



Weekly Market Movements - Week Ended 3 December 2023

Overview

National hydro storage continued to decline last week and remains below average for the time of year. Residual generation margins remained healthy last week and looking ahead N-1-G margins are healthy for the rest of December.

This week's insight dives deeper into the nature of the risk created by the new wind risk group consisting of the Turitea and Taranua wind farms.

Security of Supply

National hydro storage continued to decline, dropping to 93% of the average for this time of year, down from 98% last week. South Island storage decreased to 90% of its historical mean, while North Island storage decreased to 114%.

Capacity

Residual generation margins were healthy last week, with a minimum residual of 428 MW on Thursday morning. The Thursday morning peak saw the lowest wind generation of all peak periods last week.

N-1-G Margins are healthy for the remainder of December and through January. The latest NZGB report is available on the [NZGB website](#).

Electricity Market Commentary

Weekly Demand

National demand was 737 GWh last week, in line with the previous week. Demand peaked at 5,269 MW on Wednesday 29 November at 8:00 am.

Weekly Prices

The average wholesale price at Haywards last week was \$141/MWh, down from \$151/MWh the previous week. Prices peaked at \$276/MWh at Otahuhu on Thursday 30 November at 21:00. The offer price stack was quite thin during this period, meaning small variations in system conditions can lead to large variations in price.

Generation Mix

The renewable percentage of the generation mix last week dropped from 92% to 90%, reflecting an increase in thermal contribution from 7% to 9%, as a result of wind and hydro contributions each dropping 1%.

Rotohiko battery commenced commissioning on Monday. Meanwhile Kaitaia solar and Harapaki wind farms remain in commissioning, meaning we are currently carrying three ECE commissioning risks in the electricity market.

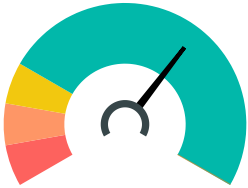
HVDC

Net HVDC flows were northward for nearly all trading periods last week. There were net southward flows during a few overnight trading periods when North Island wind generation was high and demand was low.

SOSA Consultation

The 2024 Security of Supply Assessment (SOSA) Reference Case and Sensitivities Consultation closed 5 December. Thanks to all who submitted feedback and comments.

New Zealand Energy Risk

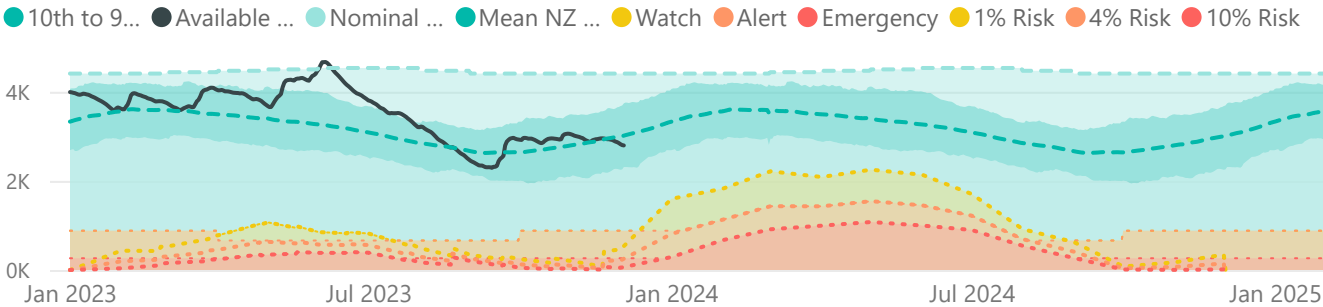


South Island Energy Risk

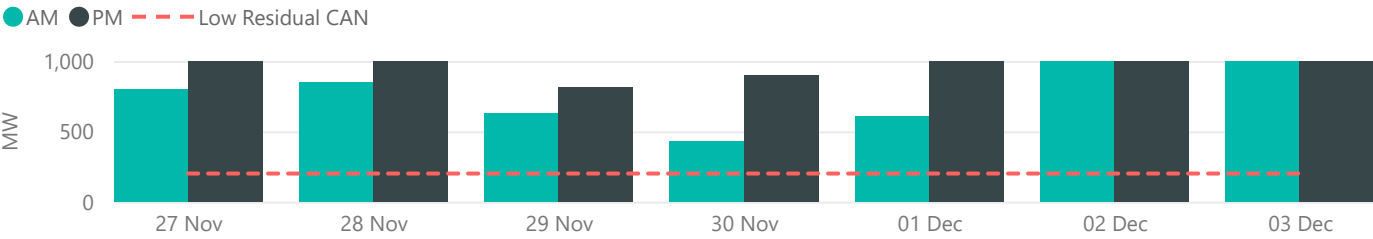


Normal Watch Alert Emergency

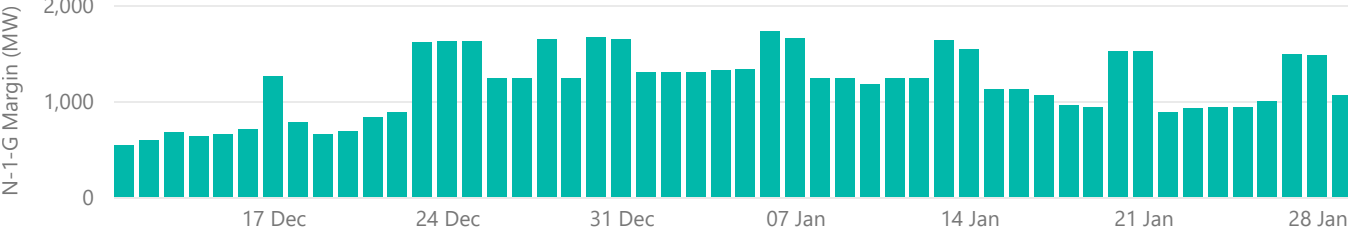
New Zealand Energy Risk Status Curves (Available GWh)



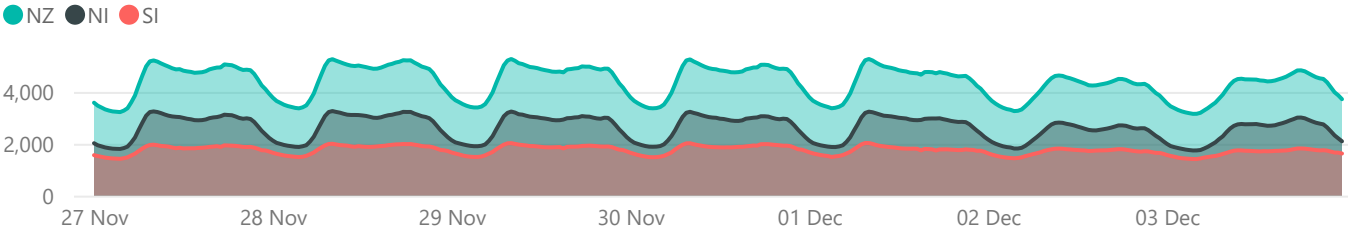
Lowest Residual Points - MW



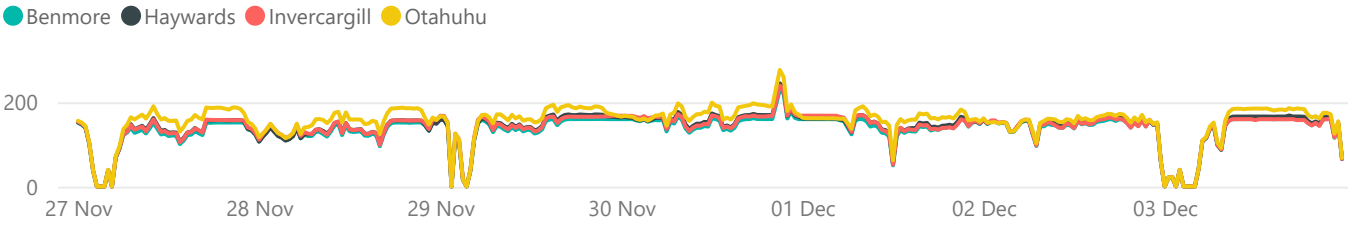
NZGB Look-Ahead (excluding next 7 days)



