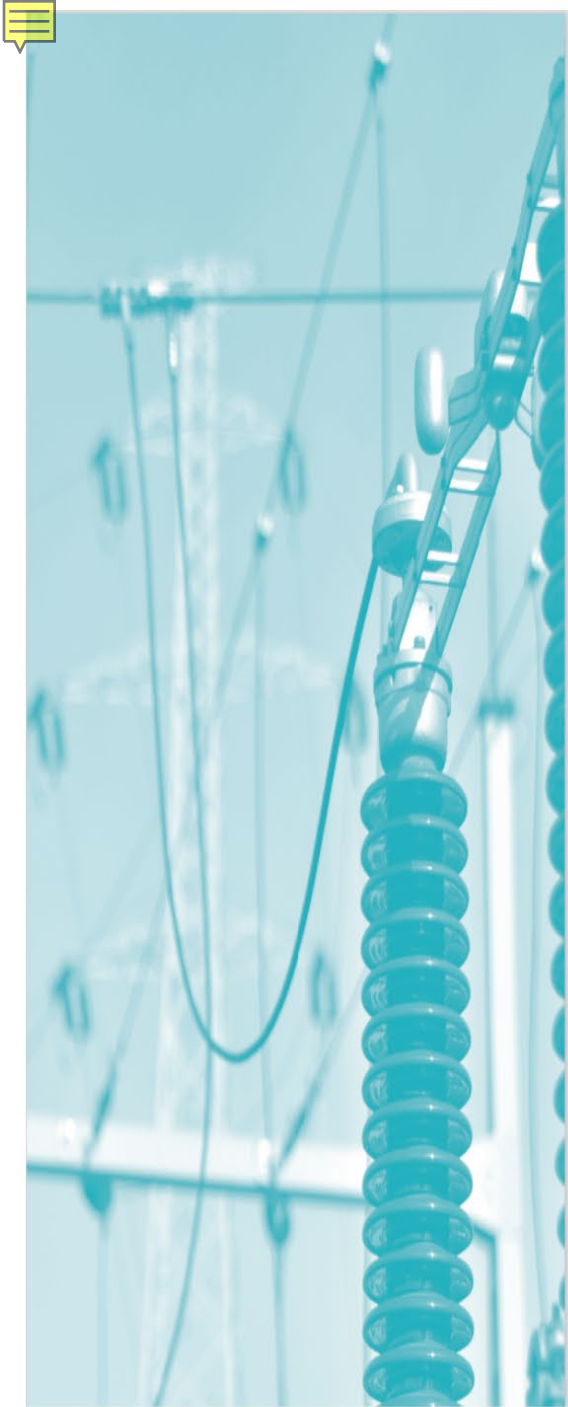


# Energy Market Monitoring Report

## November 2023



## Market Results

# Summary Dashboard

Monthly Averages	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23
DAM (€/MWh)	276.52	162.16	159.19	145.25	125.57	105.19	117.11	96.24	106.46	111.62	125.54	122.9
% Change from previous month	93%	-41%	-2%	-9%	-14%	-16%	11%	-18%	11%	5%	12%	-2%
% Change from previous year	10%	-20%	-9%	-50%	-42%	-27%	-36%	-64%	-73%	-61%	-8%	-14%
Actual System Demand (MW)	4885	4885	4782	4833	4469	4276	4189	4101	4185	4335	4516	4873
% Change from previous month	6%	0%	-2%	1%	-8%	-4%	-2%	-2%	2%	4%	4%	8%
% Change from previous year	2%	1%	-1%	3%	1%	2%	0%	0%	2%	3%	4%	5%
Actual Wind Generation (MW)	1647	1987	2026	1748	1545	884	878	1316	1401	1384	1363	1811
% Change from previous month	-26%	21%	2%	-14%	-12%	-43%	-1%	50%	6%	-1%	-2%	33%
% Change from previous year	-16%	18%	-27%	12%	8%	-38%	-22%	54%	71%	28%	-33%	-19%
Gas Price p/therm	264.54	155.16	133.65	110.96	100.32	72.41	77.87	70.76	82.87	91.52	104.88	104.97
% Change from previous month	105%	-41%	-14%	-17%	-10%	-28%	8%	-9%	17%	10%	15%	0%
% Change from previous year	-3%	-22%	-29%	-64%	-38%	-24%	-44%	-68%	-77%	-61%	3%	-19%
Carbon Price (€/Tonne)	85.61	79.91	91.82	89.41	89.98	84.18	85.51	86.57	84.61	82.09	81.10	76.25
% Change from previous month	13%	-7%	15%	-3%	1%	-6%	2%	1%	-2%	-3%	-1%	-6%
% Change from previous year	8%	-5%	1%	20%	11%	-1%	2%	6%	-4%	17%	15%	1%
Coal Price (\$/tonne)	243.46	173.25	136.71	134.95	137.83	119.57	112.56	111.02	115.57	120.40	131.80	122.16
% Change from previous month	15%	-29%	-21%	-1%	2%	-13%	-6%	-1%	4%	4%	9%	-7%
% Change from previous year	78%	14%	-27%	-61%	-55%	-63%	-67%	-71%	-67%	-65%	-52%	-43%
EWIC % Import Periods	30.58%	49.03%	38.91%	50.00%	50.56%	75.86%	77.72%	67.11%	68.11%	73.75%	86.90%	68.78%
EWIC % Export Periods	35.08%	23.66%	27.19%	16.47%	13.65%	8.28%	4.06%	9.21%	11.96%	8.89%	2.99%	9.11%
EWIC % Not Flow Periods	34.34%	27.32%	33.89%	23.86%	30.80%	15.88%	18.22%	22.68%	19.93%	17.36%	10.11%	22.11%
Moyle % Import Periods	44.19%	62.05%	53.65%	64.68%	77.50%	85.42%	92.22%	84.04%	75.24%	83.33%	92.31%	83.47%
Moyle % Export Periods	55.78%	37.95%	46.02%	25.50%	27.43%	14.58%	7.67%	15.89%	20.33%	16.60%	7.66%	16.50%
Moyle % Not Flow Periods	0.03%	0.00%	0.33%	0.13%	0.07%	0.00%	0.10%	0.07%	4.44%	0.07%	0.03%	0.03%

# Market Volumes November 2023

## Daily Average Volume MWh

DAM	122,303
IDA1	20,917
IDA2	2,969
IDA3	906
IDC	24

## Total Monthly Volume MWh

DAM	3,669,101
IDA1	627,522
IDA2	89,062
IDA3	27,177
IDC	472

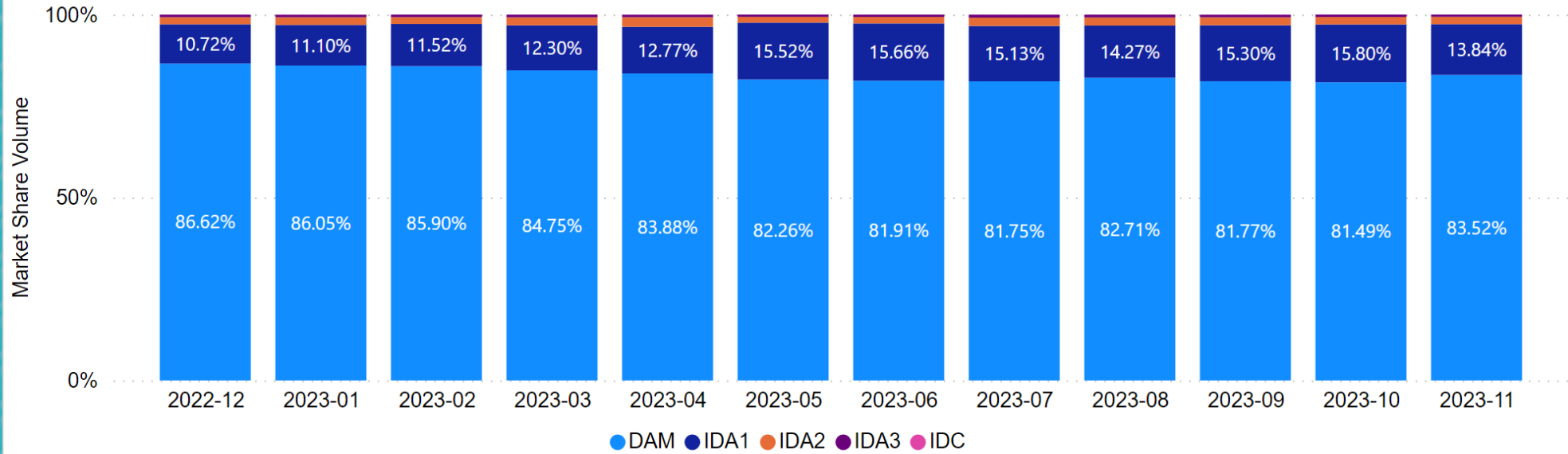
**Total 4,413,334**

## Total Market Value €

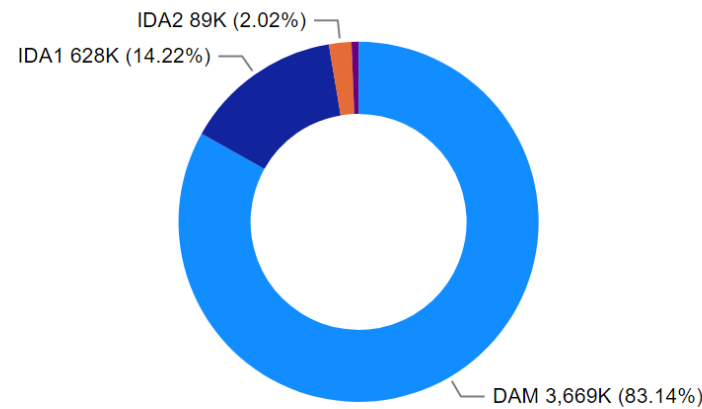
DAM	€ 464,066,877
IDA1	€ 80,362,098
IDA2	€ 12,291,773
IDA3	€ 4,132,794
IDC	€ 70,886

**Total € 560,924,429**

Ex-Ante Monthly Volume by Market

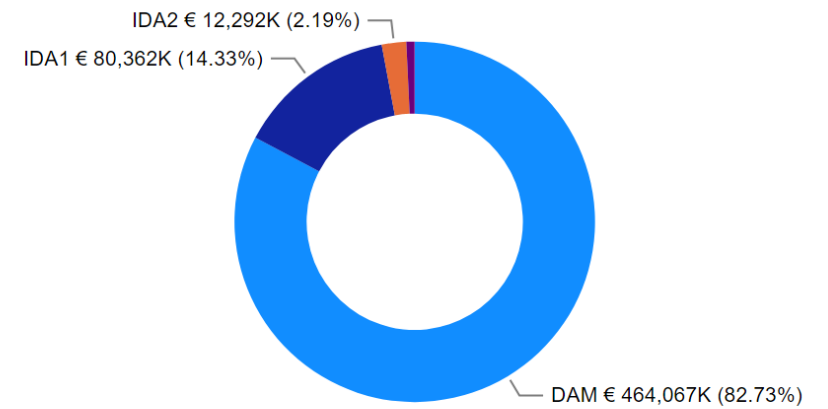


Ex-Ante Volumes (MWh)



● DAM ● IDA1 ● IDA2 ● IDA3 ● IDC

Ex-Ante Values (€)



