 85.42% | 92.22% | 84.04% | 75.24% | 83.33% |
| Moyle % Export Periods | 59.44% | 69.83% | 55.78% | 37.95% | 46.02% | 25.50% | 27.43% | 14.58% | 7.67% | 15.89% | 20.33% | 16.60% |
| Moyle % Not Flow Periods | 0.03% | 0.66% | 0.03% | 0.00% | 0.33% | 0.13% | 0.07% | 0.00% | 0.10% | 0.07% | 4.44% | 0.07% |

**Figure 2:** Market overview

## Day-ahead market

In total, the value of the DAM market for the year was over €6 billion and the volumes and prices traded are illustrated in **Figure 3**.

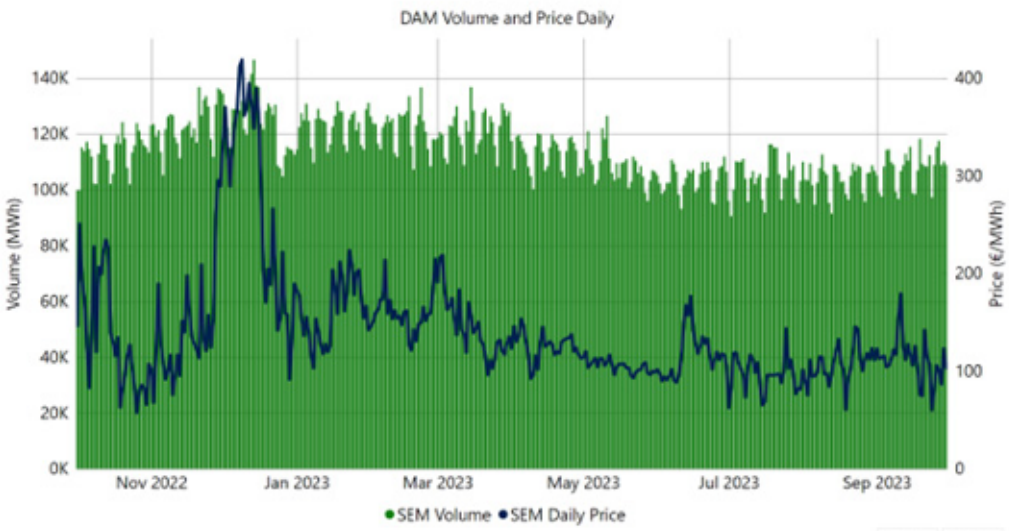



**Figure 3:** DAM Volume and Price Daily

The average daily price in the DAM was €140.40/MWh during the period from October 2022 to September 2023. The lowest price recorded in an hourly period was -€30.00/MWh and the maximum price recorded in a single period was €581.07/MWh. Prices in the DAM are 40% lower compared to the same period from October 2020 to September 2021. This has been primarily driven by a reduction in the price wholesale gas, which makes up a majority of the thermal generation in the SEM. Wholesale gas and electricity prices reached record levels in 2021/22 as the impact following Russia's invasion of Ukraine continues to be felt.

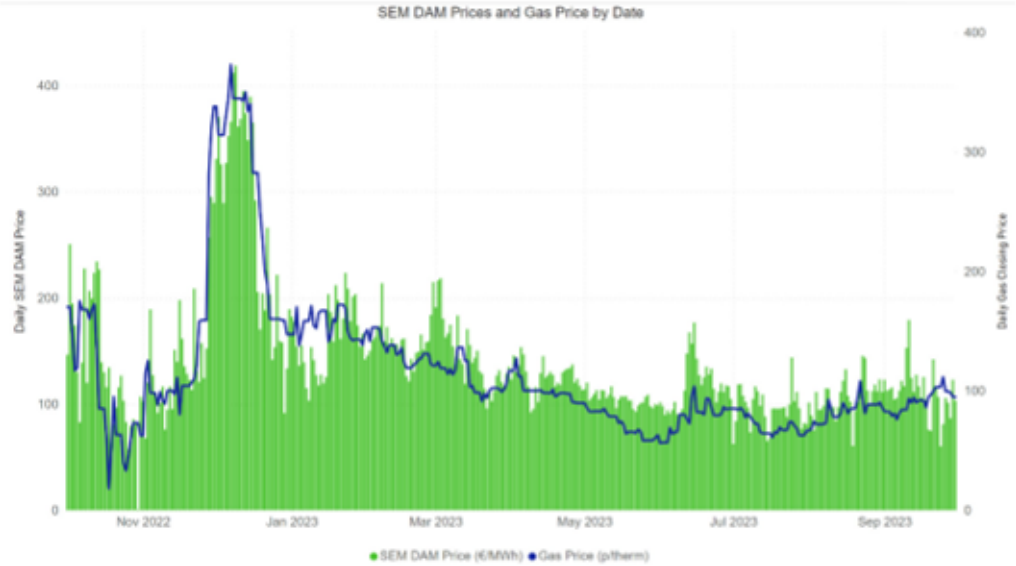



**Figure 4:** DAM Prices and Gas Price by Date

**Figure 5** below shows the average volume and price across each hourly period in the DAM showing how higher prices are correlated to peak demand and vice versa. Gas prices were 47% lower at the day-ahead-stage with the six-month forward price 39% lower compared to the year prior.

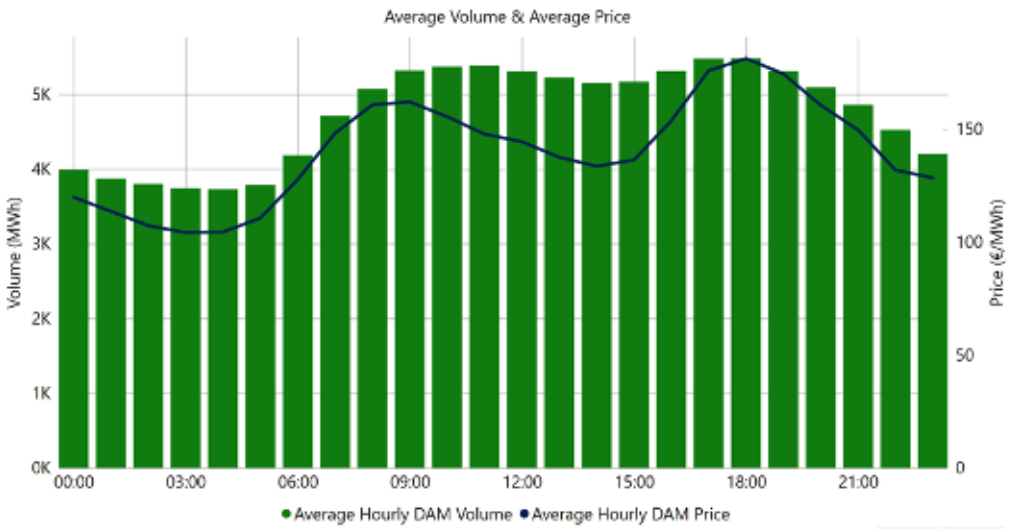



**Figure 5:** Average Volume and Average DAM Price in Each Hourly Period

The concentration of trading in the DAM, compared to the other markets before final balancing of supply and demand in the balancing market, has meant that over 84% of ex-ante volumes were traded through the DAM across October 2022 to September 2023, remaining comparable from the period October 2021 to September 2022 (86%). This is illustrated in **Figure 6**, which shows the total daily volumes in each ex-ante market and **Figure 7** translates this into a market share percentage.

