Market Operations Weekly Report - Week Ended 24 August 2025

Overview

New Zealand hydro storage continues to drop sharply and is now below the 10th percentile for this time of year, at 77% of the seasonal mean. South Island storage is lower at 74% of the seasonal mean, also below the 10th percentile.

In this week's insight we look at the differences in daily generation profile between different solar farms.

Security of Supply

Energy

New Zealand hydro storage remains below average for this time of year, dropping sharply from 83% of the historic mean to 77% over the past week following inflows that were lower than average in both islands. South Island hydro storage decreased from 78% to 74% of historic mean and North Island storage decreased from 116% to 103%.

Our August monthly Energy Security Outlook will be published this week and will provide more information on energy risks for 2026.

Capacity

Capacity margins were healthy last week with residual at all peaks but one exceeding 800 MW. The lowest residual occurred on the morning of 21 August, at 791 MW.

The N-1-G margins in the NZGB forecast are healthy through to mid October. Within seven days we monitor these more closely through the market schedules. The latest NZGB report is available on the NZGB website.

Electricity Market Commentary

Weekly Demand

Total demand last week increased slightly from 876 GWh the week prior to 881 GWh, which is higher than we have previously seen at this time of year. The highest demand peak occurred at 6:00pm on Tuesday 19 August, at 6,944 MW which was 101 MW higher than the previous week's highest peak.

Weekly Prices

The average wholesale electricity spot price at Ōtāhuhu last week increased to $218/MWh from $196/MWh the week prior in line with lower than average wind generation and declining hydro storage. Wholesale prices peaked at $363/MWh at Invercargill at 9:00pm on Friday 22 August.

The Ruakākā battery has added significant reserve capacity to the market which has helped keep reserve prices low in recent weeks.

Generation Mix

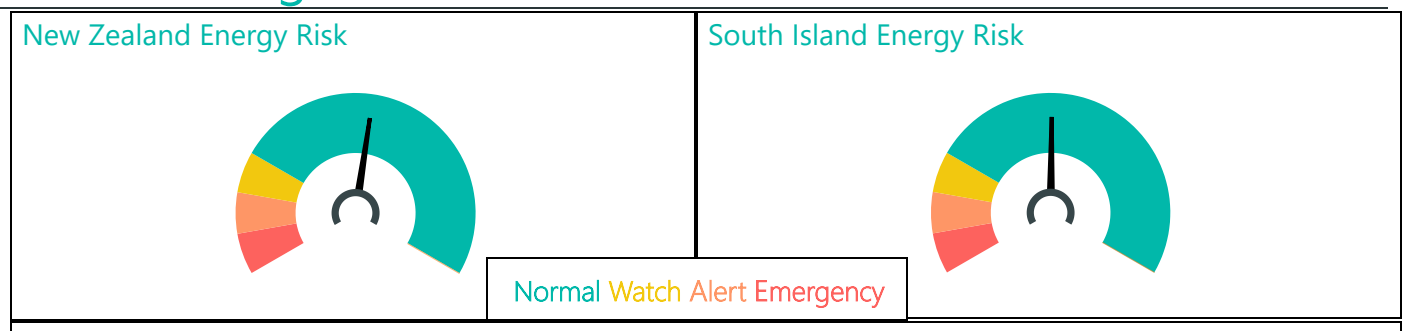
Hydro generation contributed 57% of the generation mix last week, lower than the previous week but still slightly above average for the past 52 weeks. Wind generation increased from 4% to 6% of the mix, below its average contribution of 9%. Thermal generation increased slightly from 12% to 13% with higher demand and lower hydro generation. The geothermal share remained close to its average level at 22% of the mix.