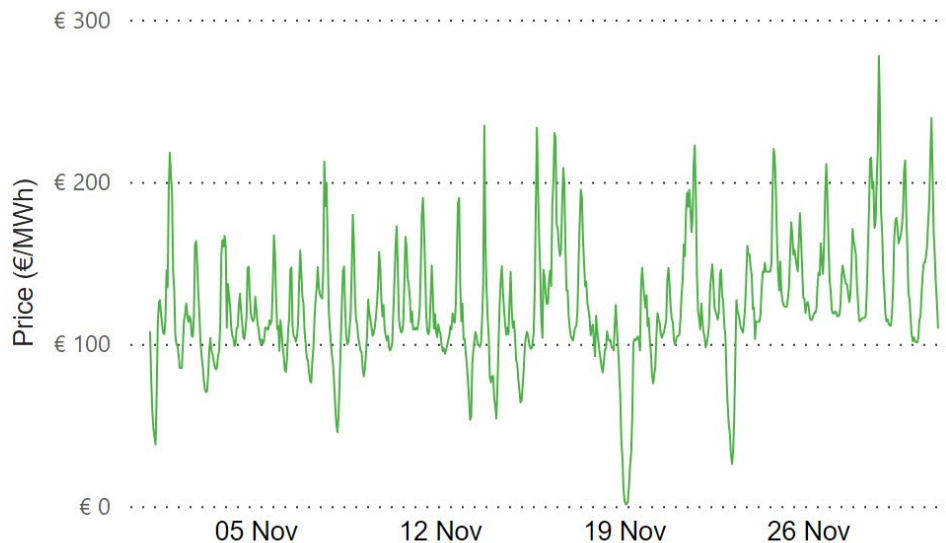
● DAM ● IDA1 ● IDA2 ● IDA3 ● IDC

# Day Ahead Market November 2023

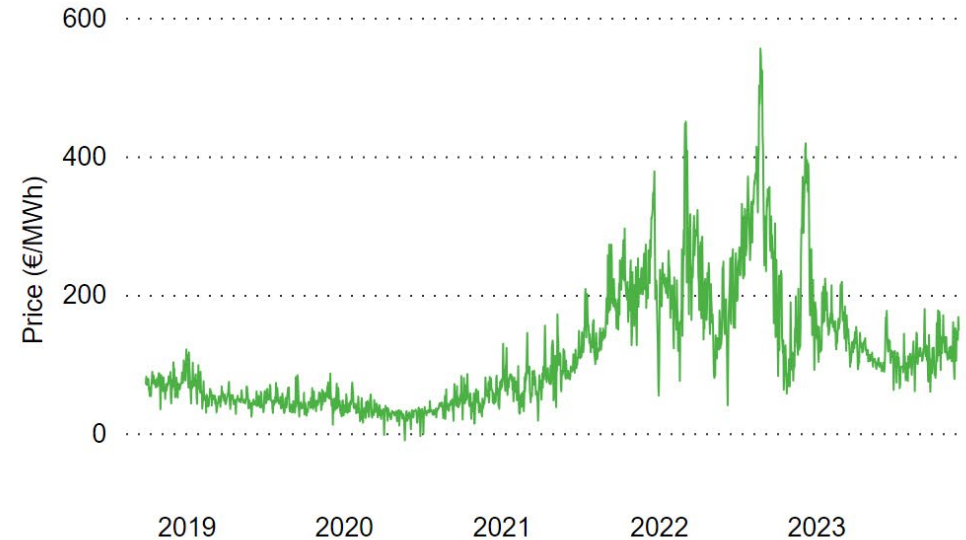
€ 122.90  
Average DAM Price  
€ 1.14  
Min DAM Price  
€ 277.60  
Max DAM Price