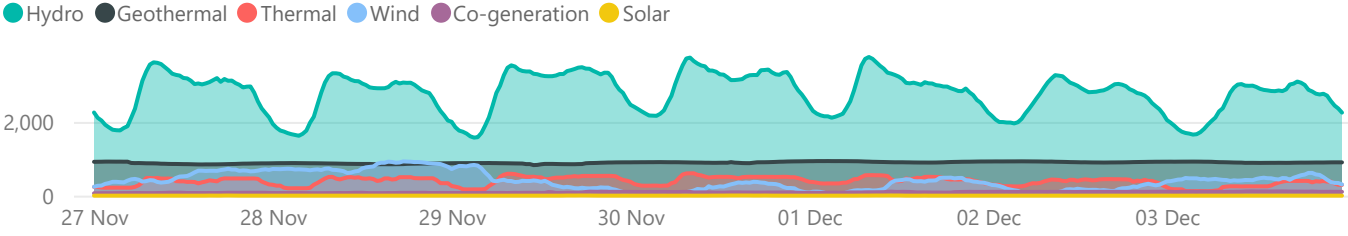
National Demand by Trading period - MW



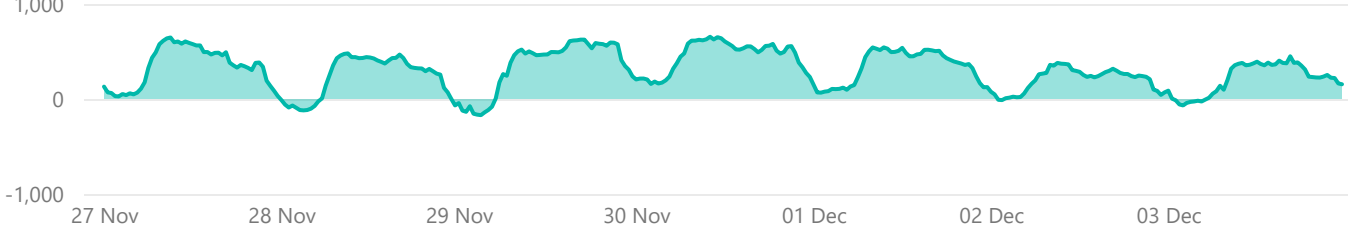
Weekly Prices - \$/MWh



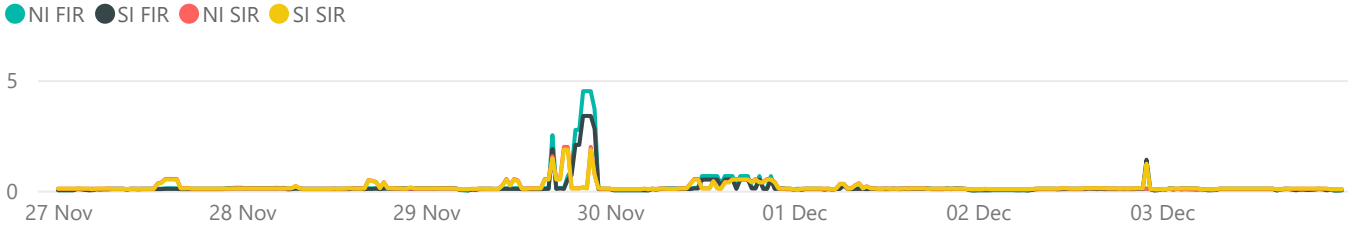
Generation - MW



Net HVDC Transfer - MW



Reserve Prices - \$/MWh



Weekly Summary Insight - North island wind risk group

This insight follows up from the one published [here](#) on 21 November explaining the new risk group created consisting of the Turitea and Tararua Wind Farms 1 and 2. Here we focus more on the nature of the risk which arises in the case of this risk group.

Voltage Fault Ride Through is the ability of generation assets to remain stable and electrically connected to the grid, after external fault conditions. This means if there is a sudden voltage drop on a line, generation plant should be able to 'ride through' this change and not trip off. Each generator which connects to the grid must sustain a certain degree of Voltage Fault Ride Through for a period of six seconds after the fault occurs, when in the 'No-trip zone' shown in the figure below, as per clause 8.25A of the code. The absolute grid voltage (per unit) is the ratio of the lowest voltage on a line, to the nominal operating voltage of the line, and duration is measured from the time the fault occurred.

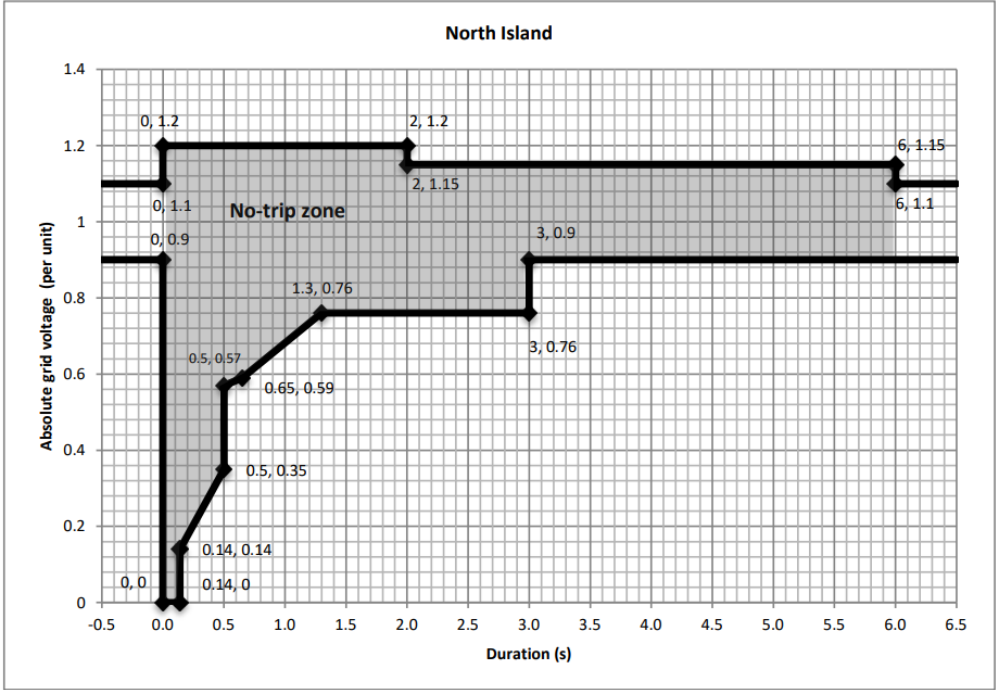


Figure. North Island 'No-trip zone' during 110kV or 220kV faults.

Where this requirement is unable to be met, a Voltage Fault Ride Through dispensation may be granted if the system operator can manage the at risk megawatts, with pre-event mitigation measures to meet its Principal Performance Obligations. This is the case with Tararua Wind Farms 1 and 2, where the pre-event mitigation is to add the output of these windfarms to the risk MW used for reserve procurement. Turitea South and North and the Tararua Wind Farms 1 and 2 are treated as a single risk group because it is known that Tararua 1 and 2 would trip off through a protection setting as a result of a fault occurring at Turitea, losing the whole wind group.

A review of the dispensation, with the addition of the recently commissioned Turitea Wind Farm, has meant that the combined output of these wind farms is large enough to become a new risk setter in the North Island. This supersedes the previous similar North Island risk group consisting of Tararua Wind Central, New Zealand Wind Farms (Te Rere Hau) and Tararua Wind Farms 1 and 2 (see more information on the CAN notice [here](#)). Turitea is now larger than the combined output of the Tararua Central and Te Rere Hau wind farms. Turitea alone has even set the risk during periods of low thermal generation, the creation of this new risk group is necessary to reflect the actual at risk megawatts associated with faults at Turitea.

Availability costs continue to be allocated to asset owners' with generation units and the grid owner for the at risk HVDC transfer at or greater than 60MW, as per clause 8.59 of the code.

- Information regarding the assigned risk setter can be found on the WITs website following these steps:
- Navigate to the 'Market Trends menu' and open the 'Reserve Quantities' tab.
 - Select the schedule and timeframe interested in.
 - Select the table view in the top right corner.
 - Click on NMIR for the trading period, island and reserve type interested in, this will bring up a table identifying the risk.
 - See snip below.