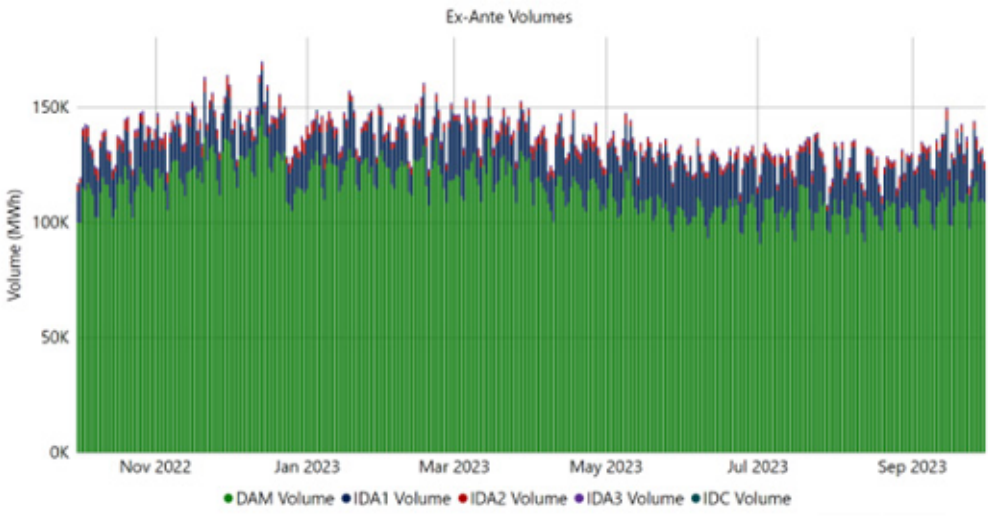



**Figure 6:** Daily Market Volume

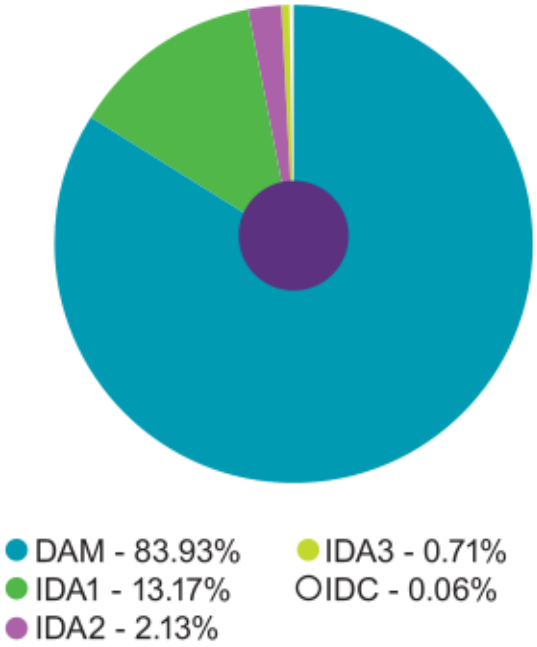



**Figure 7:**
Market Share by Volume

## System average availability

The system operators track the availability of conventional generation across the market and publish a monthly report detailing generator performance. Across the year, the total average availability of conventional generation was 73.8% and DSU total average availability was 23.2%. (Source: EirGrid Availability Report September 2023).

Planned and forced generation outages can have a significant impact on overall market performance, notably on end market prices. The system-wide availability in SEM has been decreasing for the past number of years due to the ageing of plants. This also affects the generation plant's ability to provide maximum adequacy support to demand.

## Fuel Mix in the DAM

The fuel mix illustrates the type of generation that supplies business and domestic customers in Ireland and Northern Ireland, including the role of renewable generation. **Figure 8** shows that gas was the predominant fuel used for generation in the SEM with 52.4% of metered generation. Wind made up 37.55%, with 6.61% coal and 1.87% hydro. The remaining generation was made up of peat, biomass, distillate, oil and pump storage.

Small scale generation, generating power less than 10MW, does not have to participate directly in the market. The fuel mix figures outlined does not therefore include many of the small-scale generators across the island. This generation is however captured in the overall fuel mix figures for the year as described later in this report.

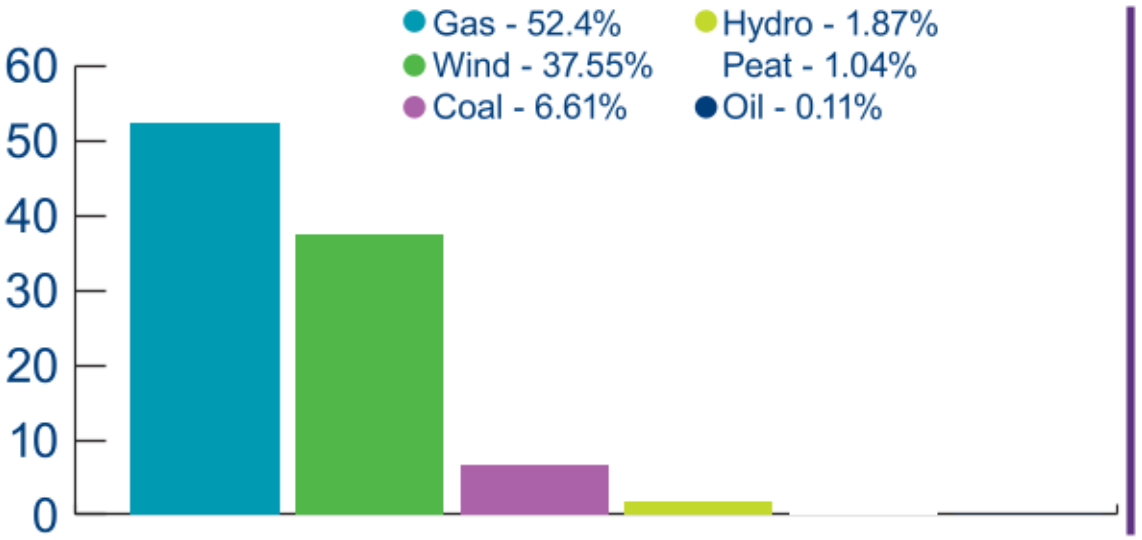



**Figure 8:** Metered Generation by Fuel Mix

## Wind and the Day Ahead Market

DAM prices have been significantly impacted by the level of wind on the system and the forecast of wind at the day ahead stage. **Figure 9** shows that the level of wind can vary significantly over the year, having an important influence on the fuel mix and price formation.

Daily DAM price against the daily aggregated forecast wind, shows the volatility of wind and its impact on the level and volatility of prices. Periods of high wind (columns) are associated with a reduction in DAM prices and likewise periods of low wind are associated with an increase in DAM prices.

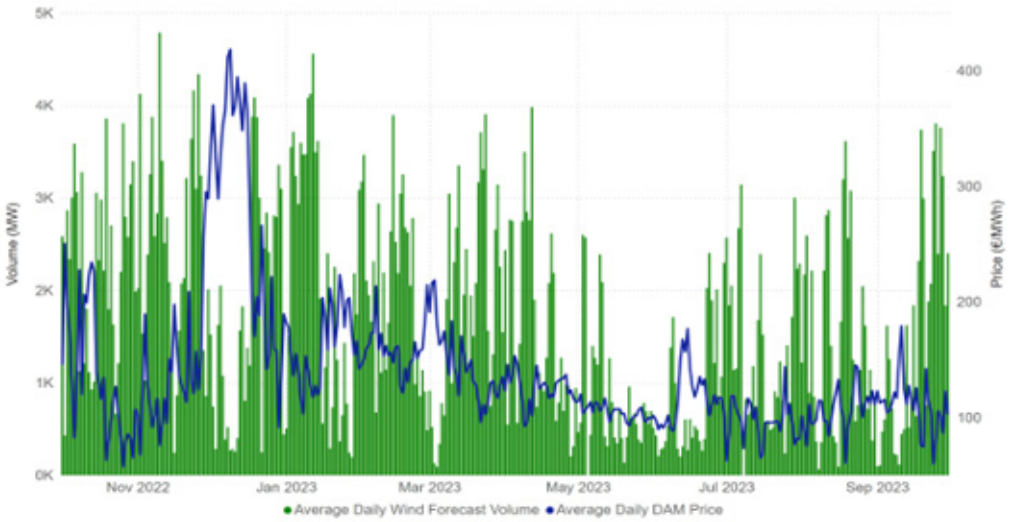



**Figure 9:** Average Daily Wind Forecast and Average Daily DAM Price

Lower prices can be directly correlated with high wind, while higher prices can be observed in periods when the level of wind is reduced. **Figure 10** illustrates the relationship between prices the wind volume across the year, highlighting the highest and low prices observed in the day-ahead market during the year.

| High Price - Low Wind | | | | Low Price - High Wind | | | |
|---|---|---|---|---|---|---|---|
| Date | Time | Price (€/MWh) | Wind Forecast (MW) | Date | Time | Price (€/MWh) | Wind Forecast (MW) |
| 08/12/2022 | 17:00 | 581.07 | 483 | 29/12/2022 | 03:00 | -30.00 | 3767 |
| 09/12/2022 | 17:00 | 545.12 | 293 | 29/12/2022 | 04:00 | -30.00 | 3747 |
| 08/12/2022 | 16:00 | 545 | 523 | 29/12/2022 | 05:00 | -30.00 | 3720 |
| 11/12/2022 | 17:00 | 540 | 84 | 29/12/2022 | 02:00 | -25.00 | 3763 |
| 08/12/2022 | 18:00 | 531.82 | 483 | 17/10/2022 | 04:00 | -10.31 | 4710 |

**Figure 10:** Daily Average DAM Prices and Daily Average Wind Volumes

**Figure 10** shows that highest prices are all occurring at evening peak demand with the lowest prices overnight where demand is on the system is lower.

## Day Ahead Market price comparison

Many factors impact on DAM prices, including of levels of demand, wind, fuel prices, carbon prices and power plant availability. **Figure 11** compares the seven-day rolling average DAM price in 2022/23 with the DAM price in 2021/22. Over 2022/23 the average DAM price has decreased (40%) compared to the same period in 2021/22.