The most frequent price range for November was between €80 and €120

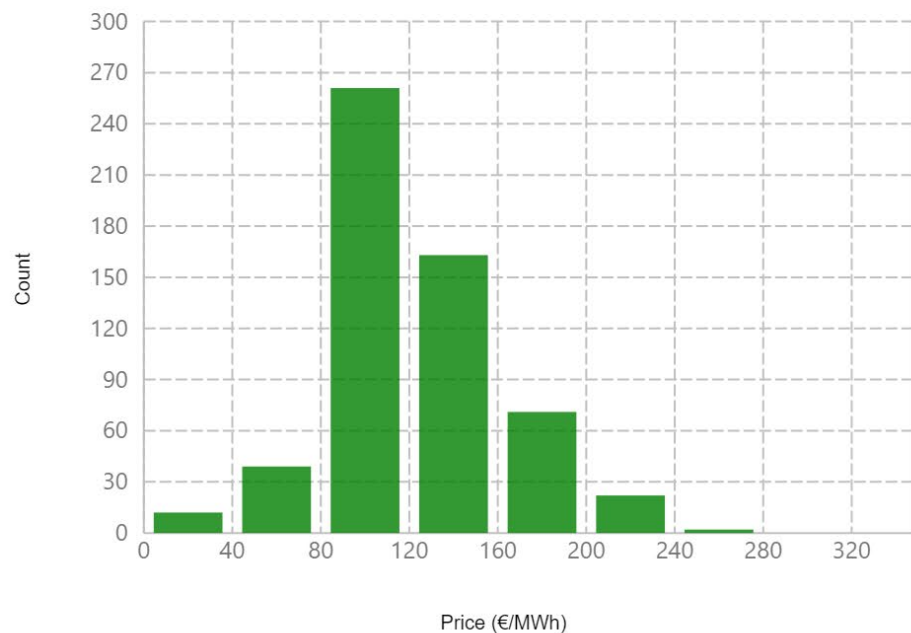
DAM Prices



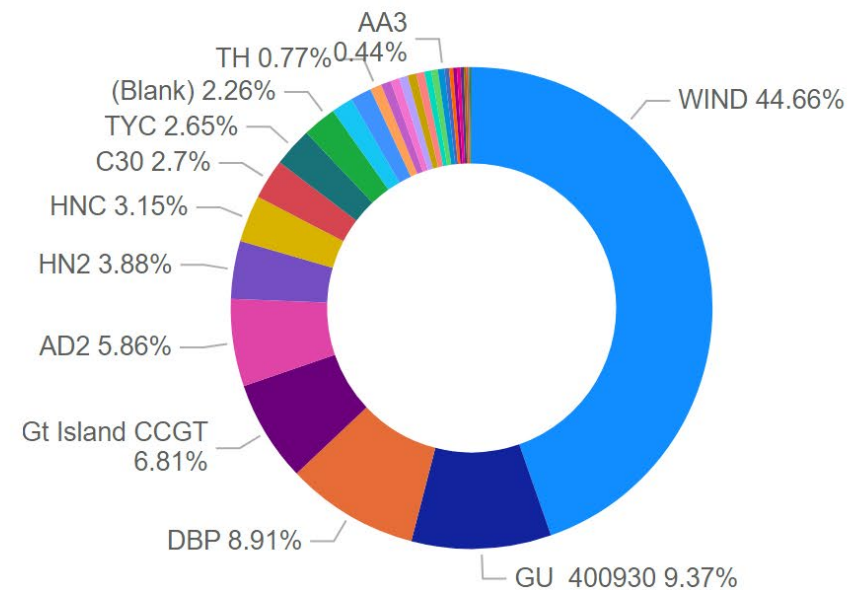
Historic Daily Average DAM Prices



Histogram of DAM Prices



DAM Sell Side Generator Order Results



# Intraday Market November 2023

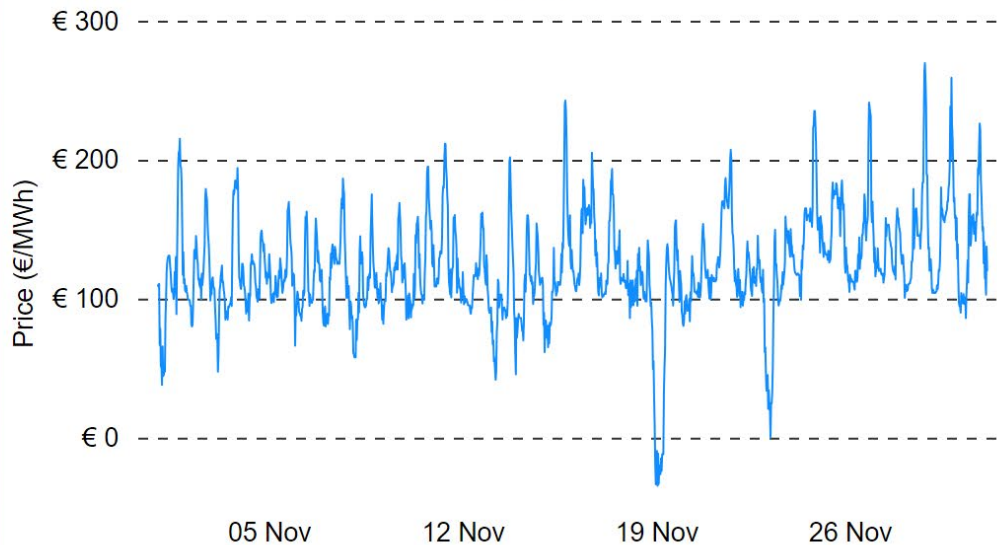
€ 122.45  
Average IDA1 Price

-€ 34.75  
Min IDA1 Price

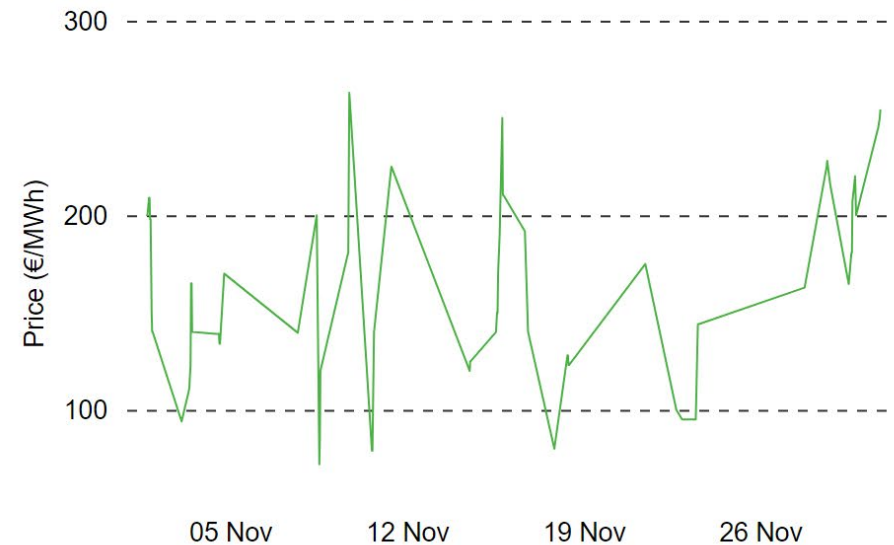
€ 269.56  
Max IDA1 Price

The most frequent price range for November was between €80 and €120

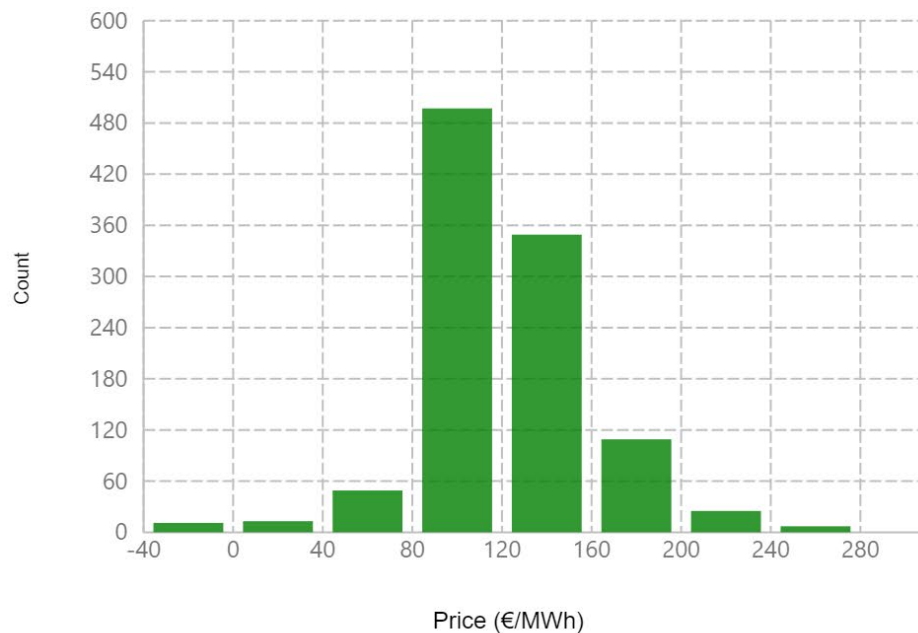
### IDA 1 Prices



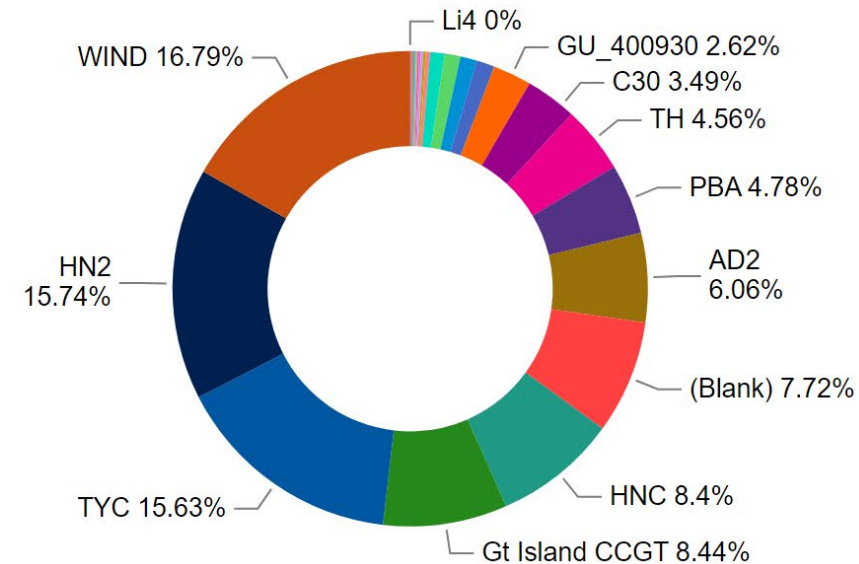
### IDC Prices



### Histogram of IDA1 Prices



### IDA1 Sell Order Results By Market Participant



# SEM vs GB

## November 2023

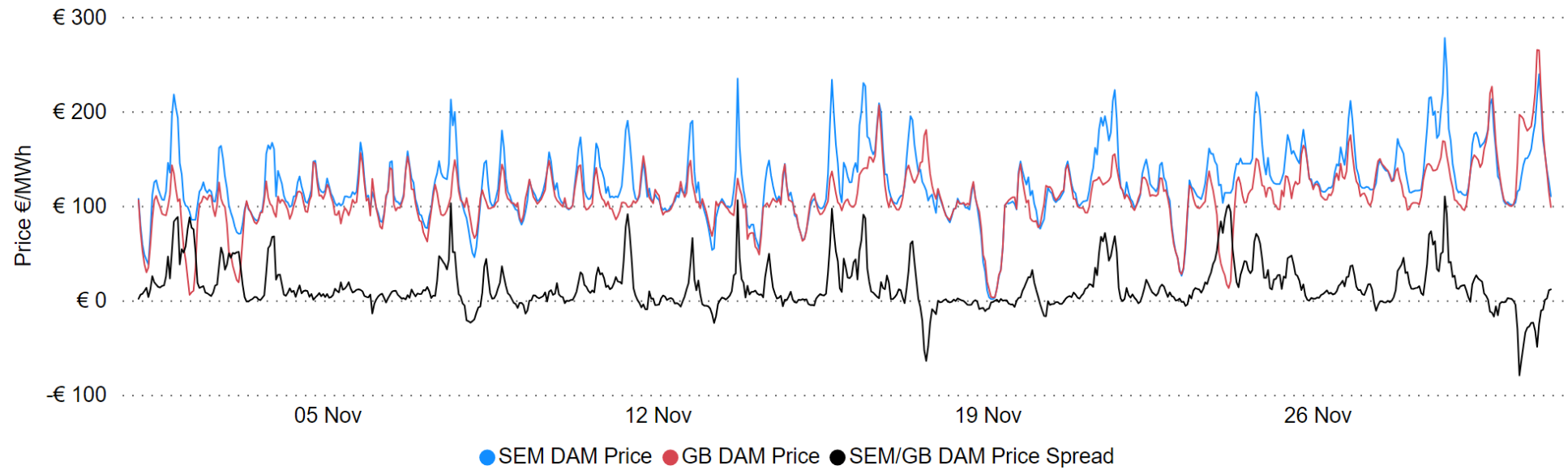
**SEM Day Ahead Price**  
 € 122.90  
 Average Price  
 € 1.14  
 Min Price  
 € 277.60  
 Max Price

**GB Day Ahead Price**  
 € 108.83  
 Average Price  
 € 2.90  
 Min Price  
 € 264.84  
 Max Price

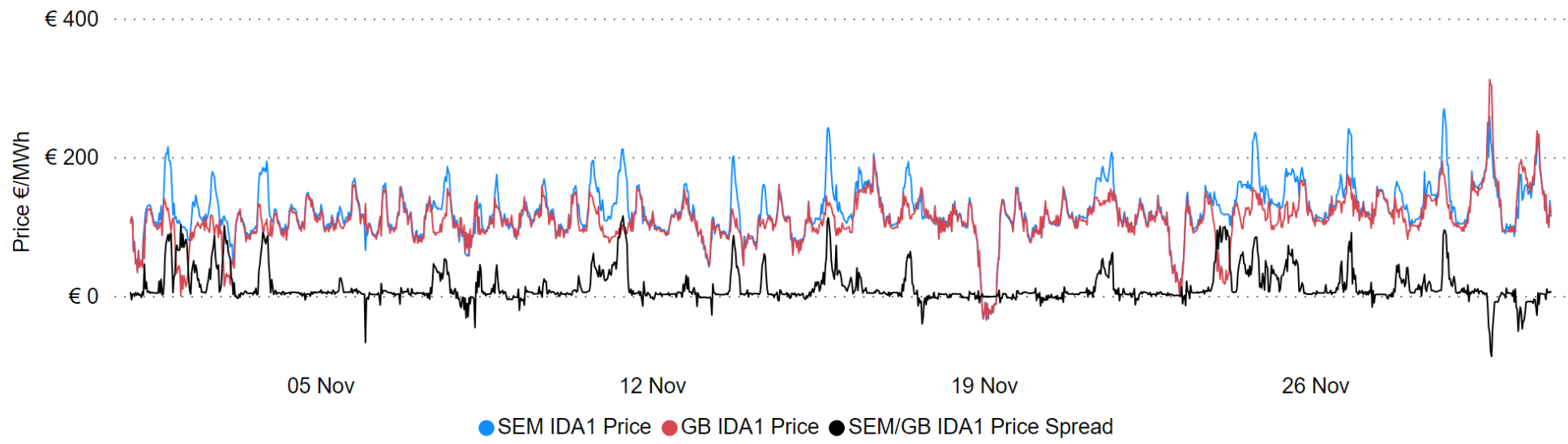
**SEM IDA1 Price**  
 € 122.45  
 Average Price  
 -€ 34.75  
 Min Price  
 € 269.56  
 Max Price

**GB IDA1 Prices**  
 € 109.55  
 Average Price  
 -€ 33.11  
 Min Price  
 € 312.13  
 Max Price

### SEM & GB DAM Prices

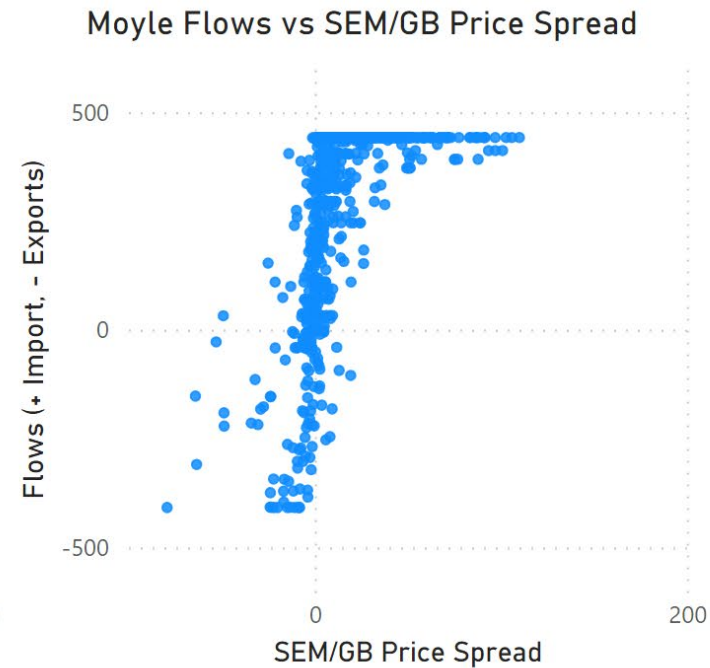
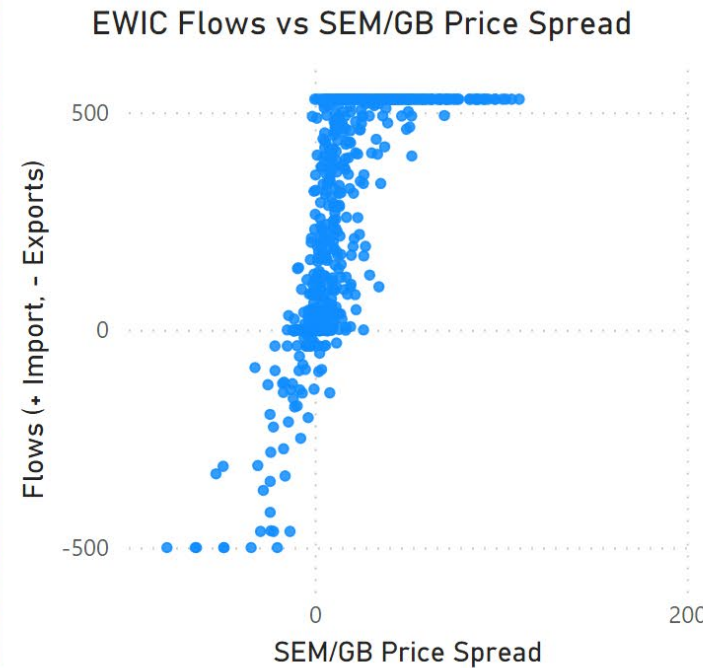
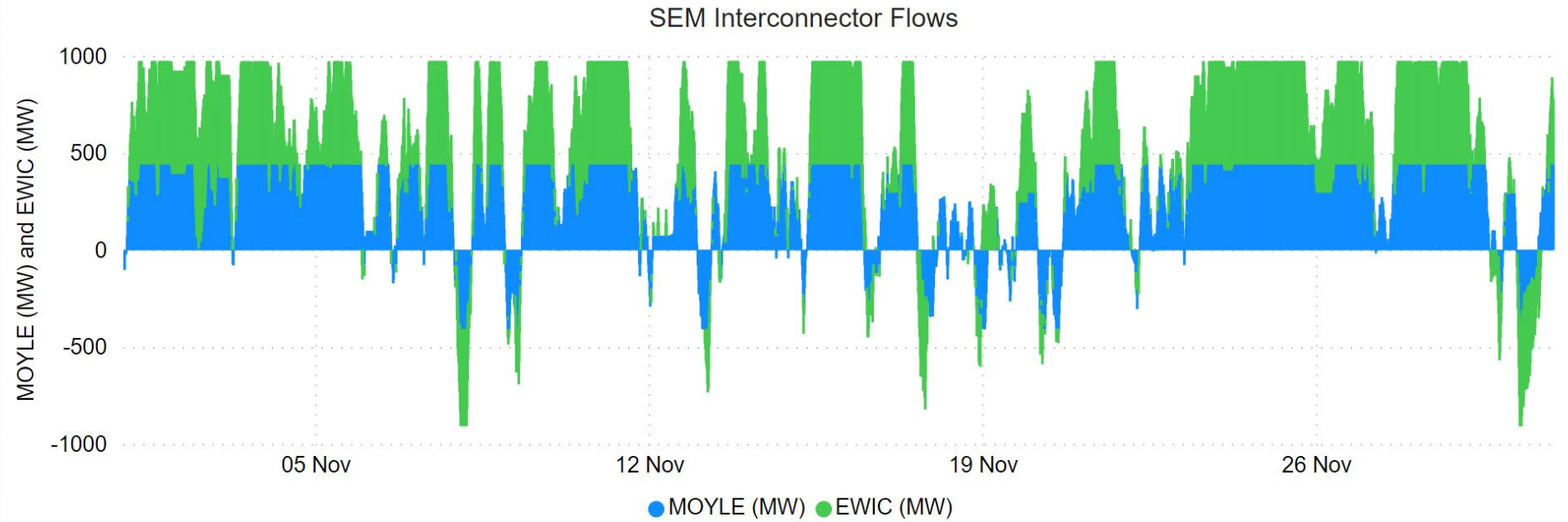