2023-12-05	28	NRS	North Island	Fast	110.884	215.000	2	0	NMIR
2023-12-05	28	NRS	South Island	Fast	30.002	206.000	2	0	NMIR
2023-12-05	28	NRS	North Island	Sustained	192.398	219.000	2	0	NMIR
2023-12-05	28	NRS	South Island	Sustained	40.000	206.000	2	0	NMIR

REFRESH RESULTS

NMIR Details

NRS, Fast, NI, 2023-12-05, TP 28, 13:30

Sharing Quantity CE	31.915 MW
Sharing Quantity ECE	0 MW
Sharing Limit	220 MW
Binding Risk Type	GEN_CE
FKC Enabled	Y
DP Status	v

Scheduled HVDC Flow

NRS, North direction, 2023-12-05, TP 28, 13:30

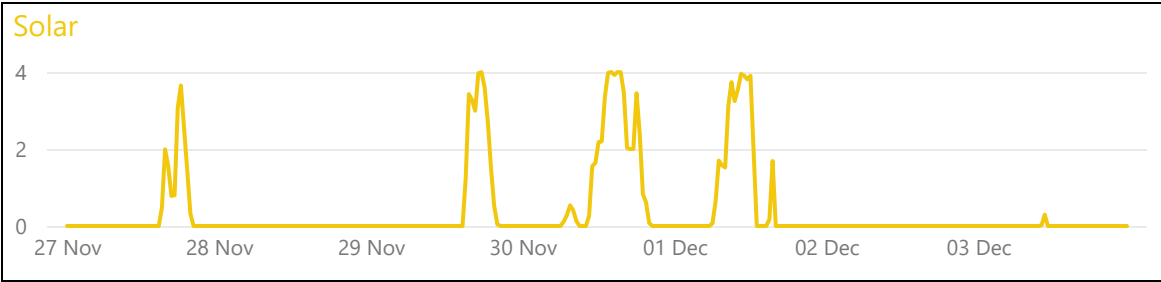
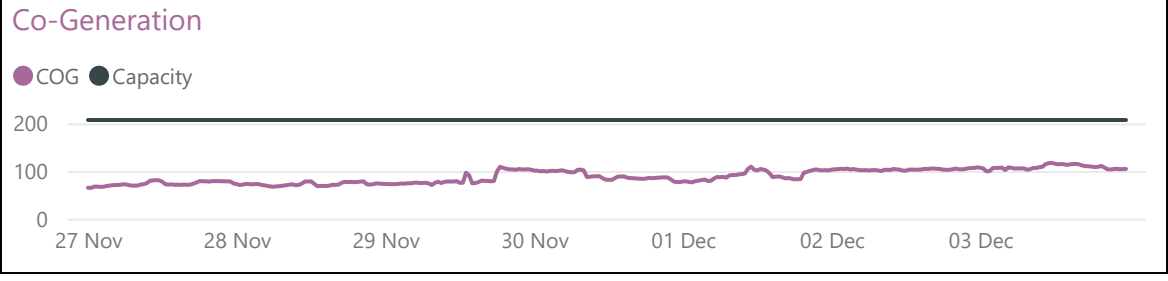
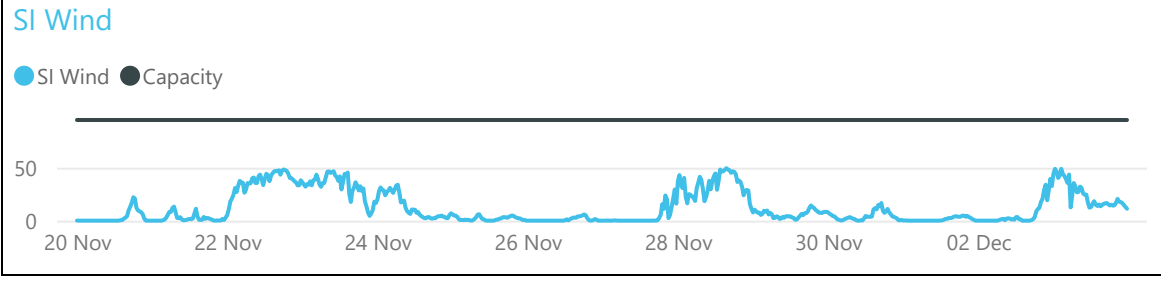