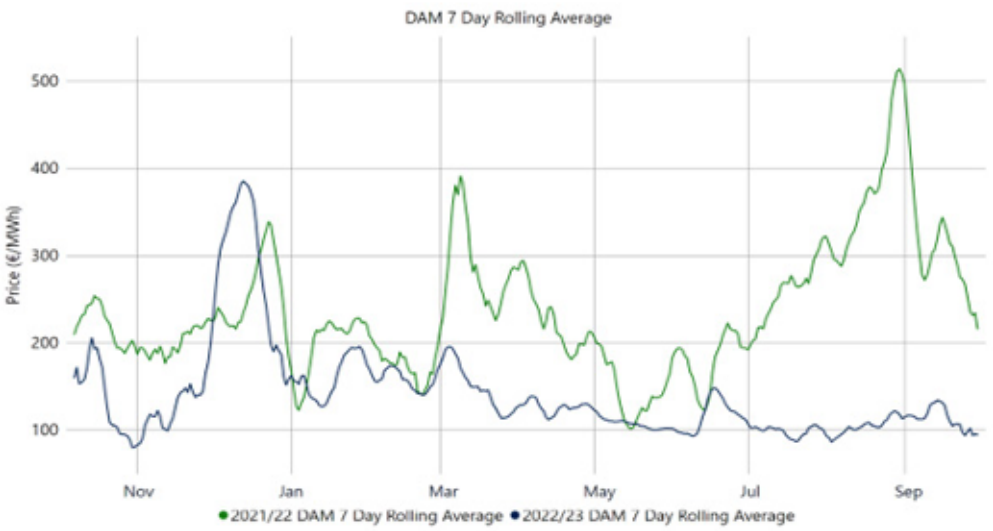



**Figure 11:** DAM Price 7 Day Rolling Average 2019-2020 and 2020-2021

## Intraday Market

The intraday markets across the year have allowed market participants to refine their market position by buying or selling nearer to real time, when power is generated and consumed. This assists market participants to balance their generation or consumption with their contracted position so that any imbalance between them is not subject to potential charges in the balancing market.

Since January 2021, when the new market coupling arrangements were introduced, the IDA1 and IDA2 are the only markets coupled with GB and allocation of interconnection capacity takes place solely during these auctions.

The IDA1 auction accounted for 13.17% of the total ex-ante market by volume. The IDA2 auction accounted for 2.13%, the IDA3 auction for 0.71% and the intraday continuous market (IDC) for 0.06% following similar trends to the previous year.

Average 2023/22 prices in the intraday markets have fallen significantly from 2021/22, as with the day-ahead prices due to the falling wholesale prices. Average prices for IDA1 were €139.17, IDA2 €150.77, IDA3 €160.65 and the IDC €158.00. The total value of these markets over the year has also decreased significantly due to the lower wholesale fuel prices. The total value for each market was €907m in IDA1; over €156m in IDA2; €58m in the IDA3 and over €4.5m in the IDC market.

The IDC market, unlike the other intraday markets is not an auction in which all trades in a particular period are cleared at a single price. It involves buyers and sellers posting volumes and prices on an order book visible to the market that are cleared by sellers and buyers accepting the volumes and prices offered.

Prices in all markets generally move in a similar direction. **Figure 12** below shows this trend across the year.

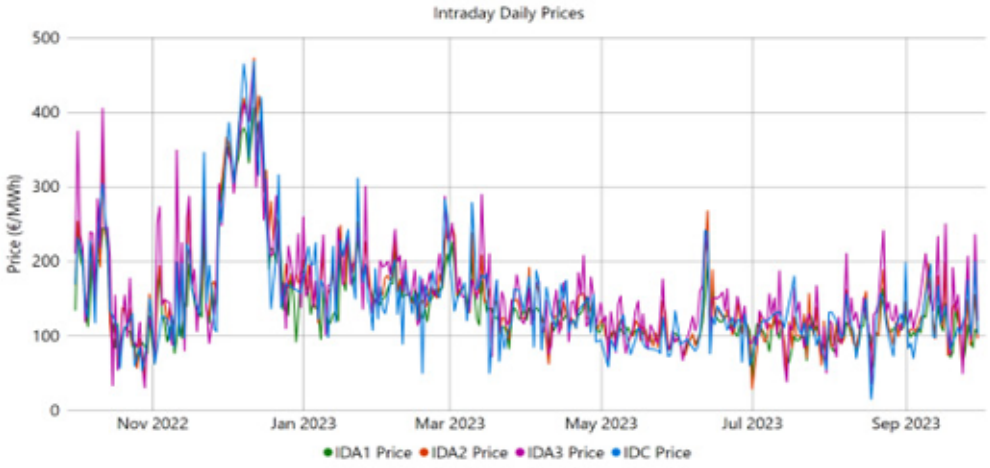



**Figure 12:** Intraday Market Average Daily Price

## Balancing Market

The balancing market is designed to ensure levels of supply meet the level of demand in real time. If for example, the level of demand is higher than expected, the market operator might instruct a generator with available capacity to increase their output.

Balancing market prices show relatively higher volatility in the market in terms of prices.

**Figure 13** below shows the Imbalance Settlement Price across the year.

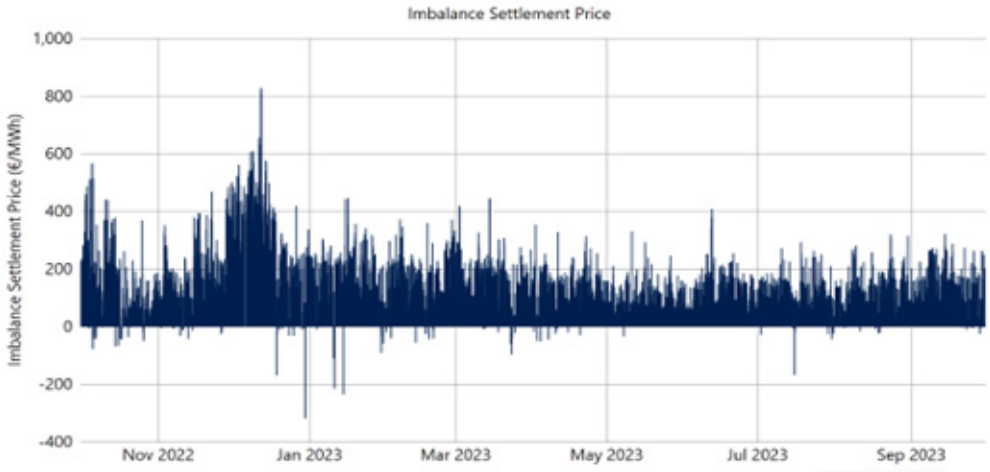



**Figure 13:** Imbalance Settlement Price

**Highest IB Price (four records with the same price)**

| Date | Imbalance Settlement Price |
|---|---|
| 12/12/2020 15:30 | 827.54 |
| 12/12/2020 16:00 | 827.54 |
| 12/12/2020 16:30 | 827.54 |
| 12/12/2020 17:30 | 827.54 |

**Lowest IB Price**

| Date | Imbalance Settlement Price |
|---|---|
| 30/12/2020 13:00 | -318.69 |

**Yearly Average: €140.51**

## Supplier behaviour

The SEM continues to provide suppliers with a competitive environment in which to purchase energy for their retail offerings to final consumers. Over the period suppliers have continued to directly participate across the markets, while the market arrangements have continued to enable suppliers the ability to play a role in setting prices instead of being only price takers.

Suppliers have continued to accurately calculate their customers' demand and sought to provide for this mainly in the DAM, which has accounted for the majority of volumes traded before balancing. The four Intraday markets have facilitated further participation through three auctions and a continuous trading market, providing flexibility to refine their position in light of changing circumstances. The Intraday 1 auction has seen an increase in volumes traded from 1 January 2021 when new market coupling arrangements with GB meant the markets are now only coupled across the IDA1 and IDA2 markets with the DAM excluded.

Suppliers can also purchase energy at regulated prices in the forward market through directed contracts, which are sold in advance of the Day Ahead and Intraday markets. These contracts enable suppliers to lock-down the price they will have to pay in the SEM. They also ensure that there is adequate energy generation capacity in the market through funding regular payments to generators who have been successful in auctions to supply their capacity. This mechanism in turn protects suppliers from very high energy prices (those above a strike price) that may occur in some periods. This requires that those generators qualifying for capacity payments pay a charge that remunerates suppliers for the costs that exceed this strike price.

# 5 Interconnectors

The SEM is connected to the electricity market in Great Britain via two interconnectors. The Moyle Interconnector is a sub-marine cable running between Scotland and Northern Ireland with a maximum potential import capacity (Scotland to Northern Ireland) of 450MW and a maximum potential export capacity (Northern Ireland to Scotland) of 500MW.