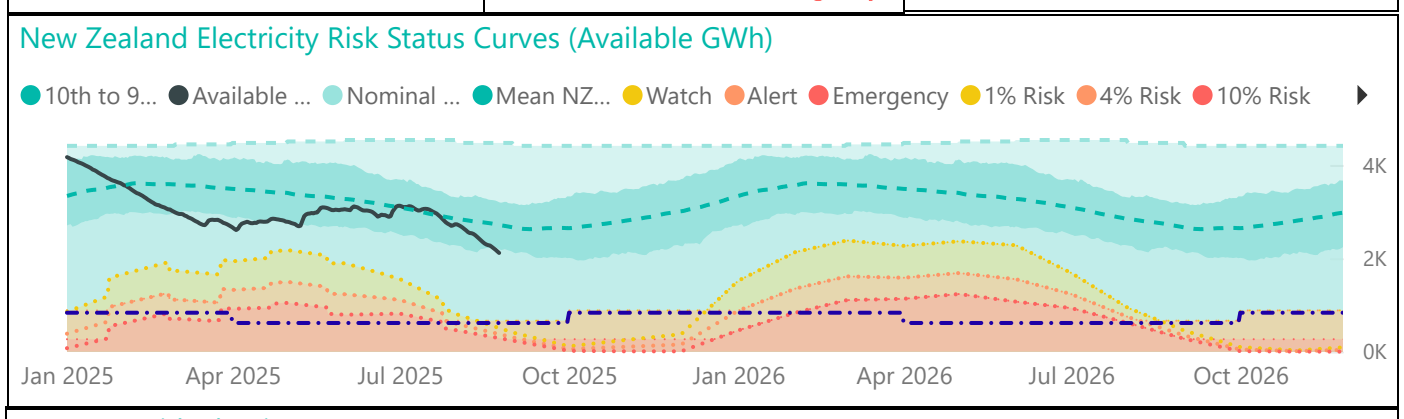
HVDC

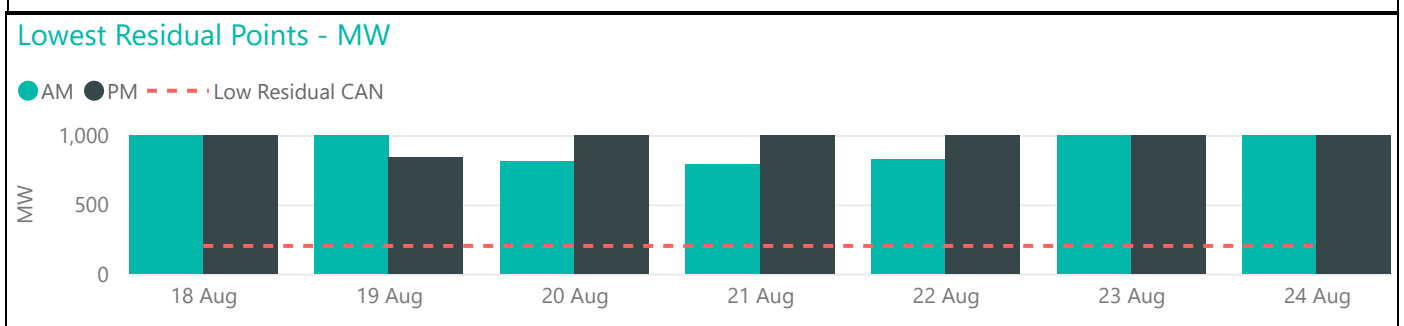
HVDC flow last week was mostly northward with overnight periods of southward flow coinciding with periods of lower North Island demand. In total, 28 GWh was sent north and 13 GWh was sent south.

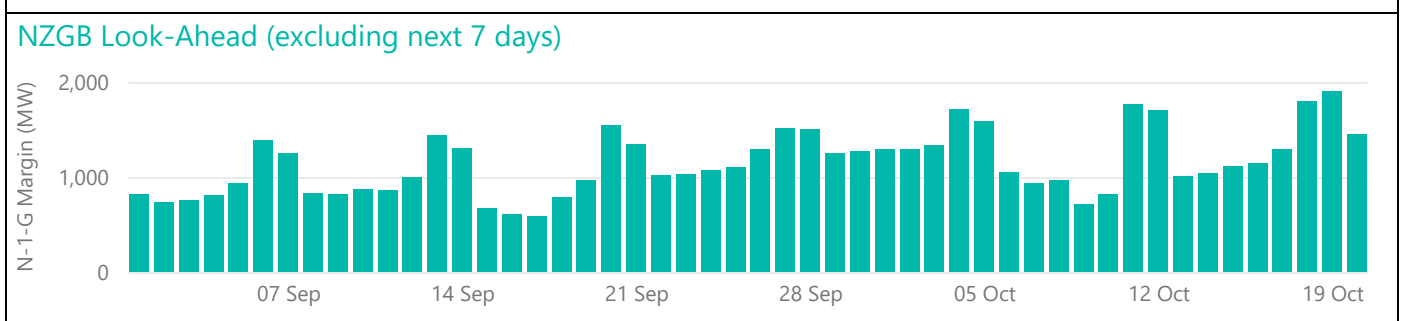
Evolving market resource co-ordination: Tie-breaker provisions consultation

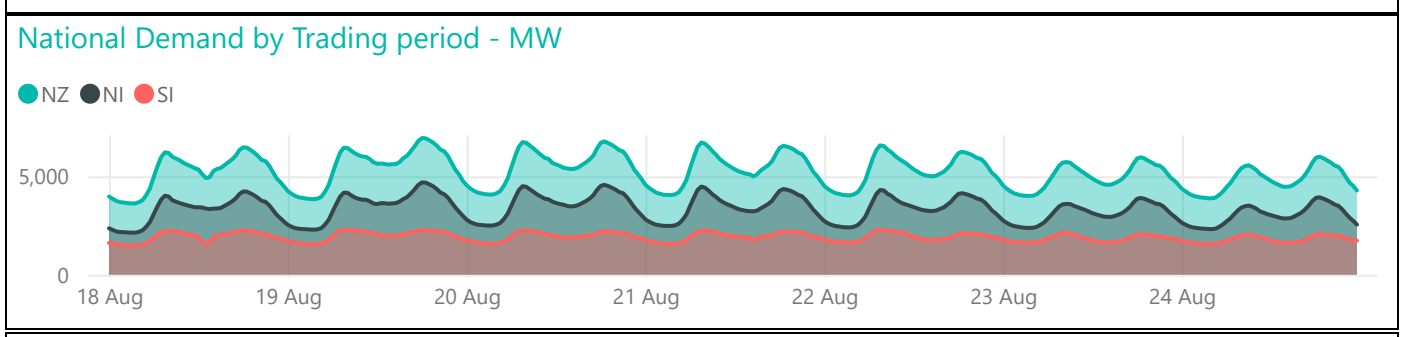
Our consultation on how tie-breaker situations should be resolved for multiple competing generator offers in the wholesale electricity market closed on 21 August. The seven submissions and two cross-submissions received can be seen here. A summary of submissions and decisions reached will be published soon.