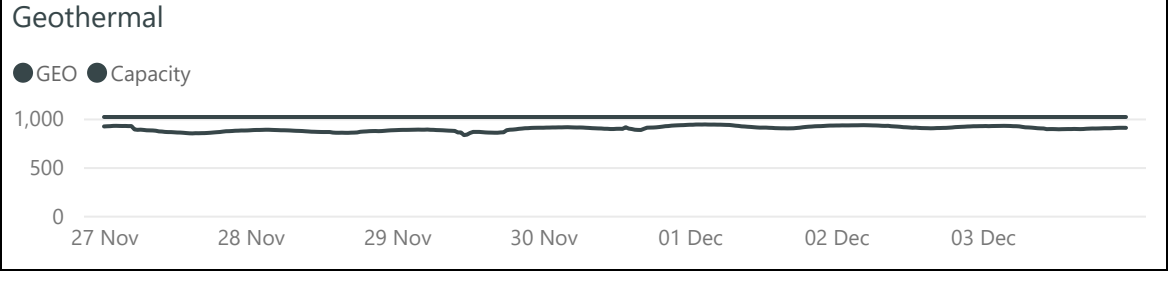
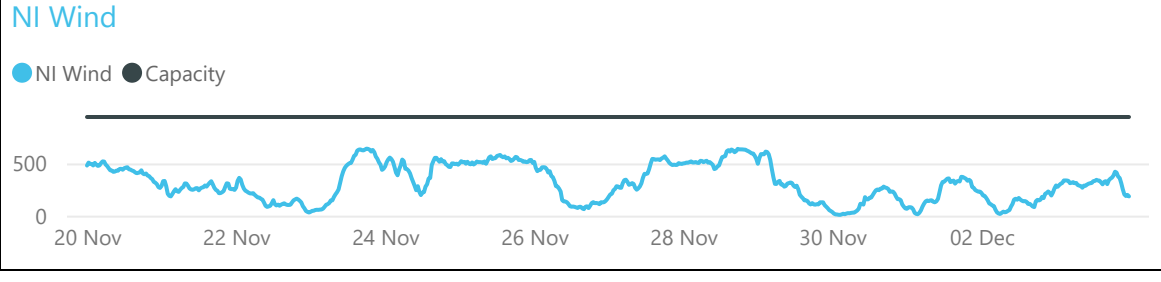
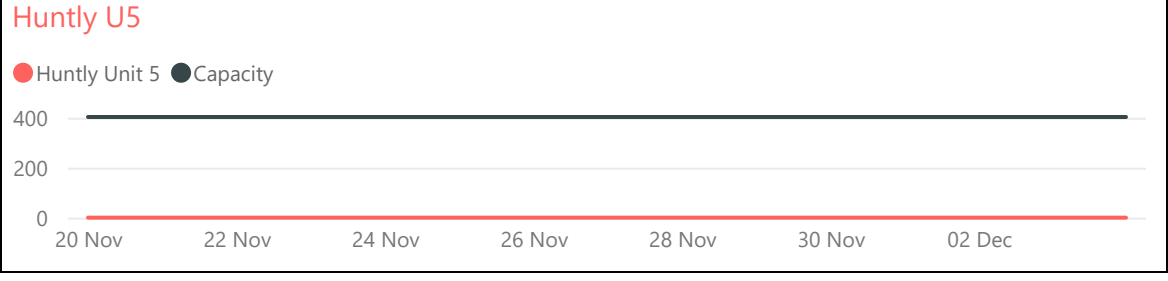
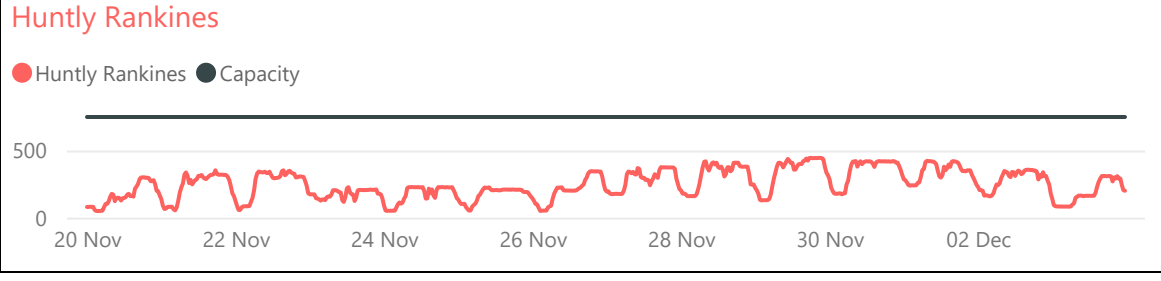
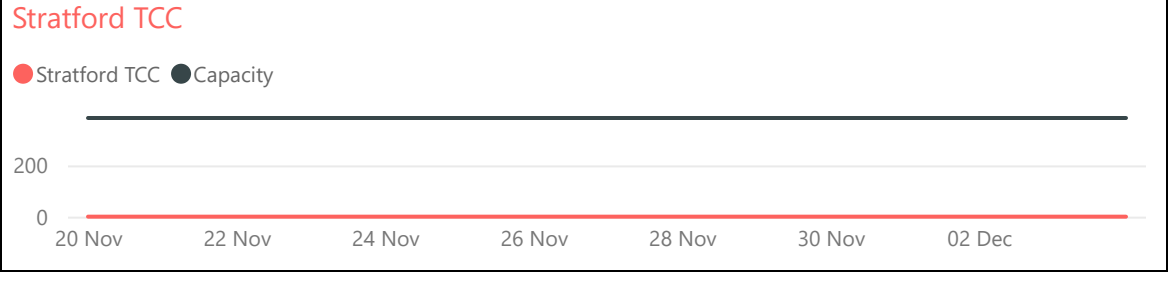
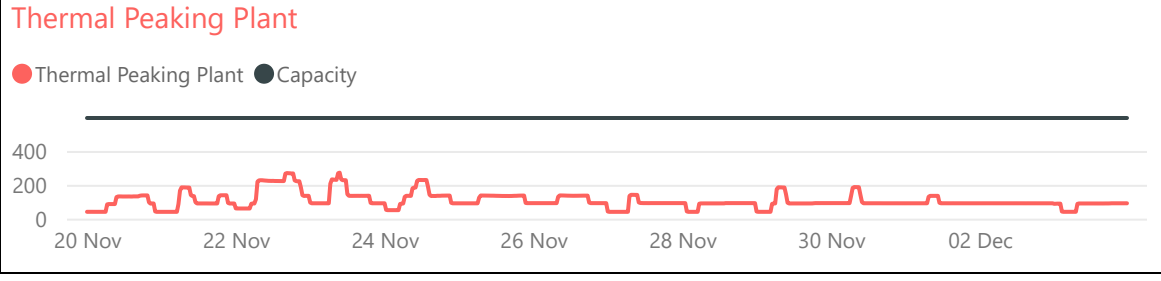
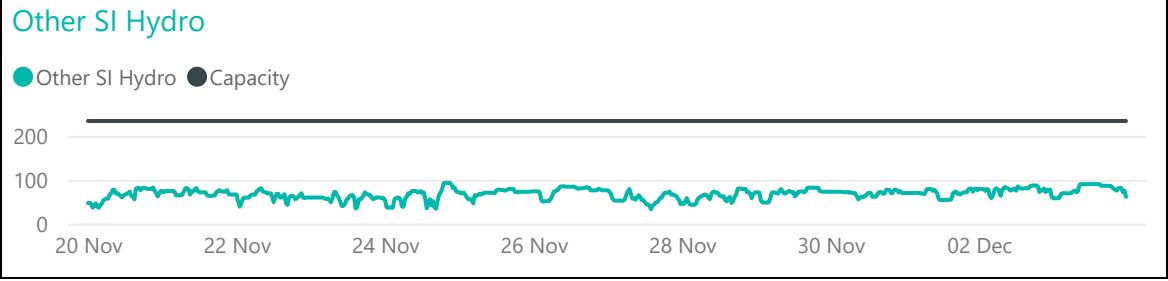
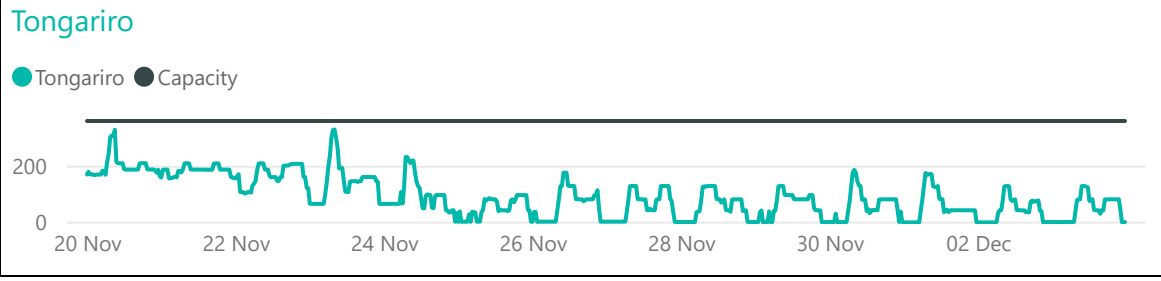
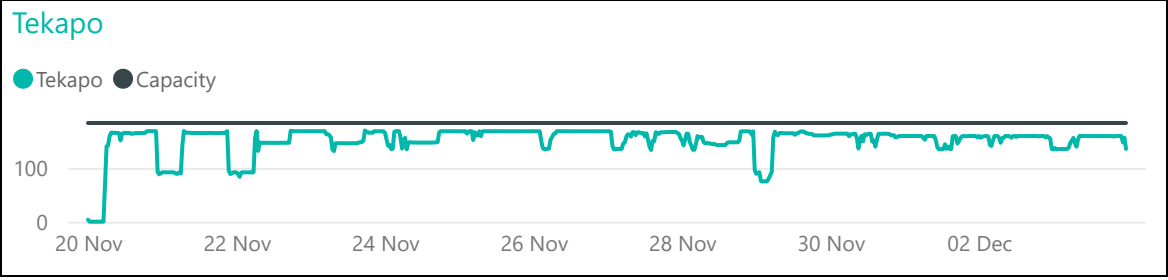
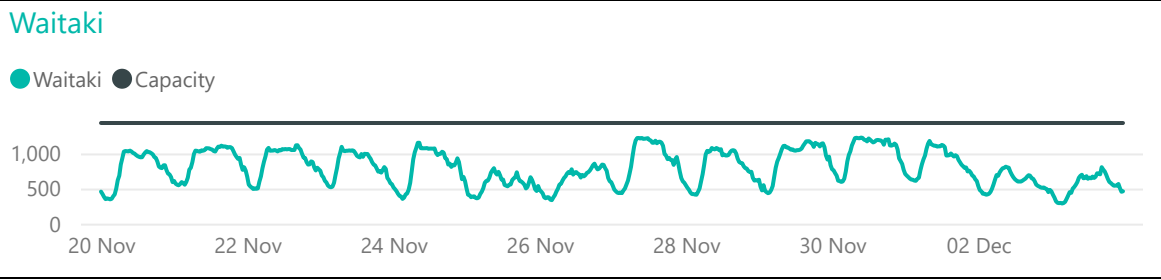
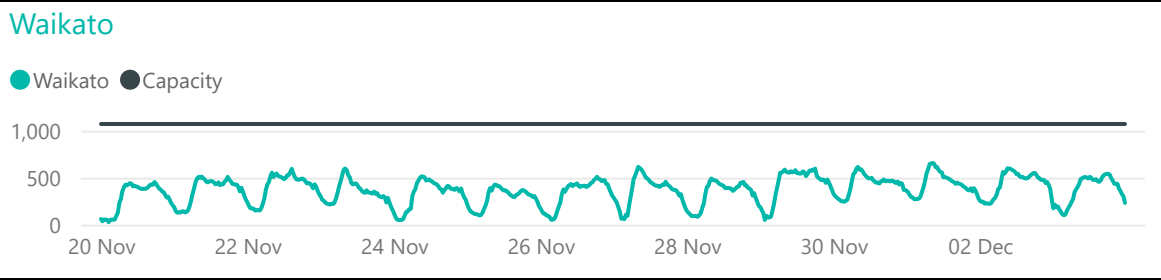
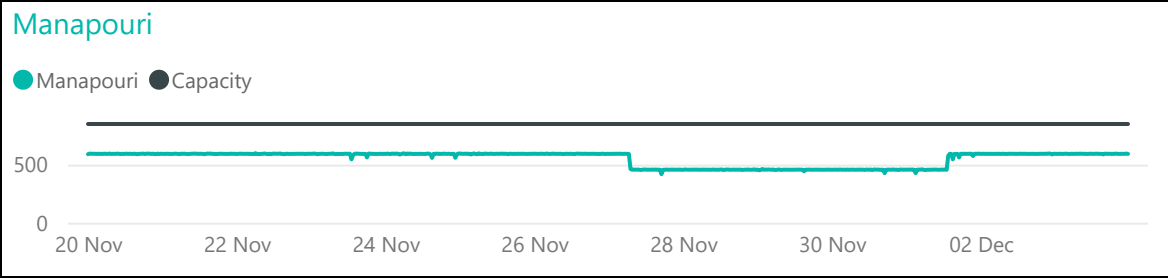
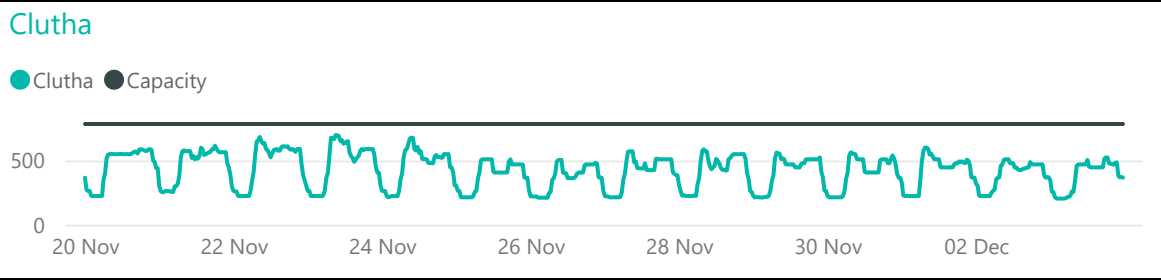
Total Sent	562.781 MW
Risk Offset CE	693.348 MW
Risk Offset ECE	588.967 MW
Bipole Capacity Limit	845 MW

