

# WEM Quarterly Market Review

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Q4 2024

# Introduction

## What is this report and where did all the data come from?

- This report presents an independent review of Wholesale Electricity Market (WEM) outcomes in Q4 2024 from a neutral perspective (\*).
- The material in this report is intended to complement the data and insights published by AEMO and other WEM stakeholders.
- Please note that there is no proprietary data used in this report and all the information is derived from the following publicly available data sources:

Data Source	Link
AEMO WA market data	<a href="http://data.wa.aemo.com.au/">http://data.wa.aemo.com.au/</a>
WEM market fees	<a href="https://aemo.com.au/-/media/files/about_aemo/energy_market_budget_and_fees/2023/wa-budget-and-fees-2023-24.pdf?la=en">https://aemo.com.au/-/media/files/about_aemo/energy_market_budget_and_fees/2023/wa-budget-and-fees-2023-24.pdf?la=en</a>
LGC spot prices (Demand Manager)	<a href="https://www.demandmanager.com.au/certificate-prices/">https://www.demandmanager.com.au/certificate-prices/</a>
Perth daily temperatures (Bureau of Meteorology)	<a href="http://www.bom.gov.au/climate/dwo/IDCJDW6111.latest.shtml">http://www.bom.gov.au/climate/dwo/IDCJDW6111.latest.shtml</a>

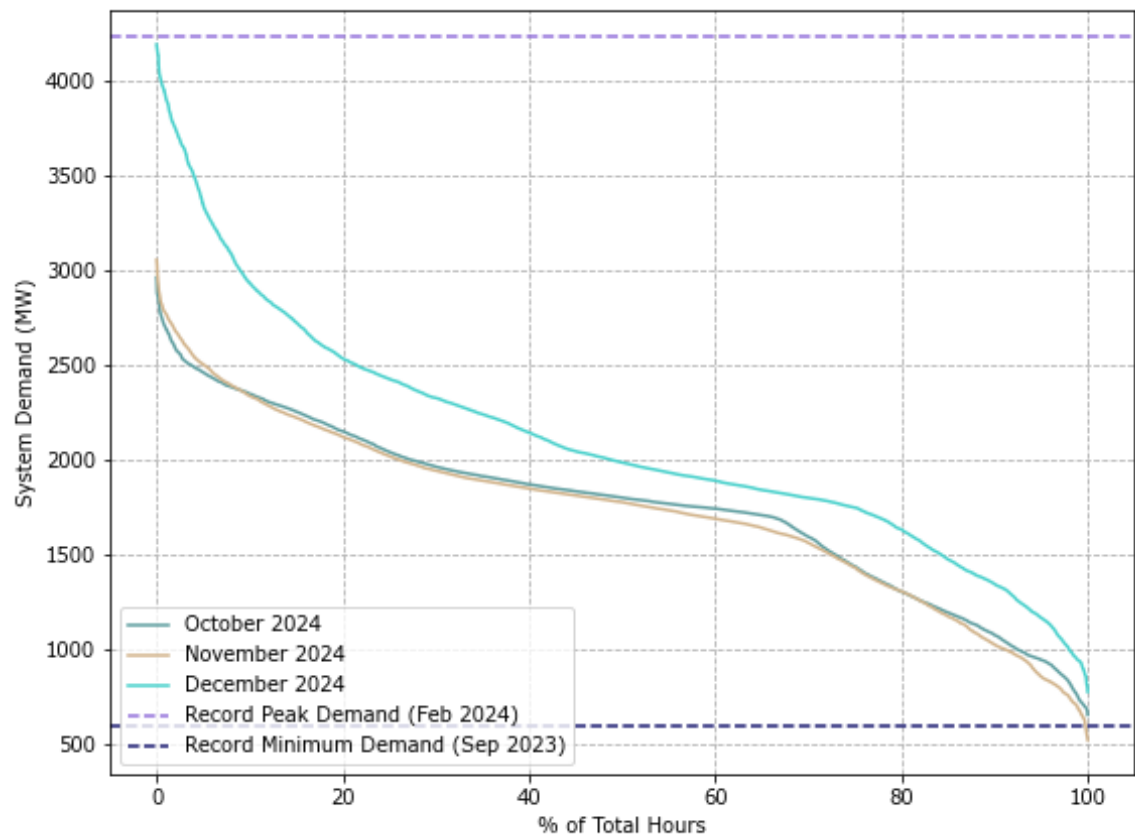
# .01 System

Aggregate system level outcomes

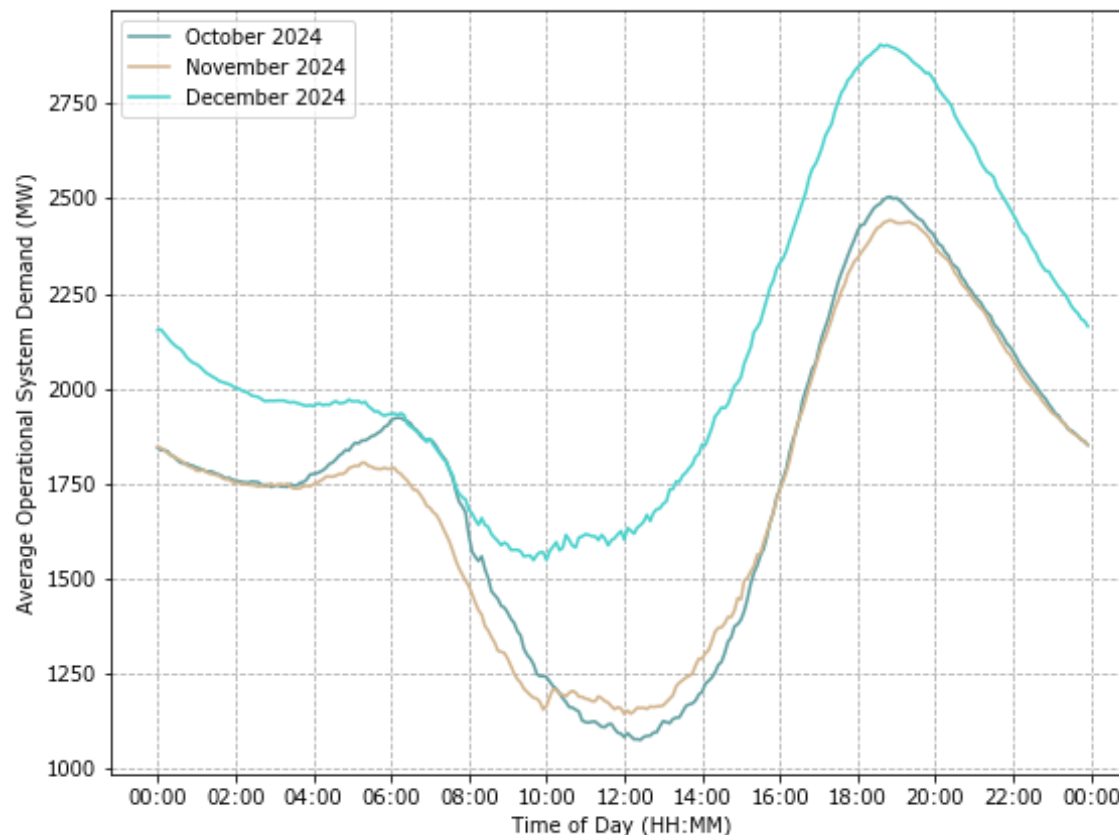
# System Operational Demand

System operational demand duration curves and time-of-day averages

### Demand Duration Curves



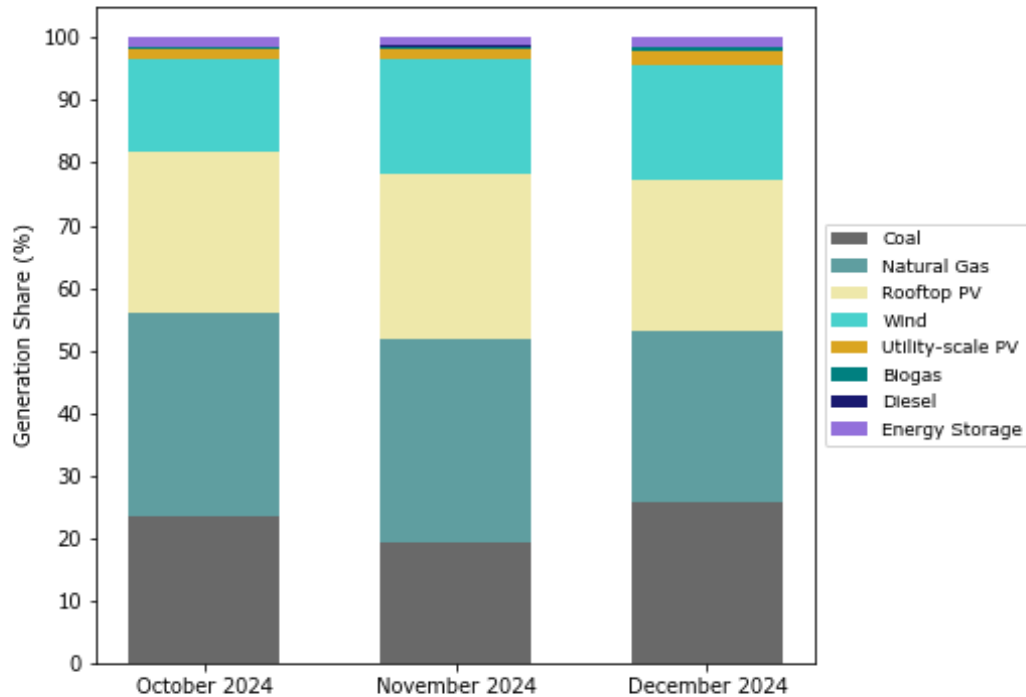
### Average Time-of-Day Demand



# Generation Mix

Categorised by fuel / technology type

### Q4 2024 Generation Mix



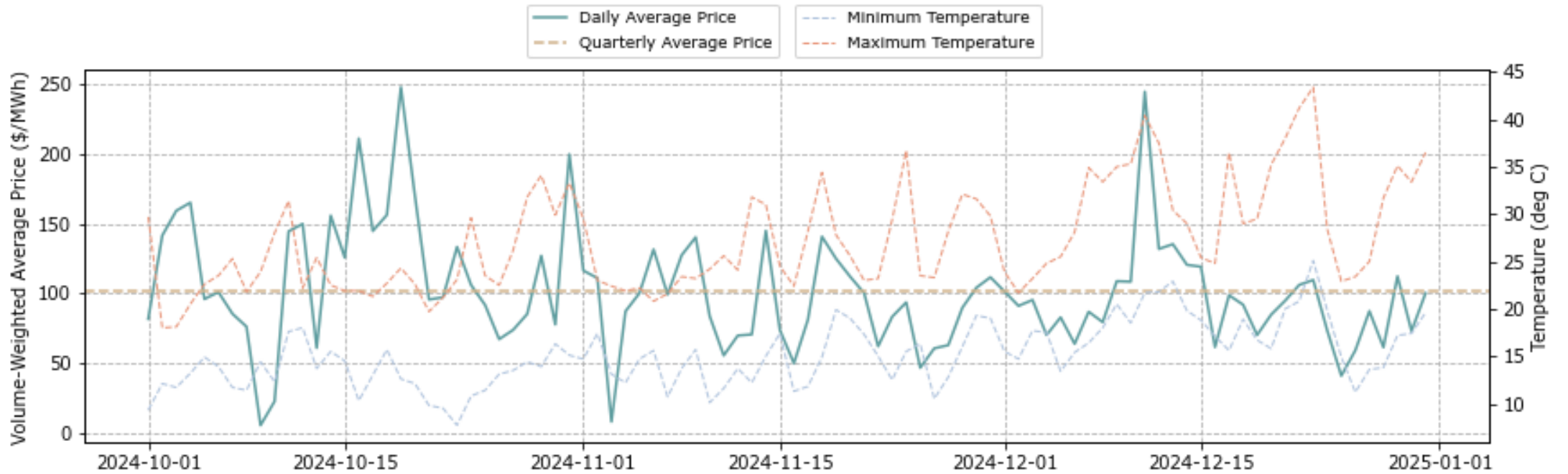
### Generation Mix Breakdown

Category	Oct 2024	Nov 2024	Dec 2024
Coal	415 GWh (23.6%)	325 GWh (19.2%)	526 GWh (25.7%)
Natural Gas	571 GWh (32.4%)	551 GWh (32.6%)	565 GWh (27.5%)
Rooftop PV	457 GWh (25.9%)	448 GWh (26.5%)	491 GWh (24%)
Wind	260 GWh (14.7%)	312 GWh (18.4%)	376 GWh (18.3%)
Utility PV	27 GWh (1.6%)	26 GWh (1.5%)	52 GWh (2.5%)
Biogas	6 GWh (0.3%)	6 GWh (0.3%)	7 GWh (0.3%)
Diesel	1 GWh (0.1%)	1 GWh (0.1%)	1 GWh (0.1%)
Storage (*)	24 GWh (1.4%)	22 GWh (1.3%)	32 GWh (1.6%)
<b>TOTAL</b>	<b>1,761 GWh</b>	<b>1,691 GWh</b>	<b>2,050 GWh</b>

(\*) Energy storage is only counted when discharging.

# Energy Prices

Daily volume-weighted energy prices and daily min/max Perth temperatures (\*)

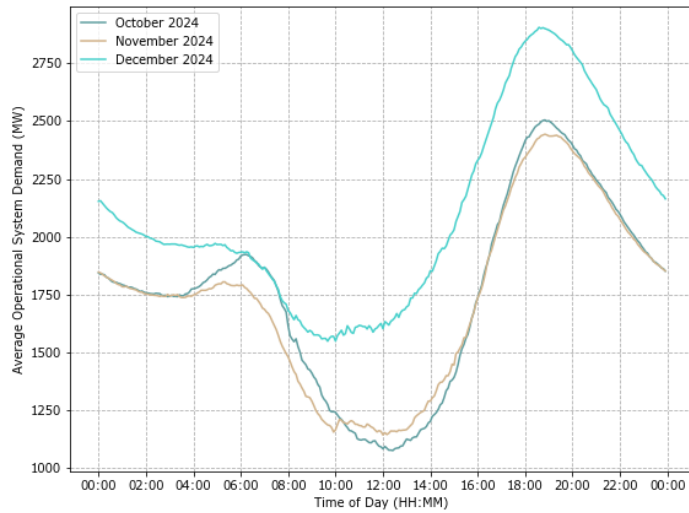
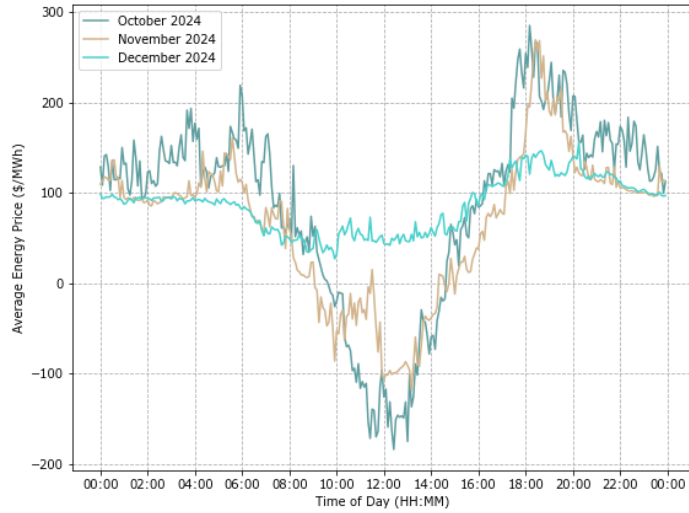


(\*) Daily temperatures are based on BOM observations at the [Perth Metro site](#).

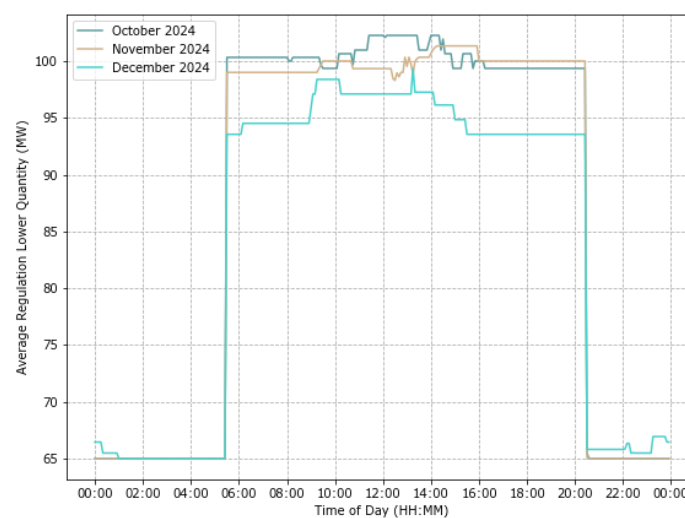
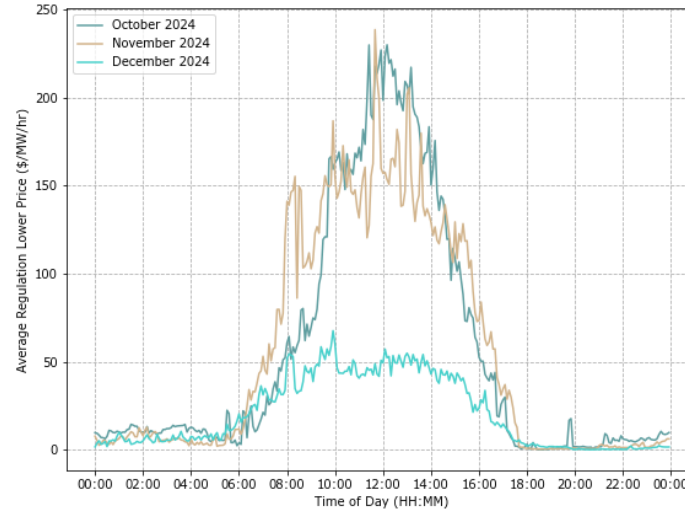
# Average time-of-day clearing prices and quantities (1)

Energy, Regulation Lower and Regulation Raise ESS

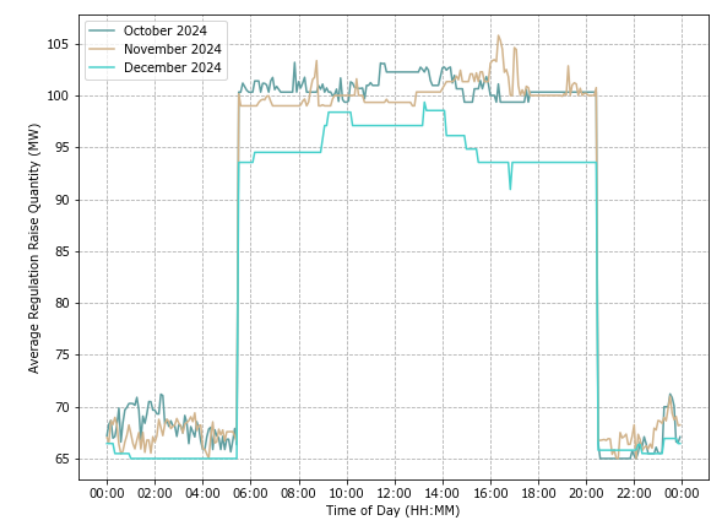
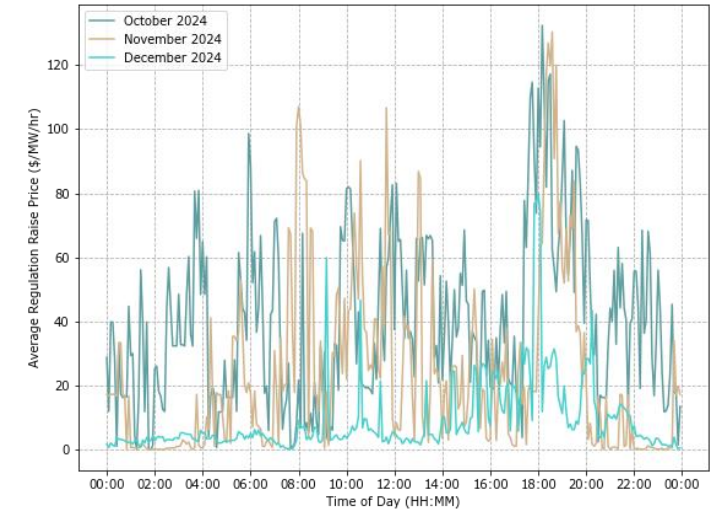
## Energy



## Regulation Lower (\*)



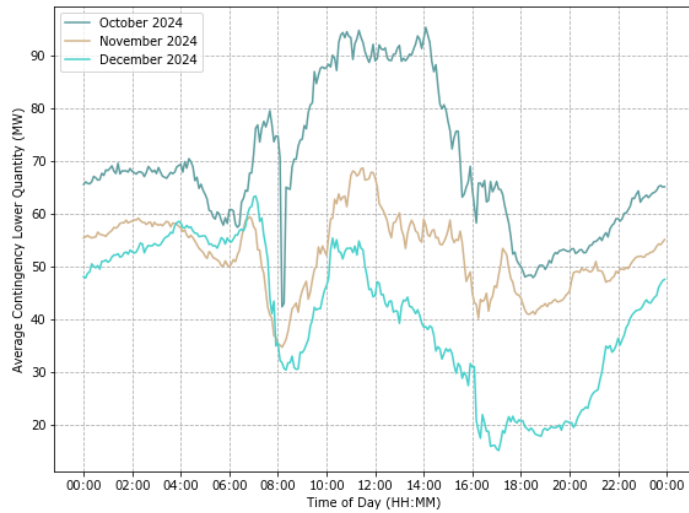
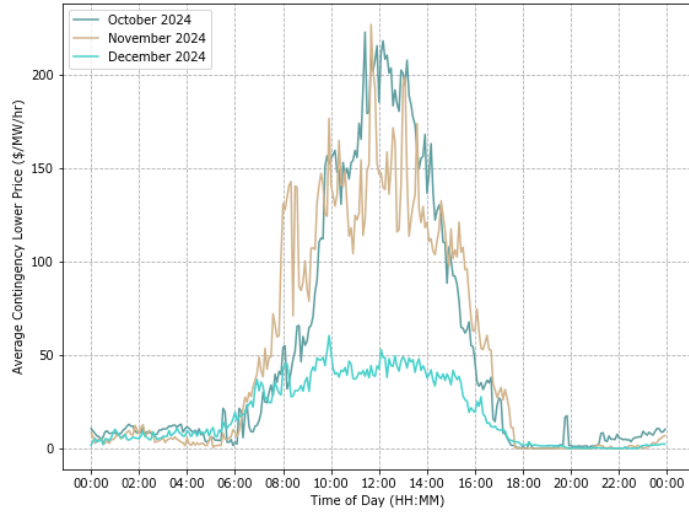
## Regulation Raise (\*)



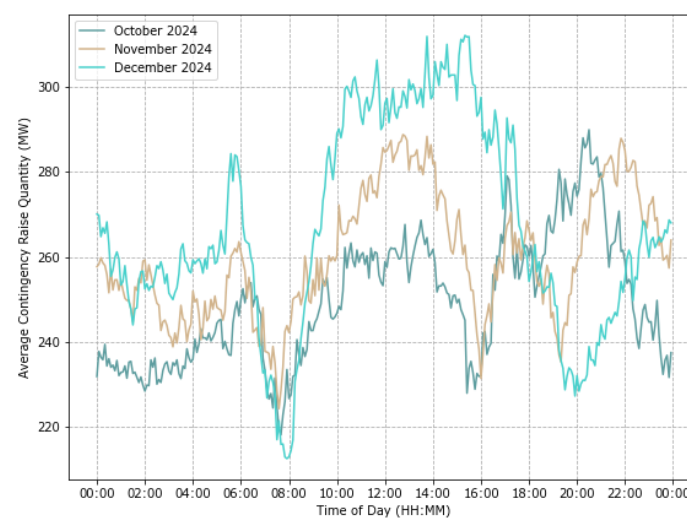
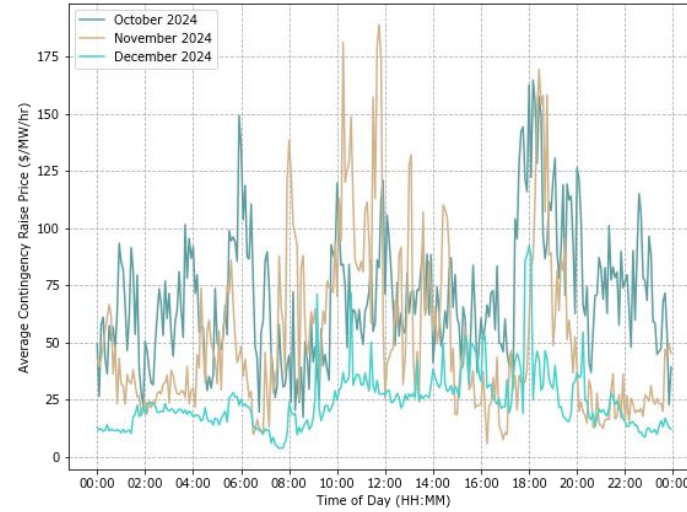
# Average time-of-day clearing prices and quantities (2)