### SEM & GB IDA1 Prices



# SEM Interconnectors

## November 2023



### Interconnector Flows

November 2023	MW
Moyle Imports	350
EWIC Imports	358
Moyle Exports	-161
EWIC Exports	-187
SEM Imports	641
SEM Exports	-260
SEM Net Import/Export	495



# Balancing Market November 2023

30 Minutes Imbalance Price

€ 116.61

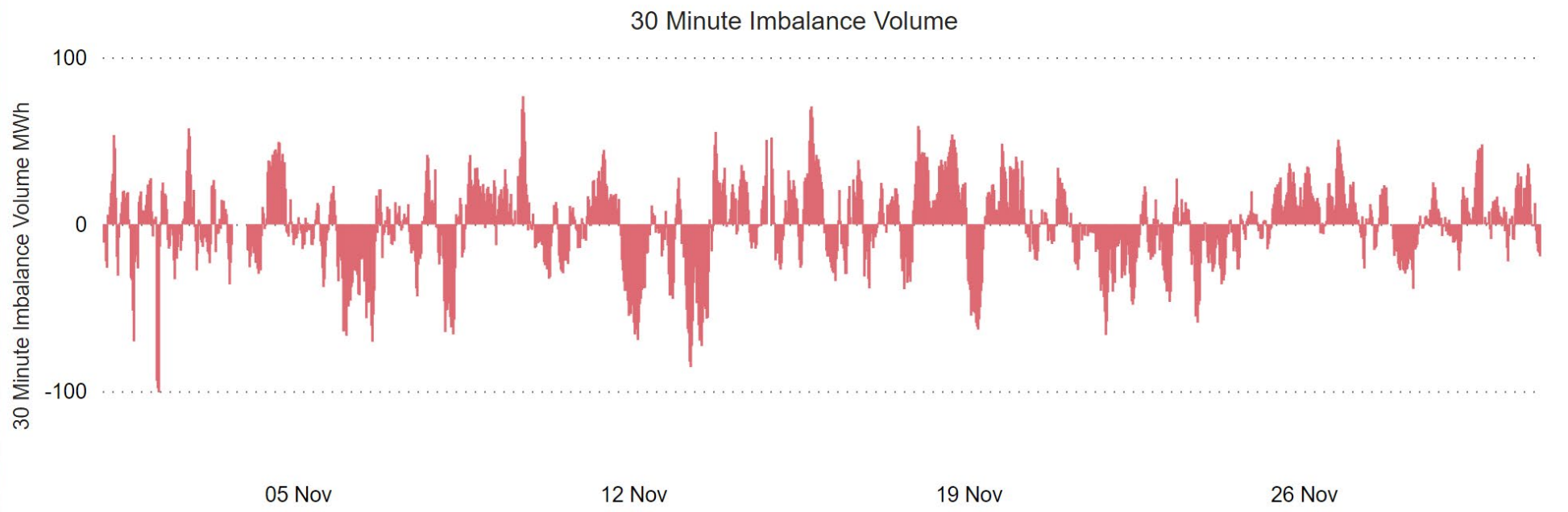
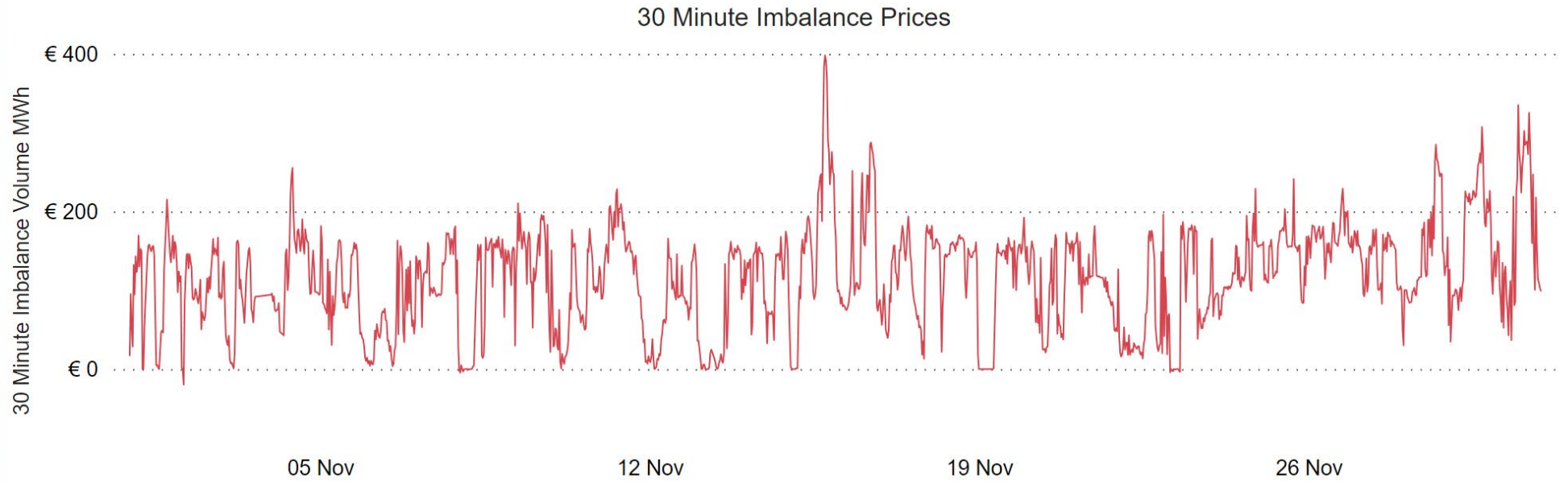
Average Price

-€ 19.75

Lowest Price

€ 398.01

Highest Price



## Demand and Generation Mix

# Demand November 2023

## SEM Demand (MW)

4,873.01	4,652.62
SEM Average 2023	SEM Average 2022
3,634.61	3,436.76
SEM Min 2023	SEM Min 2022
6,131.58	5,879.59
SEM Max 2023	SEM Max 2022

## NI Demand (MW)

891.55	867.94
NI Average 2023	NI Average 2022
565.52	548.66
NI Min 2023	NI Min 2022
1,247.32	1,220.28
NI Max 2023	NI Max 2022

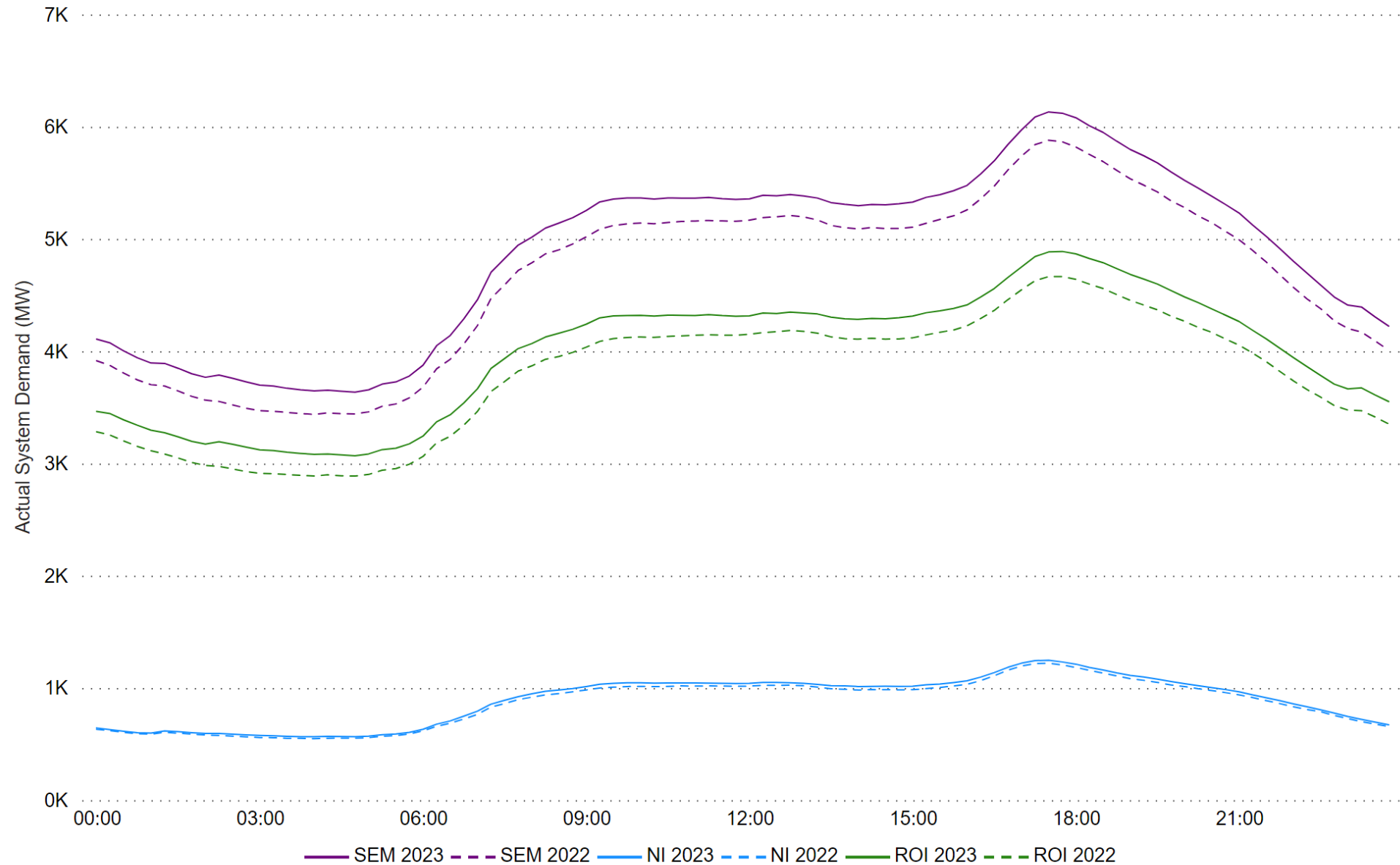
## ROI Demand (MW)

3,981.45	3,785.01
ROI Average 2023	ROI Average 2022
3,067.94	2,888.21
ROI Min 2023	ROI Min 2022
4,888.77	4,665.21
ROI Max 2023	ROI Max 2022

### Note

- \* 2.5 hours of demand data is missing on 4th November 2022.
- \* 4th of November 2022 Data removed from graph.