Figure: Risk setter location shown in WITs.



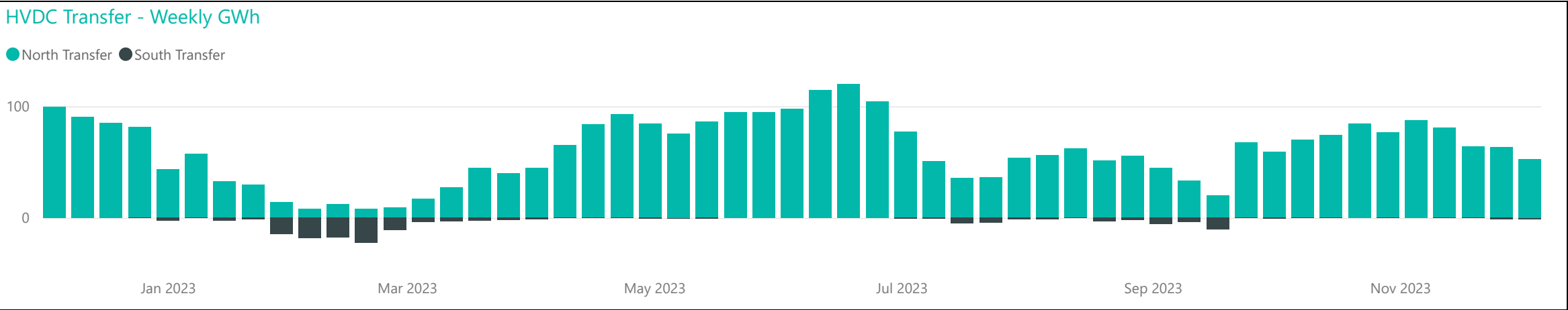
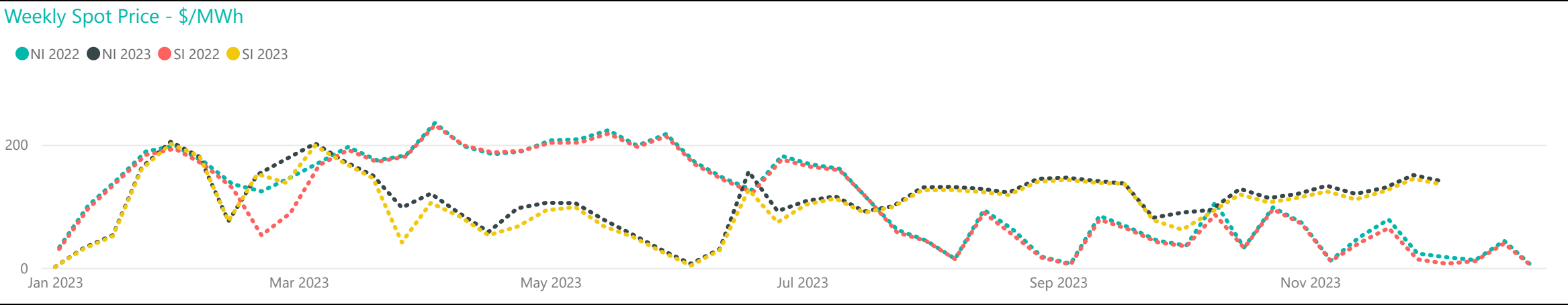
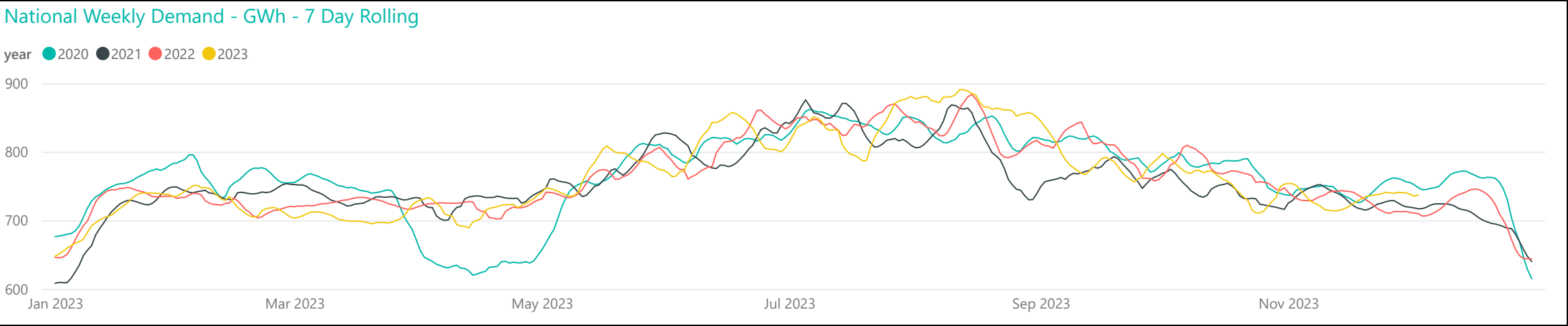
Generation Breakdown - Last Two Weeks