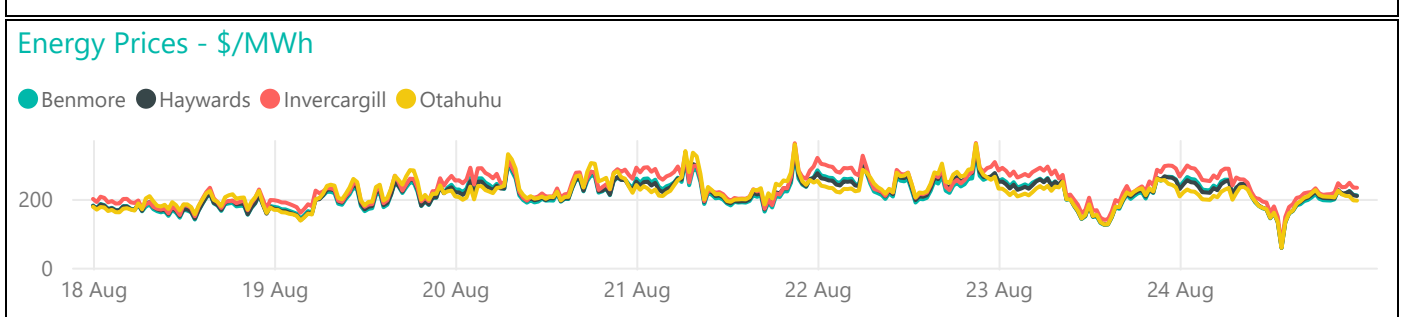


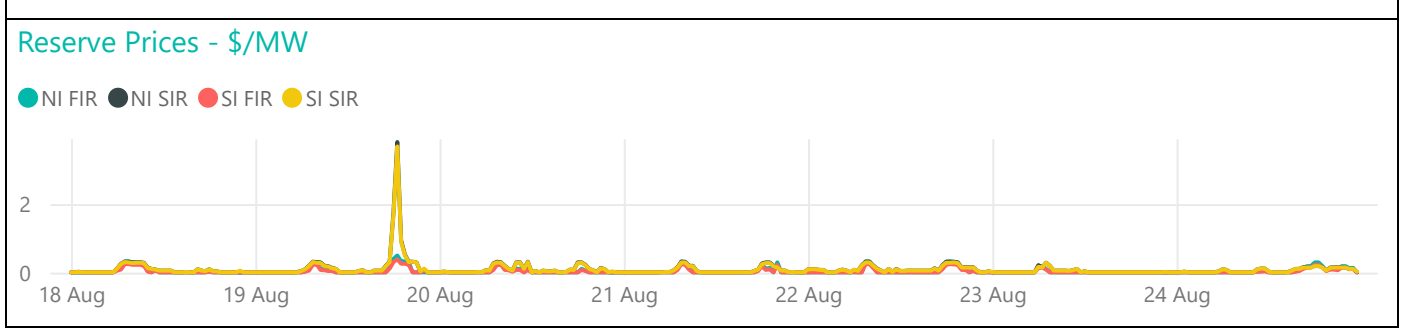


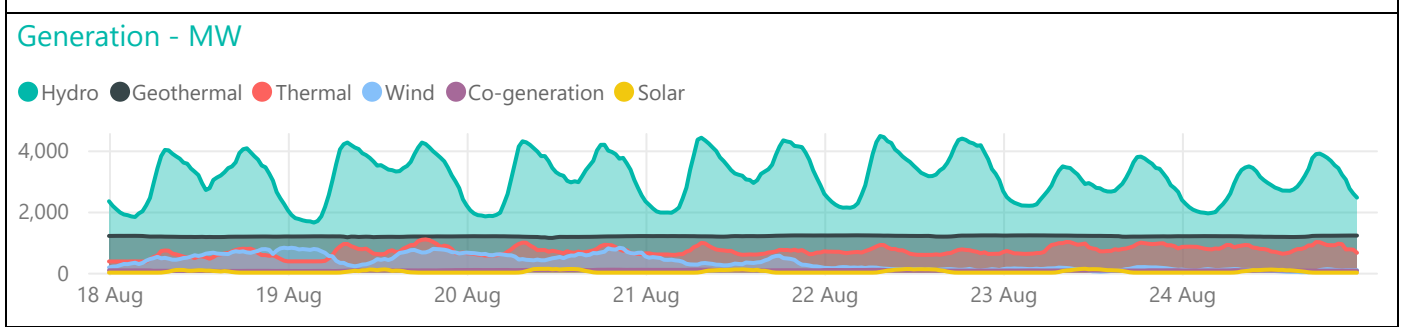


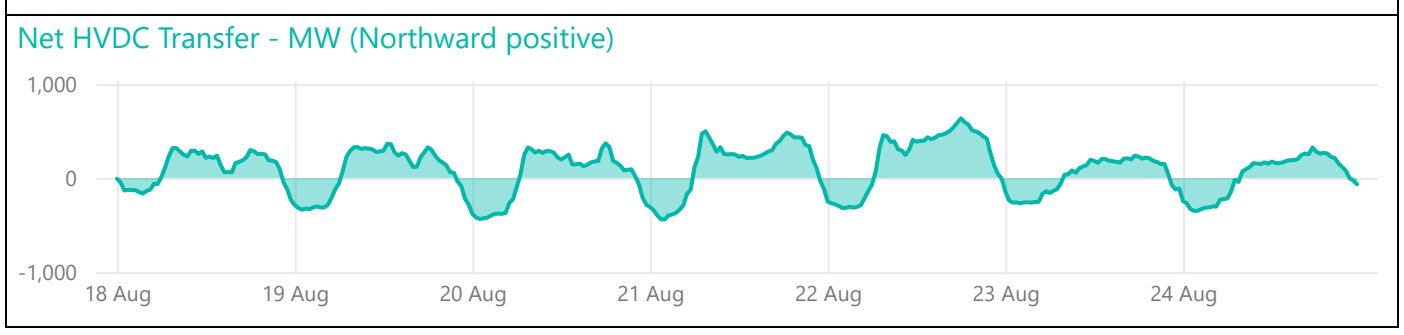












Weekly Insight - Daily solar generation profiles in winter

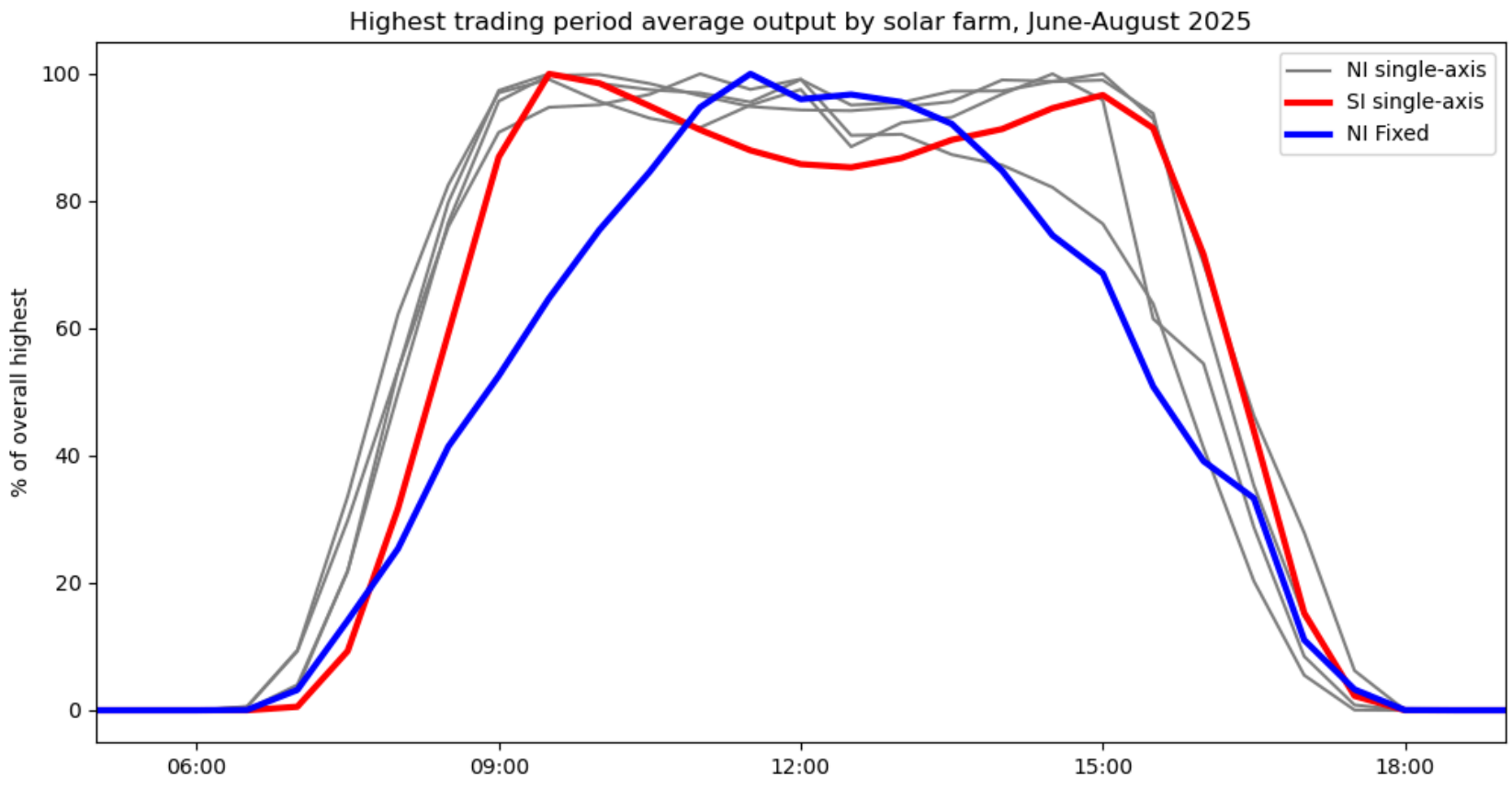
There are now six grid-scale solar farms fully commissioned and trading in the New Zealand wholesale electricity market. The generation data from these solar farms over the past few months shows some interesting features of solar generation.

The chart below shows daily generation profiles by island and technology type. Most farms use single-axis tracking. This means that panels are mounted on a rail, usually running north to south, and can tilt on that axis, i.e. usually to face directly eastward in the morning and directly westward in the afternoon. This contrasts with dual-axis tracking, where solar panels are able to both tilt and rotate meaning they can always point directly at the sun. There are no grid-scale solar farms currently using dual-axis tracking in New Zealand. Fixed solar is the simplest type and doesn't use any tracking.

Daily generation profiles

Fixed solar (blue line) has a daily generation profile that looks very much like a daily solar irradiance profile, with generation highest at midday and a shallower ramp-up and ramp-down.

The profile that differs most from this shape is South Island single-axis solar (red line). During winter this has a pronounced midday trough with peaks relatively early and late, at around 9:30 am and 3pm. This may seem counterintuitive, but in winter at this latitude the angle of incidence for east-west tracking panels is worse (larger) at midday than in the morning or afternoon. At 44°S latitude, the angle of the sun above the horizon at noon reaches a minimum of 23° at the winter solstice, while the angle of sunrise and sunset from north reaches a minimum of 57°. This means the angle between the direction of the sun and a north-south horizontal axis decreases from sunrise to noon and then increases again until sunset. This effect becomes more pronounced as you move further south.