The East-West Interconnector (EWIC) is a high-voltage direct current sub-marine and subsoil power cable running between Wales and the Republic of Ireland. This provides capacity of 500MW flowing in both import and export directions.

Prior to 1 January 2021, the two interconnectors Moyle and EWIC were linked to the SEM via Day Ahead market coupling. From 1 January 2021 onwards the two interconnectors are no longer linked through day ahead coupling, but are now linked to GB via the intraday auctions IDA1 and IDA2. These new arrangements were put in place to reflect the UK exit from the Single European Day Ahead Market Coupling (SDAC). The current intraday coupling between the SEM and GB operates outside of the pan European framework market coupling between EU bidding zones.

The Intraday Coupling with GB was in operation prior to the EU exit and from 1 January 2021 it became the exclusive route for allocation of capacity between the two markets. The market coupling principles remain the same (i.e. Interconnection capacity continues to be allocated via implicit auctions). Within an efficient market coupling mechanism, Interconnectors should flow power in the direction of the market with higher prices at a particular trading period.

Interconnectors increase the social welfare by reducing price differentials between the two markets. That improves the efficiency of dispatch and price formation by enabling generation that would otherwise be curtailed, in times of surplus, to be exported. Conversely interconnector's flows can mitigate the price shocks during periods of scarcity by injecting additional generation into the SEM.

**Figure 14** shows the volumes imported and export across both SEM Interconnectors.

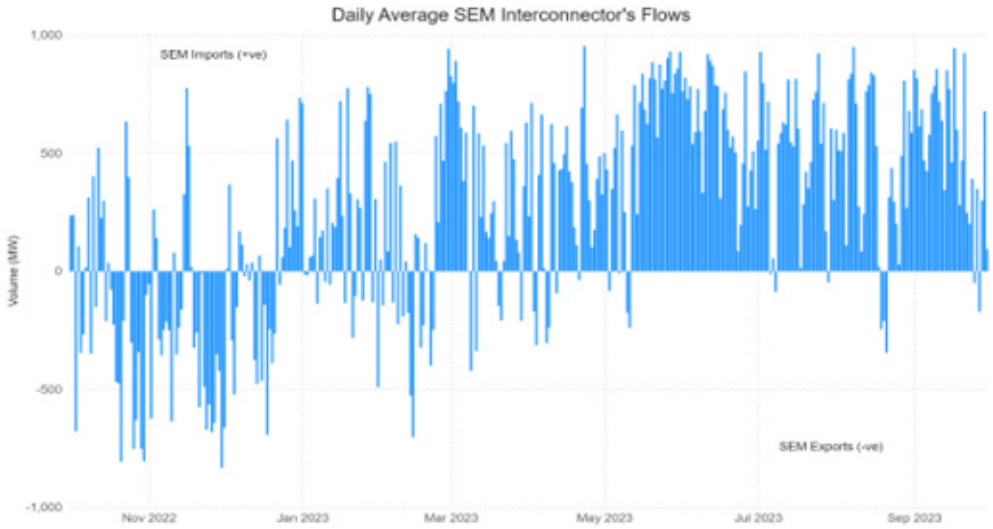



**Figure 14:**
SEM IC Flows

**Figure 14** shows the average volumes allocated between SEM and GB. As it can be seen for the period in question, imports to GB were higher than exports. During this period 67% of the Interconnector flows have been allocated from the GB to SEM direction.

# 6 Forwards Market

To manage wholesale electricity price risk and achieve longer-term certainty, forward contracts allow generators and suppliers to contract publicly via Contract for Differences (CfDs). This allows generators to sell a fixed volume for an agreed upon price covering a specific period of time which provides both generators and suppliers with more wholesale price certainty. In the SEM there are regulated and unregulated forward contracts.

## Regulated contracts

Directed Contracts (DCs) are currently the only regulated forward contract in the SEM. DCs are a key feature of our approach to mitigating market power. Generators with a large market share (ESB) are required to sell electricity forwards (DCs) to suppliers. The objective of DCs is to ensure generators with a large market share cannot unduly dominate the market. DCs remove the incentives on the incumbent generators to attempt to profit from the exertion of market power. These contracts mitigate market power by reducing the incentive for the market participants to submit bids above competitive levels, or otherwise withhold capacity, to influence current spot prices or future contract prices.

DC subscription windows are typically held every quarter, with DCs being allocated on a rolling basis up to five quarters ahead. There are three DC products in the market: baseload, mid-merit, and peak. Supply companies can elect to subscribe for any given product for which they are eligible in any particular quarter from the incumbent generator (i.e. ESB).

In 2022, ongoing market uncertainty and significant commodity price volatilities observed in the market resulted in the postponement of DC rounds. Consequently, amendments were implemented to the process of calculating DC pricing formulae and a six-day primary subscription window was introduced (instead of historically standard three-day window). Model amendments implemented strengthened the ability of the DC pricing model to reflect unprecedented market price volatilities. Additional subscription window days enabled eligible suppliers to mitigate some of the fuel price volatility risks by spreading their eligible volumes over an extended period. Furthermore, the extended subscription window enabled the market incumbent to more effectively hedge their exposure to price volatilities. In Quarter one 2023 a consultation process was held to determine if these amendments should become enduring arrangements. Following the completion of the consultation process, we decided to implement a six-day Primary Subscription Window on an enduring basis. Since Quarter four 2022, five DC rounds have been successfully held. Notably, two DC rounds were held in Quarter one 2023 due to the impact of postponing DC Rounds on scheduled timelines in 2022.

A total of 1767.4 MW of Quarter four 2022 to Quarter three 2023 products were purchased by suppliers. 193 MW, 955 MW and 619 MW of Baseload, Mid-Merit and Peak products were purchased respectively. The average prices of each product were: Baseload €262.5 MWh, Mid-Merit €244.2 MWh and Peak €325 MWh.

Figures 15 and 16 outline the aggregate volumes purchased and average prices of the specific DC products.

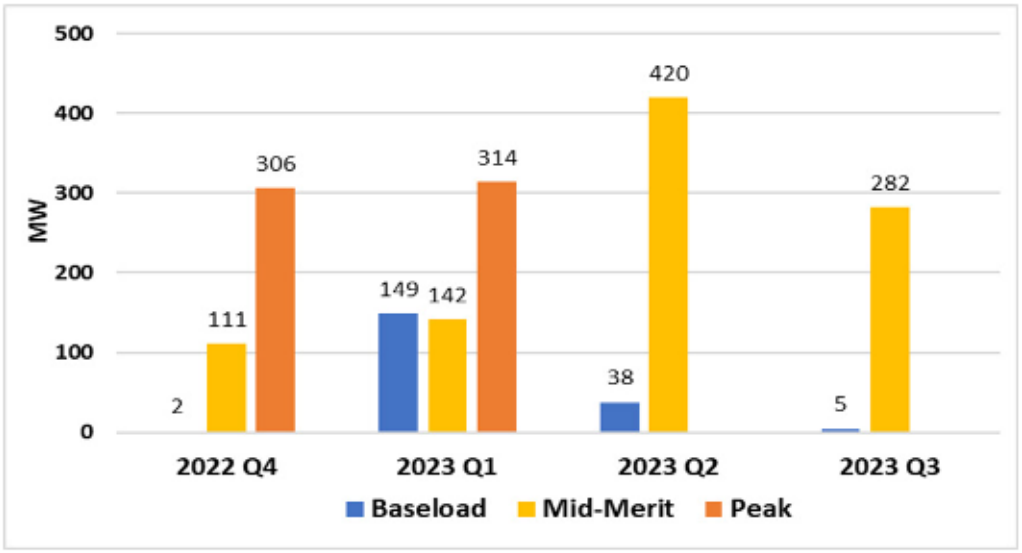



**Figure 15:** Total Directed Contract Product Volumes Purchased by Suppliers (MW)

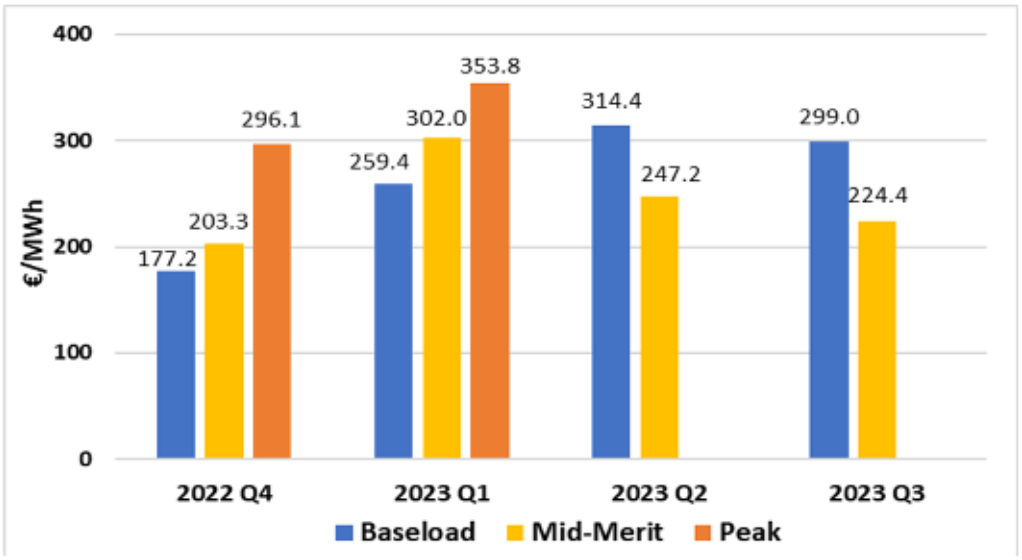



**Figure 16:** Average price of directed contrat products purchased by suppliers (€/MWh)

As a result of an unprecedented increase in commodity prices (predominantly NBP gas prices) since December 2021, the monetary value of each DC round has increased significantly. The monetary values remained high in 2023 by comparison to historical norms.