Measured in MW and displayed at trading period level for last 14 days

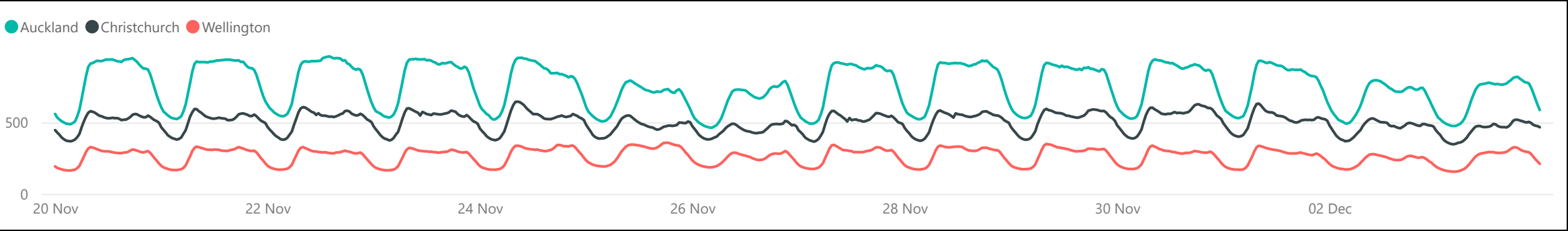




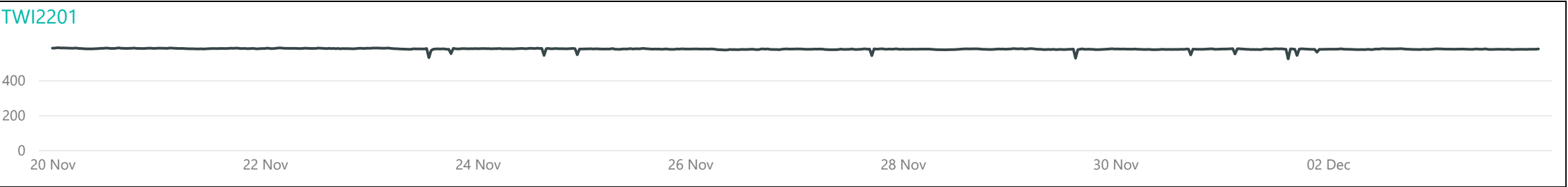
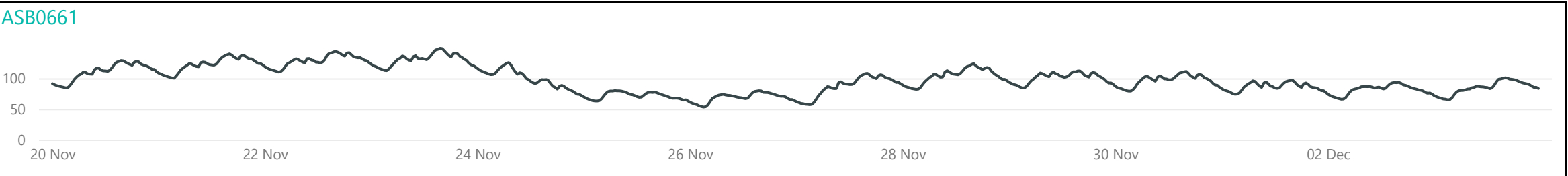
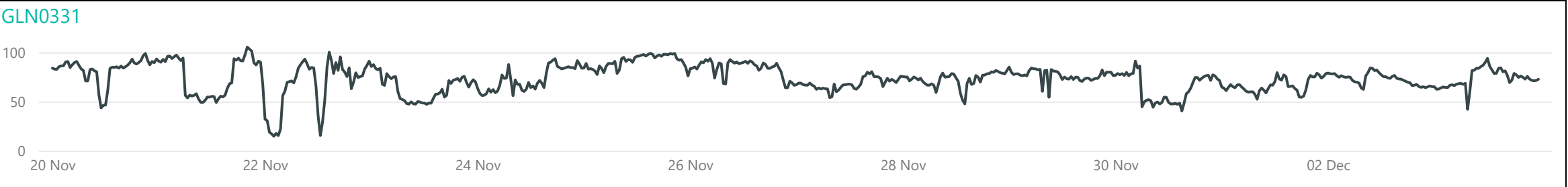
Weekly Profiles