Contingency Lower, Contingency Raise and RoCoF Control ESS

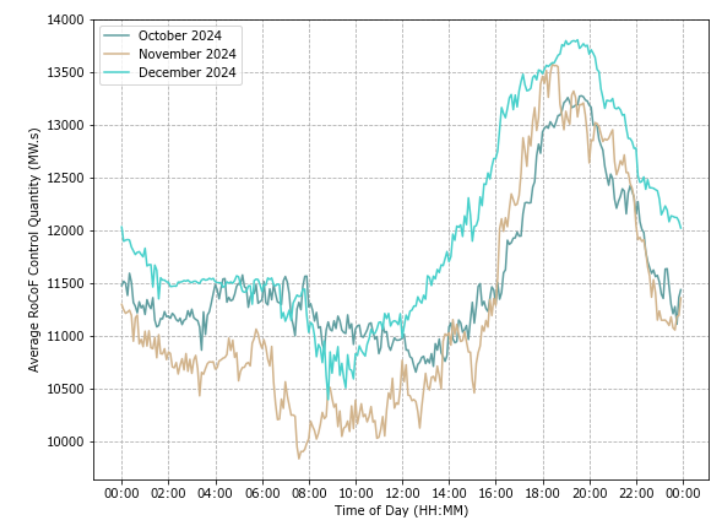
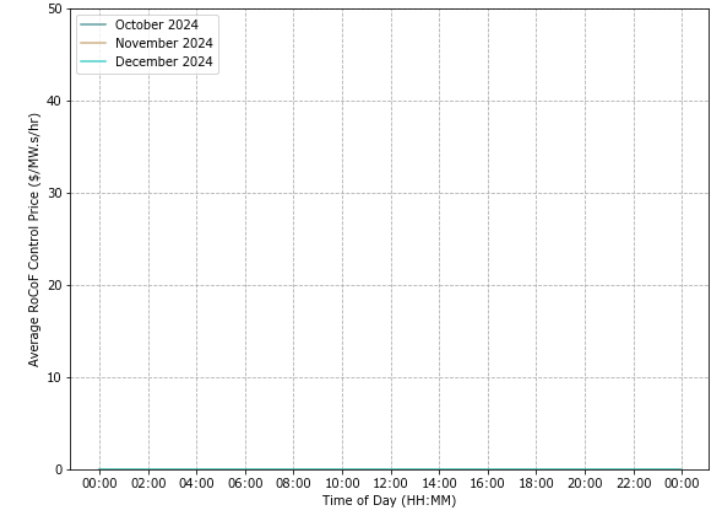
## Contingency Lower (\*)



## Contingency Raise (\*)



## RoCoF Control (\*)

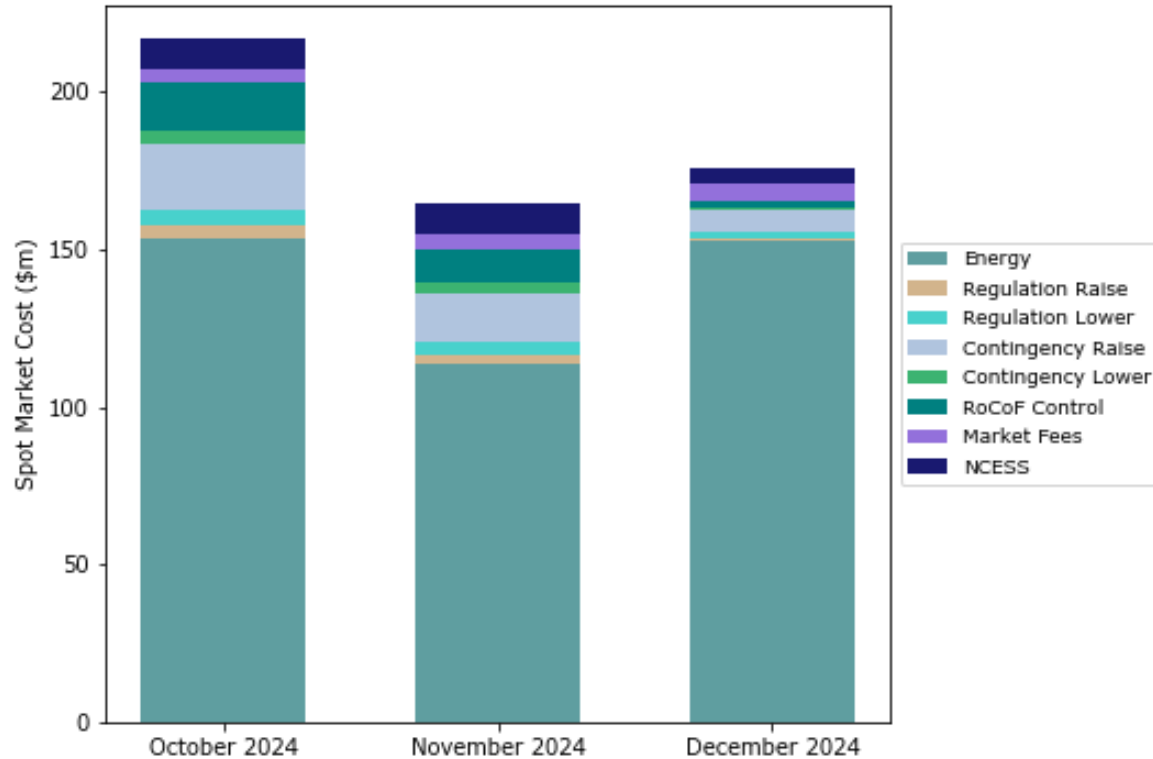




# WEM Total Spot Market Costs

Total mark-to-market cost of the WEM (excluding Reserve Capacity)

### Q4 2024 Market Costs



### Market Cost Breakdown (\$m AUD)

Category	Oct 2024	Nov 2024	Dec 2024
Energy	\$153.42m	\$113.57m	\$152.61m
Regulation Raise (*)	\$4.42m	\$2.88m	\$1.06m
Regulation Lower (*)	\$4.58m	\$4.45m	\$1.88m
Contingency Raise (*)	\$20.74m	\$15.09m	\$6.68m
Contingency Lower (*)	\$4.78m	\$3.30m	\$1.04m
RoCoF Control (*)	\$14.96m	\$10.99m	\$2.23m
Market Fees	\$4.64m	\$4.43m	\$5.52m
NCESS	\$9.16m	\$9.63m	\$4.87m
<b>TOTAL</b>	<b>\$216.69m</b>	<b>\$164.35m</b>	<b>\$175.90m</b>
<b>\$ / MWh</b>	<b>\$169.21</b>	<b>\$134.40</b>	<b>\$115.39</b>

(\*) Includes estimated FCESS Uplift Payments

# .02

## Facilities

Selected facility level outcomes

# Facility-Level Metrics

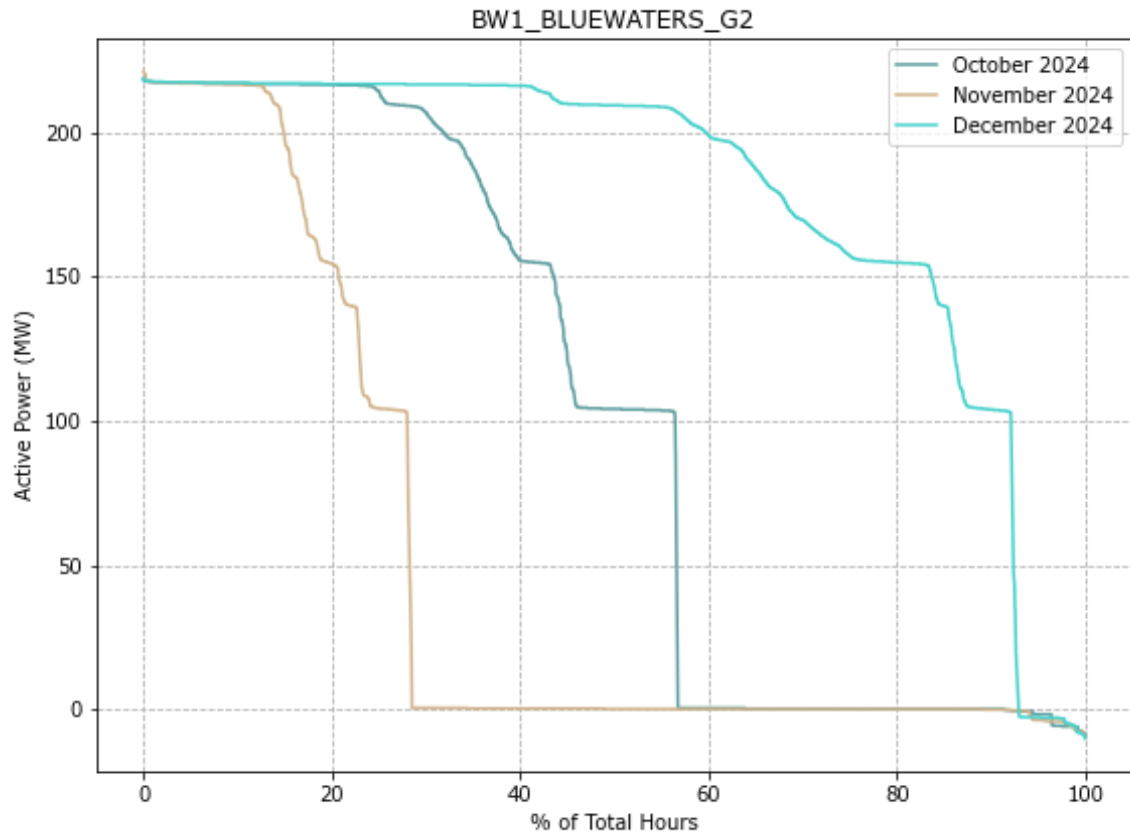
Definitions for the facility-level metrics reported in this section

Facility Metric	Description
<b>Monthly Generation Duration Curve</b>	Curve showing the proportion of time in a month that a facility is operating above a specific output.
<b>Average Time of Day Output</b>	Curve showing the mean output from a facility over a month at a 5-min resolution (with no adjustments for a facility being offline).
<b>Facility Merchant Spot Revenue</b>	The implied monthly revenue that a facility would have received from all energy and ESS markets if it were a merchant facility. Where a facility receives Large Generation Certificate (LGC), this revenue is estimated based on publicly available LGC spot prices <a href="#">published on Demand Manager</a> .
<b>Facility Capacity Factor</b>	Daily average capacity factors based on the daily energy generated and the <a href="#">registered facility size</a> . Note that for energy storage facilities, the net energy throughput is used.
<b>Average Energy Capture Price</b>	Daily average volume weighted energy price that the facility receives based on the following calculation: $\text{Average Energy Capture Price} = \frac{\sum \text{Energy Revenue}}{\sum  \text{Energy Generated or Consumed} }$

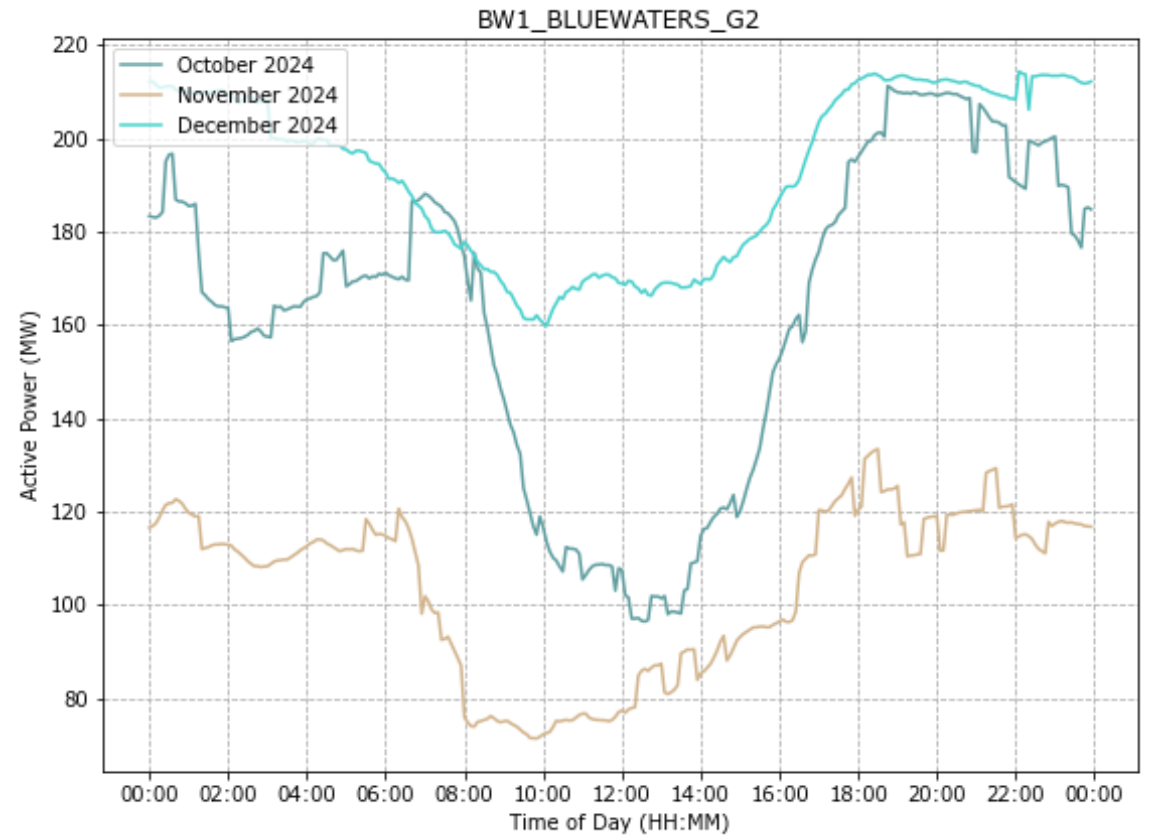
# Bluewaters Power Station BW1-G2

Coal-fired Scheduled Facility, 217 MW, Summit Southern Cross Power

### Generation Duration Curves



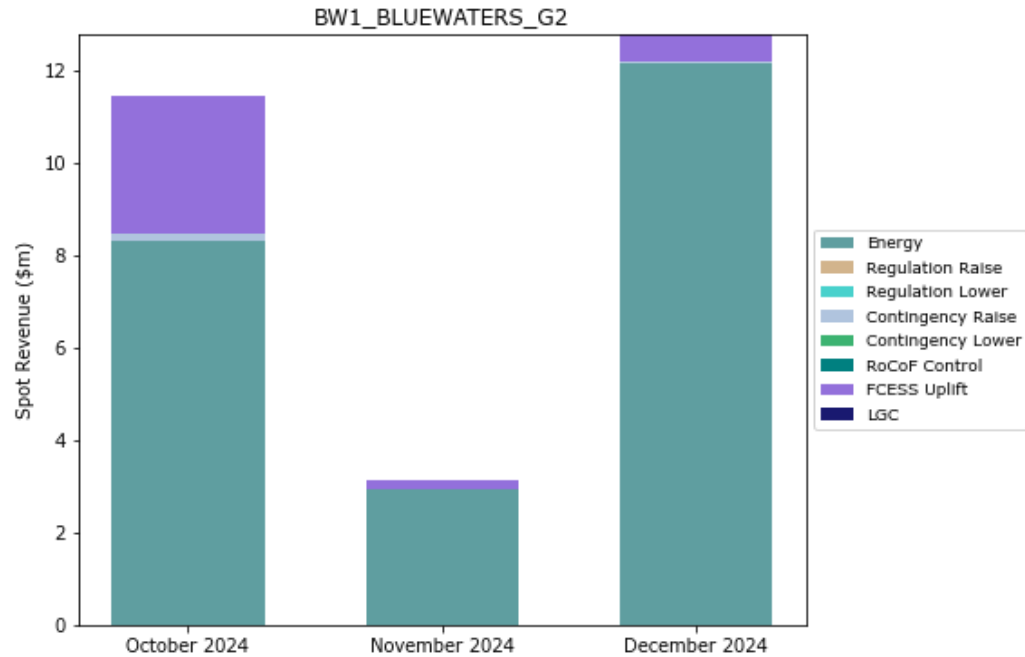
### Average Time-of-Day Output



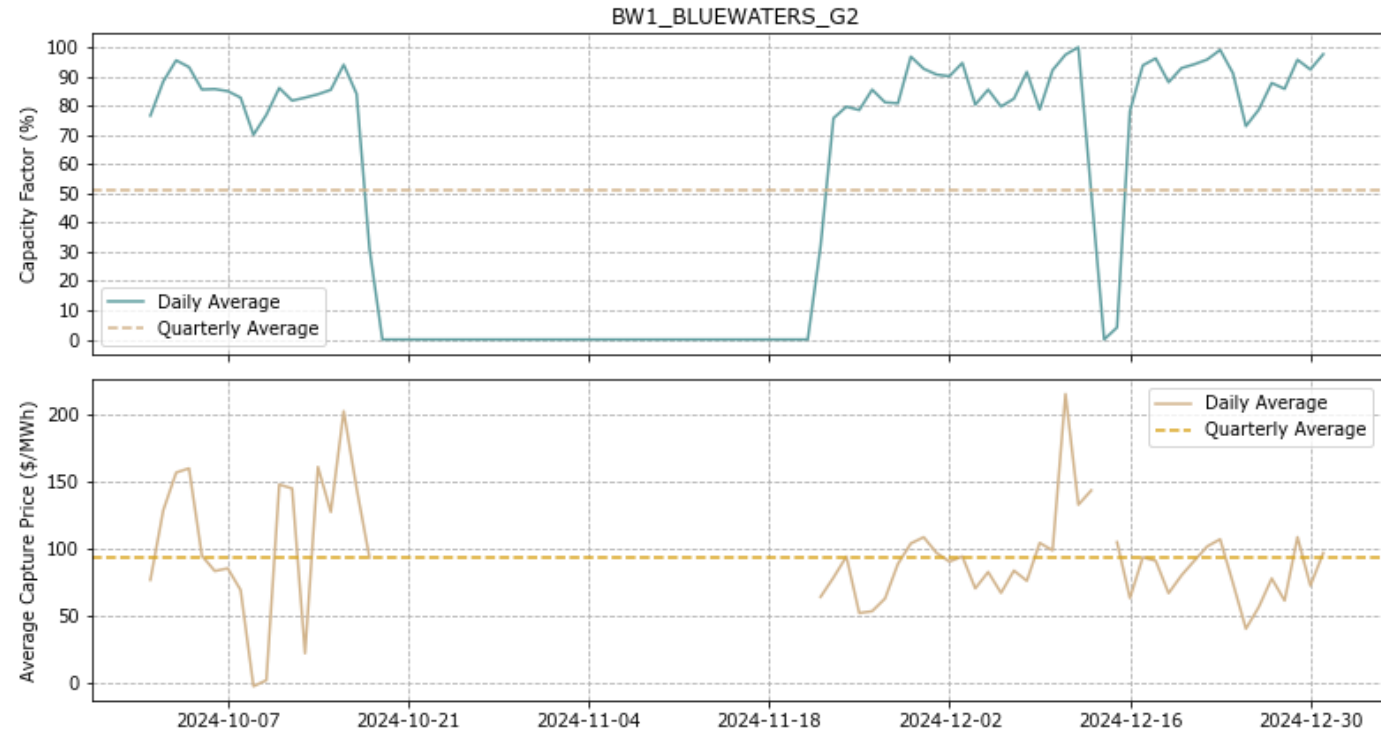
# Bluewaters Power Station BW1-G2

Coal-fired Scheduled Facility, 217 MW, Summit Southern Cross Power

## Facility Merchant Spot Revenue



## Daily Capacity Factor and Average Energy Capture Price

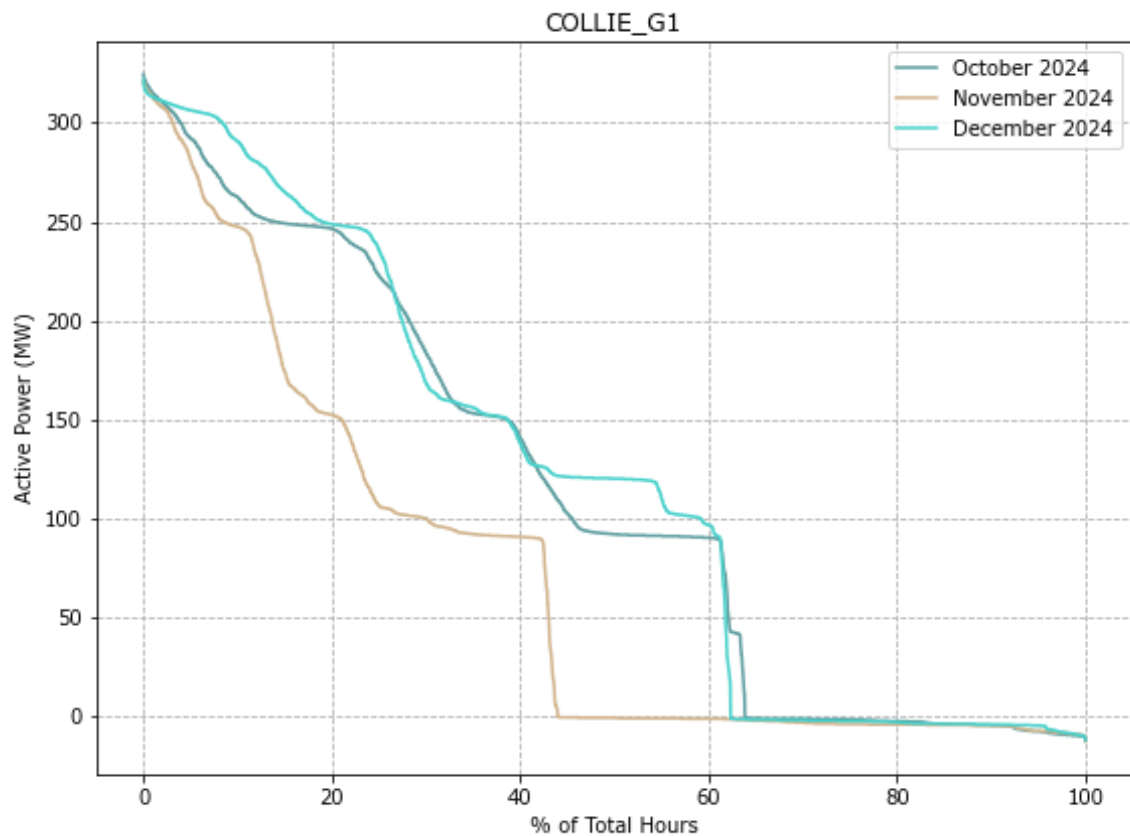


	Oct 2024	Nov 2024	Dec 2024
Energy Generated (GWh)	76.47	36.59	133.17
Total Spot Revenue (\$m)	11.44	3.15	12.79
<b>\$ / MWh</b>	<b>\$149.56</b>	<b>\$86.09</b>	<b>\$96.03</b>