Actual solar output varies a lot with cloud cover, so to capture the daily profile of potential output this chart takes the highest recorded output over the June-August period for each solar farm at each trading period. To compare between solar farms of different sizes these profiles were then scaled to cover a 0-100% range.

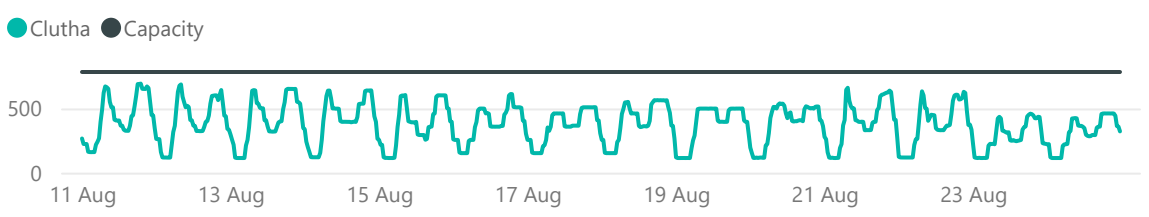
Market considerations

The New Zealand electricity market has not yet seen a significant drop in midday electricity prices, however this has happened in other markets with higher solar penetration. Midday spot prices in Australia are significantly lower than at other times of day and are often negative, even in winter when solar output is lower. The large amount of planned solar generation investment in New Zealand has the potential to cause a drop in midday prices in New Zealand over the coming decade. By maximising generation near sunrise and sunset, single-axis tracking can generate more at times when the electricity is more valuable. Because rooftop and small-scale solar installations are almost always fixed, they will not generate as much at these times.