### Monthly Average Hourly Demand Curves



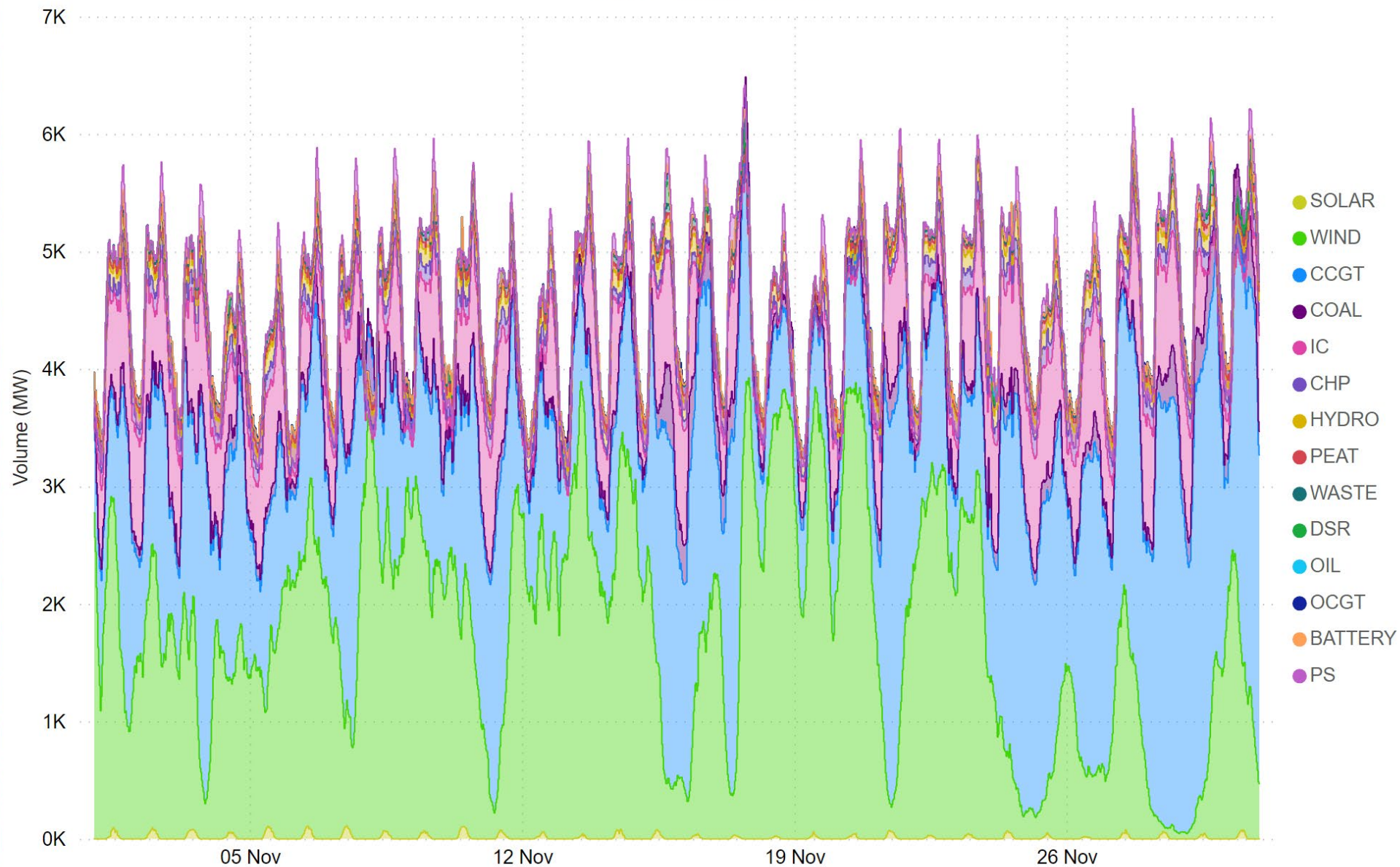
# Fuel Mix

## November 2023

Fuel Type	Monthly Average	Monthly %
CCGT	1,708	37.2%
WIND	1,812	39.4%
INTERCONNECTOR	501	10.9%
COAL	159	3.5%
HYDRO	152	3.3%
CHP	123	2.7%
PEAT	54	1.2%
WASTE	68	1.5%
SOLAR	12	0.3%
DSR	23	0.5%
OIL	5	0.1%
OCGT	1.0	0.0%
BATTERY	-4	-0.1%
PUMPED STORAGE	-18	-0.4%

Fuel Type	Max	Min
CCGT	3,733	620
WIND	3,925	41
INTERCONNECTOR	979	-901
COAL	672	0
HYDRO	182	76
CHP	168	38
PEAT	97	0
WASTE	81	16
SOLAR	111	0
DSR	188	0
OIL	246	0
OCGT	51	0
BATTERY	119	-53
PUMPED STORAGE	292	-302