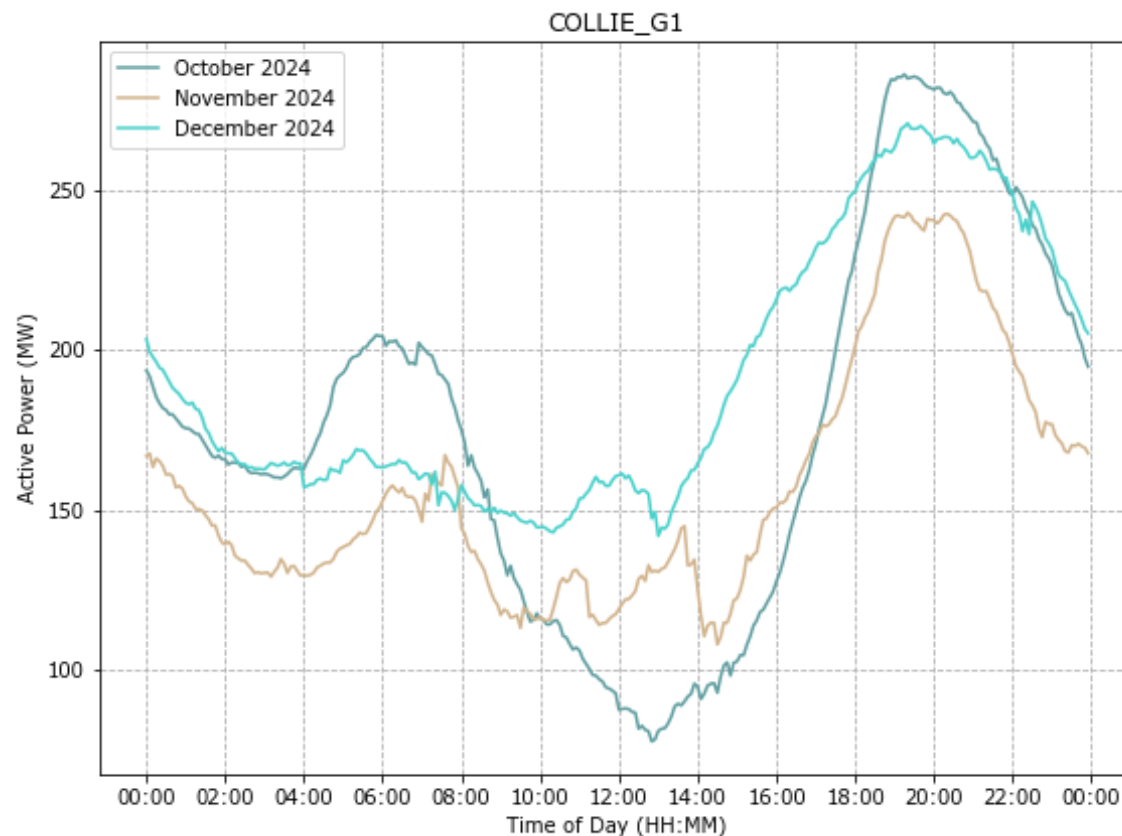
# Collie Power Station G1

Coal-fired Scheduled Facility, 318.3 MW, Synergy

### Generation Duration Curves



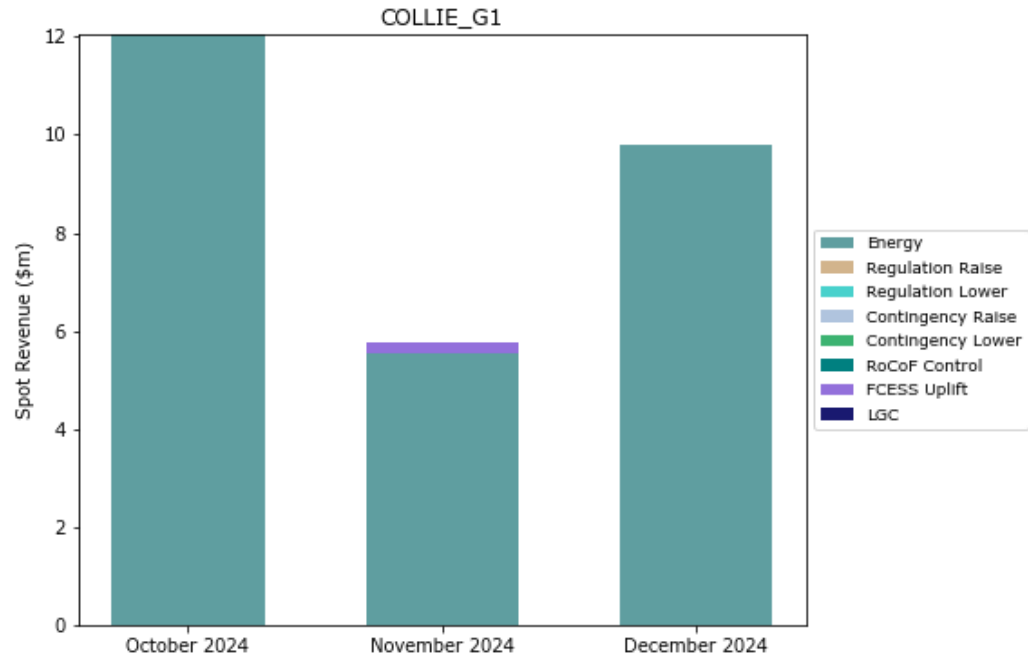
### Average Time-of-Day Output



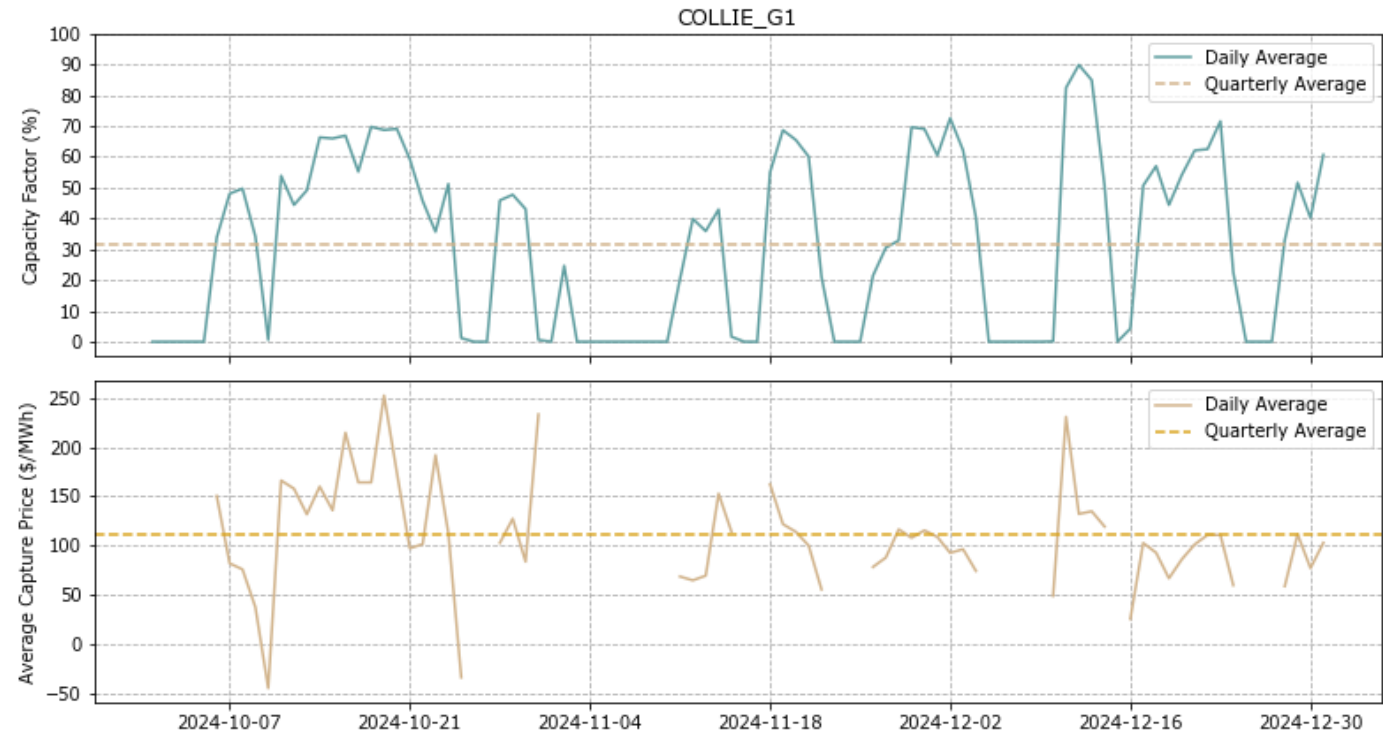
# Collie Power Station G1

Coal-fired Scheduled Facility, 318.3 MW, Synergy

## Facility Merchant Spot Revenue



## Daily Capacity Factor and Average Energy Capture Price

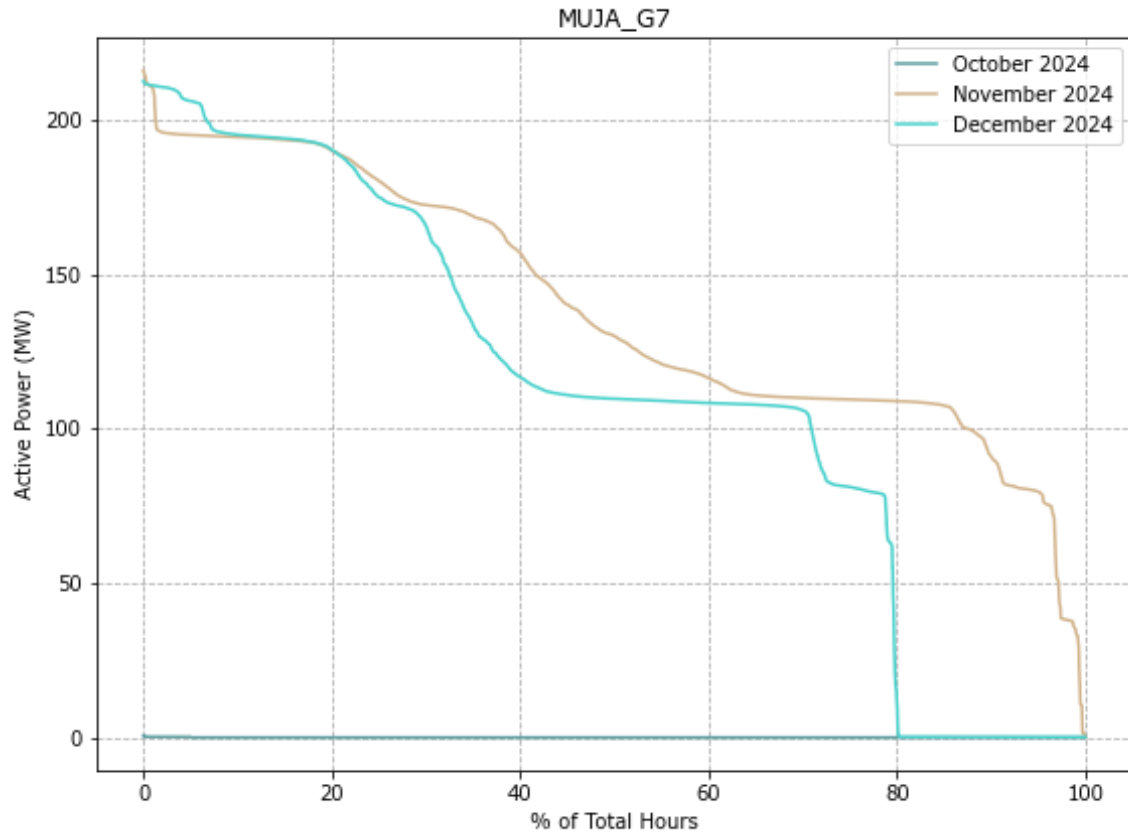


	Oct 2024	Nov 2024	Dec 2024
Energy Generated (GWh)	84.55	50.43	88.50
Total Spot Revenue (\$m)	12.05	5.75	9.80
<b>\$ / MWh</b>	<b>\$142.57</b>	<b>\$114.09</b>	<b>\$110.77</b>

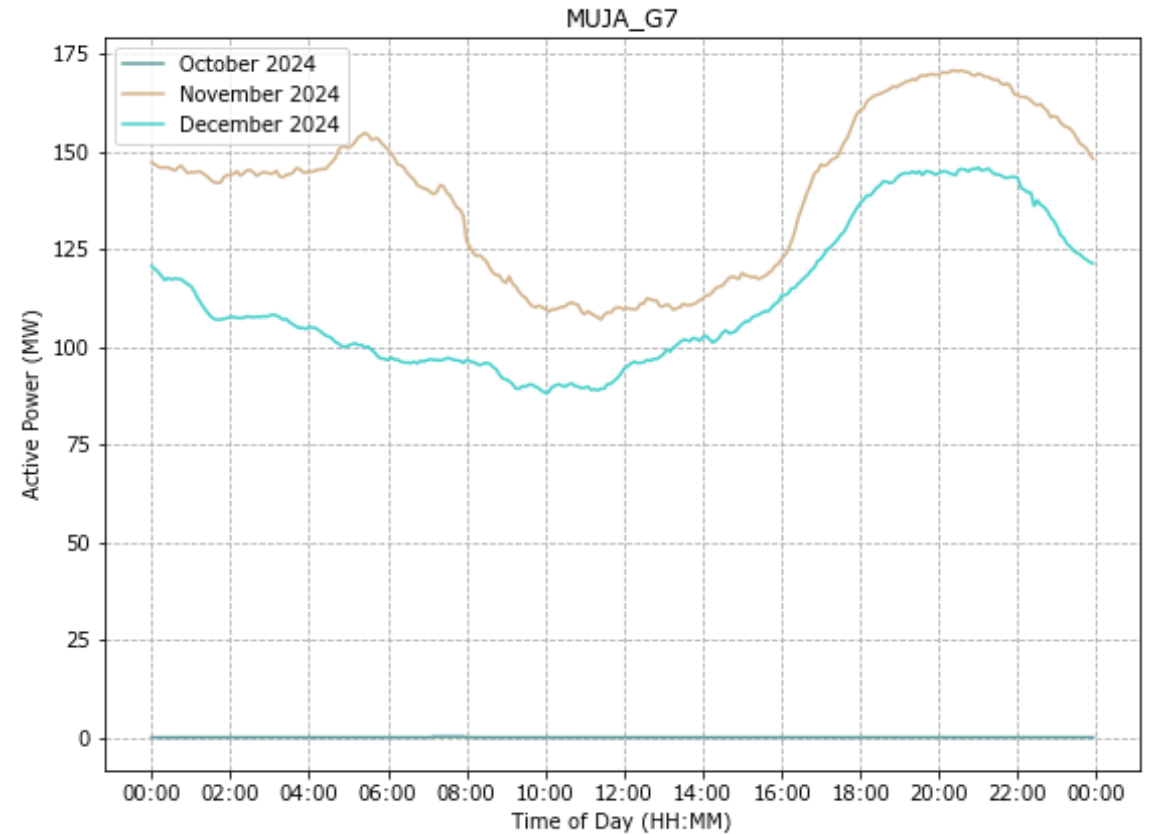
# Muja Power Station G7

Coal-fired Scheduled Facility, 212.6 MW, Synergy

### Generation Duration Curves



### Average Time-of-Day Output

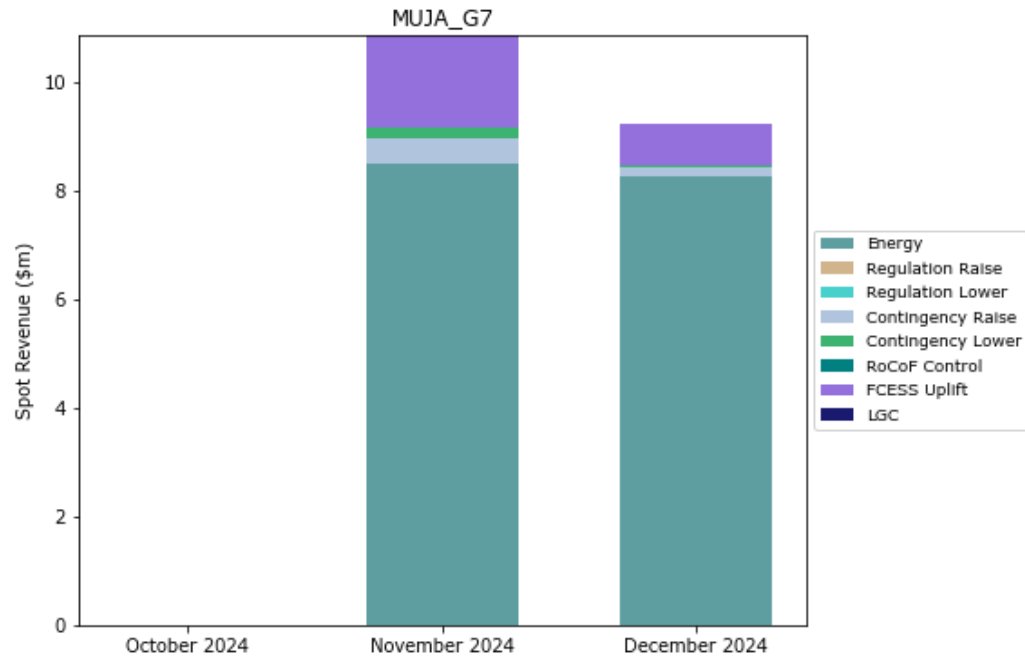




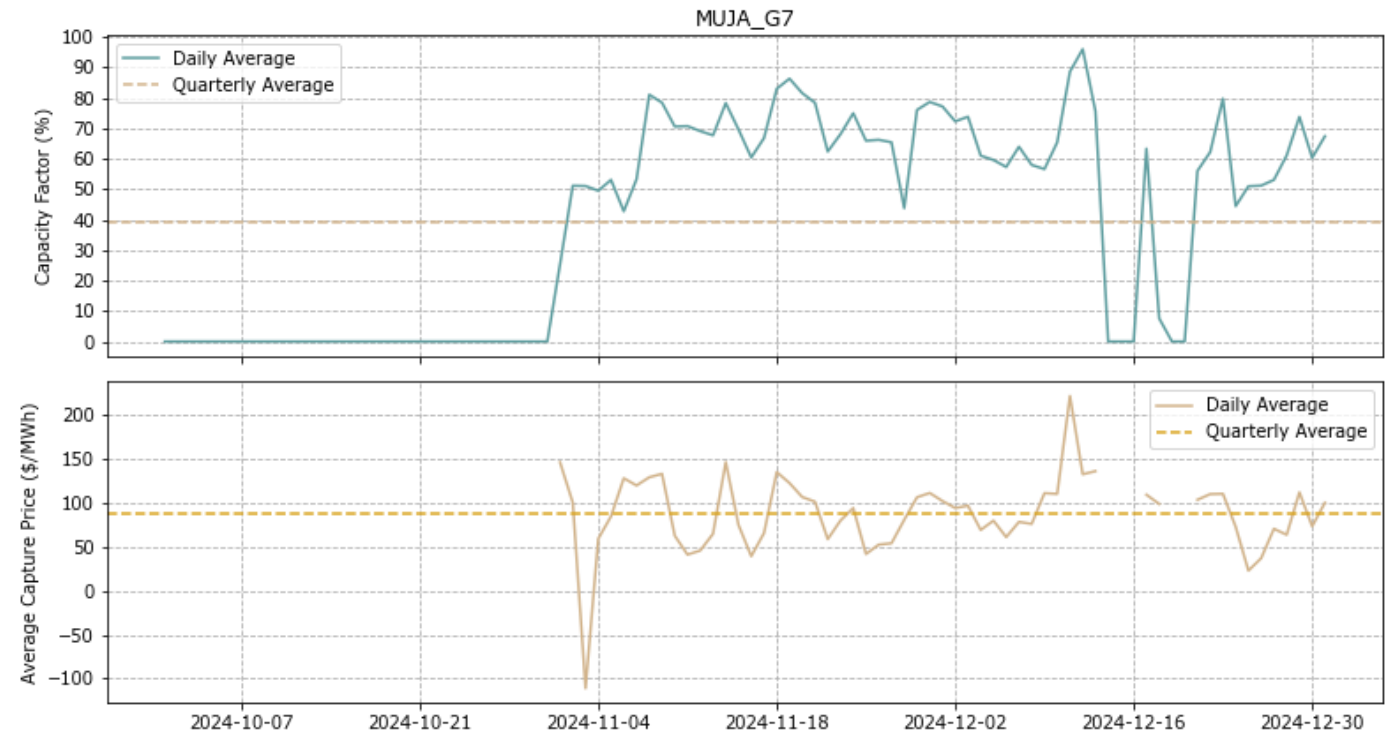
# Muja Power Station G7

Coal-fired Scheduled Facility, 212.6 MW, Synergy

## Facility Merchant Spot Revenue



## Daily Capacity Factor and Average Energy Capture Price

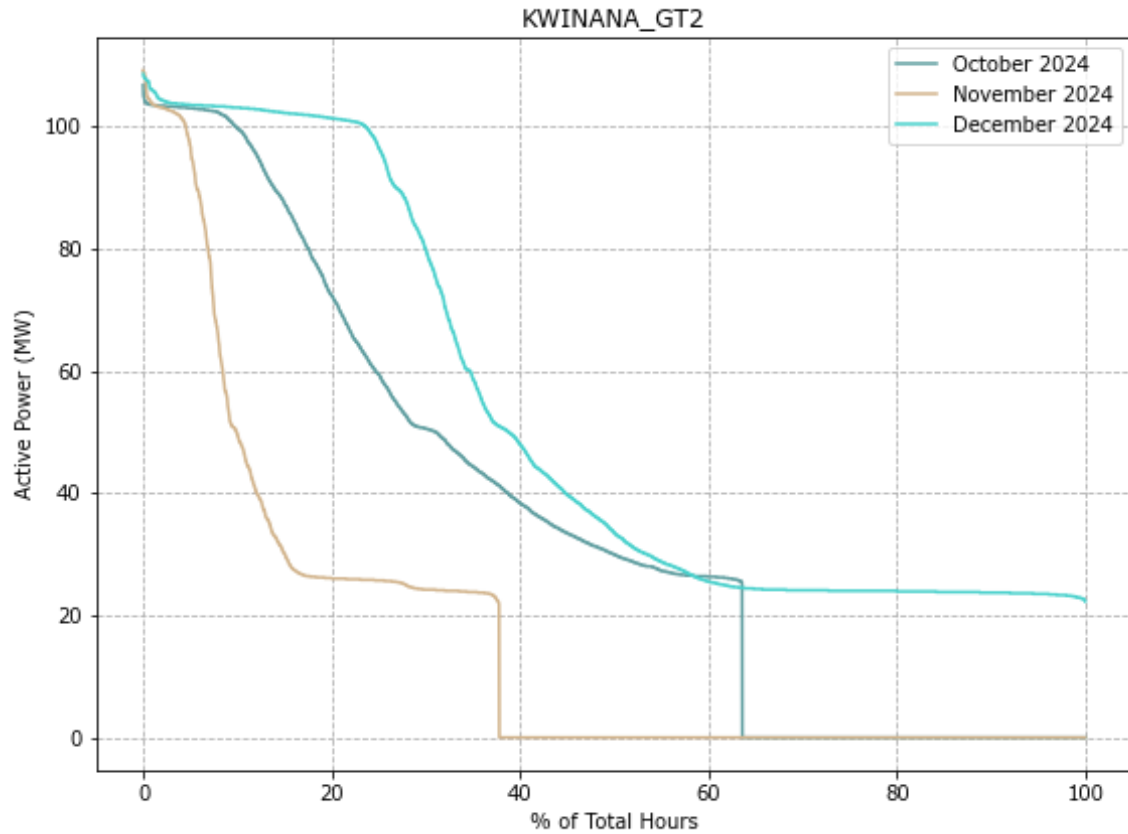


	Oct 2024	Nov 2024	Dec 2024
Energy Generated (GWh)	0.00	100.40	83.42
Total Spot Revenue (\$m)	0.00	10.85	9.22
<b>\$ / MWh</b>	<b>\$0.00</b>	<b>\$108.12</b>	<b>\$110.57</b>