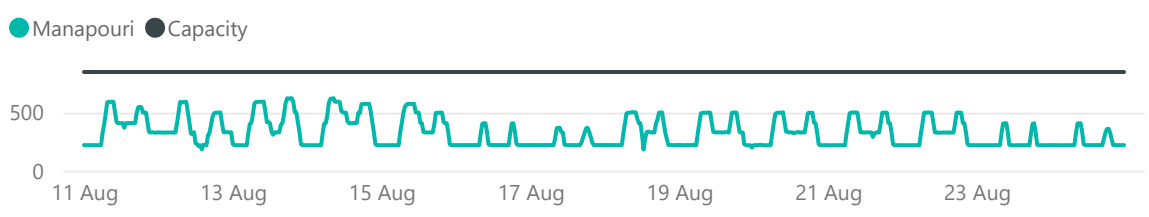
Generation Breakdown - Last Two Weeks

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

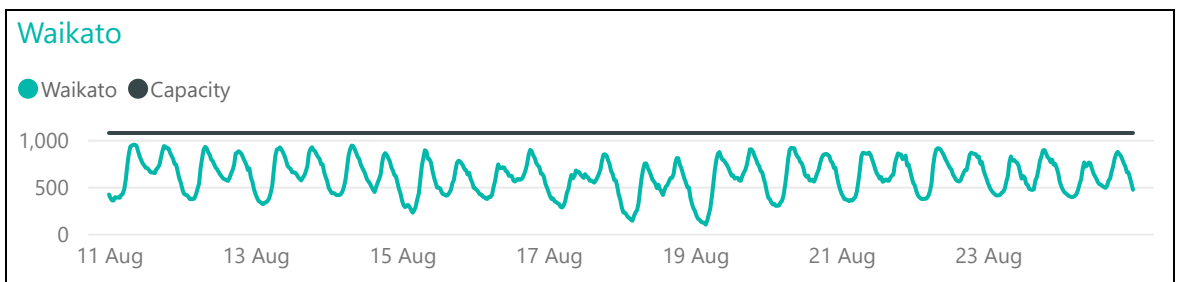
Clutha



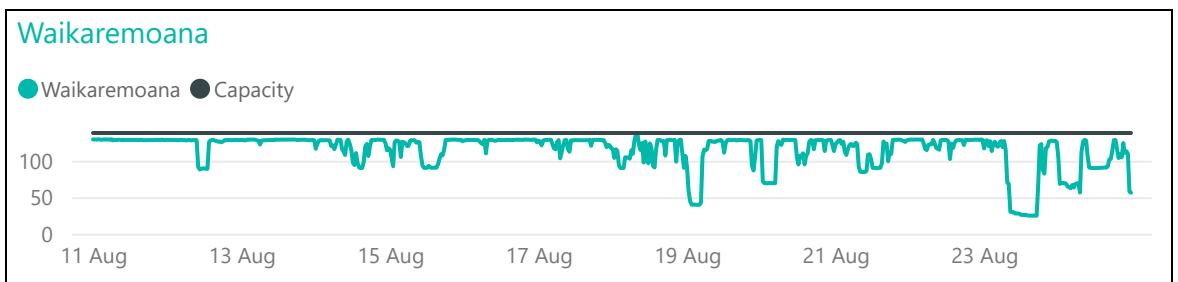
Manapouri



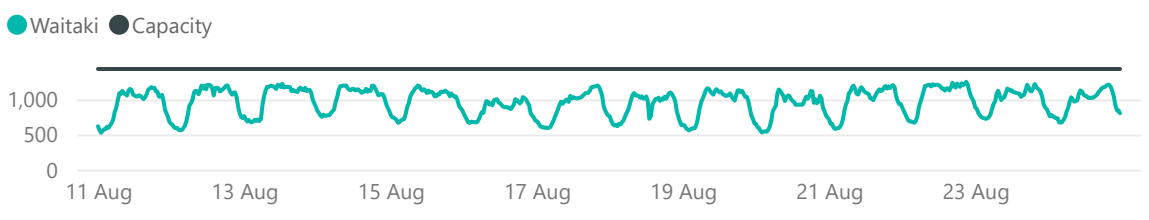
Waikato



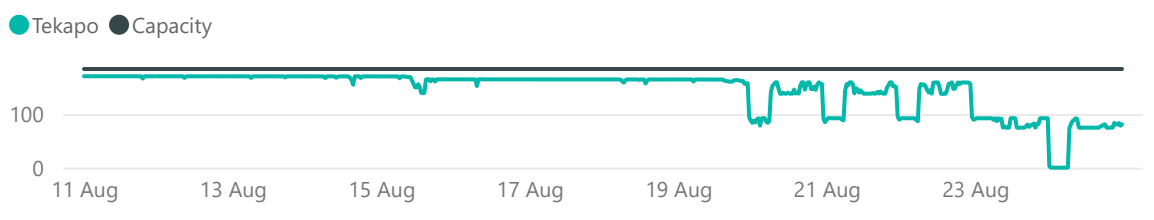
Waikaremoana



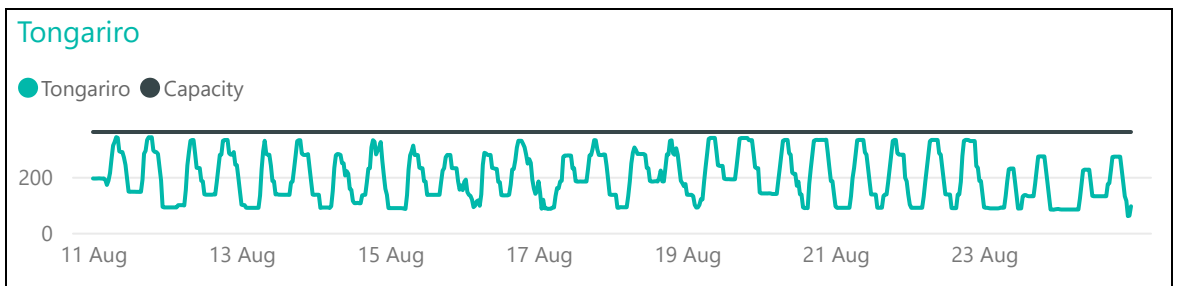