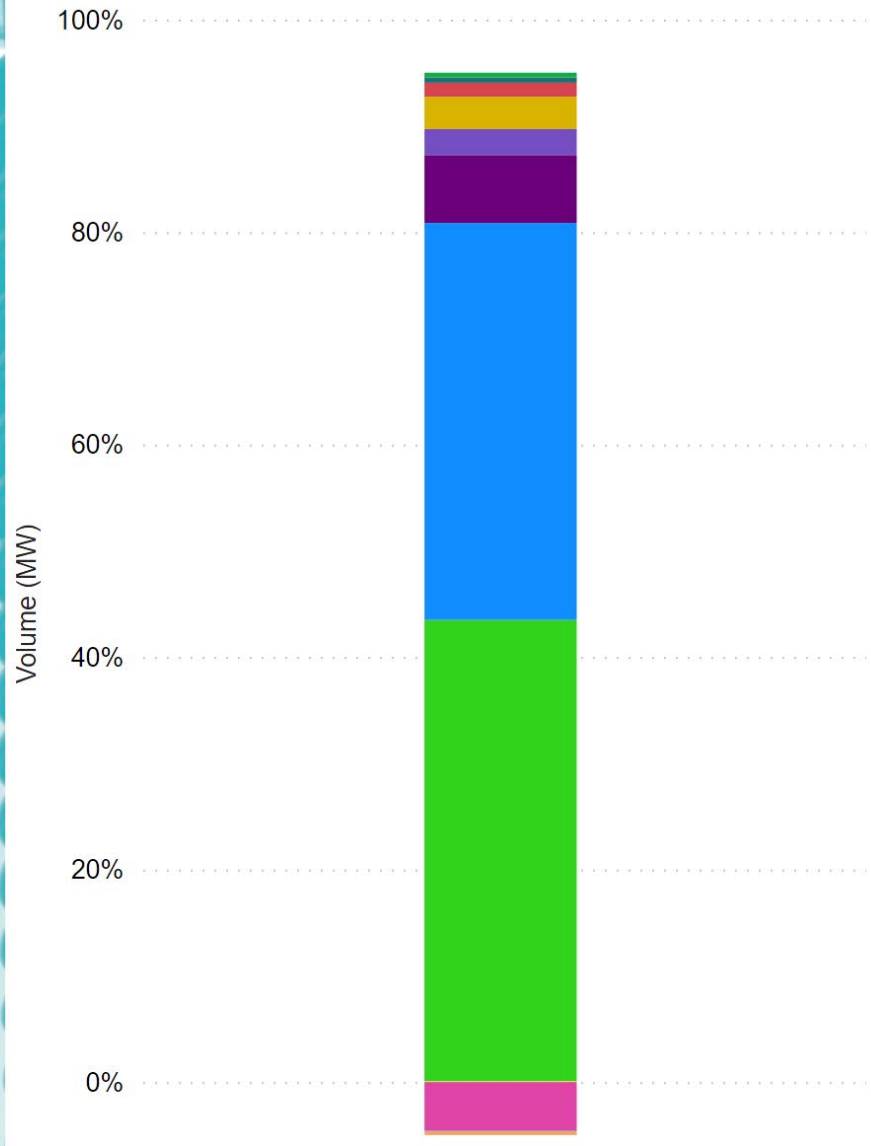
SEM 30 Minute Fuel Mix



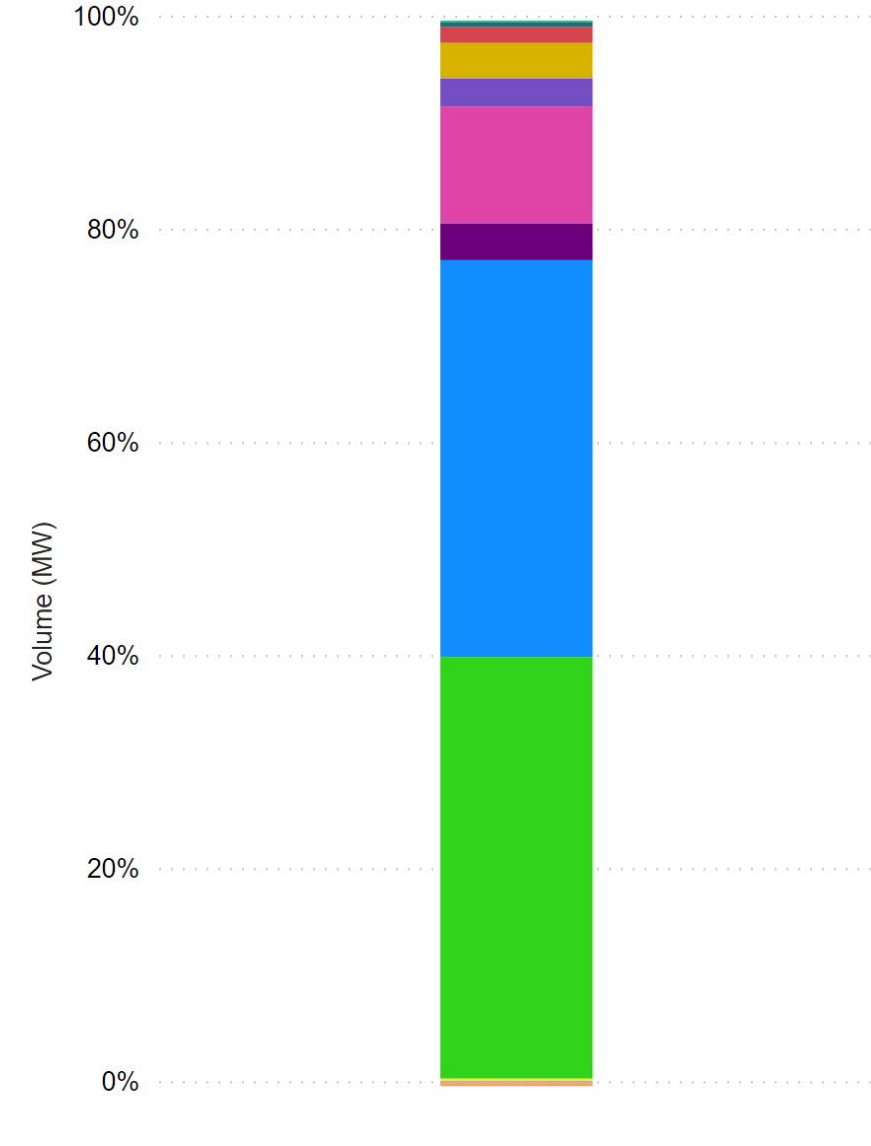


# Fuel Mix Comparison November 2022 & 2023

### SEM Fuel Mix November 2022



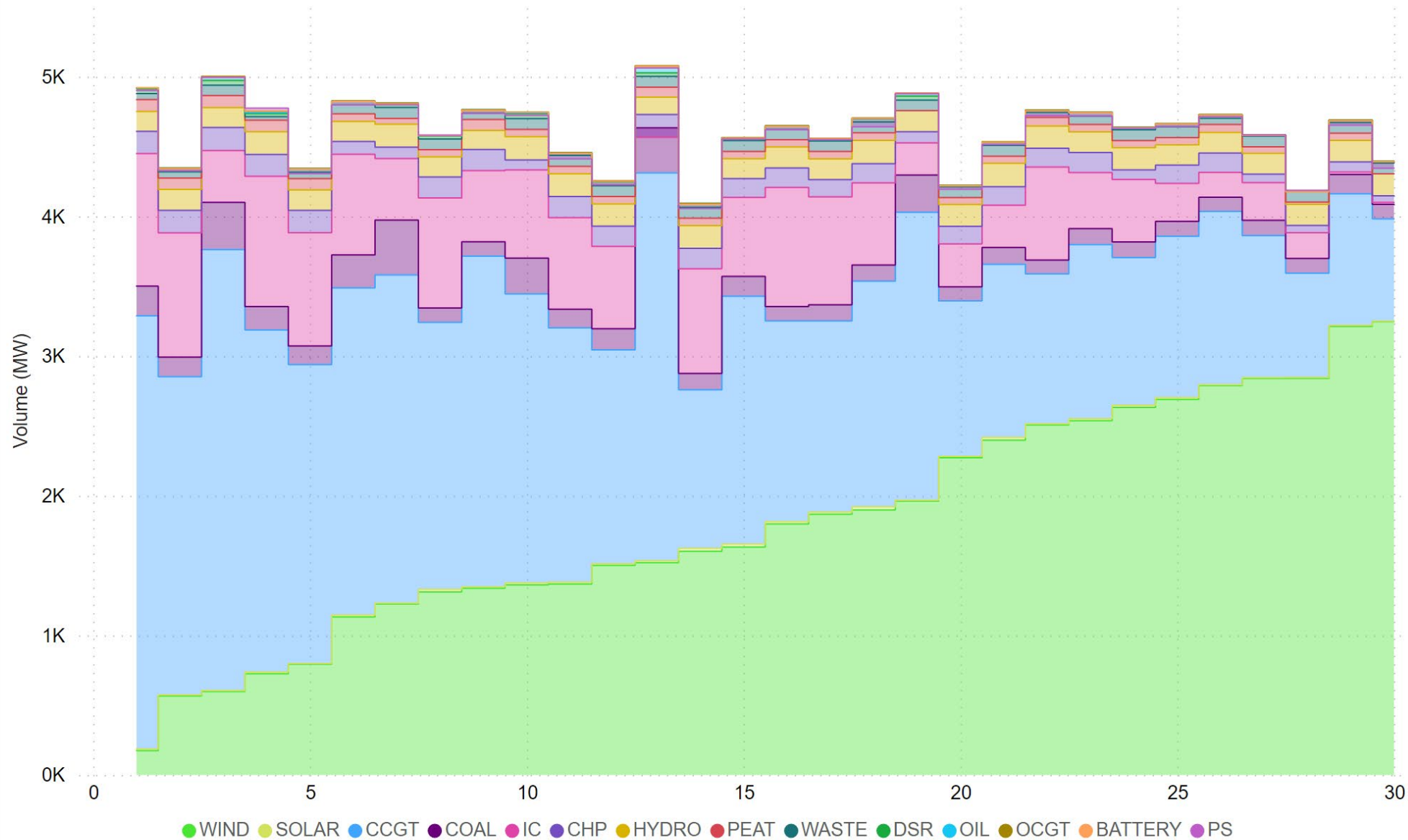
### SEM Fuel Mix November 2023



# Fuel Mix Ranked by Wind Volume November 2023

This chart shows the average daily fuel mix for the month but instead of being a timeline chart it is ranked by level of wind available from smallest to largest.