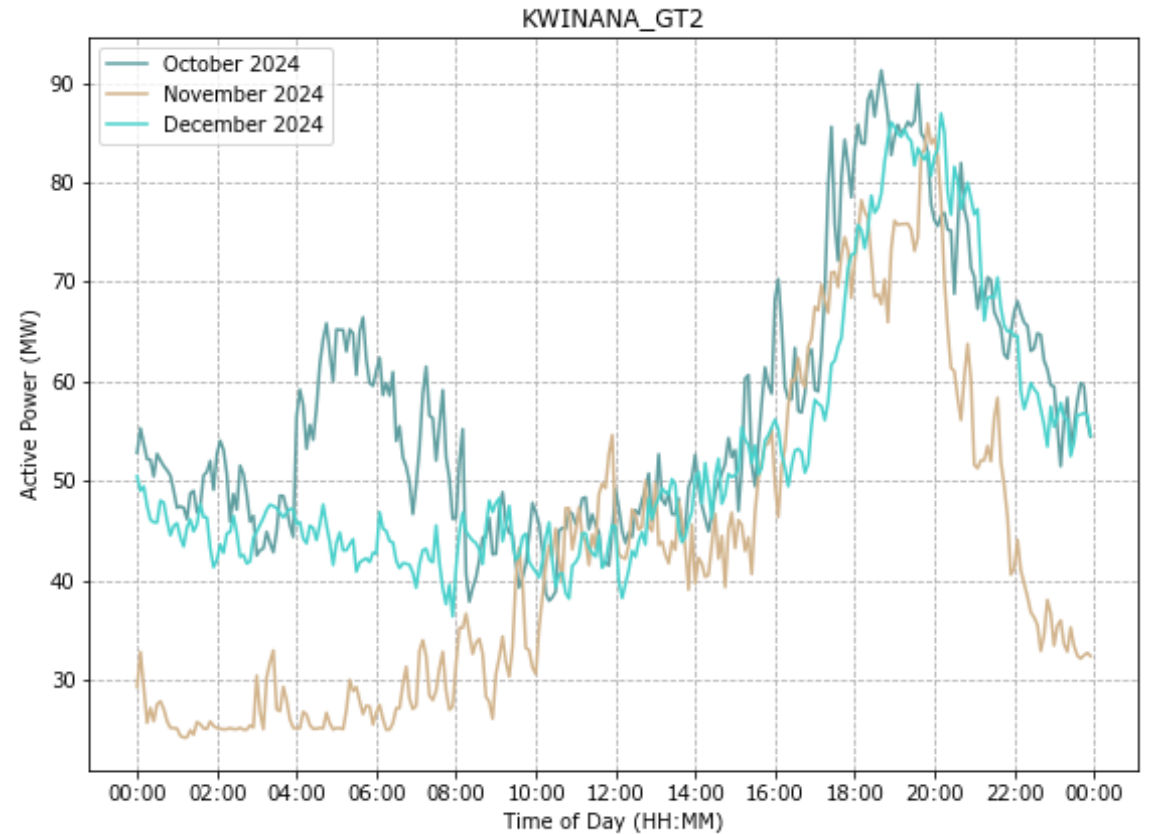
# Kwinana Power Station GT2

Gas-fired Scheduled Facility, 103.94 MW, Synergy

## Generation Duration Curves



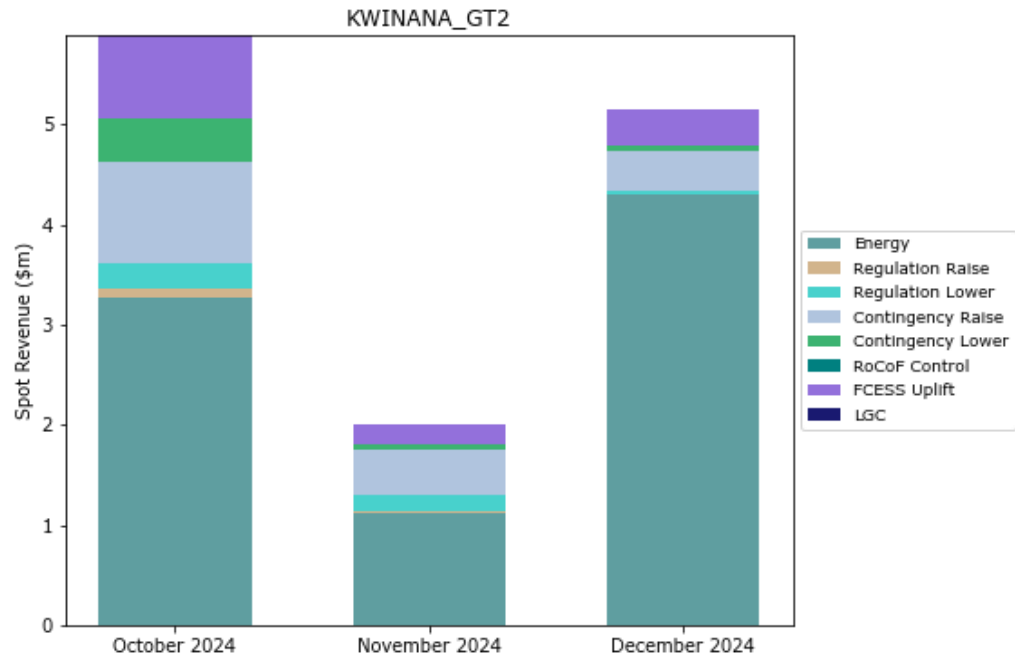
## Average Time-of-Day Output



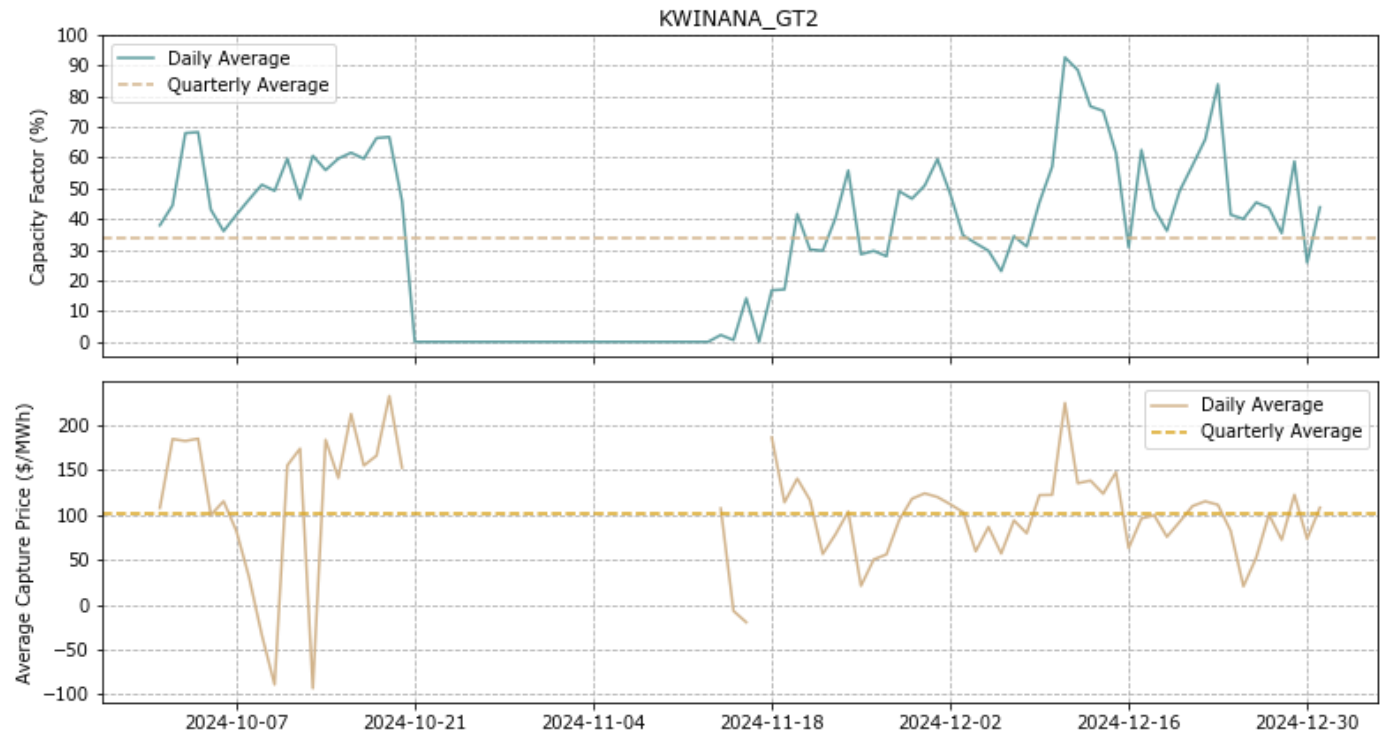
# Kwinana Power Station GT2

Gas-fired Scheduled Facility, 103.94 MW, Synergy

## Facility Merchant Spot Revenue



## Daily Capacity Factor and Average Energy Capture Price

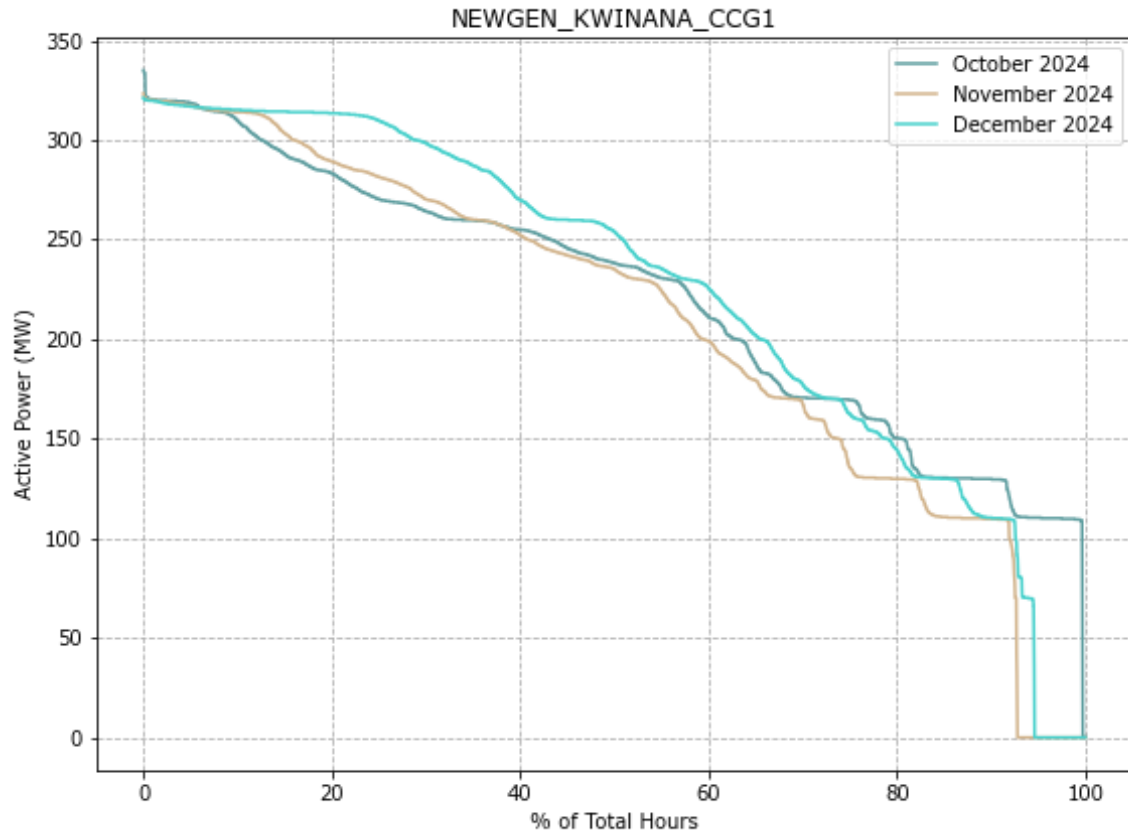


	Oct 2024	Nov 2024	Dec 2024
Energy Generated (GWh)	26.64	11.99	30.72
Total Spot Revenue (\$m)	5.89	2.00	5.14
<b>\$ / MWh</b>	<b>\$221.14</b>	<b>\$167.14</b>	<b>\$132.80</b>

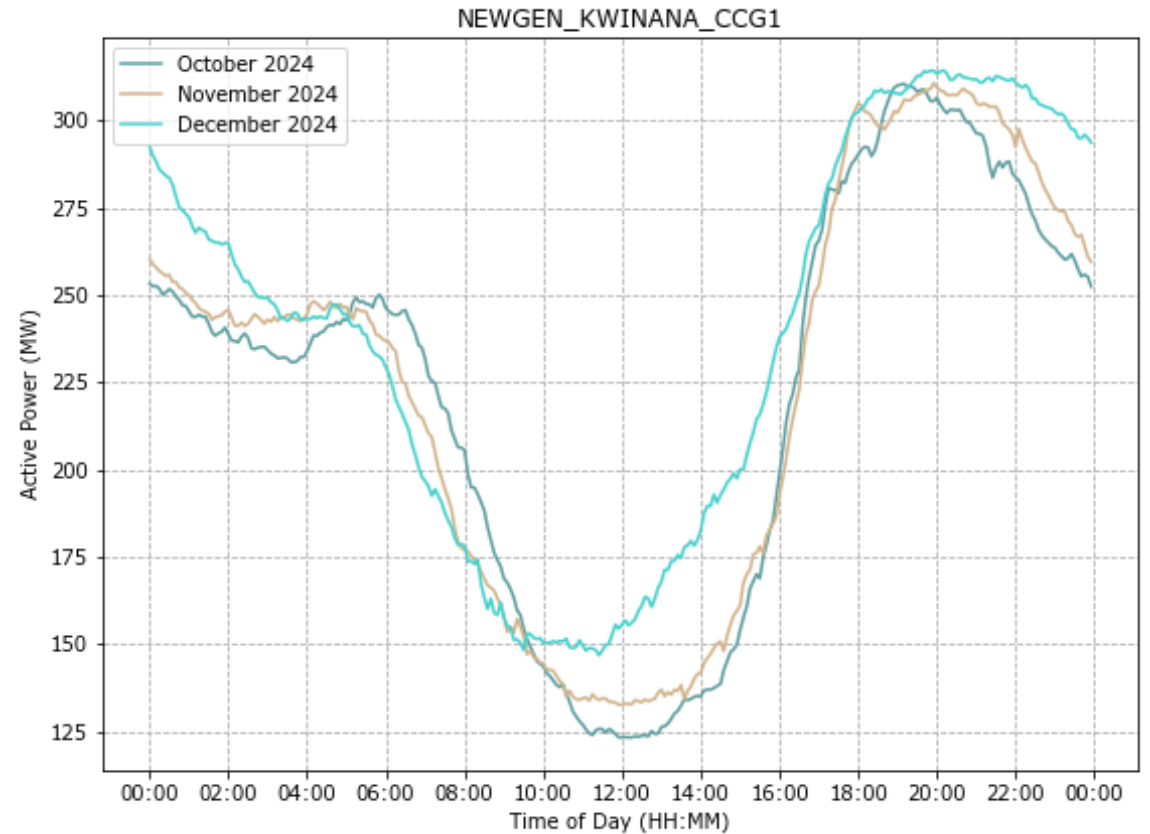
# Newgen Kwinana Power Station

Gas-fired Scheduled Facility, 334.8 MW, Summit Southern Cross Power

### Generation Duration Curves



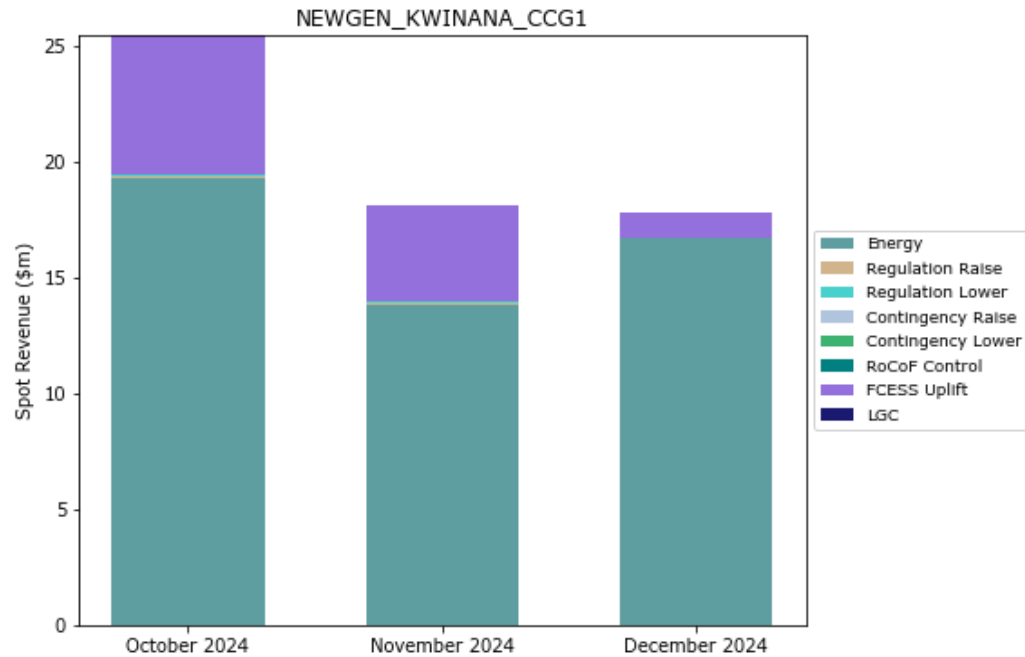
### Average Time-of-Day Output



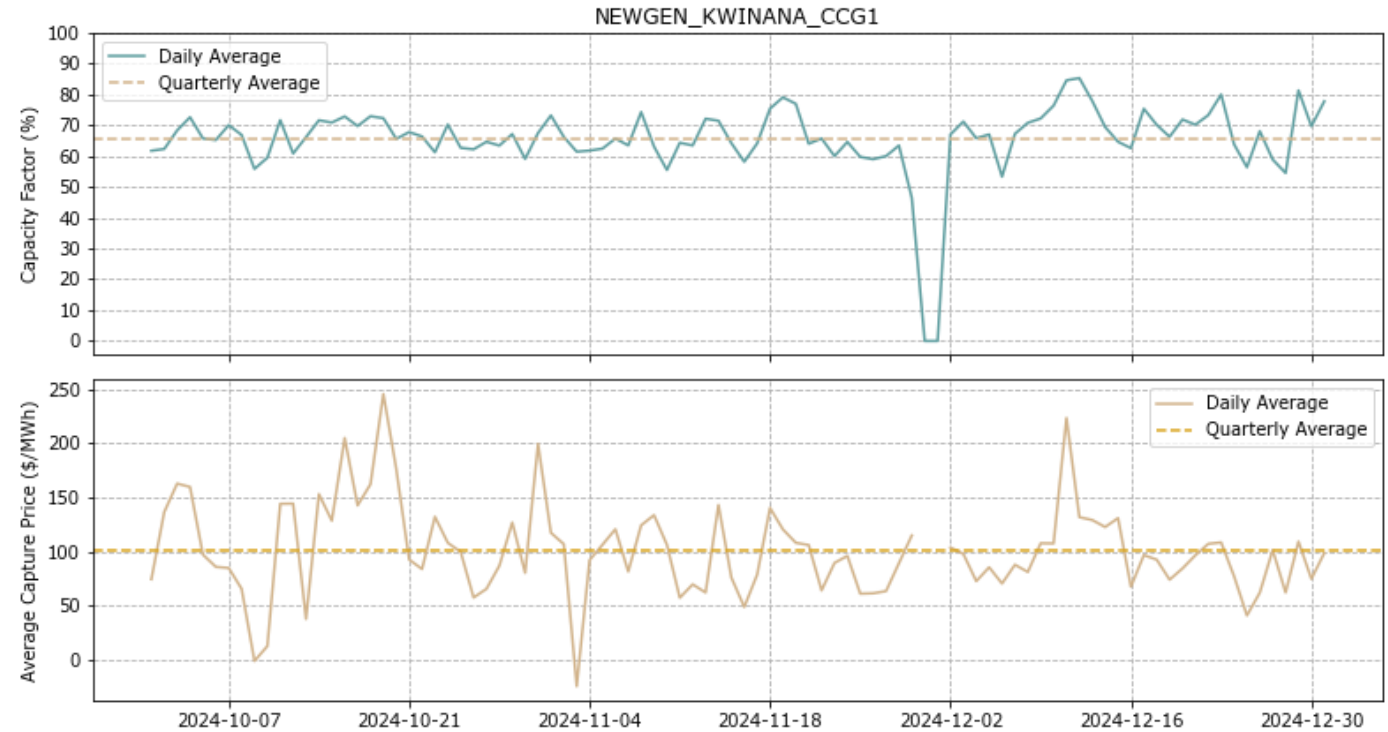
# Newgen Kwinana Power Station

Gas-fired Scheduled Facility, 334.8 MW, Summit Southern Cross Power

## Facility Merchant Spot Revenue



## Daily Capacity Factor and Average Energy Capture Price

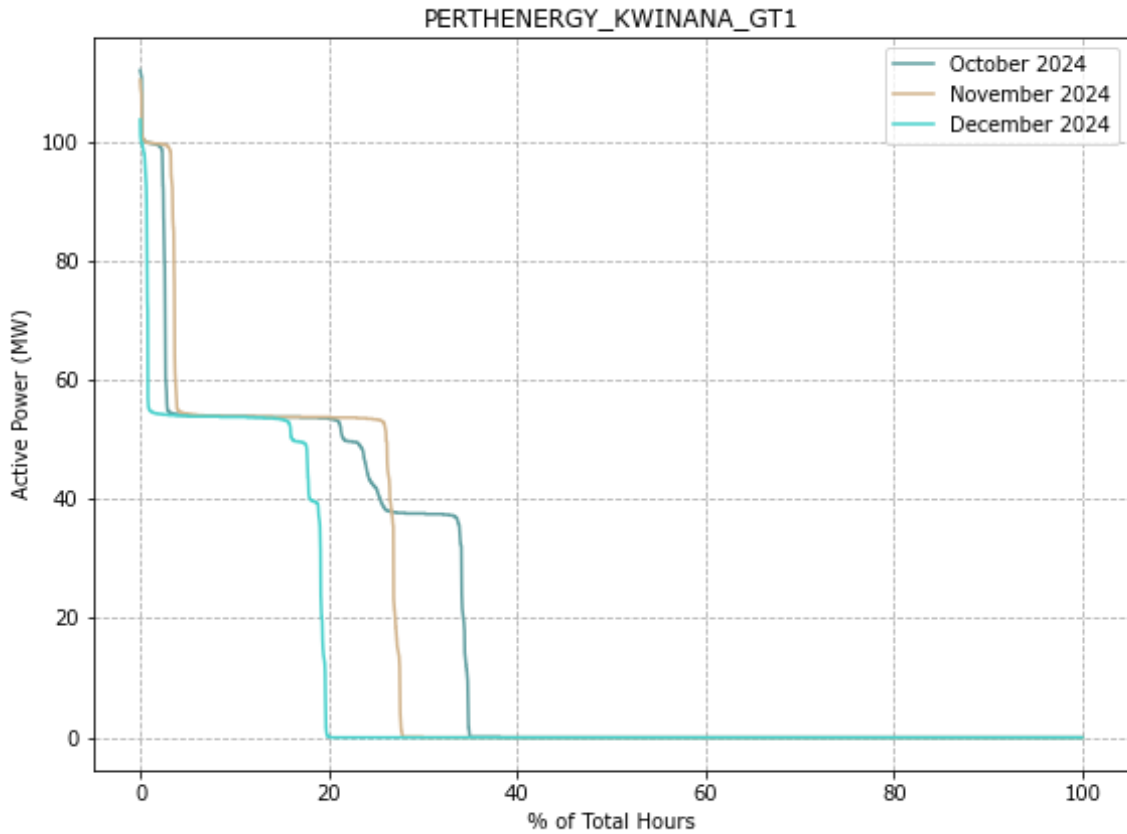


	Oct 2024	Nov 2024	Dec 2024
Energy Generated (GWh)	164.99	150.87	168.03
Total Spot Revenue (\$m)	25.48	18.09	17.77
<b>\$ / MWh</b>	<b>\$154.42</b>	<b>\$119.92</b>	<b>\$105.76</b>

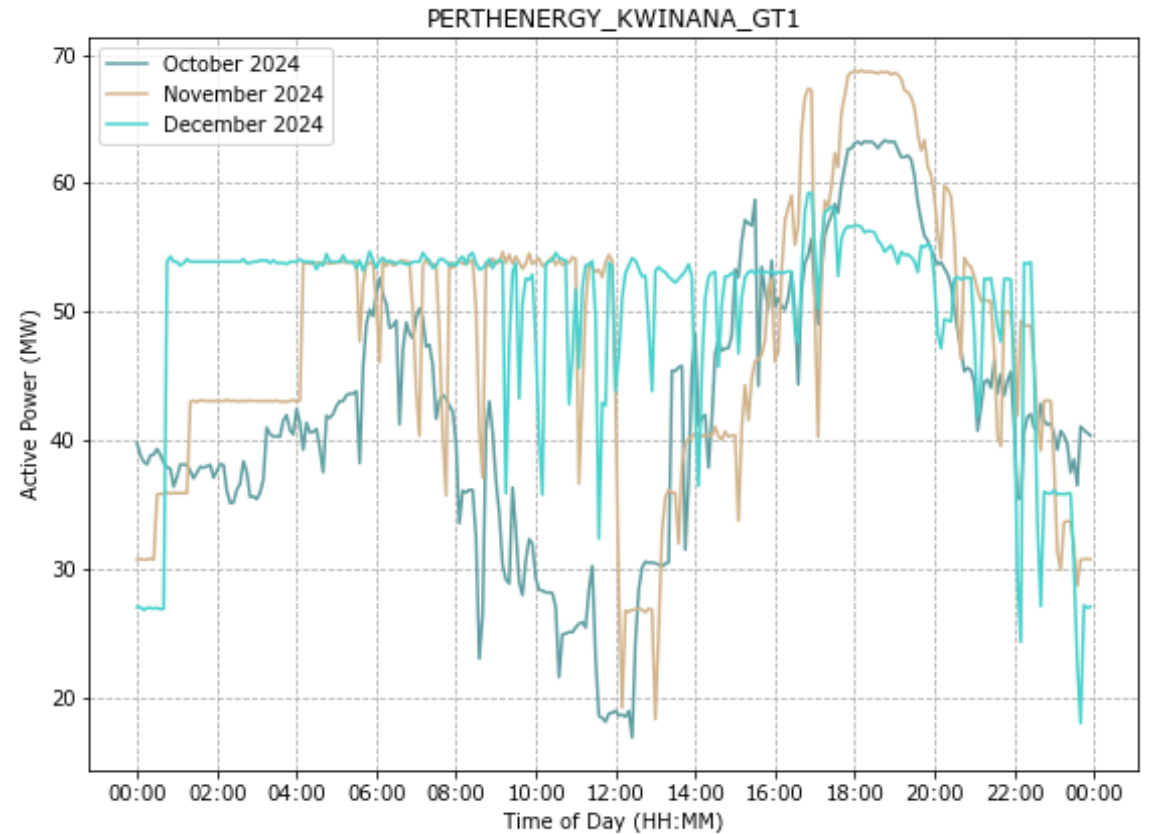
# Kwinana Swift Power Station

Gas-fired Scheduled Facility, 109 MW, AGL (Perth Energy)