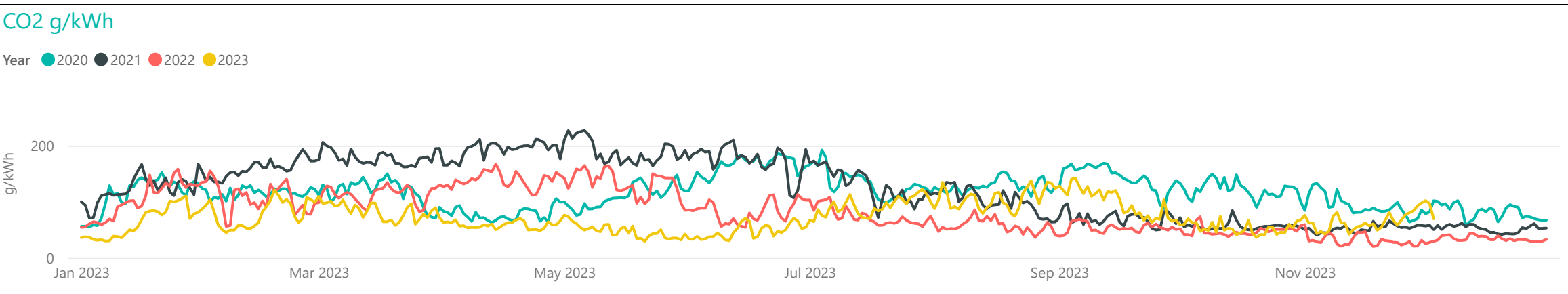
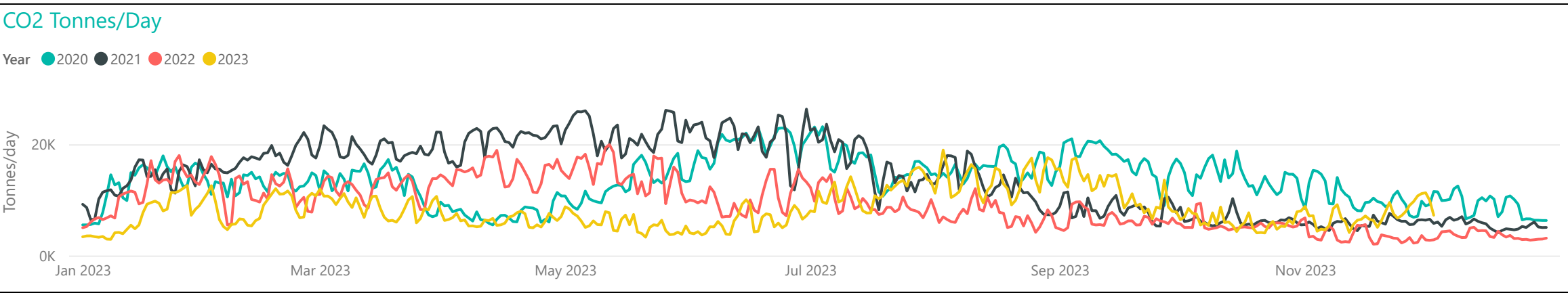
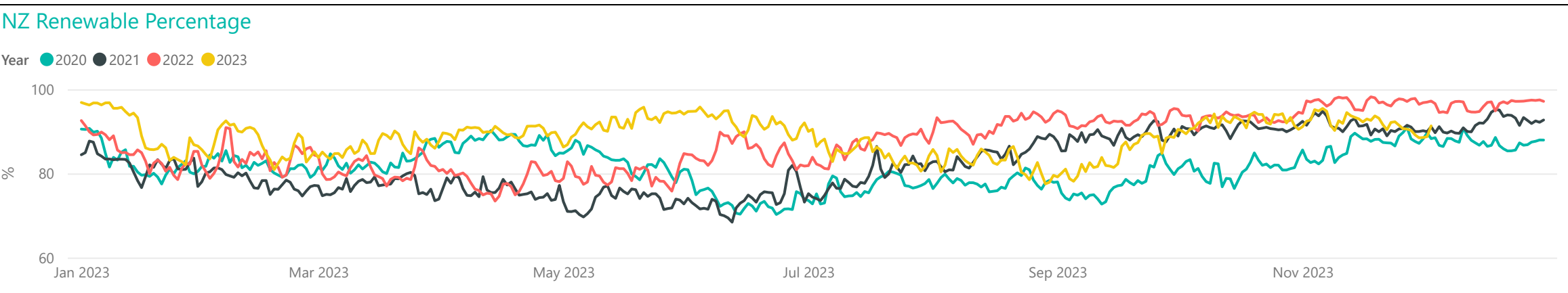
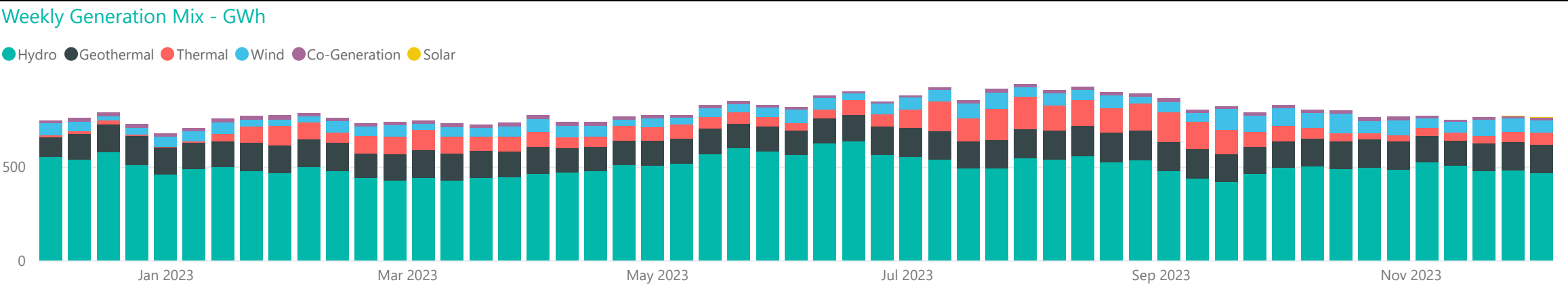
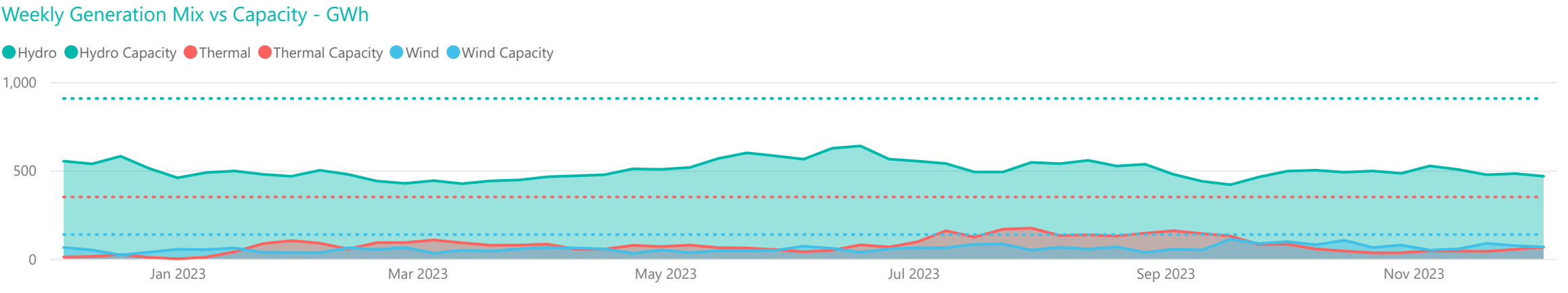
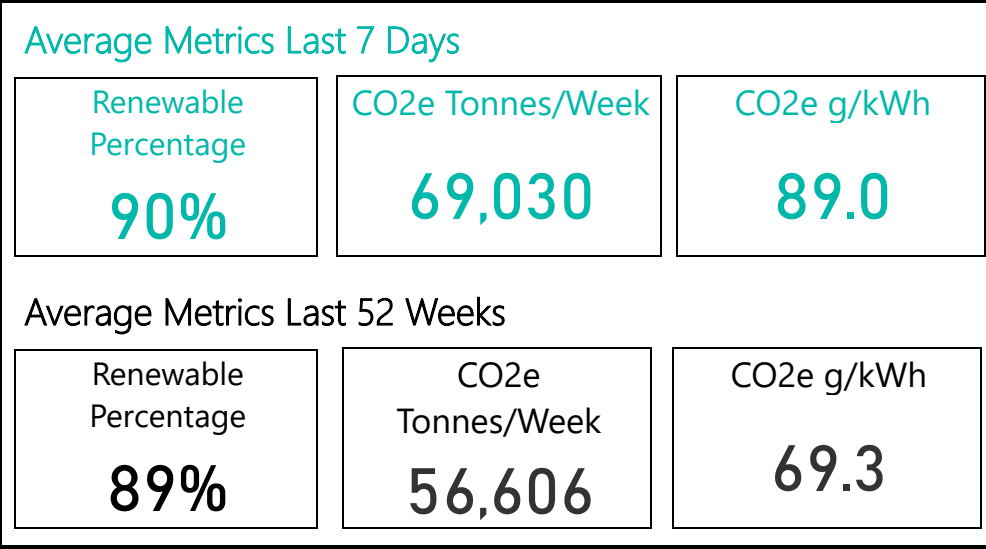
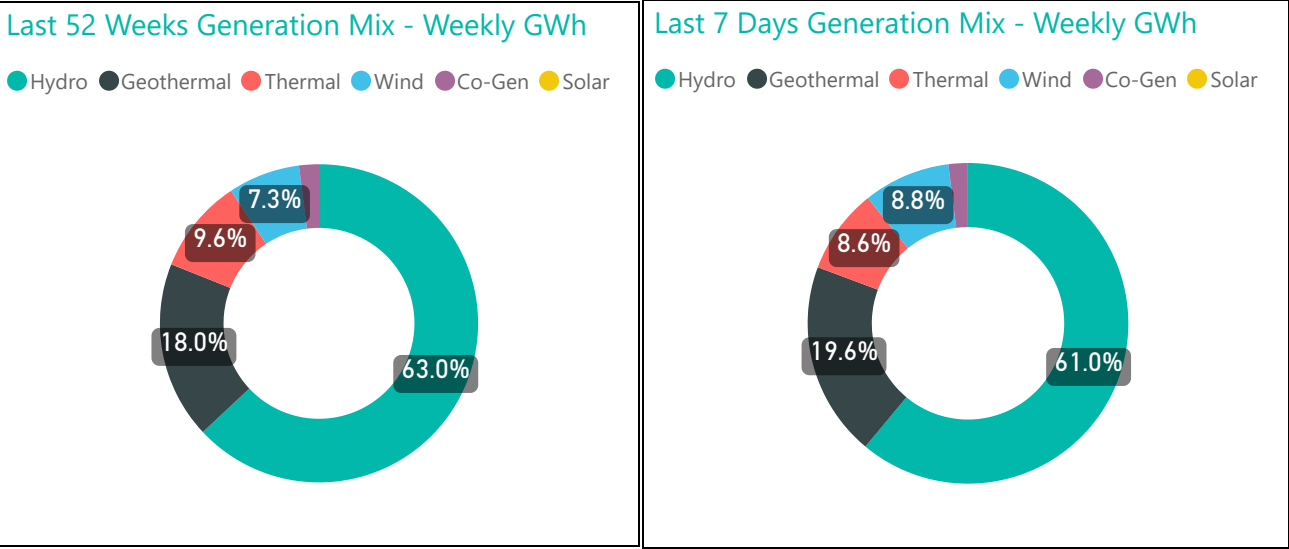
Conforming Load Profiles - Last Two Weeks *Measured in MW shown by region*