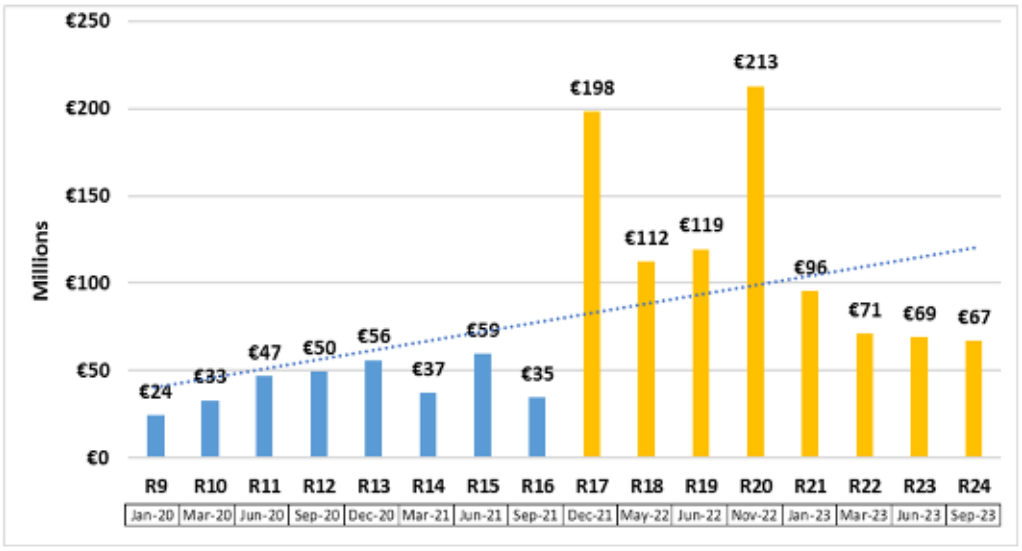



**Figure 17:** Monetary value of DC products sold during each DC round, January 2020 to Nvember 2022 (millions)

## Unregulated Contracts

Generators can offer forward contracts in the SEM which suppliers are free to bid for. We have no direct role in setting the price or volume of these forward contracts, although we do monitor transaction activity. A common type of forward contract is an Over the Counter (OTC) sale, in which the generator offers the product, setting the volume and the price. With an OTC sale the suppliers have a set window in which to purchase a product. If a supplier makes a bid at the price set by the generator, then they are able to purchase it instantly (i.e. first-come-first-served). Other hedging options include 'Proxy Hedging'. A proxy hedge involves the use of a correlated financial instrument (gas) to hedge a particular risk when a direct hedge (electricity) is not available.

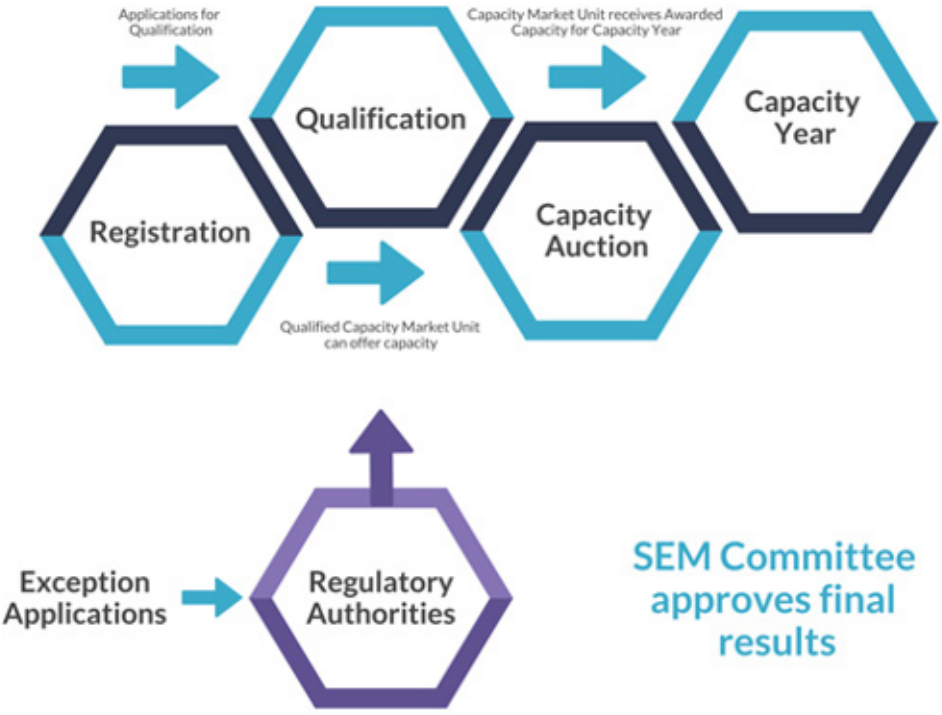
# 7 Capacity Remuneration Mechanism

The Capacity Remuneration Mechanism (CRM) is designed to ensure that enough capacity is available to meet the demand for electricity on the island of Ireland. The overall aim of the CRM is to ensure security of supply, as well as ensuring that consumers do not pay for more capacity than is needed.

The CRM was implemented as part of the revised SEM arrangements which went live on 1 October 2018, and replaced the Capacity Payment Mechanism (CPM) under the previous arrangements. Capacity providers sell qualified capacity to the market, based on generation capacity required in a future capacity year. This takes place in the form of capacity auctions. Auctions are normally held by the Transmission System Operators between one and four years ahead of delivery.

Capacity providers who are successful in a capacity auction receive a regular capacity payment. This payment assists with funding generation capacity. In return, successful participants have an obligation to refund consumers for any energy prices which rise above a set strike price for each capacity auction. Participants submit bids that specify the volume of capacity being offered and the price sought for that capacity. Bids submitted to an auction are arranged from lowest to highest until the capacity requirement for the specific capacity year is satisfied.

The level of capacity required is assessed by the Transmission System Operators in advance of the auction. Capacity that has been bid at a price less than or equal to the last bid is accepted and receives this market clearing price. Capacity that is bid at a price higher than the market clearing price is deemed to have failed to clear the auction and is not paid, unless the capacity is needed to meet a local security of supply need.




Holders of a capacity contract are expected to be available to provide their agreed generation volumes or load reductions (in the case of demand side units) when required at times of system stress or high demand. If a generator is unable to do this, they risk being exposed to substantial charges.

## Capacity Market Code

The Capacity Market Code (CMC) describes the arrangements whereby market participants can qualify for and participate in capacity auctions. It was first published in June 2017 and is regularly reviewed and modified to ensure the efficient and effective operation of the capacity auctions.

The most recent version was published on 1 September 2023. CMC Working Groups are convened every two months and have allowed for the progression and implementation of over forty modifications to date. Modifying the CMC has involved the co-operation, commitment and constructive engagement with industry stakeholders.

## Capacity Auctions

To date, twelve capacity auctions have taken place and completed successfully (five T-4 auctions, one T-3 auction, one T-2 auction and five T-1 auctions). So far in calendar year 2023 three auctions have taken place, A T-4 for Capacity Year 2026/2027 and a T-1 for Capacity Year 2023/2024 held in March and July respectively and the third and final auction of 2023, T-4 27/28, in October 2023.

A key benefit of the T-4 auction is that it facilitates competition between new and existing generation, to deliver the best outcome for consumers. The CRM was adapted to take account of the impact of the introduction of the Clean Energy Package (CEP). As a result, the CRM was modified to ensure that limits were imposed on existing plant in the SEM through restricted levels of annual running hours (directly relating to CO2 emissions), which take effect from July 2025. The primary focus shifted to the need for investment in major new units to replace old coal, peat and oil-fired units which do not meet emissions limits. The CRM has been successful in procuring around 3,600MW of new, predominantly gas-fired capacity to replace retiring, high-emissions plant and meet growing demand.