### Generation Duration Curves



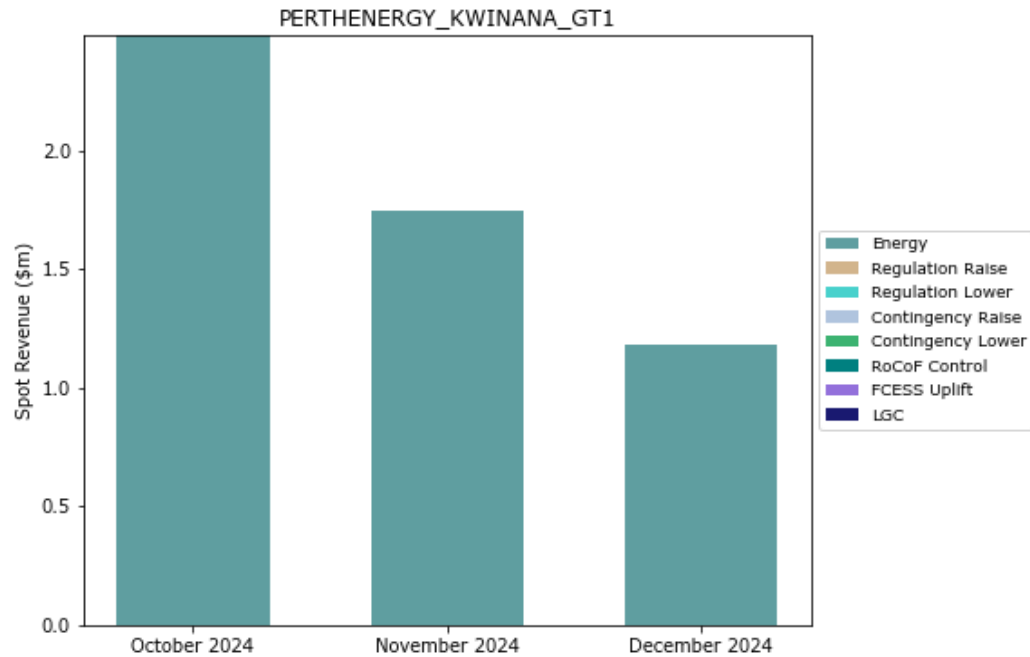
### Average Time-of-Day Output



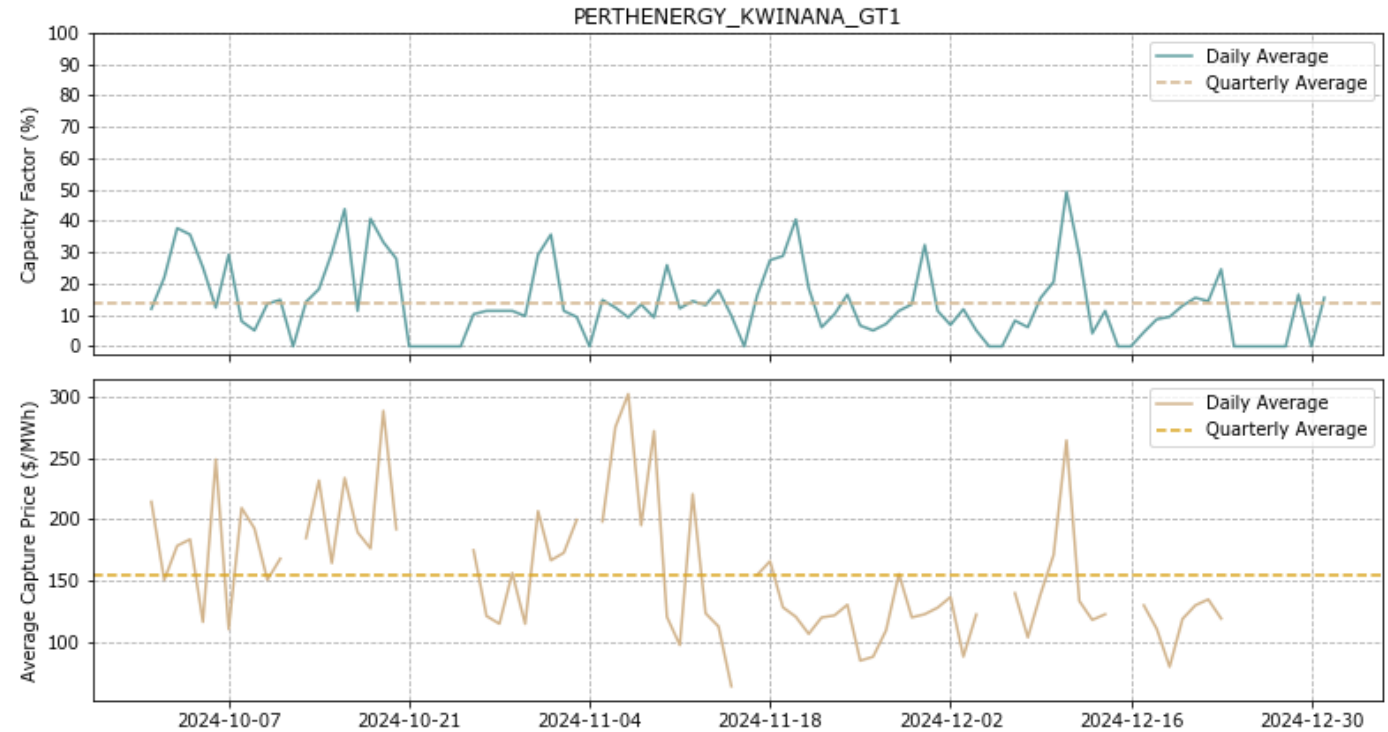
# Kwinana Swift Power Station

Gas-fired Scheduled Facility, 109 MW, AGL (Perth Energy)

## Facility Merchant Spot Revenue



## Daily Capacity Factor and Average Energy Capture Price

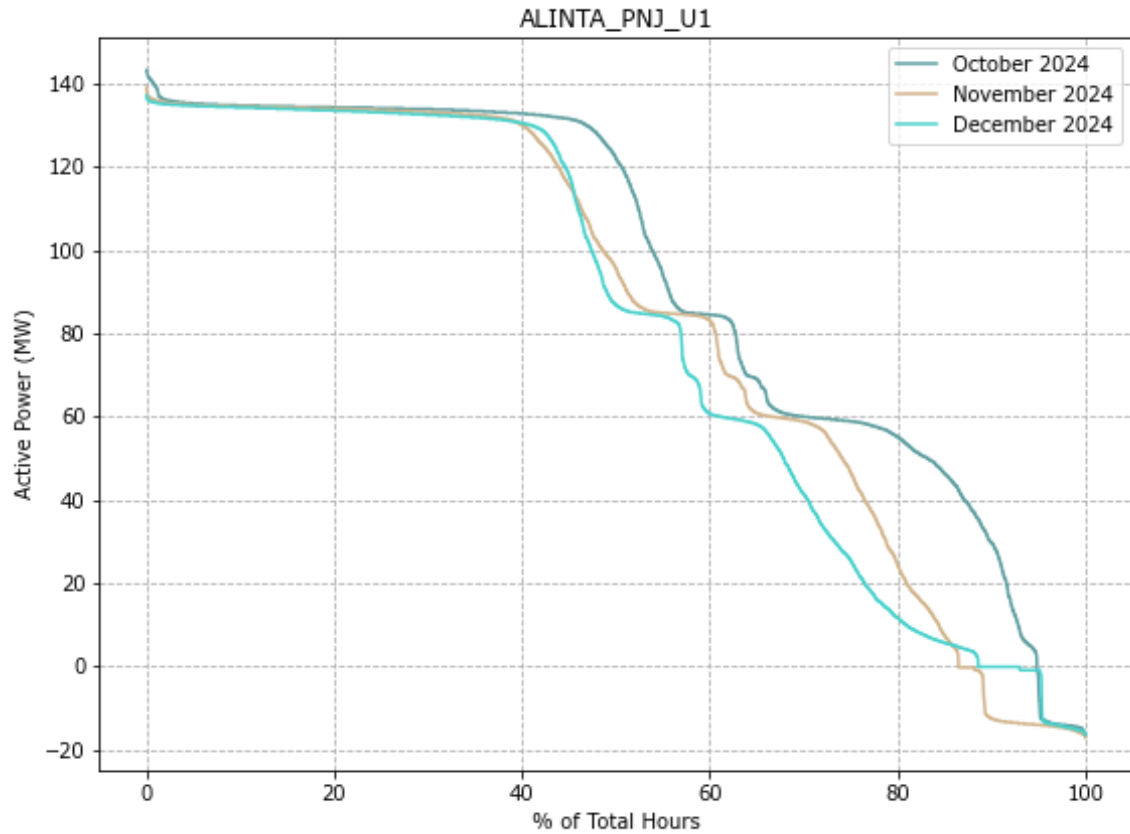


	Oct 2024	Nov 2024	Dec 2024
Energy Generated (GWh)	13.54	11.74	7.88
Total Spot Revenue (\$m)	2.49	1.75	1.18
<b>\$ / MWh</b>	<b>\$183.90</b>	<b>\$148.62</b>	<b>\$150.28</b>

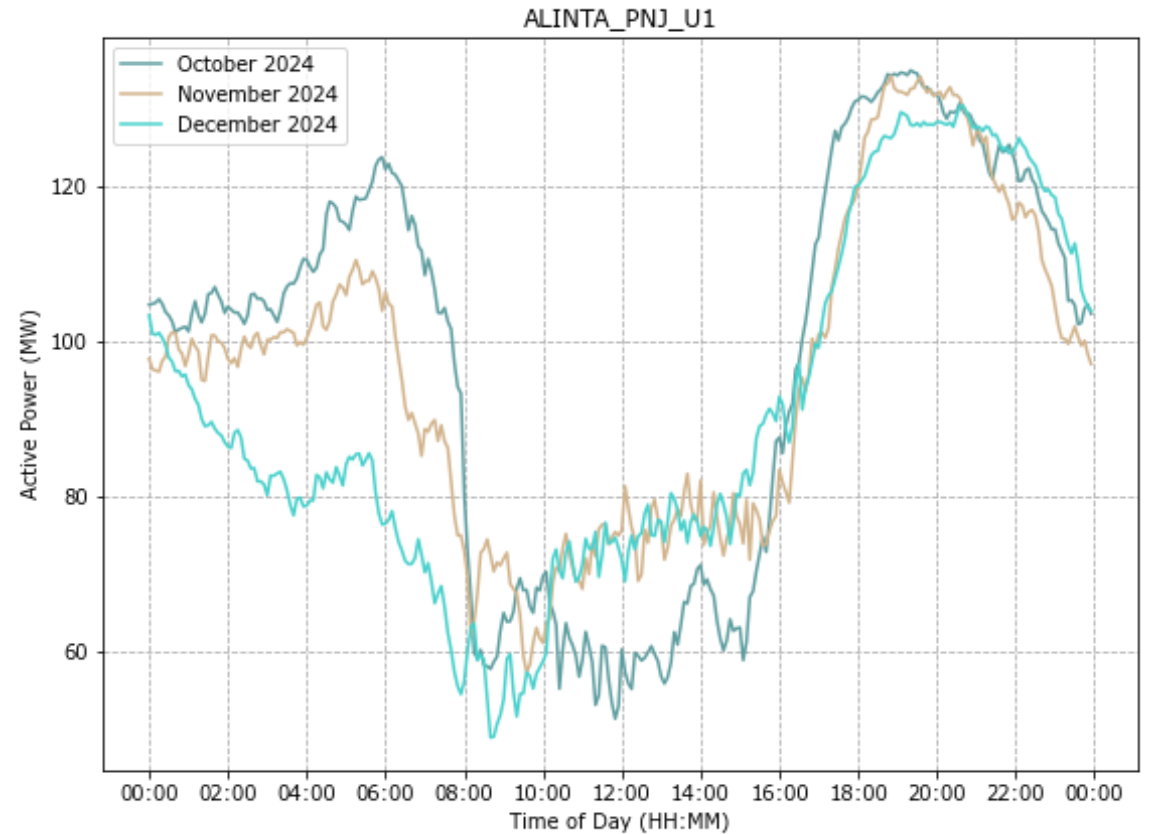
# Pinjarra Power Station U1

Gas-fired Scheduled Facility, 143 MW, Alinta Energy

### Generation Duration Curves



### Average Time-of-Day Output

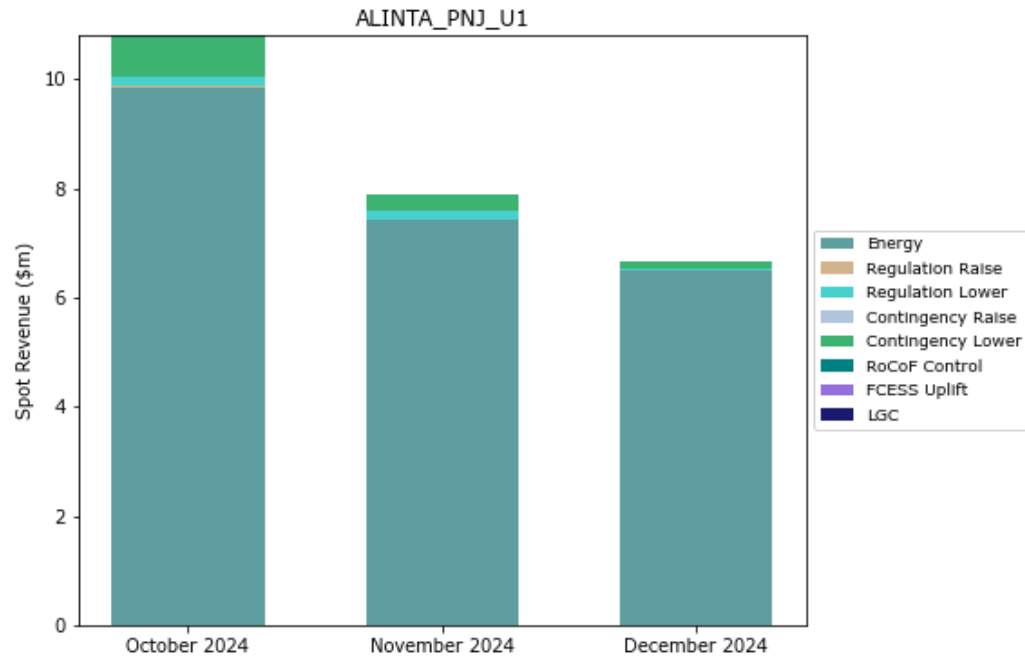




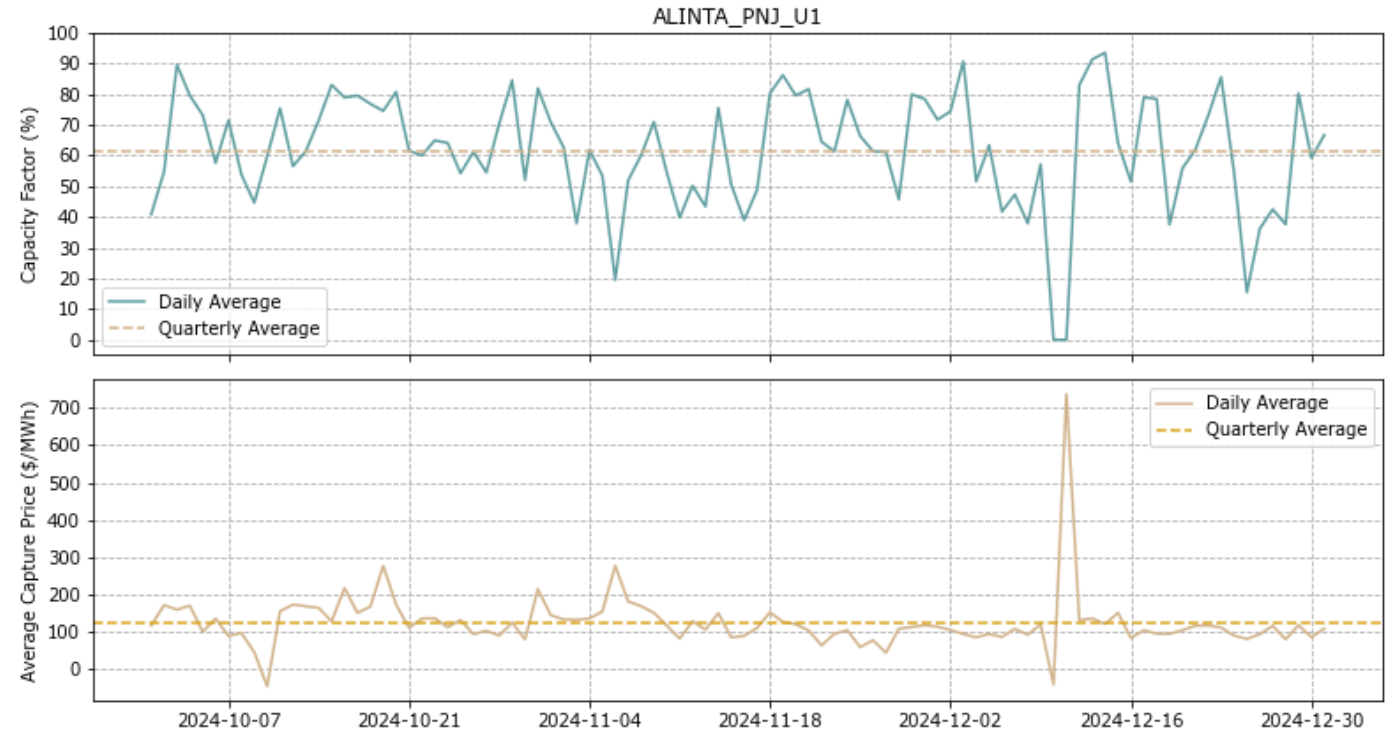
# Pinjarra Power Station U1

Gas-fired Scheduled Facility, 143 MW, Alinta Energy

### Facility Merchant Spot Revenue



### Daily Capacity Factor and Average Energy Capture Price

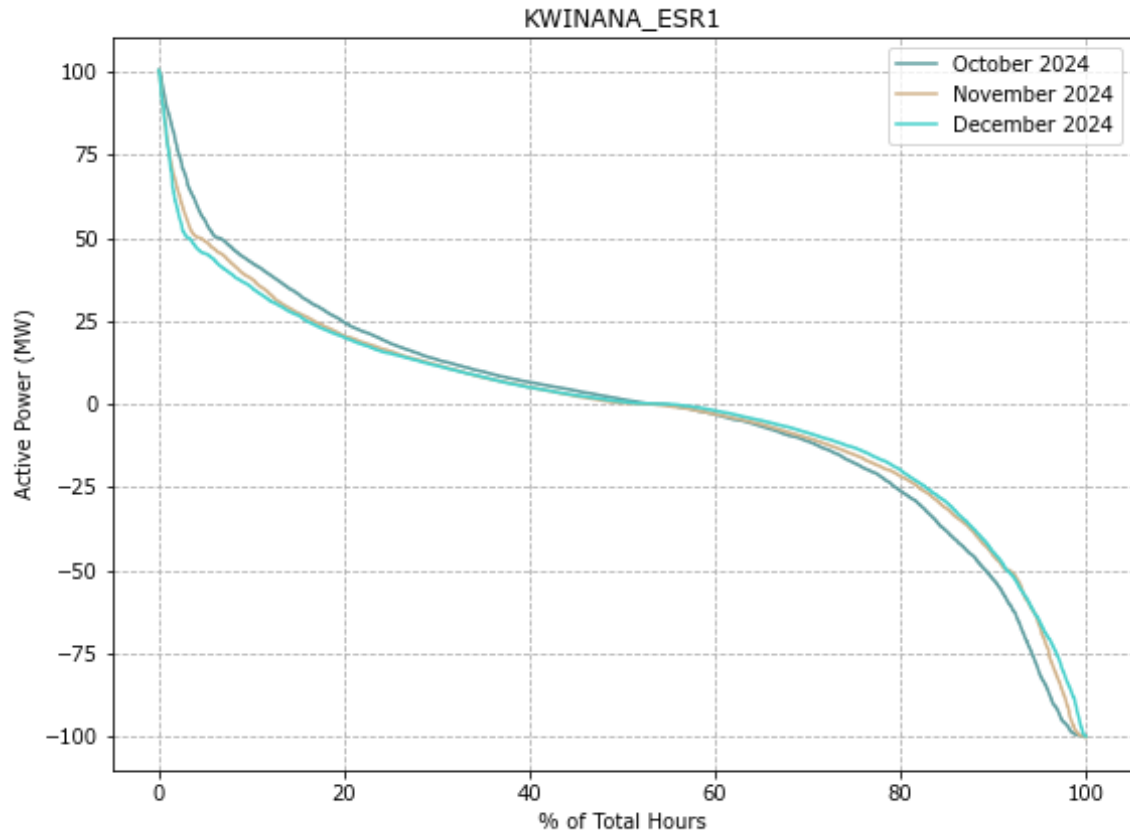


	Oct 2024	Nov 2024	Dec 2024
Energy Generated (GWh)	71.68	63.46	61.70
Total Spot Revenue (\$m)	10.81	7.89	6.65
<b>\$ / MWh</b>	<b>\$150.78</b>	<b>\$124.68</b>	<b>\$107.77</b>