Waitaki



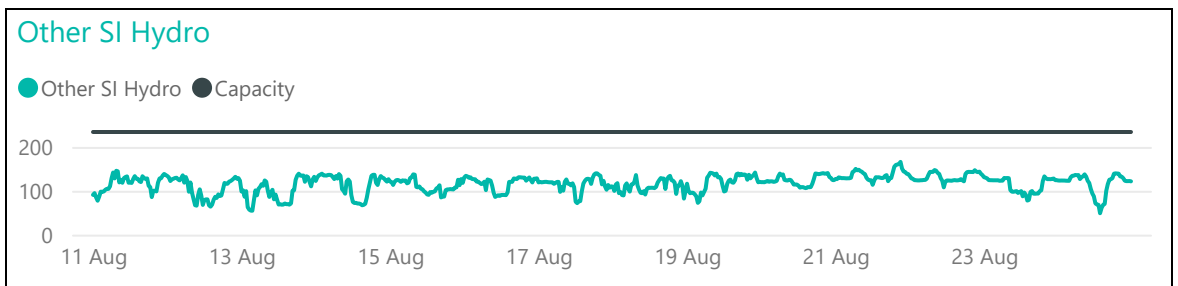
Tekapo



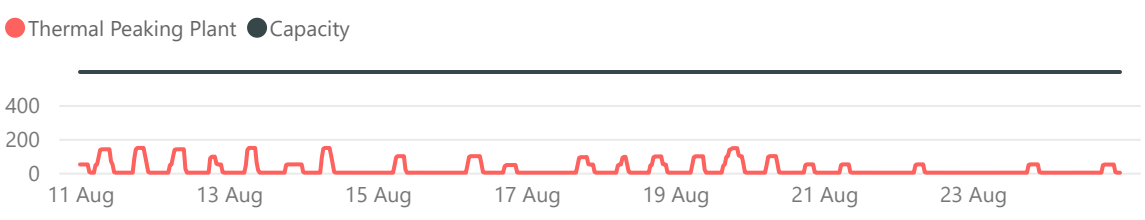
Tongariro



Other SI Hydro

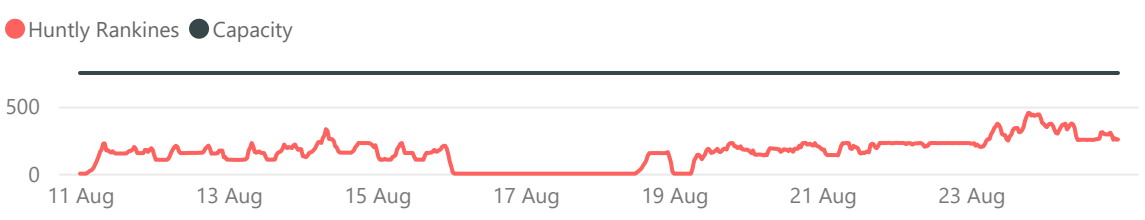


Thermal Peaking Plant

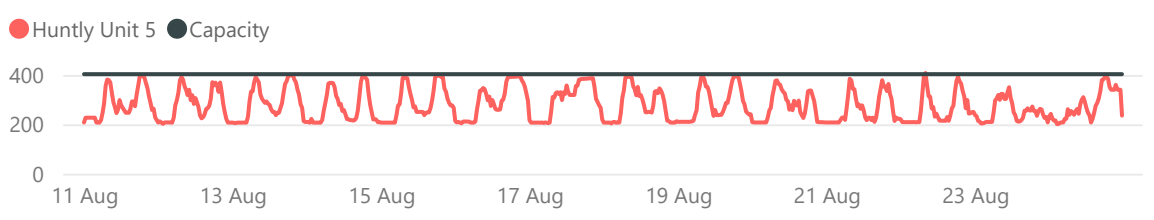


Stratford TCC

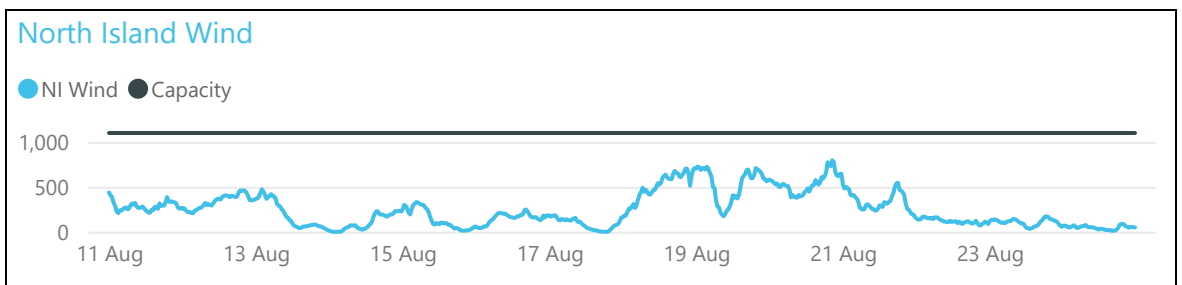
Huntly Rankines



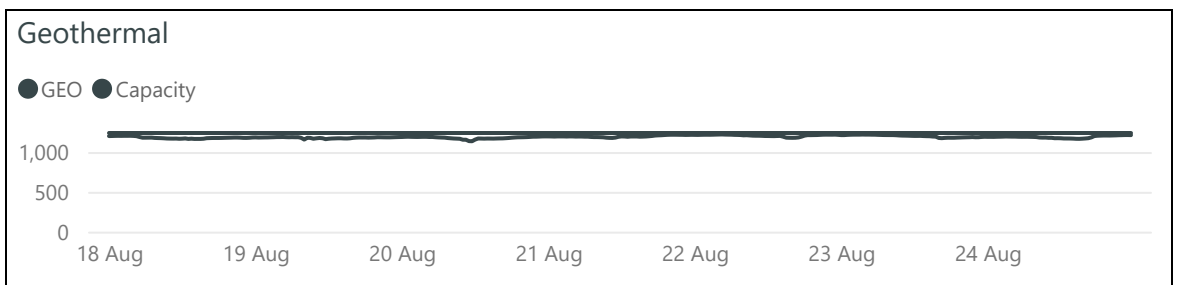
Huntly U5