The T-4 2026/2027 Capacity auction was completed in March 2023 which procured 7,204 MW of capacity for delivery in the capacity year 2026/2027. The total cost of this auction is estimated at circa €700m. The total capacity procured for delivery in 2026/2027 is 9,527MW, which includes 2,313MW of previously procured capacity.

The T-1 2023/2024 Capacity auction was completed in July 2023 which procured 638.809 MW of capacity for delivery in the capacity year 2023/2024. The total cost of this auction is estimated at circa €94m. The total capacity procured for delivery in 2023/2024 is 8,091 MW, which includes 7,322 MW of previously procured capacity.

The T-4 2027/2028 Capacity auction was completed in October 2023 which procured 5,469 MW of capacity for delivery in the capacity year 2027/2028. The total cost of this auction was circa €600m. The total capacity procured was 5,469MW, which includes 5,238MW of existing capacity.

The table below summarises the volumes procured by the CRM auctions to date against the delivery years. These figures reflect volumes contracted presently and are subject to terminations that could arise prior to delivery date for each capacity unit.

| | Awarded Capacity | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auction | '18 | '19 | '20 | '21 | '22 | '23 | '24 | '25 | '26 | '27 | '28 | '29 | '30 | '31 | '32 | '33 | '34 | '35 | '36 |
| | '19 | '20 | '21 | '22 | '23 | '24 | '25 | '26 | '27 | '28 | '29 | '30 | '31 | '32 | '33 | '34 | '35 | '36 | '37 |
| 2018/2019 T-1 | 7,727 | | | | | | | | | | | | | | | | | | |
| 2019/2020 T-1 | | 8,193 | | | | | | | | | | | | | | | | | |
| 2020/2021 T-1 | | | 7,557 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | | | | | | | |
| 2021/2022 T-2 | | | | 7,423 | | | | | | | | | | | | | | | |
| 2022/2023 T-1 | | | | | 1,087 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | | |
| 2022/2023 T-4 | | | | | 6,830 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | 81 | | | | | |
| 2023/2024 T-1 | | | | | | 639 | | | | | | | | | | | | | |
| 2023/2024 T-4 | | | | | | 7,074 | 370 | 370 | 370 | 370 | 370 | 370 | 370 | 370 | 370 | | | | |
| 2024/2025 T-3 | | | | | | | 1,100 | 1,033 | 1,033 | 1,033 | 1,033 | 1,033 | 1,033 | 1,033 | 1,033 | 1,033 | | | |
| 2024/2025 T-4 | | | | | | | 6,105 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | 261 | | | |
| 2025/2026 T-4 | | | | | | | | 6,426 | 542 | 542 | 542 | 542 | 542 | 542 | 542 | 542 | 542 | | |
| 2026/2027 T-4 | | | | | | | | | 7,204 | 1,474 | 1,474 | 1,474 | 1,474 | 1,474 | 1,474 | 1,474 | 1,474 | 1,474 | |
| 2027/2028 T-4 | | | | | | | | | | 5,469 | 144 | 144 | 144 | 144 | 144 | 144 | 144 | 144 | 144 |
| | 7,727 | 8,193 | 7,557 | 7,434 | 7,928 | 7,818 | 7,681 | 8,196 | 9,517 | 9,205 | 3,880 | 3,880 | 3,869 | 3,869 | 3,775 | 3,404 | 2,110 | 1,568 | 144 |

# 8 System Services and DS3

The system services workstream aims to improve the technical capability of the generation fleet and the system more generally. This is achieved by defining the capability required by the TSOs and appropriately incentivising the delivery of that capability. System services allow participants to provide services which support operating the system with increased renewable penetration through allowing the TSO to deploy units when a frequency deviation occurs. Participants are currently rewarded for their availability through a tariff or a contract.

We have been developing a framework for the system services future arrangements since 2020. The objective of the project is to deliver a competitive framework for the procurement of system services, which ensures secure operation of the electricity system with higher levels of non-synchronous generation. Phase One of this process concluded with our decision on the scope and assessment criteria for the project in 2021. The development of the high-level design was carried out in Phase two and concluded with our decision on the high-level design in 2022.

In June 2023 we published a consultation paper setting out proposals in relation to Phase Three of the System Services Future Arrangements. The paper proposes phased implementation of the Layered Procurement Framework (LPF), under a Phased Implementation Roadmap (PIR). At the time of writing, we are considering responses to the consultation and aiming to publish a decision paper on the PIR in Q4 2023.

The DS3 programme (Delivering a Secure, Sustainable Power System), aims to meet the challenges of operating the electricity system in a secure manner while achieving the renewables targets set in both the Republic of Ireland and Northern Ireland.

With increasing amounts of variable renewable generation, there is a need to ensure that the power system can continue to be operated securely and sustainably.

Our key objective throughout the DS3 programme has been to ensure that the interests of the all-island customer were protected. We did this through:

- Oversight of TSOs activities;
- Review of the impact and appropriateness of the various options and proposals put forward by the TSOs;
- Making key decisions on TSO proposals/ recommendations which will only be implemented after consultation with industry stakeholders; and
- Ensuring consistency across SEM activities and that the full implication of all actions proposed by the TSOs is considered.

We successfully oversaw the close out of the DS3 programme in September 2023. The programme has been a driver in the successful progression of SNSP increases from 50% to 75% since 2015. Facilitating additional renewables on the grid should support lower wholesale energy prices, which achieves a good outcome for consumers as well as supporting Ireland and Northern Ireland's transition to a low-carbon economy. This can already be seen in the day-ahead market where increased wind generation places a downward pressure on prices.

In January 2023 we published our decision on the procurement process for Low Carbon Inertia Services, and in September 2023 we published our decision on the contractual arrangements for this procurement. It is expected that the TSOs will begin this procurement in Q4 2023. The delivery of low carbon inertia services through this procurement will have important consumer benefits including facilitating the reduction in the minimum number of conventional units required on the all-island system.

# 9 Market Operation


In addition to the trading, capacity and system services elements of the market, we also oversee a number of other areas to ensure the market runs efficiently, effectively and in the best interests of consumers. Although the TSOs, market operator and market participants are separately licenced by the Regulatory Authorities, we are responsible for overseeing a number of cross-cutting market issues.

## SEMO Regulation

SEMO is licensed and regulated cooperatively by the CRU in Ireland and the Utility Regulator in Northern Ireland. SEMO is subject to a regulated price control and also has a number of licence and market rules obligations to comply with.

The current price control was determined in September 2021 and is scheduled to be re-determined to commence on 1 October 2024. At present, a flexible and agile framework applies to capital investment, with costs recoverable subject to SEMO evidencing that the expenditure is efficiently incurred, is demonstrably necessary, is incremental to existing price controls and is capable of being robustly validated by the regulators.

A SEMO 'Focus Group' first convened in March 2022 and has met three times since its inception to discuss SEMO's performance and capital investment programme. The Focus Group consists of twelve representatives from industry across a range of technologies and is chaired by a market participant. This provides a platform for accountability, transparency and two-way feedback with SEMO.

SEMO reports on its capital programme, performance, KPIs and its finances. Regular interaction is scheduled between SEMO and the regulators about the industry rules and governance relating to the Trading and Settlement Code.

## SEMOpx Regulation

SEMOpx (as a contractual joint venture of EirGrid plc and SONI Ltd) was designated by the respective regulators in the Ireland and Northern Ireland jurisdictions as the Nominated Electricity Market Operator (NEMO) from 3 October 2022 on an enduring basis.

SEMOpx provides day-ahead and intraday electricity market trading as part of the Single Electricity Market and is subject to a regulated price control as part of the regulatory framework. A decision was taken to 'roll forward' the last years' allowance of the 2019-2022 price control into the periods covering October 2022 to September 2023 and October 2023 to September 2024. A revised regulatory revenue framework for SEMOpx is subject to discussion with the regulators and will be taken forward as part of our next forward work programme.

SEMOpx is governed by a set of rules and operating procedures that set out the obligations on Exchange Members and the processes for trading on the exchange. The regulatory authorities attend biannual Exchange Committee meetings where the rules are discussed and modified as necessary.

## Trading and Settlement Code

Through 2022 into 2023, the Trading and Settlement Code Modifications Committee continued to consider and progress modification proposals in order to further develop the SEM in line with the objectives of the Trading and Settlement Code. Eighteen modification proposals were raised across 2022 and eleven modification proposals have been raised so far in 2023. These modification proposals have been considered through Modification Committee meetings, working groups with constructive engagement and feedback from the committee and broader industry observers.