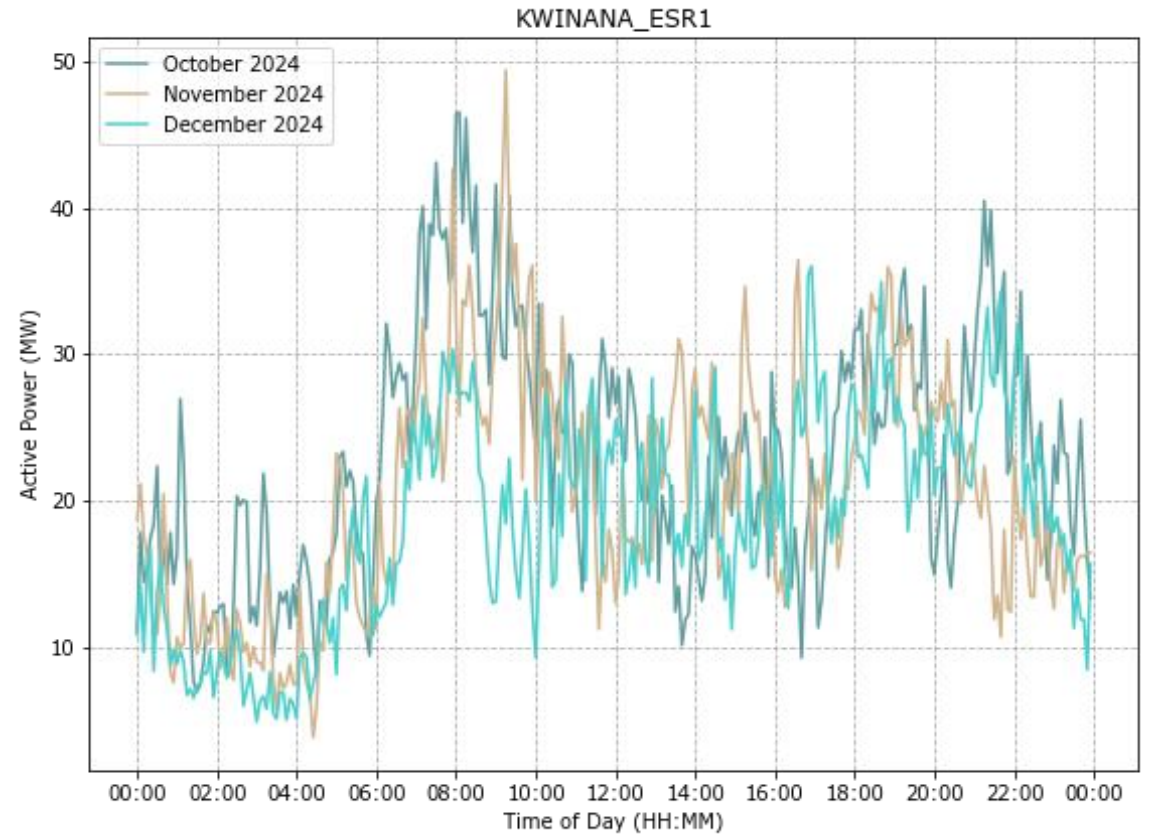
# Kwinana BESS 1

Energy Storage Scheduled Facility, 100 MW, Synergy

### Generation Duration Curves



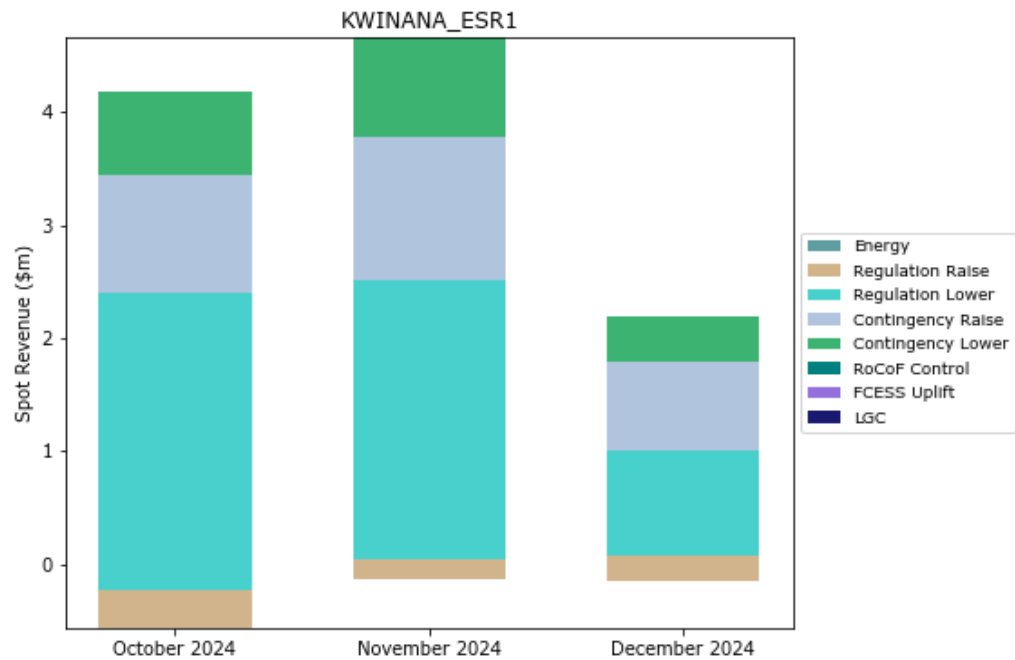
### Average Time-of-Day Output



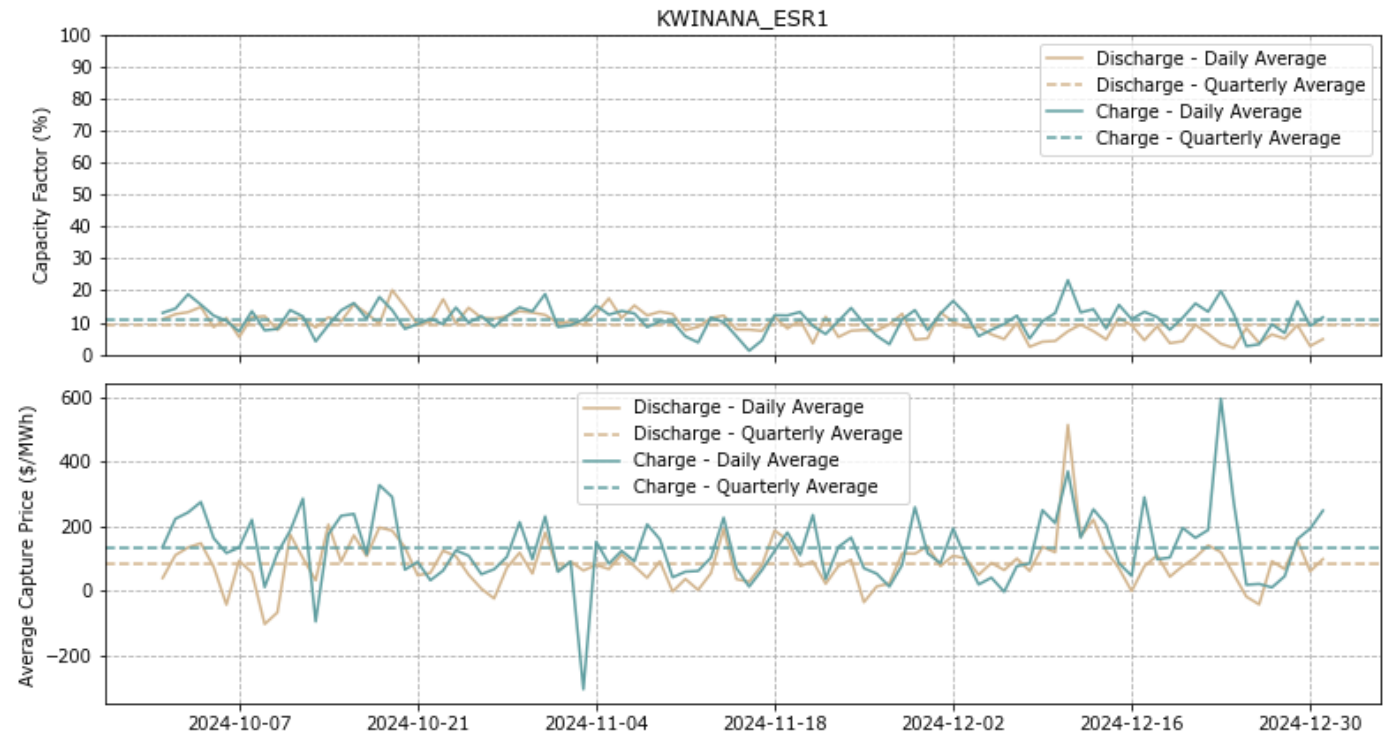
# Kwinana BESS 1

Energy Storage Scheduled Facility, 100 MW, Synergy

### Facility Merchant Spot Revenue



### Daily Capacity Factor and Average Energy Capture Price

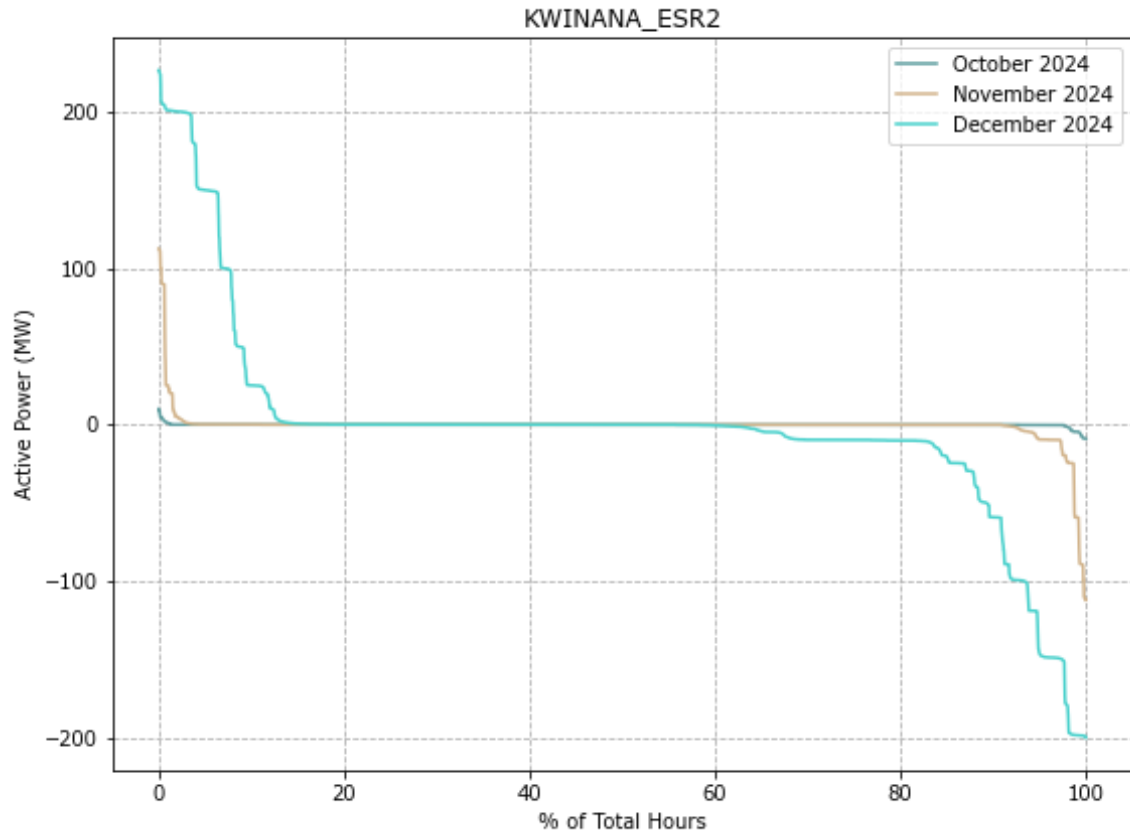


	Oct 2024	Nov 2024	Dec 2024
Total Spot Revenue (\$m)	4.18	4.66	2.19

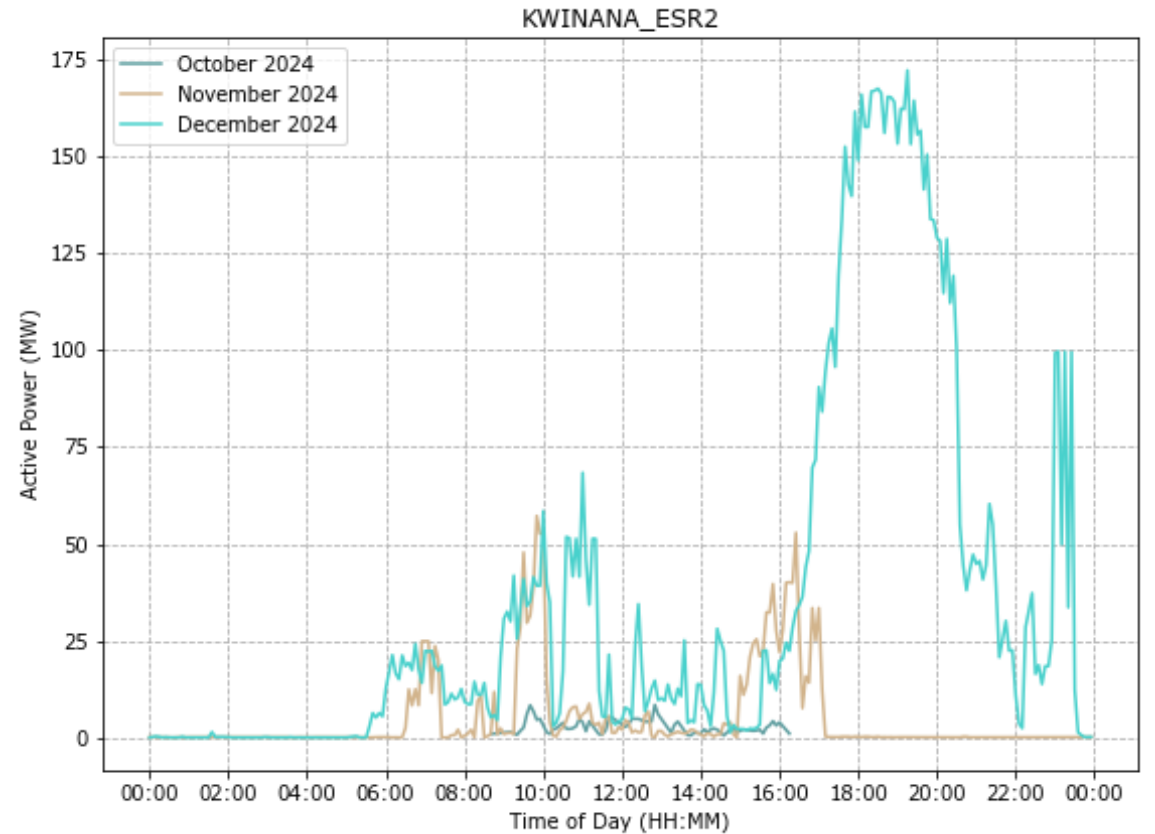
# Kwinana BESS 2

Energy Storage Scheduled Facility, 225 MW, Synergy

### Generation Duration Curves



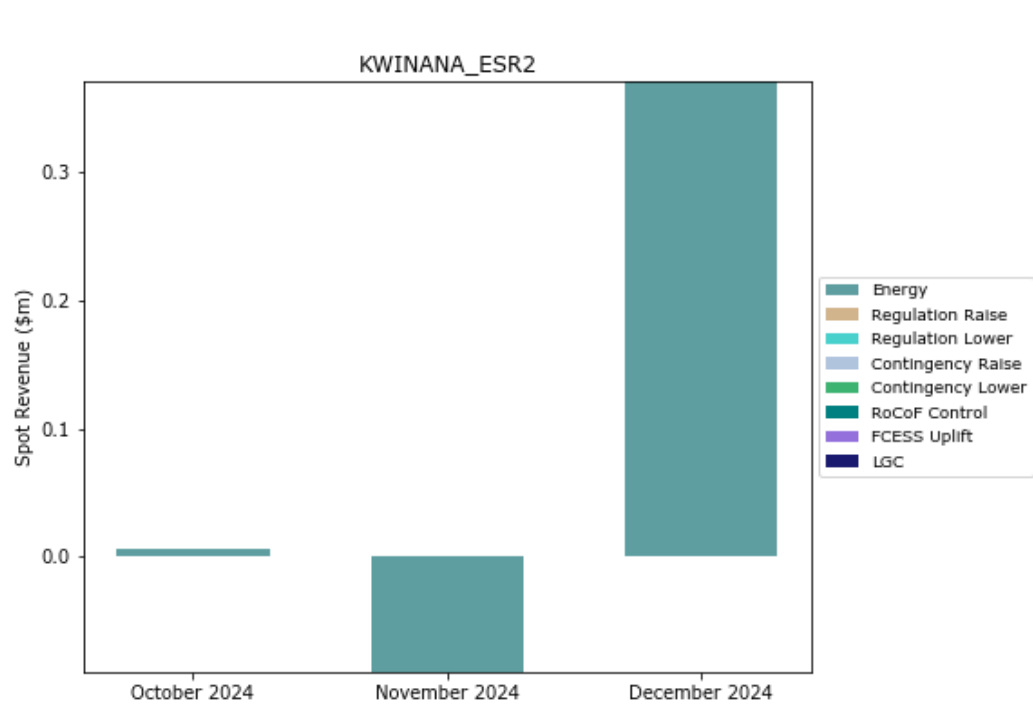
### Average Time-of-Day Output



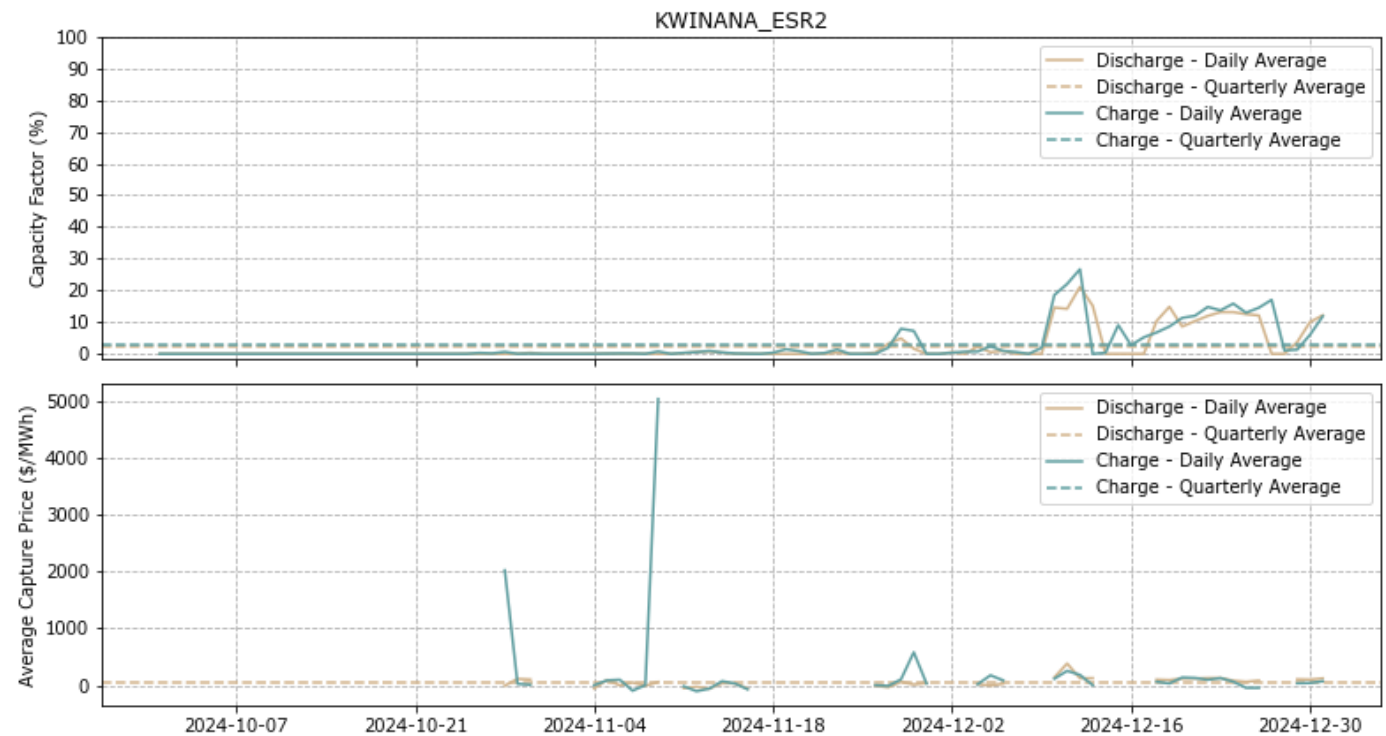
# Kwinana BESS 2

Energy Storage Scheduled Facility, 225 MW, Synergy

## Facility Merchant Spot Revenue



## Daily Capacity Factor and Average Energy Capture Price

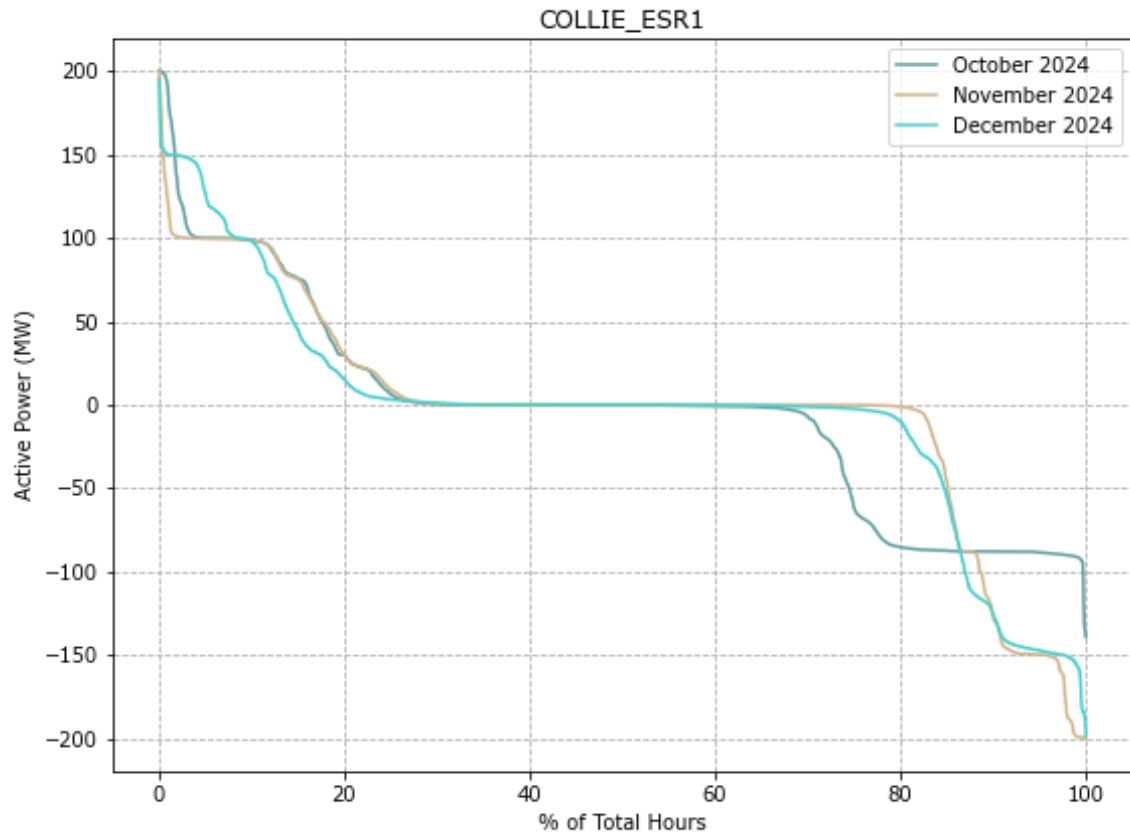


	Oct 2024	Nov 2024	Dec 2024
Total Spot Revenue (\$m)	0.01	-0.09	0.37

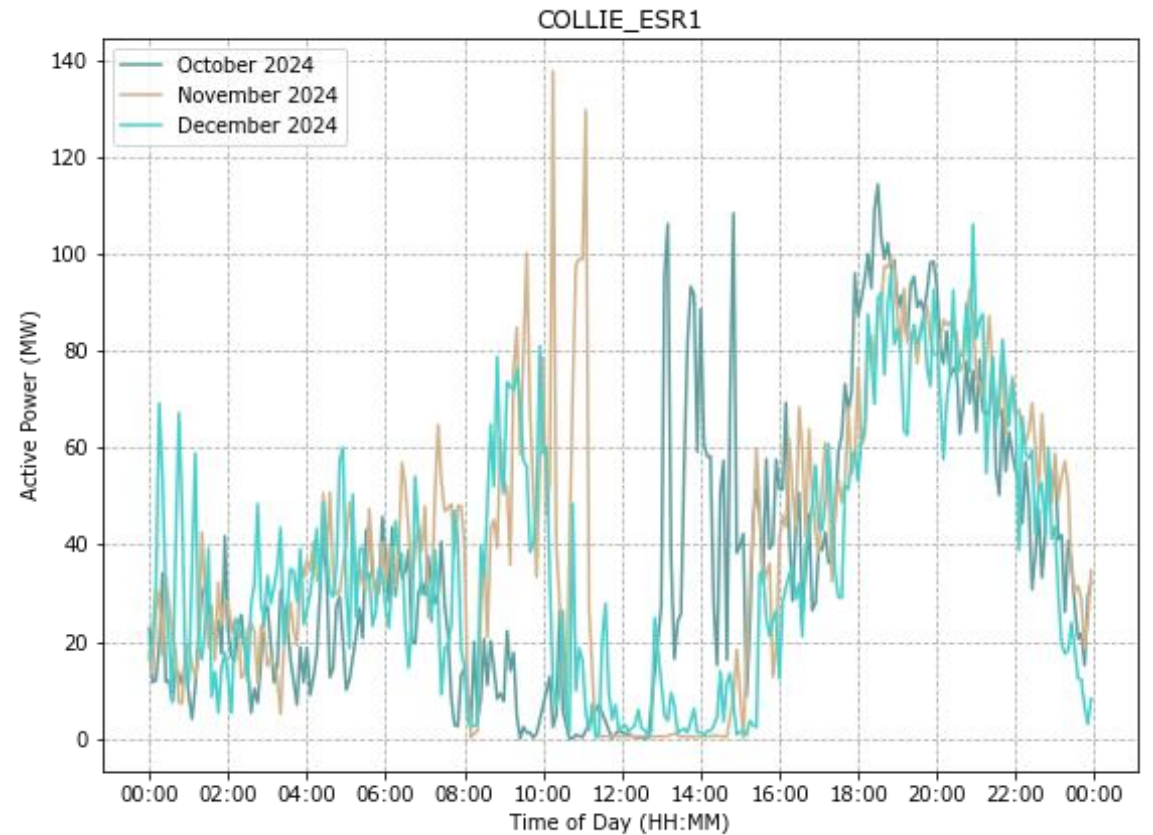