Daily SEM Fuel Mix Ranked by Wind Volume for the Month



# North-South Tie Line November 2023

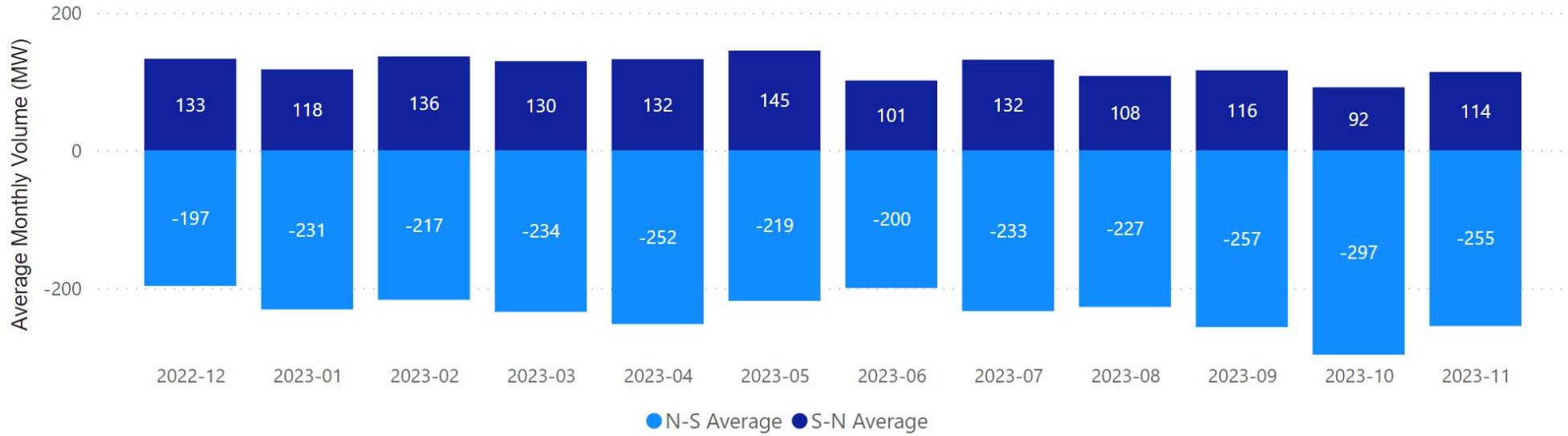
Average Flow NI to ROI (MW)  
-254.97

Average Flow ROI to NI (MW)  
113.89

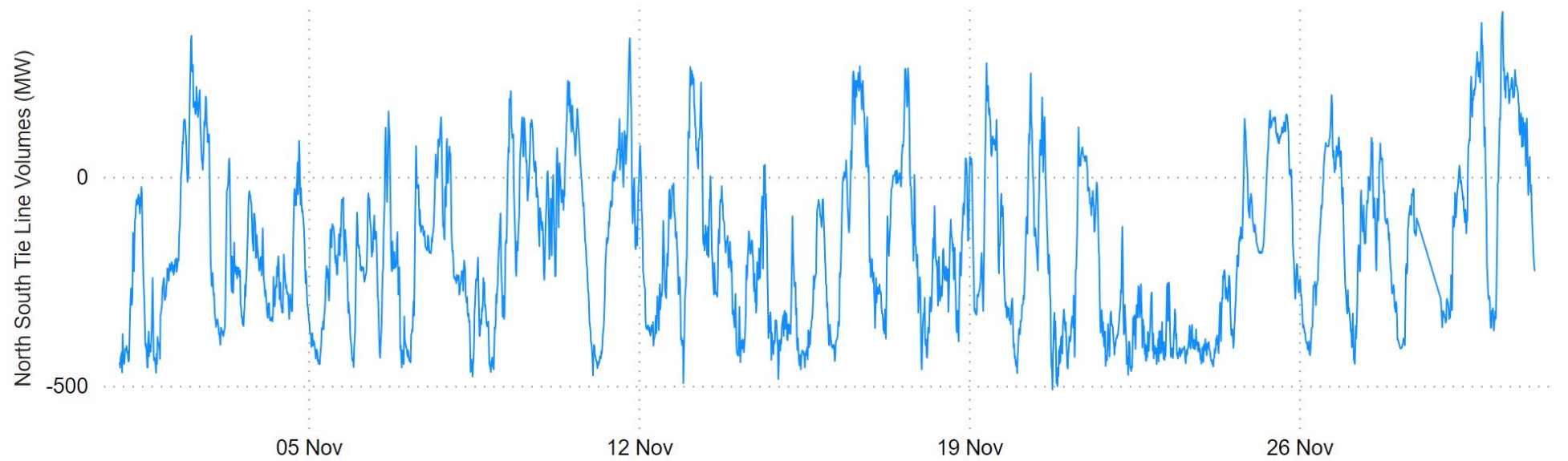
Average Net Flow (MW)  
-175.92

-ve flow NI to ROI  
+ve flow ROI to NI

Average Flows N-S Tie Line Long Term Trend



North South Tie Line Volumes 15 minute periods



# Wind Generation November 2023

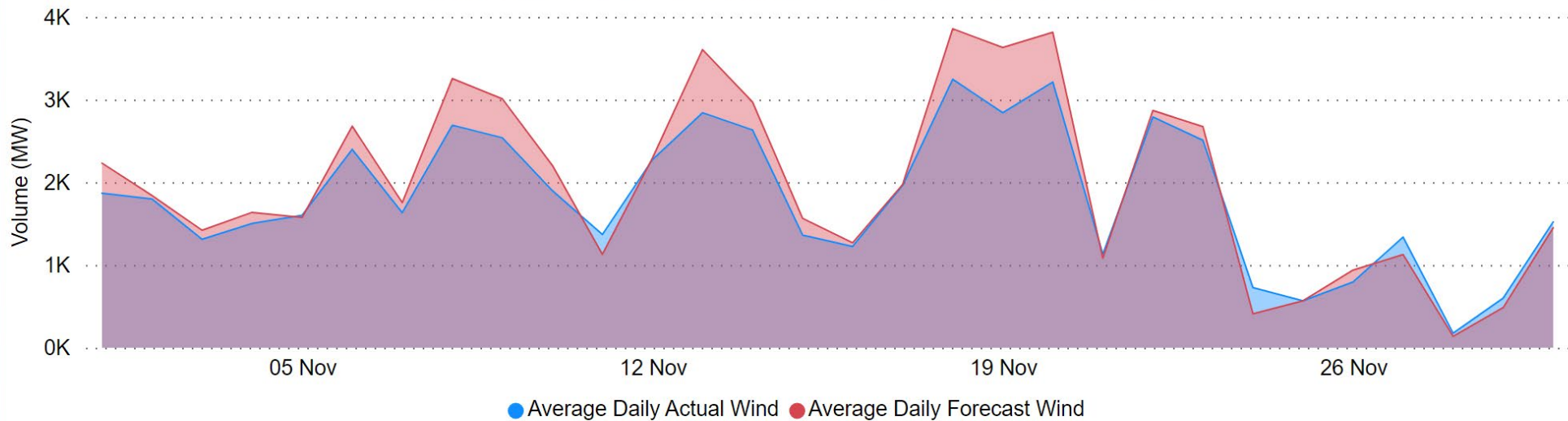
Average Daily Actual Wind (MW)  
1,811

Average Daily Forecast Wind (MW)  
1,981

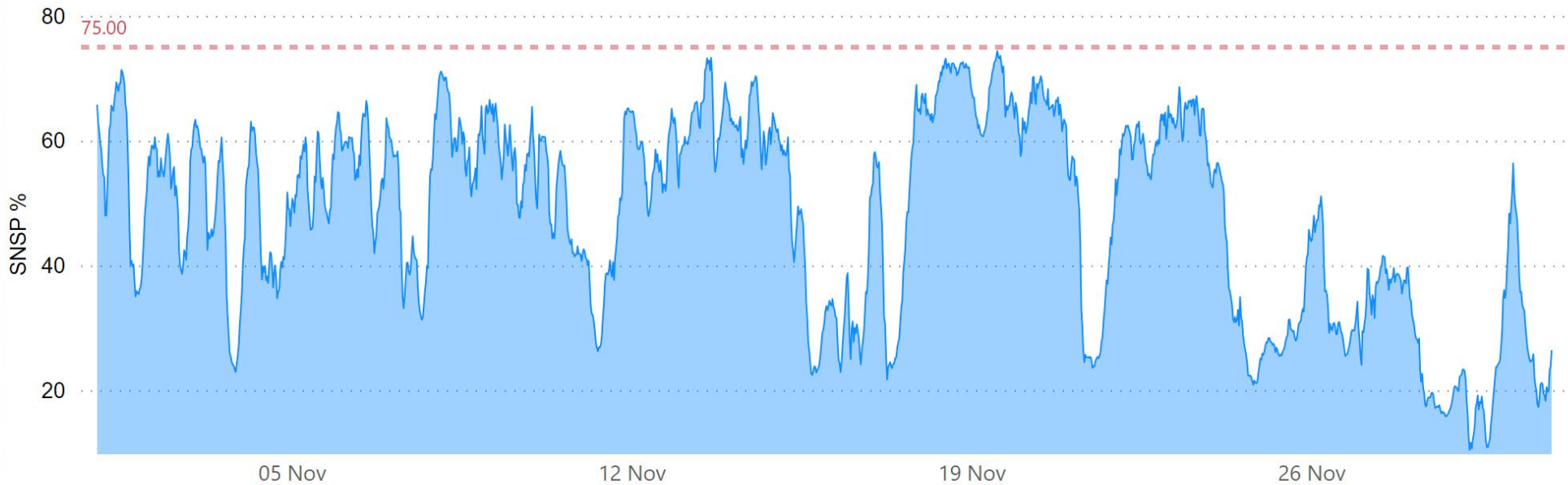
Min SNSP%  
10.43

Max SNSP%  
74.38

Actual Daily Average Wind Relative to Forecast Daily Average Wind



SNSP %





# CO<sub>2</sub> November 2023

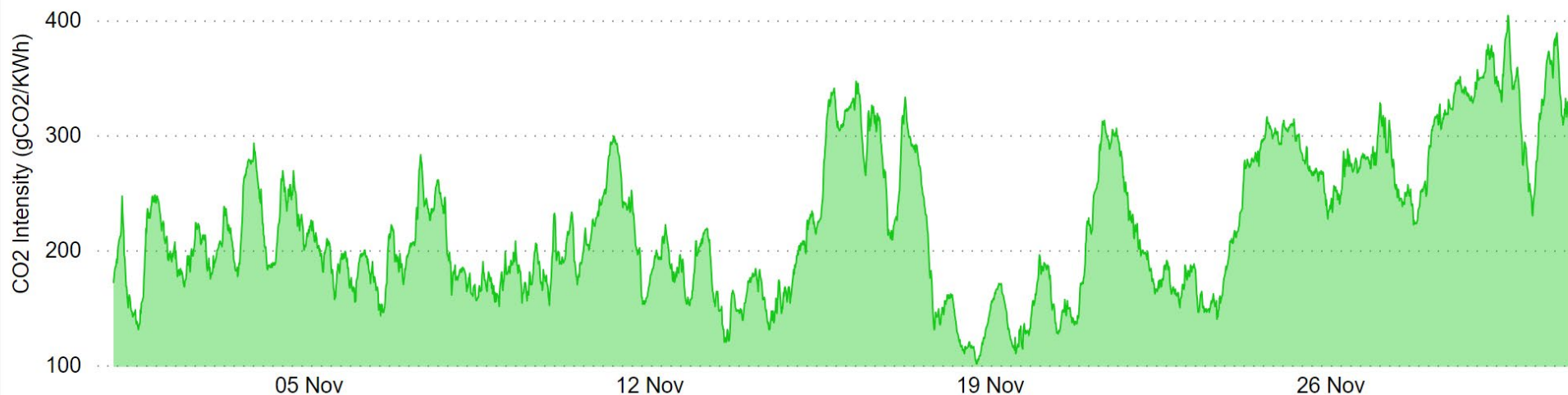
**CO<sub>2</sub> Intensity**  
 220.83  
 Monthly Average (gCO<sub>2</sub>/KWh)  
 101  
 Monthly Low (gCO<sub>2</sub>/KWh)  
 404  
 Monthly High (gCO<sub>2</sub>/KWh)

**CO<sub>2</sub> Emissions**  
 1159.25  
 Monthly Average (tCO<sub>2</sub>/hr)  
 650  
 Monthly Low (tCO<sub>2</sub>/hr)  
 2461  
 Monthly High (tCO<sub>2</sub>/hr)

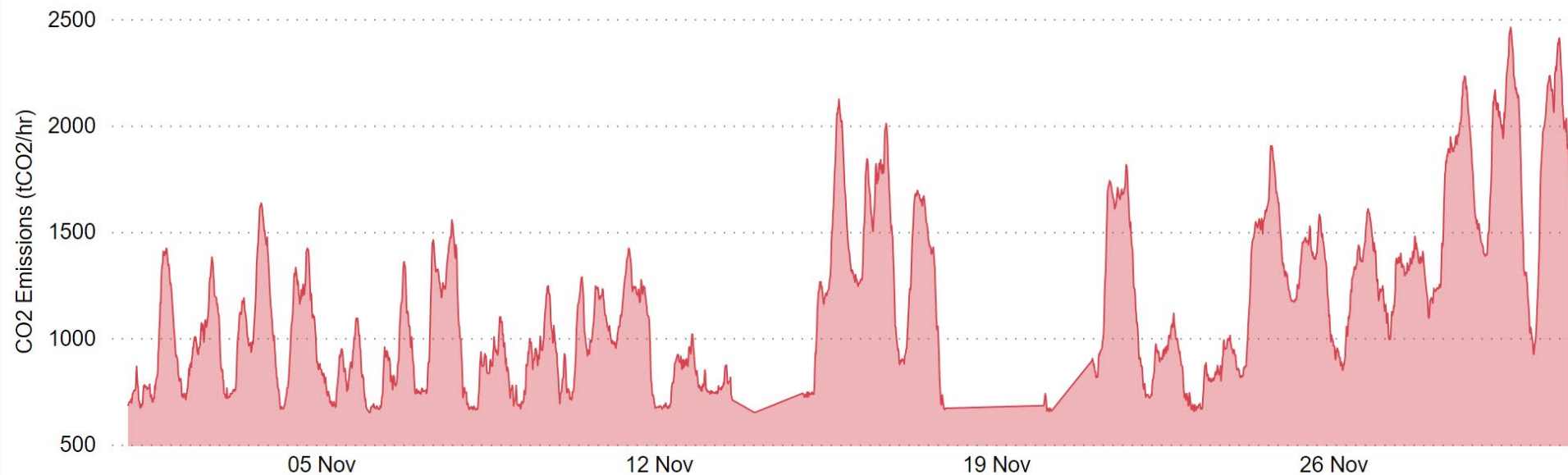
**Note**  
 CO<sub>2</sub> Emissions data missing  
 14/11/23 00:00 to 15/11/23 00:00  
 17/11/23 23:00 to 20/11/23 00:00  
 20/11/23 03:45 to 21/11/23 00:00

Data sourced from - SONI/ERIGRID

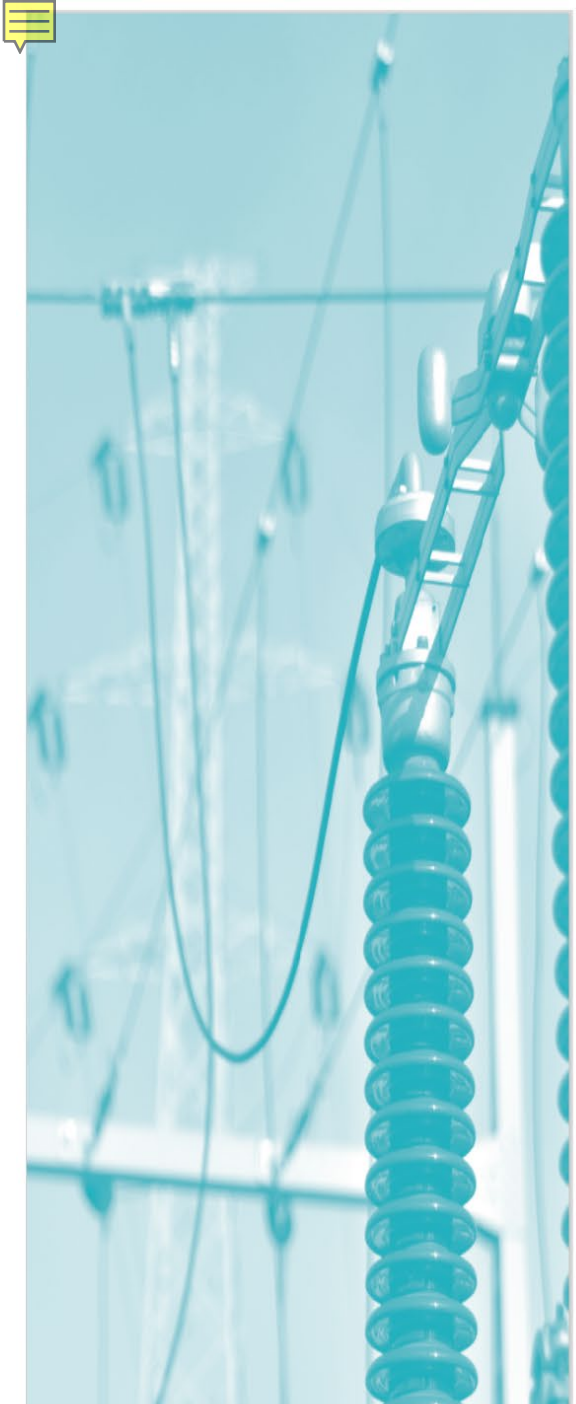
CO<sub>2</sub> Intensity



CO<sub>2</sub> Emissions



## Fuel Costs and Spreads



# Gas Price

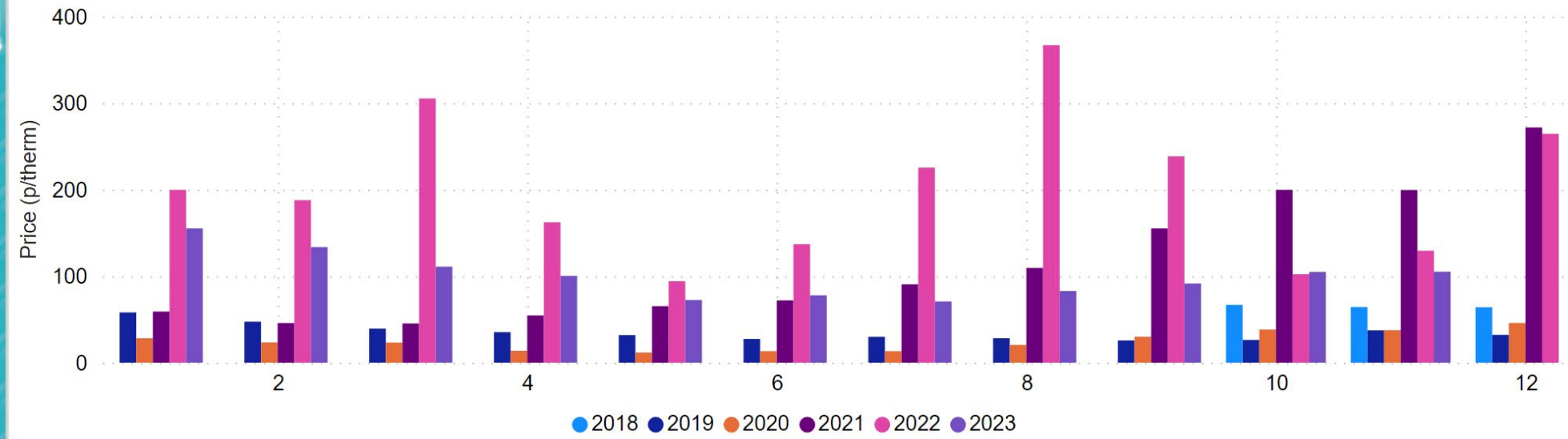
## November 2023

104.97  
Monthly Average (p/therm)

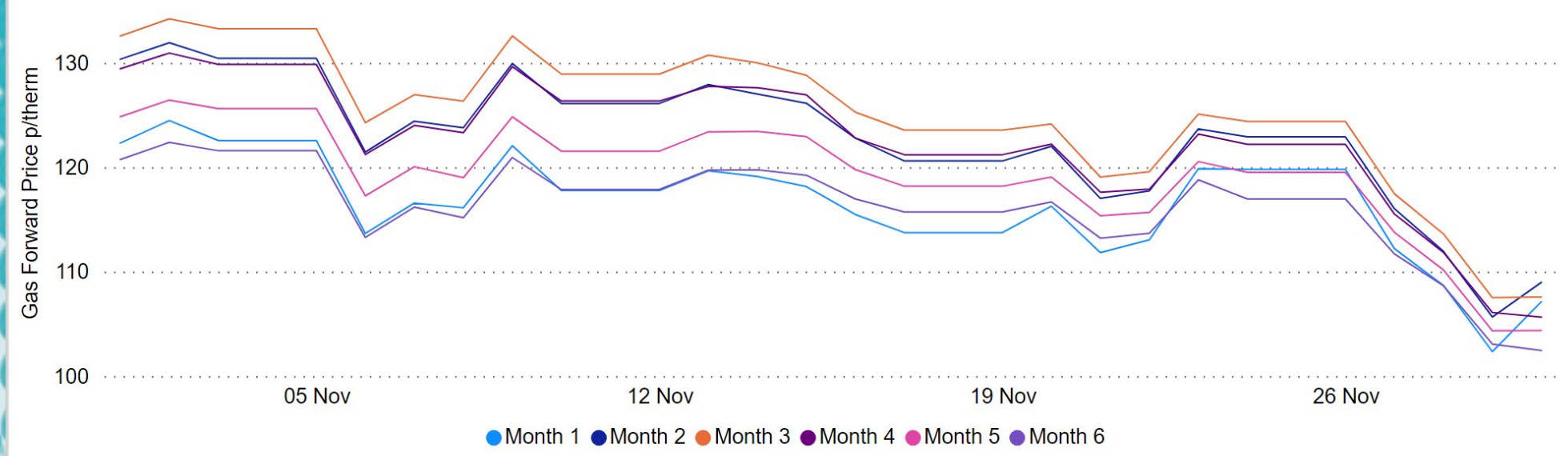
87.00  
Monthly Low (p/therm)