In January 2023, we approved a modification to change the frequency of the Strike Price calculation from monthly to weekly. The methodology for calculating the strike price remains the same, but more up to date information is used as the calculation is now carried out on a weekly basis. The dependence of the Strike Price on the gas commodity price has become evident as gas prices increased and became the determining factor. Given the possibility of gas price volatility over the course of a month, it was appropriate to increase the frequency of the Strike Price calculation.

## Fuel Mix Disclosure

The All-Island Fuel Mix Disclosure and CO2 Emissions 2022 information paper set out the 2022 fuel mix disclosure and CO2 emissions for electricity suppliers licensed in Ireland and Northern Ireland and operating in the SEM. It presents reliable information regarding the sources of electricity, i.e., the fuel mix that suppliers have chosen to meet their customers' demand and the related environmental impact. It does this by disclosing the fuel mix as the percentage of a supplier's demand that is met by various electricity sources and the associated carbon dioxide (CO2) emissions intensity (grammes/kWh). The disclosure allows consumers to understand the recent environmental impact of the electricity that they buy and choose between suppliers on this basis, and to show how the individual supplier's fuel mix compares with the All-Island average.

The 2022 report showed that, on average, 57.6% of the electricity supplied was from renewable sources, compared to 55.9% in 2021. CO2 emissions intensity decreased from 258 grammes per kWh in 2021 to 234 grammes per kWh in 2022.

## Generator financial performance reporting

Work on the Generator Financial Performance Report for FY2021 was progressed with the final document due to be published in Q4 2023. Published on an annual basis, all generation companies with a combined ownership capacity of greater than or equal to 25MW and operating in the SEM are included. The report provides aggregated information on the financial performance of generators in the SEM along with a breakdown by generation fuel source.

Analysis shows a large increase in the margin of generators operating in the SEM when compared to previous years. Overall net margin for FY2021 was 28% compared to 1% in FY2020.

This has been caused by a number of inter-relating factors including lower availability of efficient generation, higher levels of demand and lower levels of generation from wind units.

Global markets also began to see the impact of increases in wholesale fuel costs during this period. The significant increases in commodity costs drove up end electricity prices and resulted in governments across Europe implementing measures to address the increasing energy prices.

Generator investments are capital-intensive, long-term investments and while this reporting year clearly reflects a year of particularly high revenues, this should be understood in the context of a number of years of lower margins.

Due to the time taken for generation companies to have their financial audits completed for a given year, and for the subsequent submission and collation of the relevant data, there is a lag between the reporting period covered in the report and its publication.

## Tariffs

The all-island tariff timetable was coordinated by the regulators with EirGrid Group during Q1 of 2023 to ensure delivery of approvals of a suite of tariffs for the tariff year 2023-24 or calendar year 2024 as appropriate. The timetable is published on our website for transparency so that any key dates of consultations or publications are well communicated.

A number of tariffs were approved by the SEM Committee during late summer after public consultation which was led by the TSOs or MO; these included Generator Transmission Use of System (GTUoS) charges, Other System Charges (OSC), Transmission Loss Adjustment Factors (TLAFs), generator testing tariffs, capacity charges and Imperfections.

## Audits

The independent Market Auditor's report for the Trading and settlement Code (TSC) Market Audit 2021 was published on 21 April 2023. The Market Audit 2021 was a core SEMO audit with limited expansion to include calculation, application and reporting of the Market Operator charges (Fixed and Variable) and Imperfection charges within the TSC. Based on reasonable assurance engagement, the Market Auditor found that, in all material respects, SEMO had complied with the TSC and relevant agreed procedures as set out in the terms of reference for the Market Audit 2021 for the period from 1 January 2021 to 31 December 2021.

The independent Market Auditor's report for the TSC Market Audit 2022 was published on 22 November 2023. The Market Audit 2022 was a core SEMO audit. Based on reasonable assurance engagement, the Market Auditor found that, in all material respects, SEMO had complied with the TSC and relevant agreed procedures as set out in the terms of reference for the Market Audit 2022 for the period from 1 January 2022 to 31 December 2022.

The consultation paper on the terms of reference for the TSC Market Audit 2023 was published on 30 November 2023. The consultation will close on 28 December 2023. Following closure of this consultation, we will consider the responses received and publish a decision paper on the terms of reference for the TSC Market Audit 2023. We expect to publish the independent Market Auditor's report in 2024.

The independent assurance report for the scheduling and dispatch audit 2021 was published on 3 April 2023. The auditors found that, in all material respects, the TSOs had complied with the requirements as they relate to the specified elements of the scheduling and dispatch process during the 12-month period ended 31 December 2021.

The independent assurance report for the scheduling and dispatch audit 2022 was published on 30 November 2023. The auditors found that, in all material respects, the TSOs had complied with the requirements as they relate to the specified elements of the scheduling and dispatch process during the 12-month period ended 31 December 2022.

The TSOs are required to develop the Balancing Market Principles Statement (BMPS) and publish an updated version annually. The BMPS is a restatement of obligations, alongside an explanation of how these obligations are met and is intended to increase awareness and visibility of the TSOs' scheduling and dispatch process. It also provides clarity and certainty to the market on the timing and nature of TSO actions. The 2023 BMPS was published for consultation on 24 April 2023, and the final BMPS was published on 28 June 2023.

## Clean Energy Package

We have continued to progress work to implement Articles 12, 13 and 13(7) of the Electricity Regulation under the Clean Energy Package.

In March 2022 we published our decision paper on Dispatch, Redispatch and Compensation pursuant to Regulation (EU) 2019/943. Across this year we have defended two judicial reviews challenging this decision and we continue to work to ensure the consumer interest in represented throughout this legal process.

During the year, EirGrid and SONI launched the Scheduling and Dispatch Programme (SDP). This programme proposes six initiatives aiming to enhance the Scheduling and Dispatch approach for intermittent renewable generation and energy storage. It also aims to introduce approaches for synchronous condensers, fast frequency response and reserve services. We continue to engage with the TSOs on this work.

A modification proposal was raised by SEMO intended to implement the prospective element of our decision in relation to the compensation for market revenues for non-market based redispatching for curtailment of firm volumes. This modification also implements the retention of ex ante market revenues for firm curtailment from the beginning of the tariff year 2024/25.

## Market Monitoring

The Market Monitoring Unit (MMU) is a joint regulatory unit that is the main monitoring function of the two Regulatory Authorities (RAs). The Unit's role is to monitor the performance of the wholesale market, including compliance with the Bidding Code of Practice (BCoP) and other market rules, and where necessary investigate potential abuse of market power.

This function of the MMU is carried out alongside that of the Agency for the Cooperation of Energy Regulators (ACER) and is provided for by Regulation (EU) No 1227/2011 of 25 October 2011 on wholesale energy market integrity and transparency (REMIT). The monitoring function of the Regulatory Authorities is complemented by the oversight of the Single Electricity Market Operator (SEMO) and SEMOpx which also provide surveillance to ensure the integrity of their exchanges. The purpose of the monitoring of trading activity in wholesale energy products carried out by the MMU is to:

1. Detect and prevent trading based on inside information and market manipulation.
2. Enhance transparency of the SEM and improve market integrity and functioning.
3. Assist identification of barriers to efficiency e.g. low liquidity, and possible improvements to competition in the market.

The MMU has put in place the necessary systems and processes required to actively monitor the SEM arrangements. Throughout the year the unit engaged with market participants on a number of key areas including bidding behaviour. The unit has also provided in-depth analysis on a number of market events to the SEM Committee alongside regular market updates. The MMU publishes a monthly market monitoring report which provide useful information on the performance of the market.


DINER
DINER
GRAFTON BARBER
BARBER
GRAFTON BARBER
GOTHAM
GRAFTON BARBER
EAT
GBK
STOP

# 10 Report on Forward Work Plan (FWP) 2022 –2023


Our October 2022-September 2023 Forward Work Plan set some of the most significant projects identified to commence or complete across the year.