# Collie BESS 1

Energy Storage Scheduled Facility, 200 MW, Neoen

### Generation Duration Curves



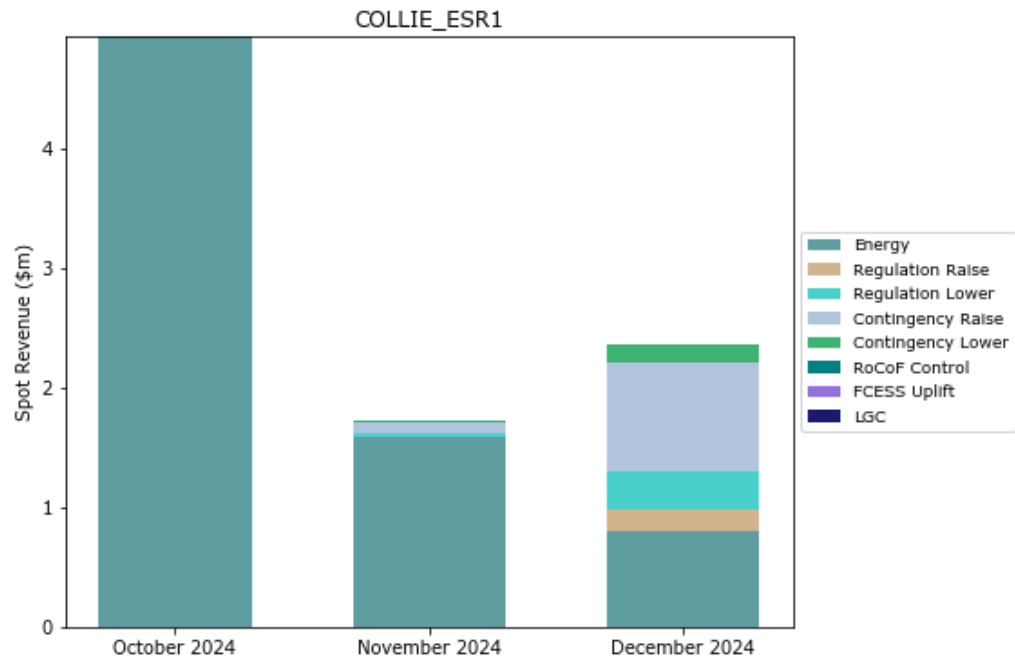
### Average Time-of-Day Output



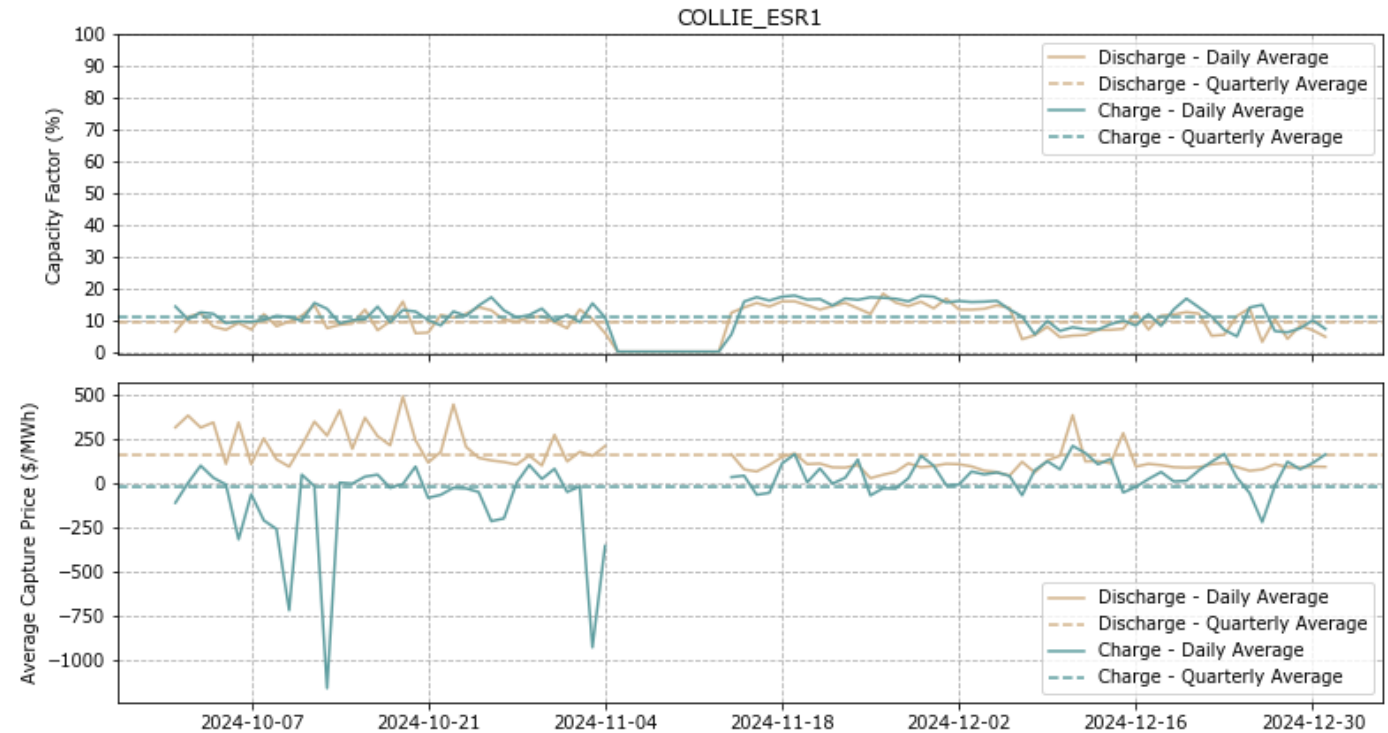
# Collie BESS 1

Energy Storage Scheduled Facility, 200 MW, Neoen

### Facility Merchant Spot Revenue



### Daily Capacity Factor and Average Energy Capture Price

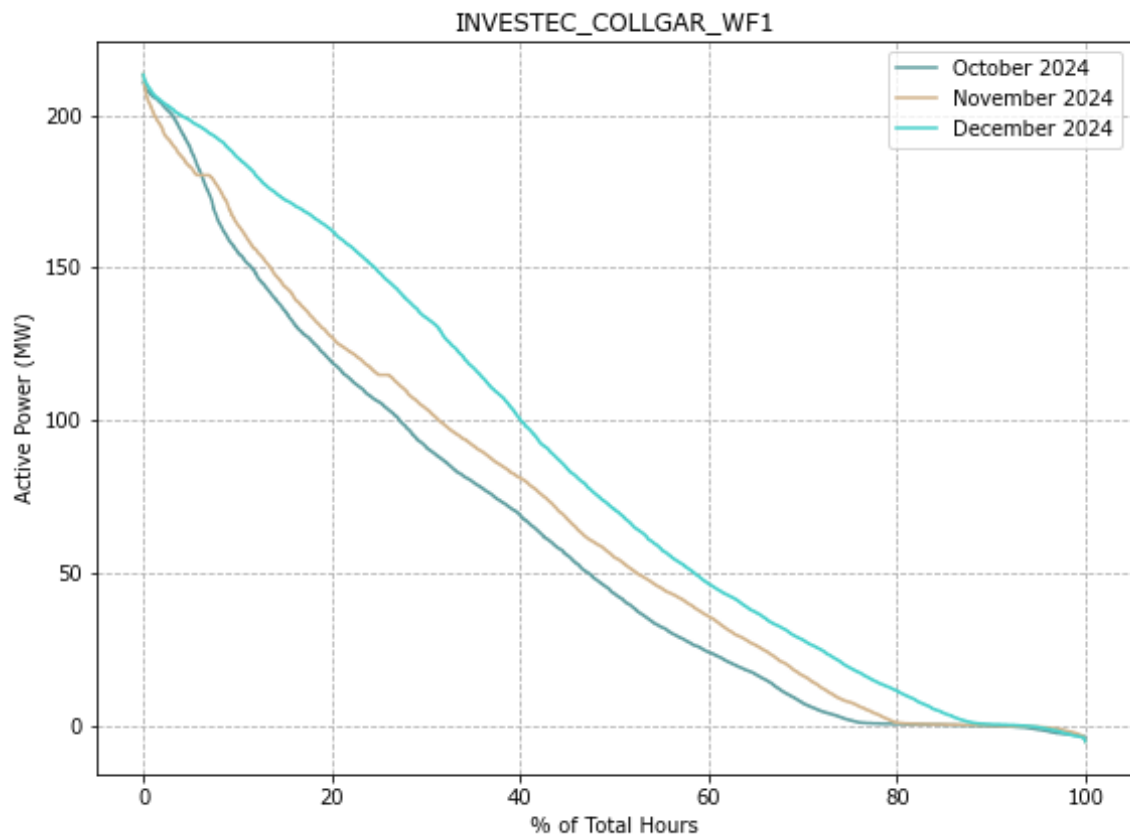


	Oct 2024	Nov 2024	Dec 2024
Total Spot Revenue (\$m)	4.94	1.72	2.37

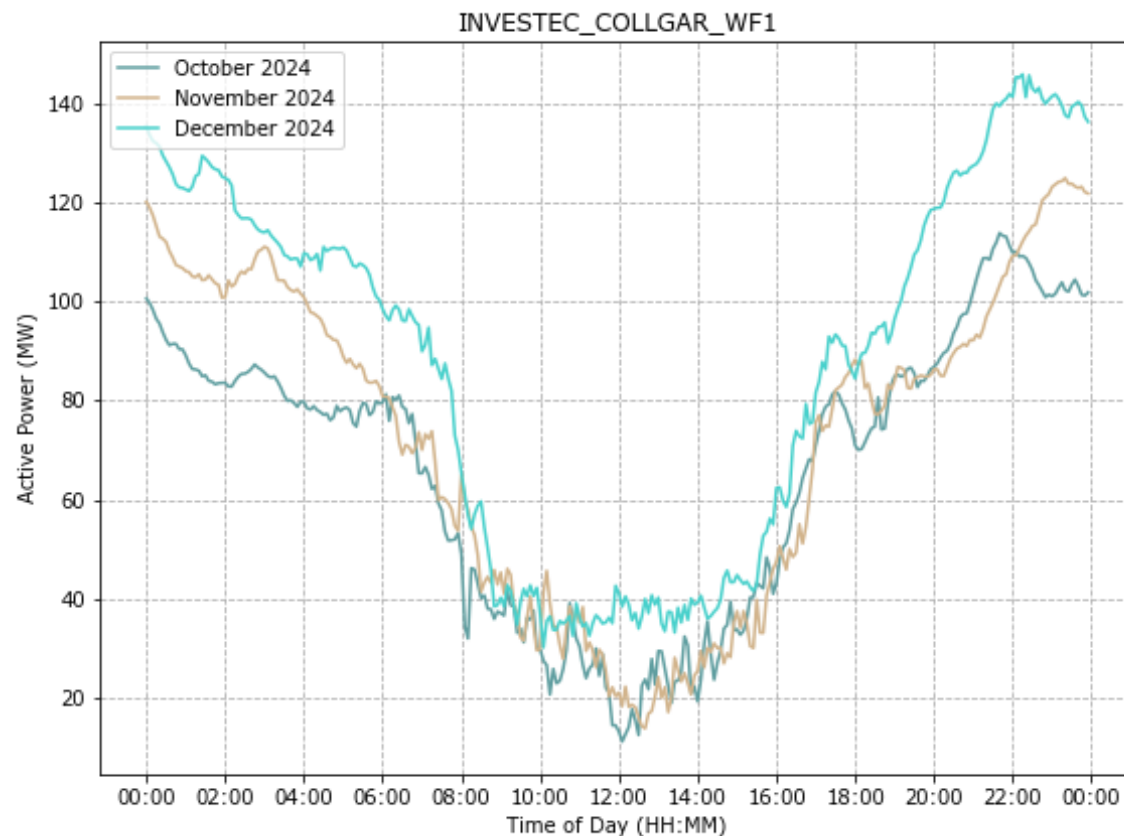
# Collgar Wind Farm

Wind Semi-Scheduled Facility, 218.5 MW, Collgar Renewables

### Generation Duration Curves



### Average Time-of-Day Output

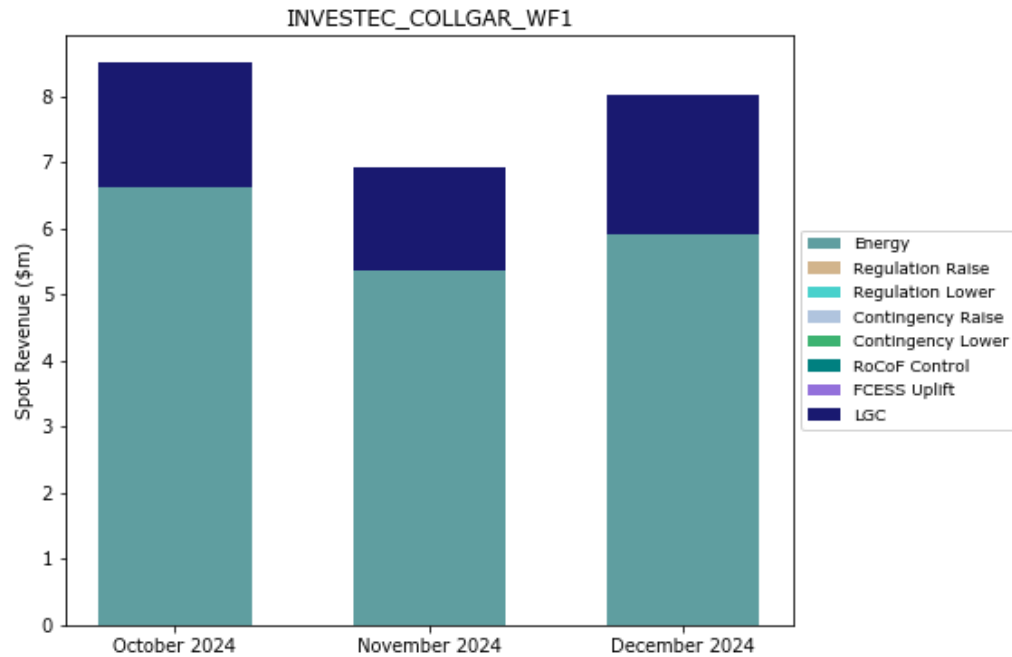




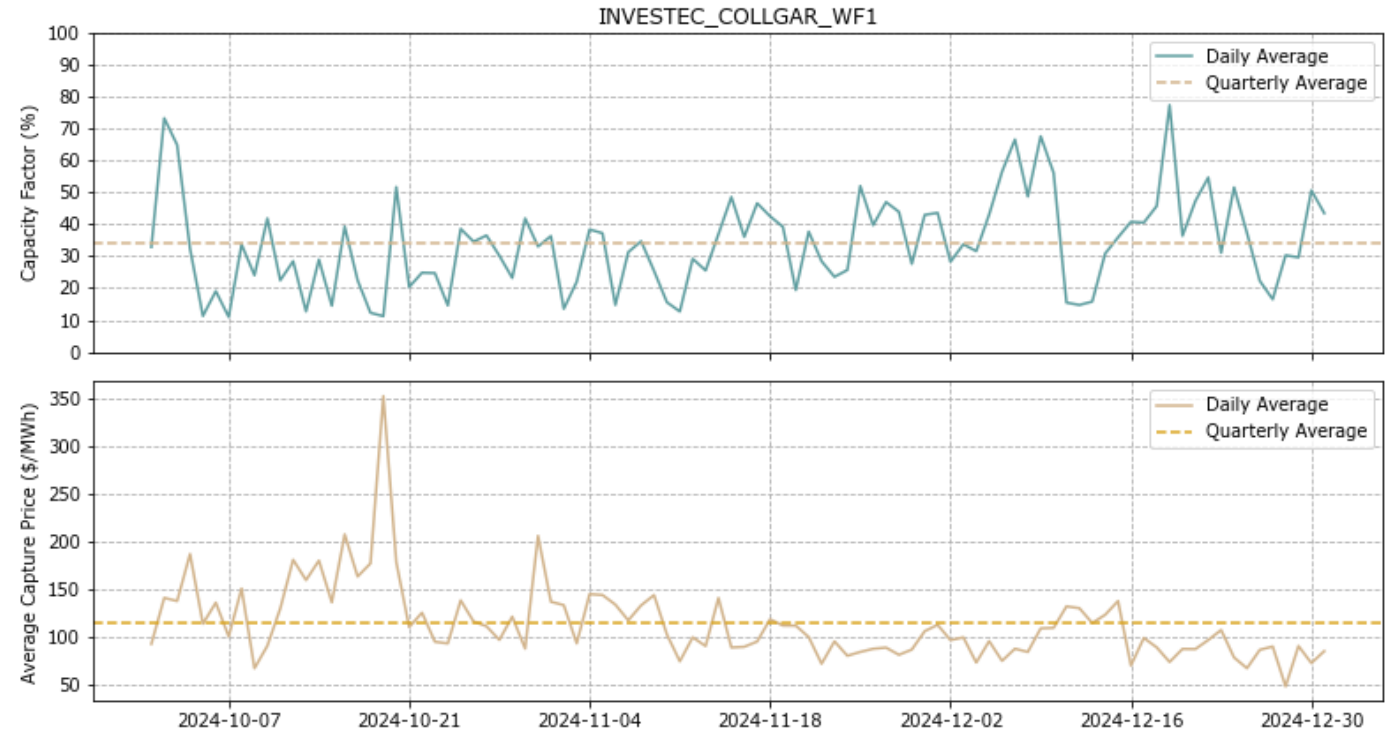
# Collgar Wind Farm

Wind Semi-Scheduled Facility, 218.5 MW, Collgar Renewables

## Facility Merchant Spot Revenue



## Daily Capacity Factor and Average Energy Capture Price

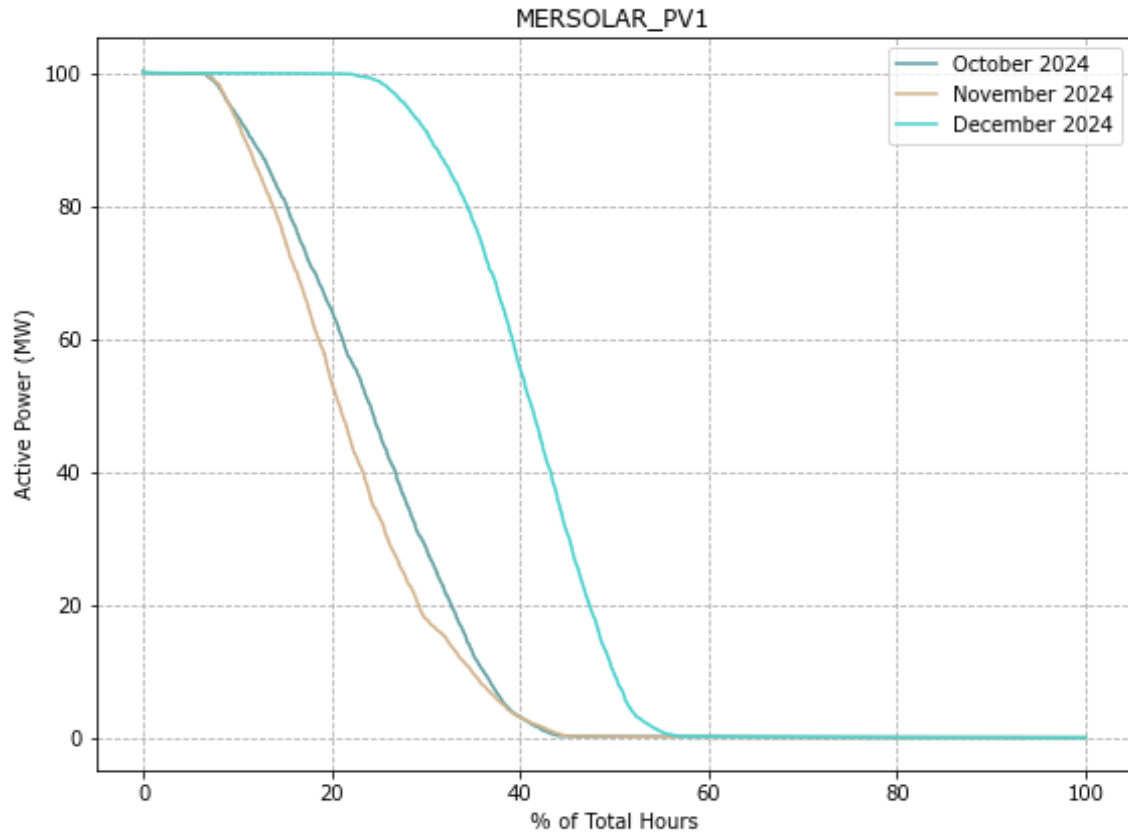


	Oct 2024	Nov 2024	Dec 2024
Energy Generated (GWh)	47.69	51.03	65.16
Total Spot Revenue (\$m)	8.50	6.92	8.02
<b>\$ / MWh</b>	<b>\$178.31</b>	<b>\$135.57</b>	<b>\$123.09</b>