120.05  
Monthly High (p/therm)

Monthly Day Ahead NBP Gas Price by Year (p/therm)



Gas Forward Prices

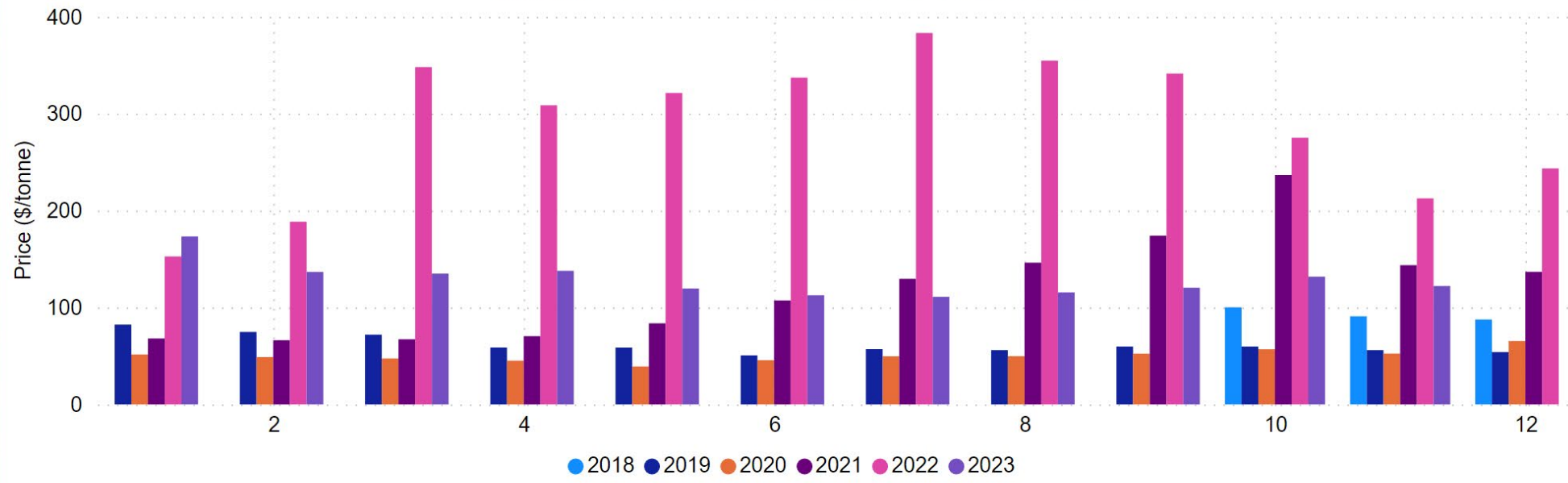


# Coal Price

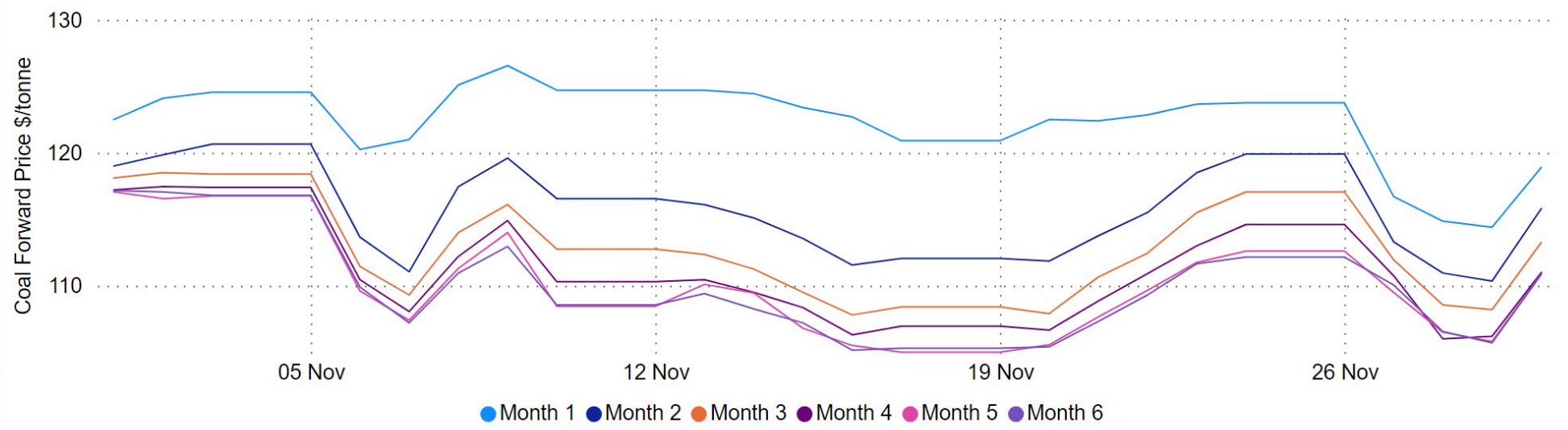
## November 2023

**\$122.16**  
 Monthly Average \$/tonne  
**\$113.65**  
 Monthly Low \$/tonne  
**\$126.55**  
 Monthly High \$/tonne

Monthly ICE Rotterdam Coal Price by Year (\$/tonne)



Coal Forward Prices



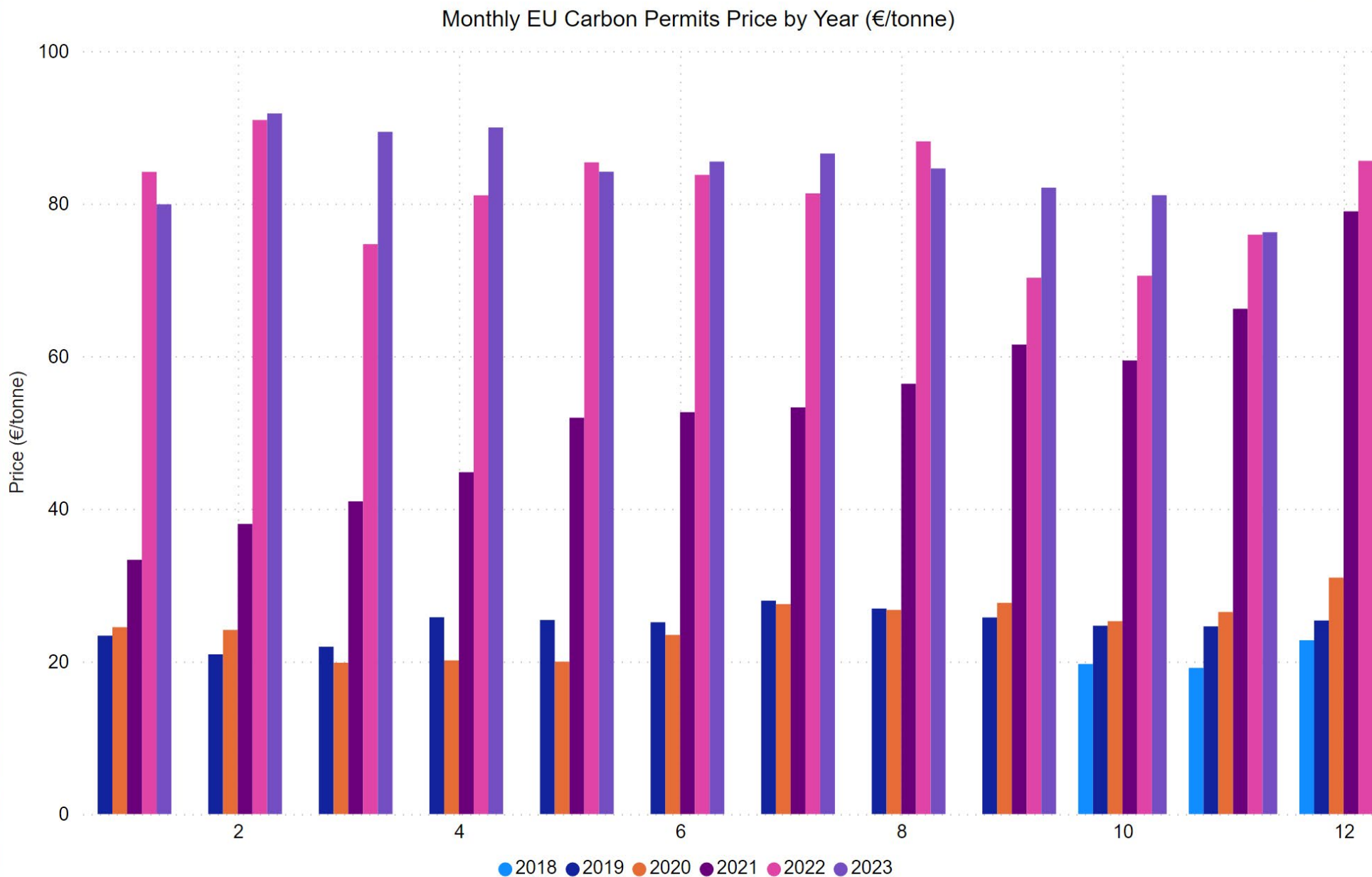
# Carbon Price

## November 2023

€ 76.25  
Monthly Average €/tonne

€ 70.34  
Monthly Low €/tonne

€ 79.44  
Monthly High €/tonne

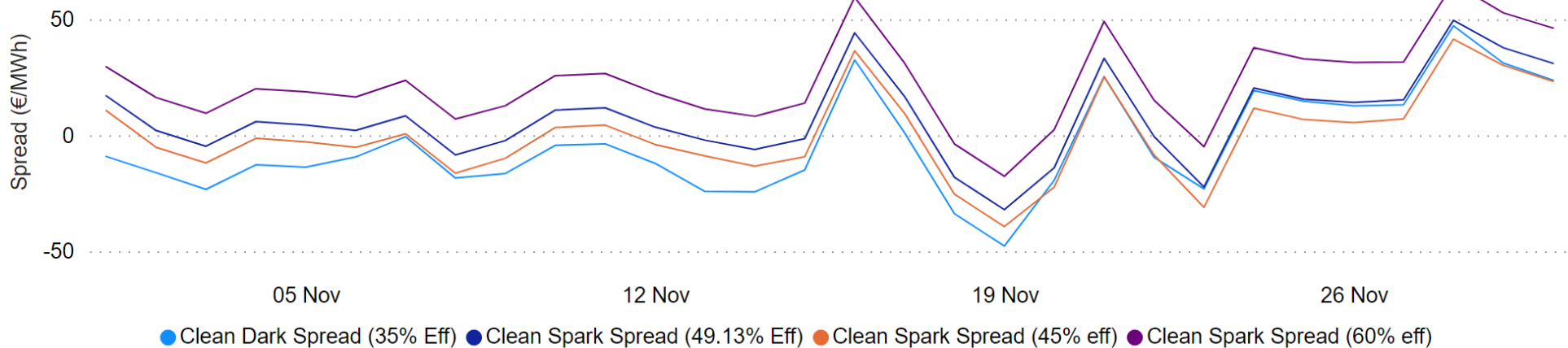


# Spark Spreads November 2023

**Clean Dark Spread** measure the profitability of coal fired power generation based on the variable cost of inputs (coal and carbon credits) and the value of the output (electricity).

**Clean Spark Spread** is the difference between the price received by a generator for electricity produced and the cost of the natural gas + Carbon needed to produce that electricity.

Clean Dark Spread v Clean Spark Spread



Clean Dark Spread v Clean Spark Spread (October 2018 Onwards)