At the end of the reporting year, of the 91% projects identified in our original FWP, 82% were completed or partially completed and 9% delayed. This work was completed with a backdrop of unplanned projects as a direct result of the rise in international wholesale prices, work to ensure security of supply and other emerging market issues.

| | Project Title | Scope and outcomes | Timing | End of year position | Comments |
|---|---|---|---|---|---|
| 1 | Directed contracts modelling | Complete quarterly Directed Contracts modelling for rounds 20, 21, 22, 23 | Across year | Complete | |
| 2 | Imperfections tariff | Assess, consult on and then publish the imperfections charges for tariff year 2023-24 | Q1 – Q3 2023 | Complete | |
| 3 | Revision of the Market Monitoring Unit Inquiry Procedure Manual | Review, refinement and improvement of MMU inquiry procedure manual | Q1 2023 | Partially complete | Consultation complete and decision to be published by end of calendar year |
| 4 | Market queries and investigations | Effectively respond to and action market queries. Carry out investigations where necessary | Across year | Complete | |
| 5 | DS3 tariff and tariff methodology review | Review and approval of TSO recommendations on system service tariff reviews followed by the updating derivation of tariffs and scalers and review expenditure cap. | Q1 – Q3 2023 | Complete | |
| 6 | Fixed contracts: low carbon inertia services auction | Approval of TSO Recommendations (procurement and contractual arrangements) | Q1 – Q3 2023 | Complete | |

| | Project Title | Scope and outcomes | Timing | End of year position | Comments |
|---|---|---|---|---|---|
| 7 | System services future arrangements high level design Implementation, day ahead system services arrangements and layered procurement | Approvals and RA oversight of TSO activities required for the implementation of the HLD. Consultation on auction design of day-ahead auction and approval of TSO recommendations and monitoring of TSO procurement | Across year | Partially complete | Consultation complete and decision to be published by end of calendar year |
| 8 | T-4 2026/2027 capacity auction | Complete preparation and auction for T-4 2026/2027 capacity year. | Q2 2022 – Q1 2023 | Complete | |
| 9 | T-1 2023/2024 capacity auction | Complete preparation and auction for T-1 2023/2024 capacity year. | Q4 2022 – Q3 2023 | Complete | |
| 10 | T-4 2027/2028 capacity auction | Complete preparation for T-4 2027/2028 capacity auction. | Across year | Complete | |
| 11 | T-1 2024/2025 capacity auction | Complete preparation for T-1 2024/2025 capacity auction. | Across year | Complete | |
| 12 | Capacity market code audit | Determine terms of reference, initiate and complete audit and publish final report(s) of audit of the Capacity Market Code. | Q4 2022 – Q1 2023 | Partially complete | Work completed just outside reporting year with reports to be published shortly |
| 13 | Development of the CMC and TSC | Deliver and support the facilitation of modifications to the CMC and TSC to further enhance the objectives of the codes and market | Across year | Complete | |

| | Project Title | Scope and outcomes | Timing | End of year position | Comments |
|---|---|---|---|---|---|
| 14 | CRM governance and next steps in enhancing the performance of the CRM | Review TSO and RA operational processes, methodologies and policies, to enhance efficiency and the delivery of the CMC Objectives. Decision on the next steps and prioritisation of changes to the CRM | Across year | Complete | |
| 15 | New capacity delivery | Monitor the delivery of new capacity in the market auctions | Across year | Complete | |
| 16 | Generator financial performance report | Collect data and publish report for 2021 | Q2 2023 | Partially complete | Analysis complete with final report to be published by end of calendar year |
| 17 | Decision on review of applicability of RO difference charges to available units | Decide how RO difference charges are applied in the case of units who are available, and whether this is appropriate in all cases | Q4 2022 | Complete | |
| 18 | Review of administered scarcity price | To review the ASP mechanism | Q1 2023 - Q2 2023 | Partially complete | Consultation complete and decision to be carried forward to next FWP |
| 19 | Clean Energy Package resource adequacy and review of GCS process | Publication of new VoLL/CoNE/ RS. Review of GCS development and approval process including inclusion of National Regional Adequacy Assessment process | Q1 2023 | Partially complete | VoLL information paper published. GCS development ongoing |

| | Project Title | Scope and outcomes | Timing | End of year position | Comments |
|---|---|---|---|---|---|
| 20 | GB SEM trading | Analyse and consider improvements for SEM and GB trading. Update to interim cross-zonal arrangements | Q1 2023 | Partially complete | Consultation complete and decision to be published by end of calendar year |
| 21 | Demand Side Units enduring energy payments decision | Complete decision to enable TSOs/ SEMO to implement Phase 1 of a solution for energy payments to DSUs in the balancing market and commence monitoring for effectiveness | Q4 2022 - Q2 2023 | Partially complete | Analysis ongoing |
| 22 | Review and approval of all island tariffs including SEMO, SEMOpx, SEM parameters, other system charges, GTUoS, TLAFs | Approval and publication of tariffs | Across year | Complete | |
| 23 | Strategic governance of market | Managing the effective delivery of Market/System Operator functions | Across year | Partially complete | Work ongoing |
| 24 | Trading and settlement code market audit 2021 | Final market audit completed with report produced and published | Q1 2023 | Complete | |
| 25 | Trading and settlement code market audit 2022 | Final market audit completed with report produced and published | Q3-Q4 2023 | Partially complete | Work complete with report to be published by end of calendar year |

| | Project Title | Scope and outcomes | Timing | End of year position | Comments |
|---|---|---|---|---|---|
| **26** | Trading and settlement code market audit 2023 | Terms of reference to be consulted on and decision published. In 2023 | Q4 2023 | Delayed | Consultation to be published by end of calendar year |
| **27** | Scheduling and dispatch audit 2021 | Close out of final audit report and outstanding elements | Q4 2022 | Complete | |
| **28** | Scheduling and dispatch audit 2022 | Final audit completed with report produced and published | Q3 2023 | Partially complete | Report to be published by end of calendar year |
| **29** | Scheduling and dispatch audit 2023 | Terms of reference to be consulted on and decision published | Q3 2023 | Partially complete | Work ongoing |
| **30** | SEMOpx price control | Consult on and determine SEMOpx price control | Q4 2022 - Q3 2023 | Complete | |
| **31** | Clean Energy Package - decision on priority dispatch | Consultation and decision on priority dispatch hierarchy | Q1 - Q2 2023 | Delayed | Work to be carried forward |
| **32** | Consultation on Sundry Clean Energy Package articles | Consultation on sundry articles relating to market design | Q2 2023 | Delayed | Work to be carried forward |
| **33** | Firm access | Complete consultation process re: Ireland and consider Northern Ireland aspects | Q4 2022 | Complete | |

# 11 Glossary

| | Abbreviation | Explanation |
|---|---|---|
| 1 | ACER | The European Union Agency for the Cooperation of Energy Regulators |
| 2 | ASP | Administered Sacarity price |
| 3 | BM | Balancing market |
| 4 | BMPS | Balancing Market Principles Statement |
| 5 | CEP | Clean Energy Package |
| 6 | CfD | Contract for Differences |
| 7 | CMC | Capacity Market Code |
| 8 | C02 | Carbon Dioxide |
| 9 | CoNE | Cost of New Entrant |
| 10 | CPM | Capacity Payment Mechanism |
| 11 | CRM | Capacity Remuneration Mechanism |
| 12 | CRU | Commission for Regulation of Utilities |
| 13 | DAM | Day ahead Market |
| 14 | DCs | Directed Contracts |
| 15 | DS3 | Delivering a Secure, Sustainable Power System |
| 16 | DSU | Demand Side Unit |
| 17 | EBG | Electricity Balancing Guidelines |
| 18 | ETA | Energy Trading Arrangements |
| 19 | EU | European Union |
| 20 | EWIC | East West Interconnector |
| 21 | FOR | Forced Outage Rate |
| 22 | FWP | Forward Work Programme |
| 23 | GB | Great Britain |

| | Abbreviation | Explanation |
|---|---|---|
| 24 | GCS | Generation Capacity Statement |
| 25 | GTUoS | Generator Transmission Use of System |
| 26 | HLD | High Level Design |
| 27 | IDC | Intrday continuous market |
| 28 | IDM | Intraday market |
| 29 | LCIS | Low Carbon Inertia Services |
| 30 | LPF | Layered Procurement Framework |
| 31 | MMU | Market Monitoring Unit |
| 32 | NEMO | Nominated Electricity Market Operator |
| 33 | NRAA | National Resource Adequacy Assessment |
| 34 | OSC | Other System Charges |
| 35 | OTC | Over the counter |
| 36 | PIR | Phased Implementation Roadmap |
| 37 | RAs | Regulatory Authorities |
| 38 | REMIT | Regulation Energy Market Integrity and transparency |
| 39 | RO | Renewables Obligation |
| 40 | SEM | Single Electricity Market |
| 41 | SEMC | Single Electricity Market Committee |
| 42 | SEMO | Single Electricity Market Operator |
| 43 | SDAC | Single European Day Ahead Market Coupling |
| 44 | SDP | Scheduling and Dispatch Programme |
| 45 | SNSP | System Non-Synchronous Penetration |
| 46 | SO | System Operator |

| | Abbreviation | Explanation |
|---|---|---|
| 47 | SONI | System Operator for Northern Ireland |
| 48 | TLAF | Transmission Loss Adjustment Factors |
| 49 | TSC | Trading and Settlement Code |
| 50 | TSO | Transmission System Operator |
| 51 | UK | United Kingdom |
| 52 | UR | Utility Regulator |
| 53 | VoLL | Value of Lost Load |