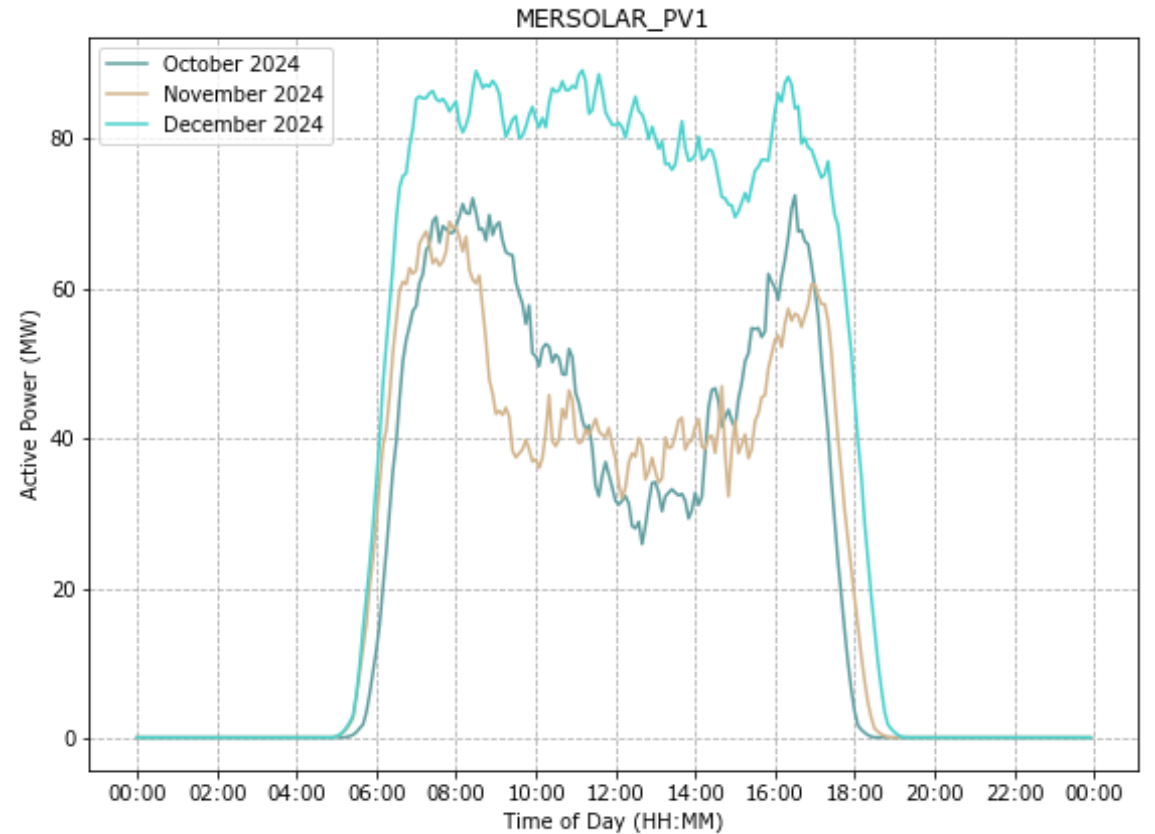
# Merredin Solar Farm

Solar PV Semi-Scheduled Facility, 100 MW, SUN Energy

### Generation Duration Curves



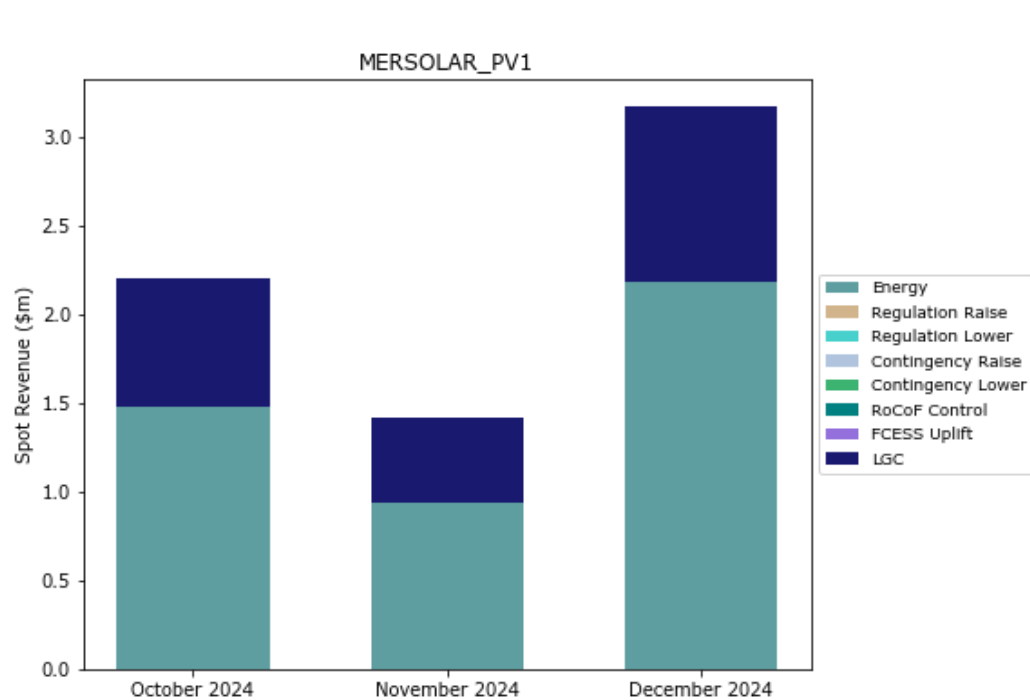
### Average Time-of-Day Output



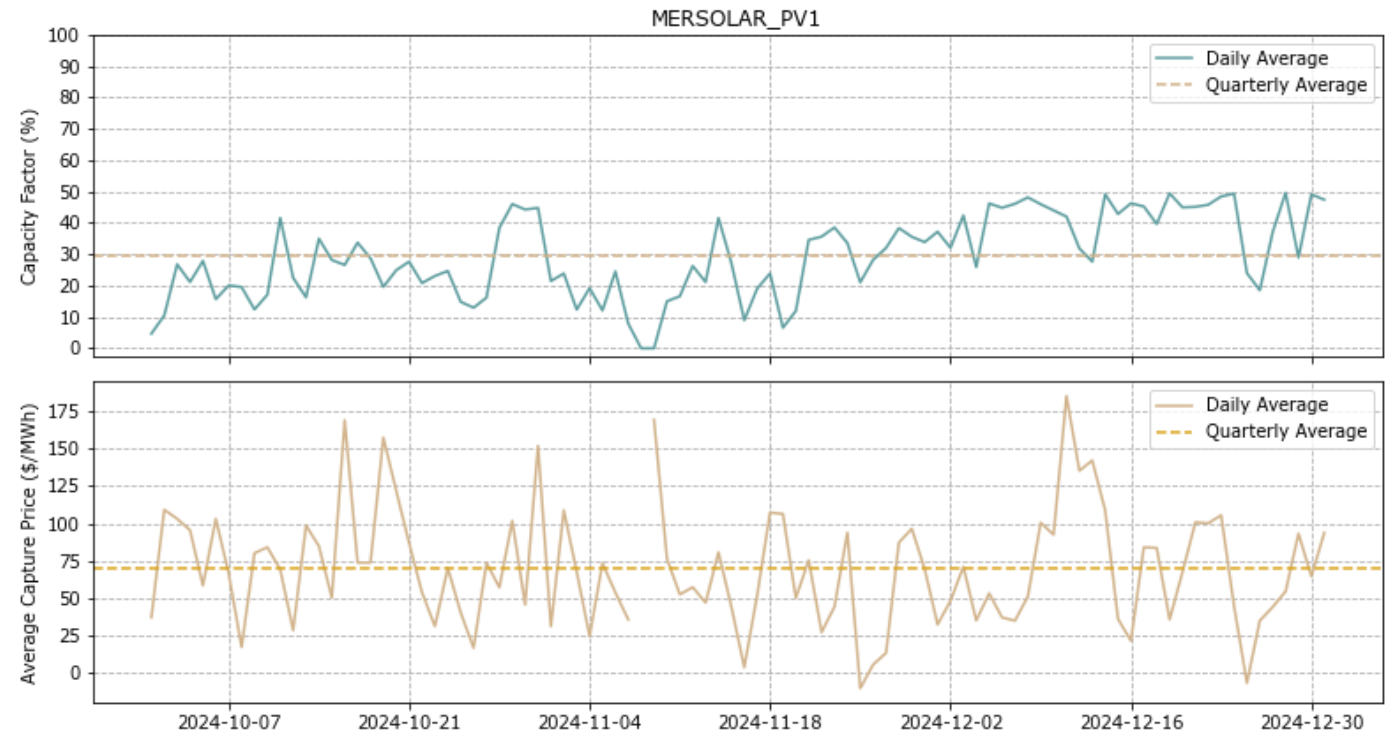
# Merredin Solar Farm

Solar PV Semi-Scheduled Facility, 100 MW, SUN Energy

### Facility Merchant Spot Revenue



### Daily Capacity Factor and Average Energy Capture Price

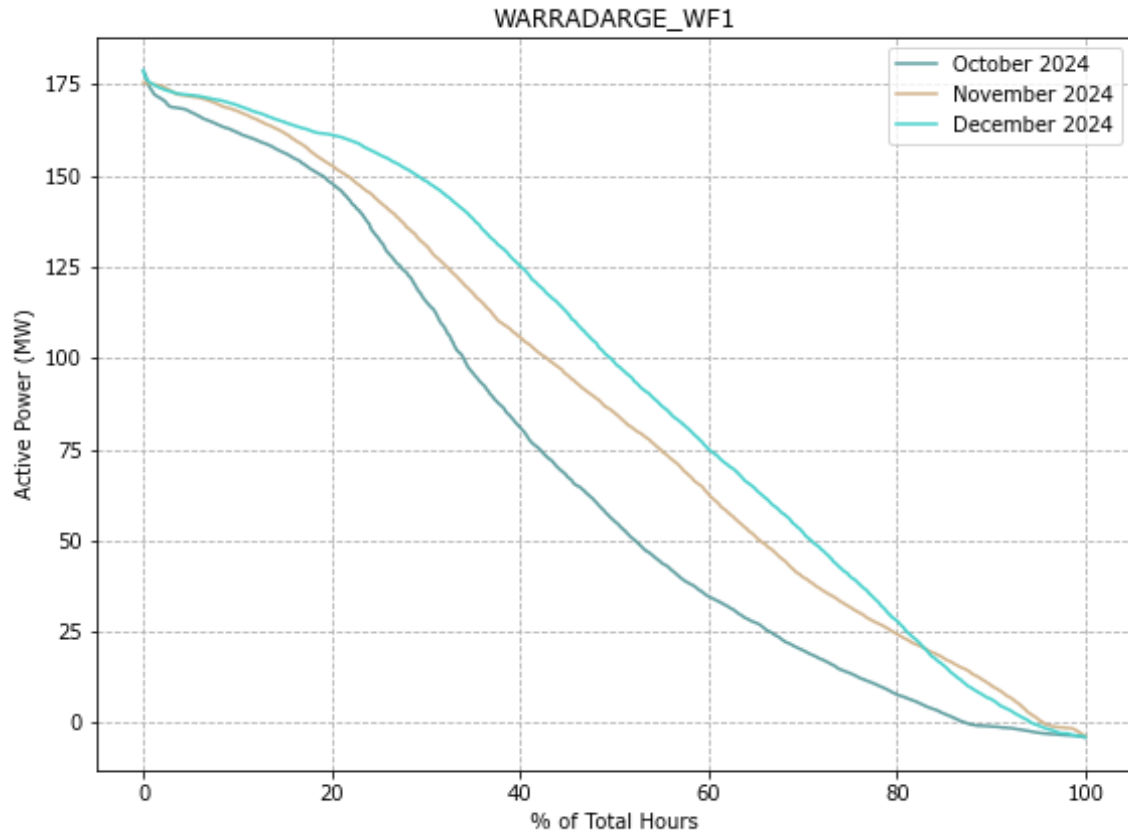


	Oct 2024	Nov 2024	Dec 2024
Energy Generated (GWh)	18.38	116.09	30.58
Total Spot Revenue (\$m)	2.20	1.42	3.17
<b>\$ / MWh</b>	<b>\$119.78</b>	<b>\$88.30</b>	<b>\$103.59</b>

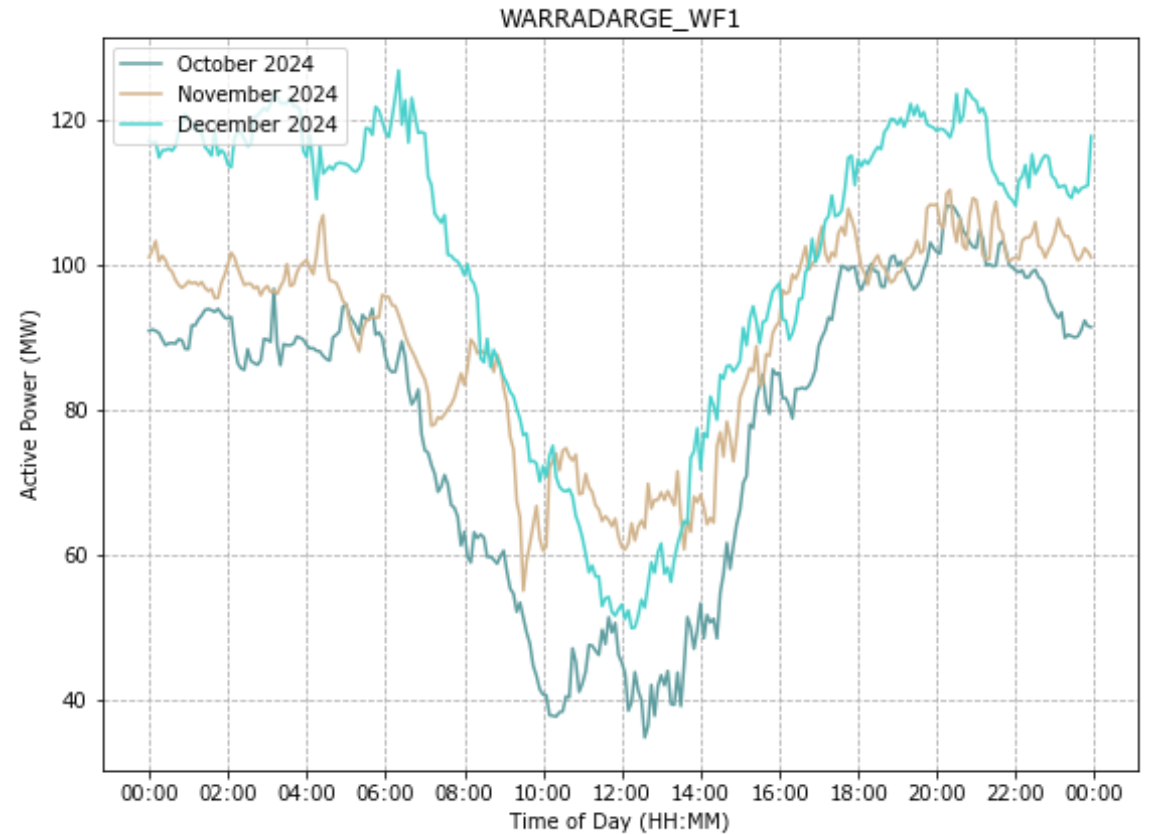
# Warradarge Wind Farm

Wind Semi-Scheduled Facility, 180 MW, Bright Energy Investments

### Generation Duration Curves



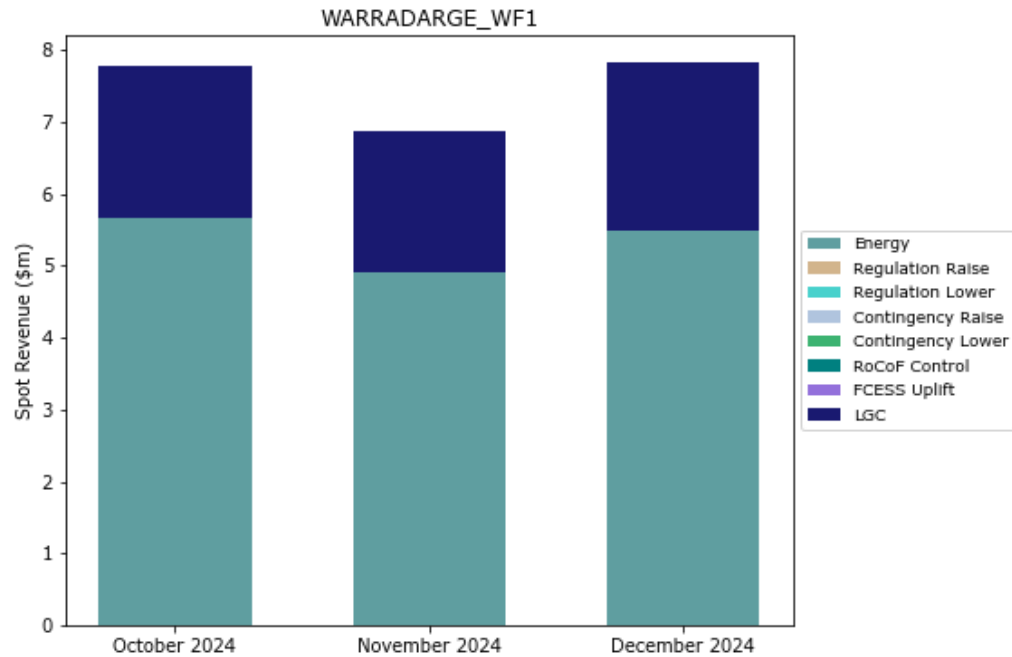
### Average Time-of-Day Output



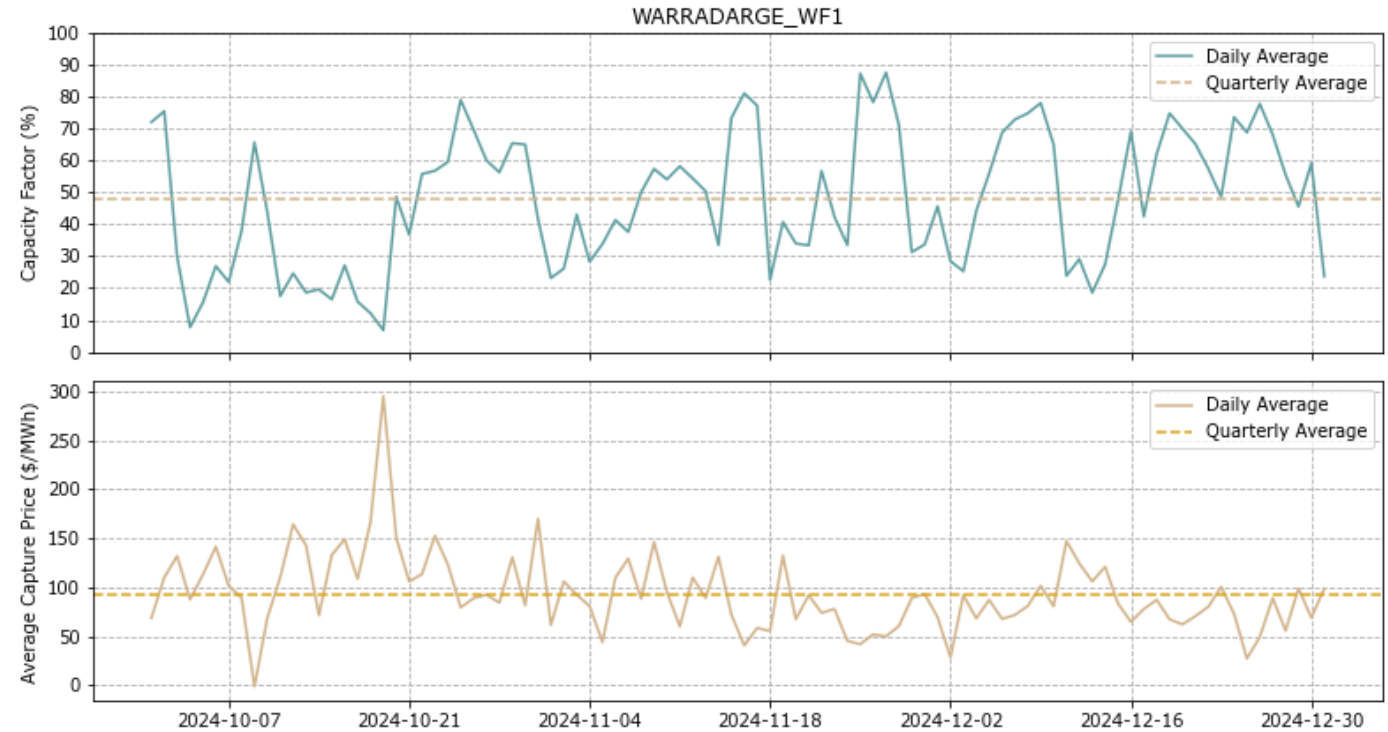
# Warradarge Wind Farm

Wind Semi-Scheduled Facility, 180 MW, Bright Energy Investments

### Facility Merchant Spot Revenue



### Daily Capacity Factor and Average Energy Capture Price

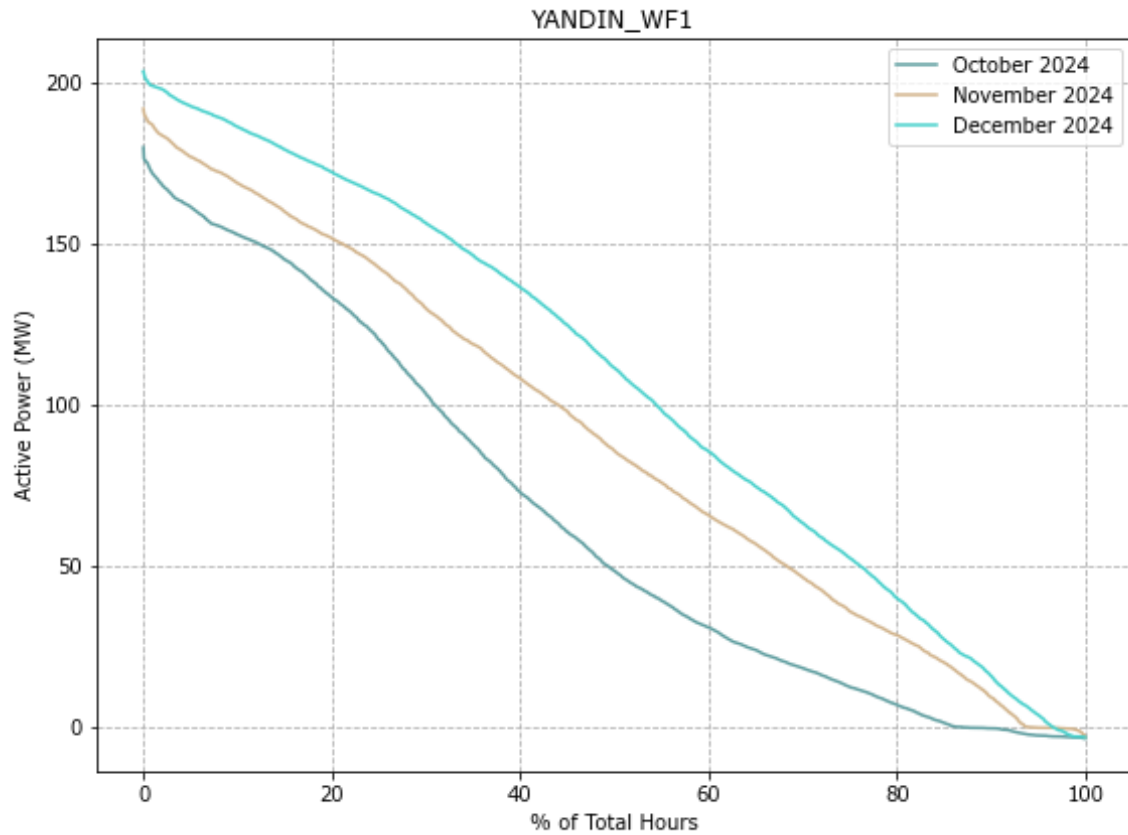


	Oct 2024	Nov 2024	Dec 2024
Energy Generated (GWh)	53.94	63.67	71.95
Total Spot Revenue (\$m)	7.77	6.87	7.82
<b>\$ / MWh</b>	<b>\$143.99</b>	<b>\$107.88</b>	<b>\$108.65</b>

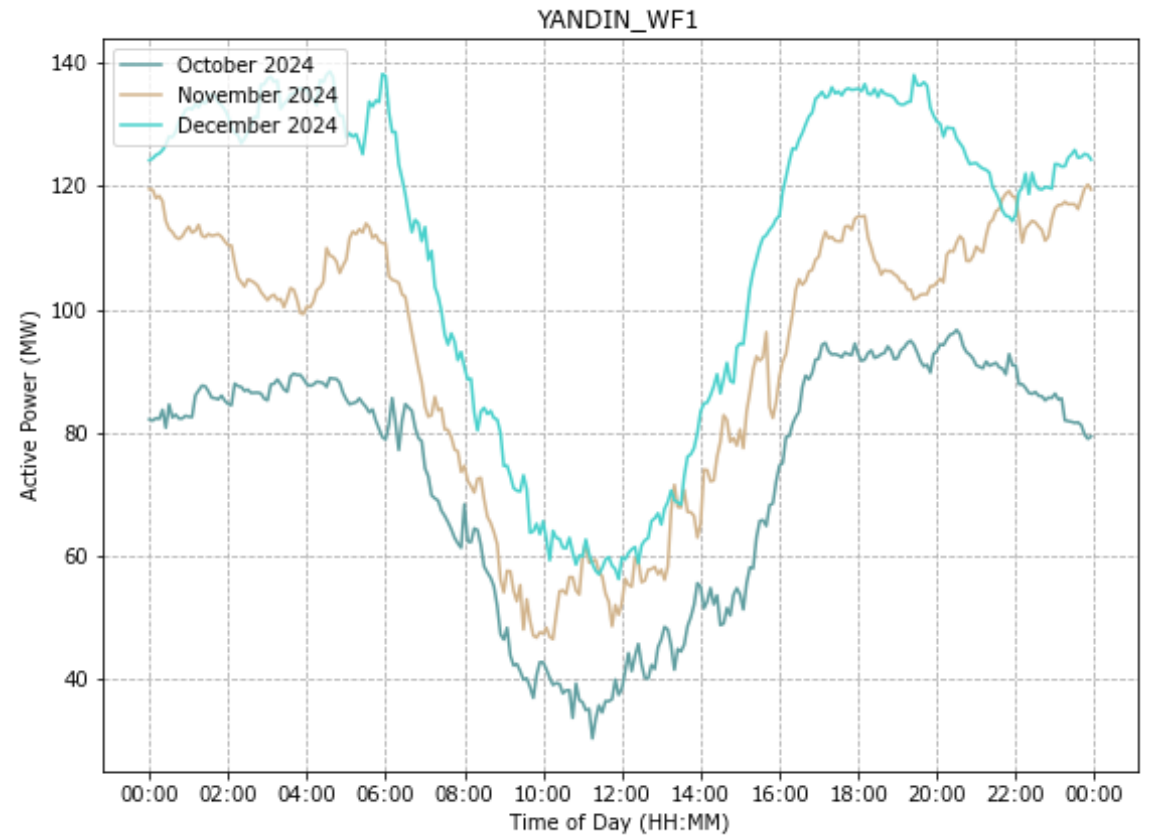
# Yandin Wind Farm

Wind Semi-Scheduled Facility, 214.2 MW, Alinta Energy

### Generation Duration Curves



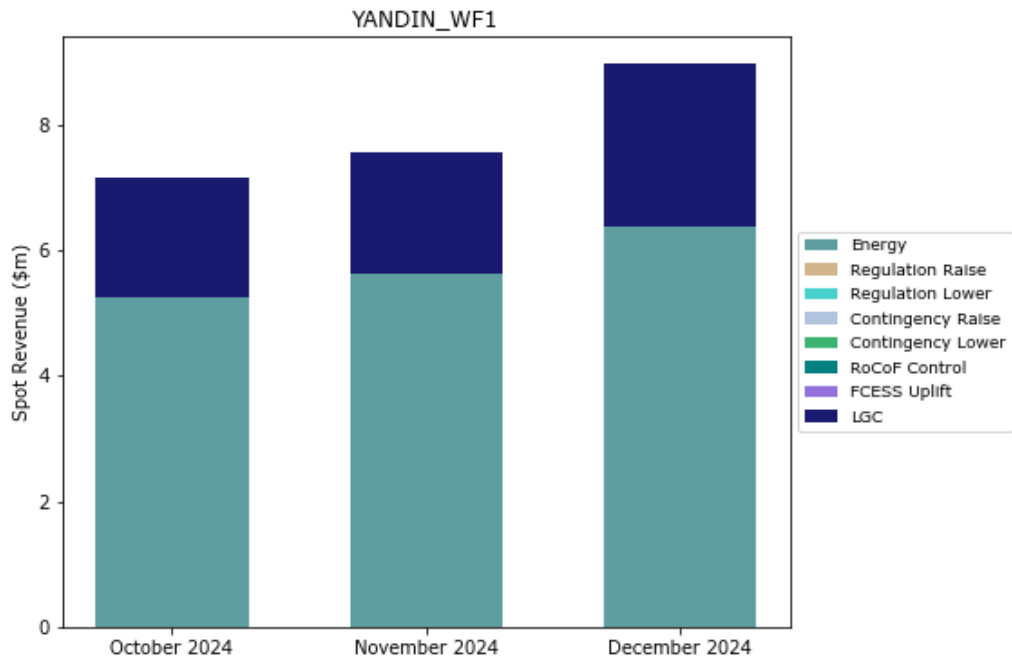
### Average Time-of-Day Output



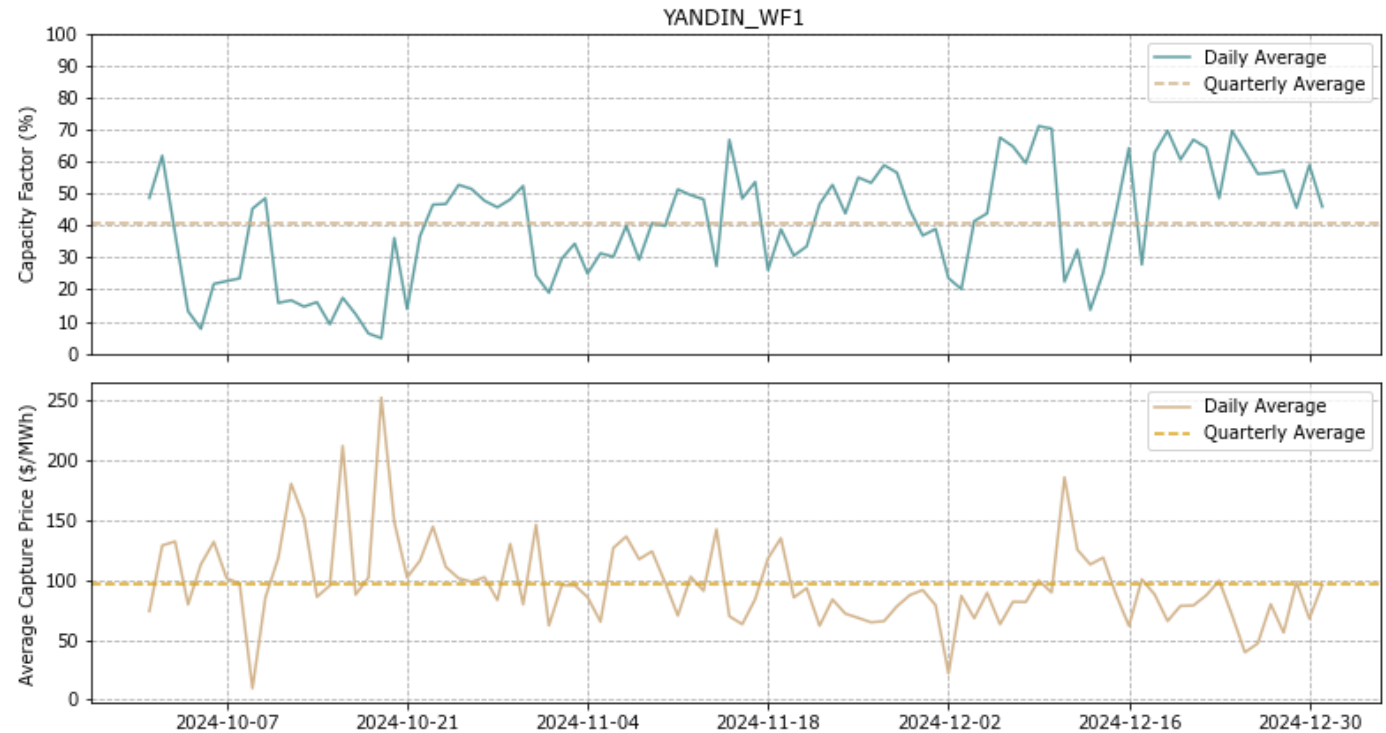
# Yandin Wind Farm

Wind Semi-Scheduled Facility, 214.2 MW, Alinta Energy

## Facility Merchant Spot Revenue



## Daily Capacity Factor and Average Energy Capture Price



	Oct 2024	Nov 2024	Dec 2024
Energy Generated (GWh)	48.61	63.84	79.99
Total Spot Revenue (\$m)	7.16	7.57	8.96
<b>\$ / MWh</b>	<b>\$147.22</b>	<b>\$118.62</b>	<b>\$112.06</b>



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