Non-Conforming Load Profiles - Last Two Weeks *Measured in MW shown by GXP*

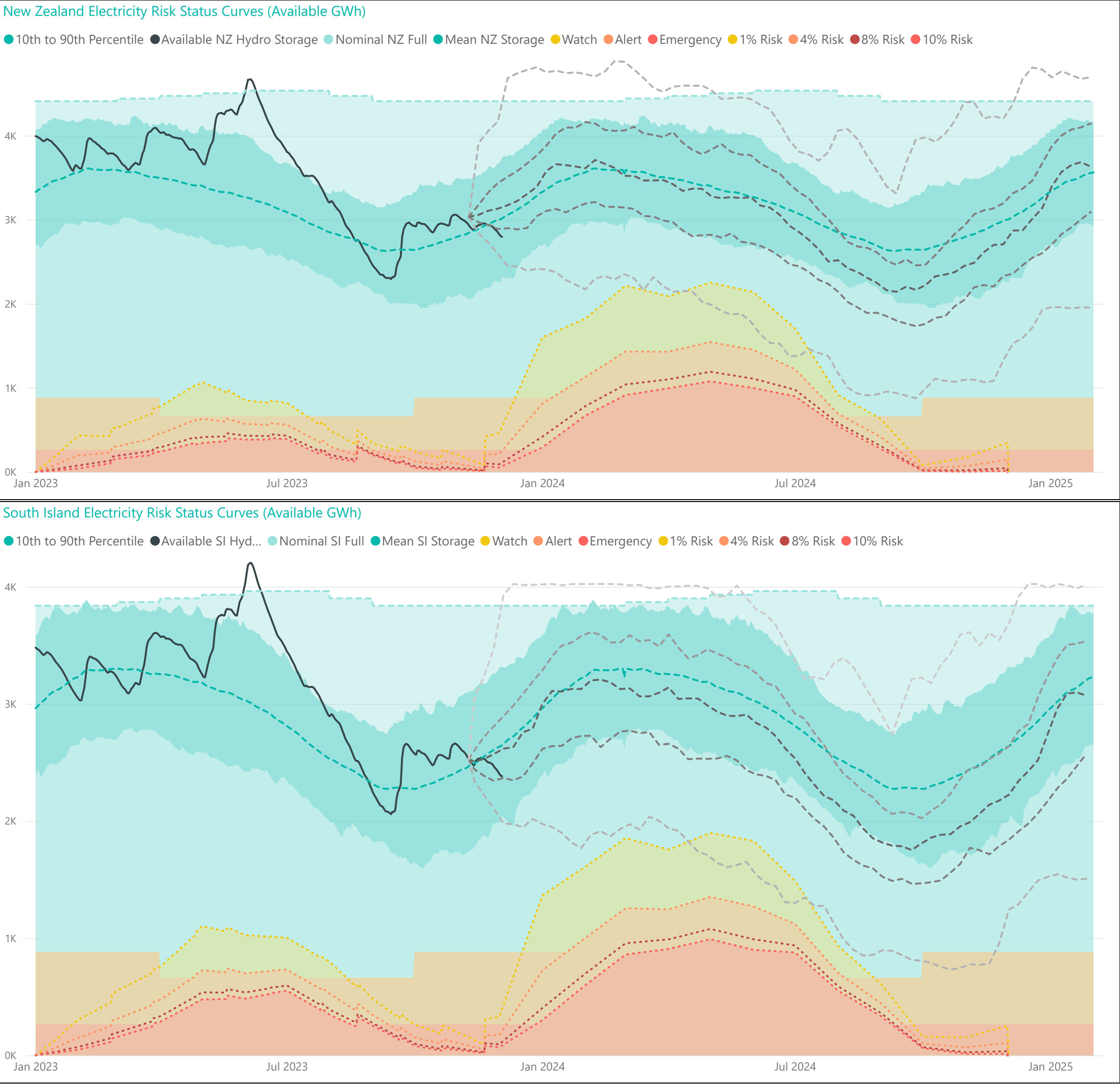


Generation Mix





Electricity Risk Curves



Electricity Risk Curve Explanation:

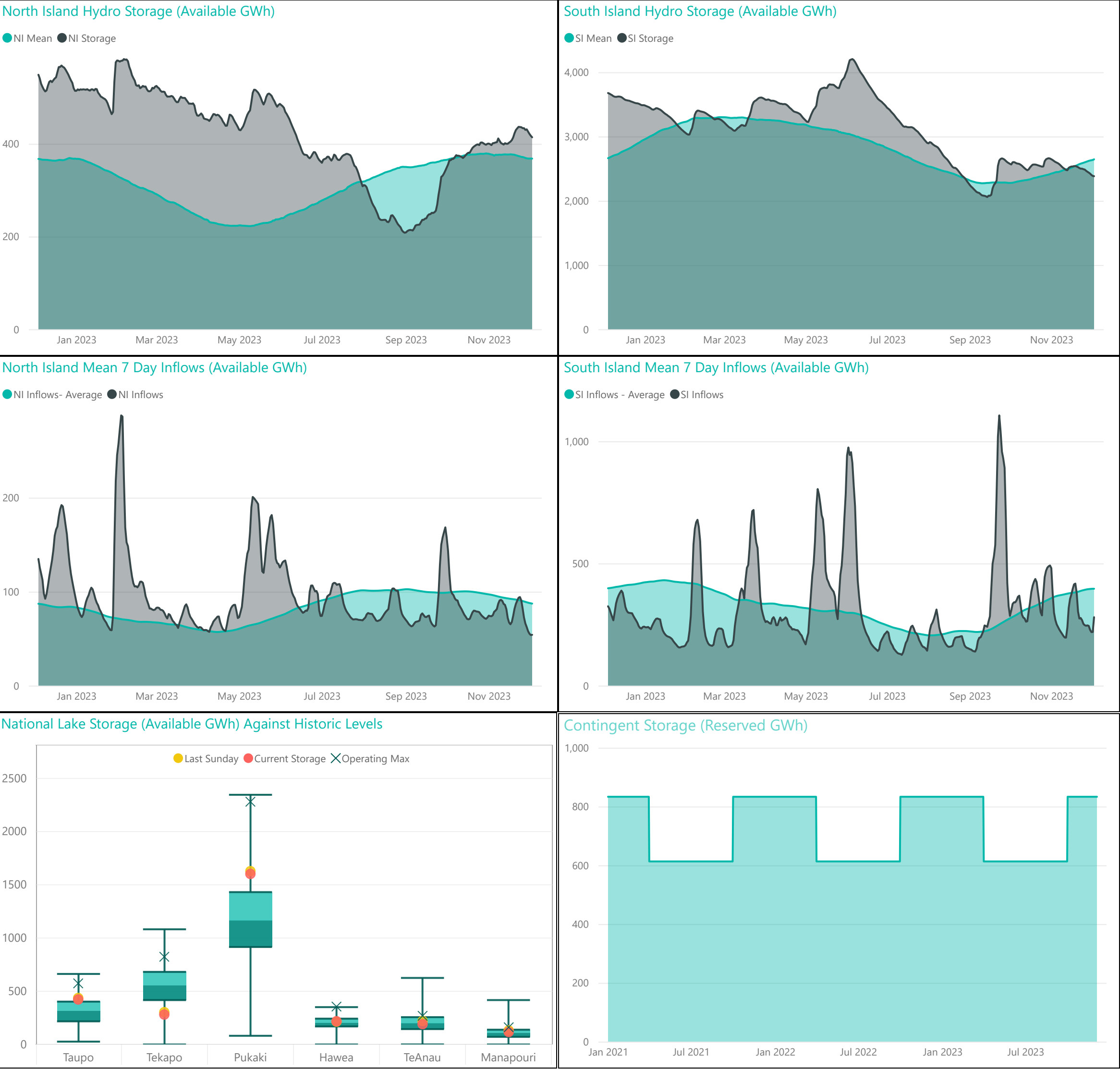
- Watch Curve - The maximum of the one percent risk curve and the floor and buffer
- Alert Curve - The maximum of the four percent risk curve and the floor and buffer
- Emergency Curve - The maximum of the 10 percent risk curve and the floor and buffer
- Official Conservation Campaign Start - The Emergency Curve
- Official Conservation Campaign Stop - The maximum of the eight percent risk curve and the floor and buffer

Note: The floor is equal to the amount of contingent hydro storage that is linked to the specific electricity risk curve, plus the amount of contingent hydro storage linked to electricity risk curves representing higher levels of risk of future shortage, if any. The buffer is 50 GWh.

The dashed grey lines represent the minimum, lower quartile, median, upper quartile and the maximum range of the simulated storage trajectories (SSTs). These will be updated with each Electricity Risk Curve update (monthly).



Hydro Storage



For further information on security of supply and Transpower's responsibilities as the System Operator, refer to our webpage here: <https://www.transpower.co.nz/system-operator/security-supply>

For any inquiries related to security of supply contact market.operations@transpower.co.nz

Hydro data used in this report is sourced from [NZX Hydro](#).

Electricity risk curves have been developed for the purposes of reflecting the risk of extended energy shortages in a straightforward way, using a standardised set of assumptions.

Further information on the methodology of modelling electricity risk curves may be found here: <https://www.transpower.co.nz/system-operator/security-supply/hydro-risk-curves-explanation>