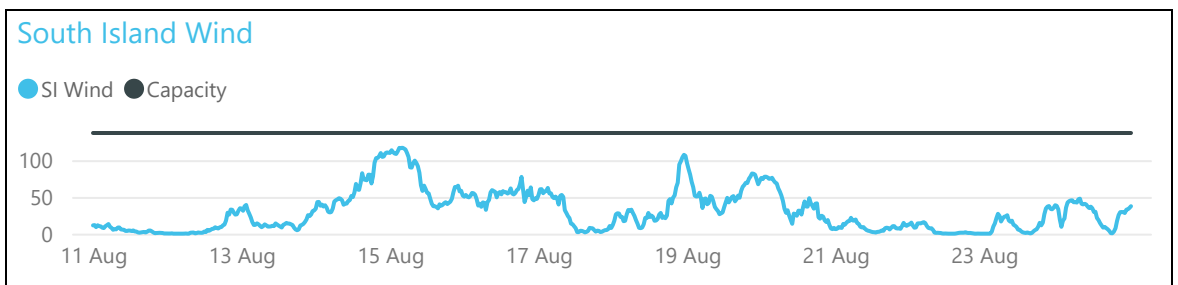
North Island Wind



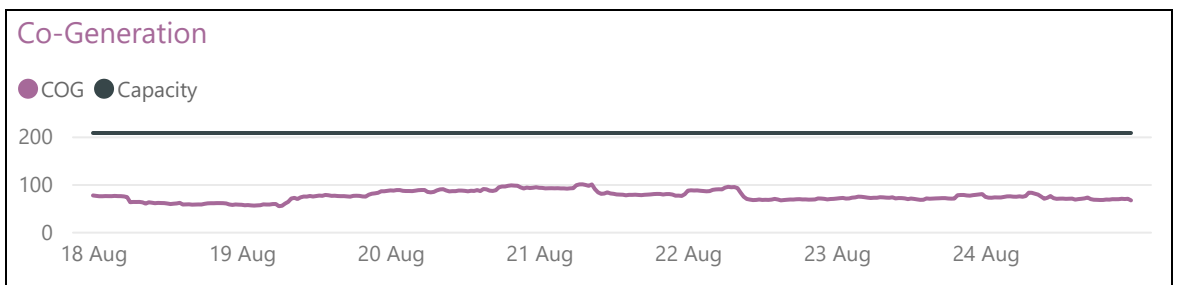
Geothermal



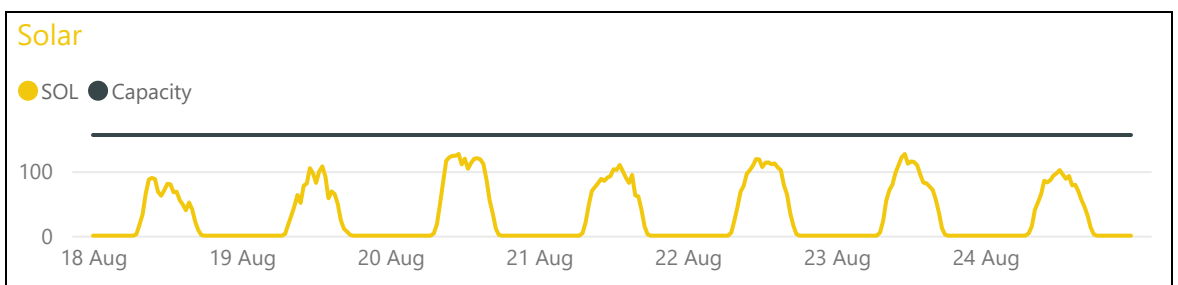
South Island Wind



Co-Generation

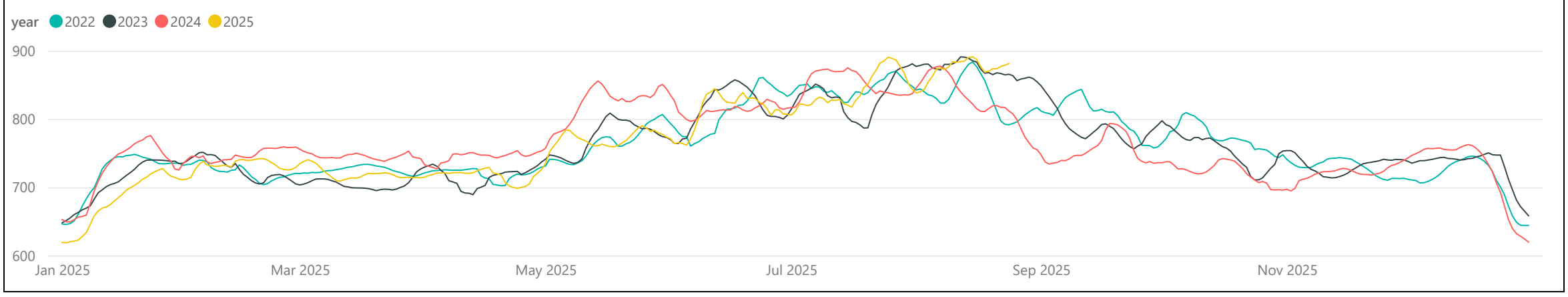


Solar

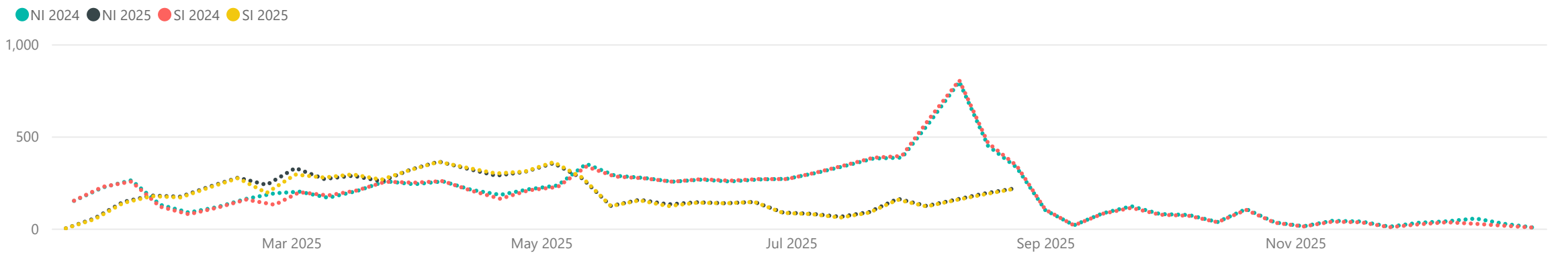


Weekly Profiles

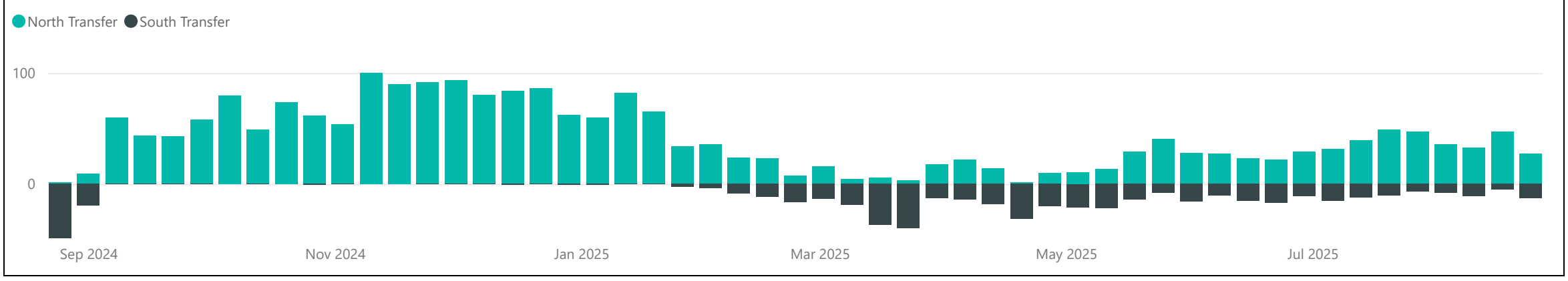
National Weekly Demand - GWh - 7 Day Rolling



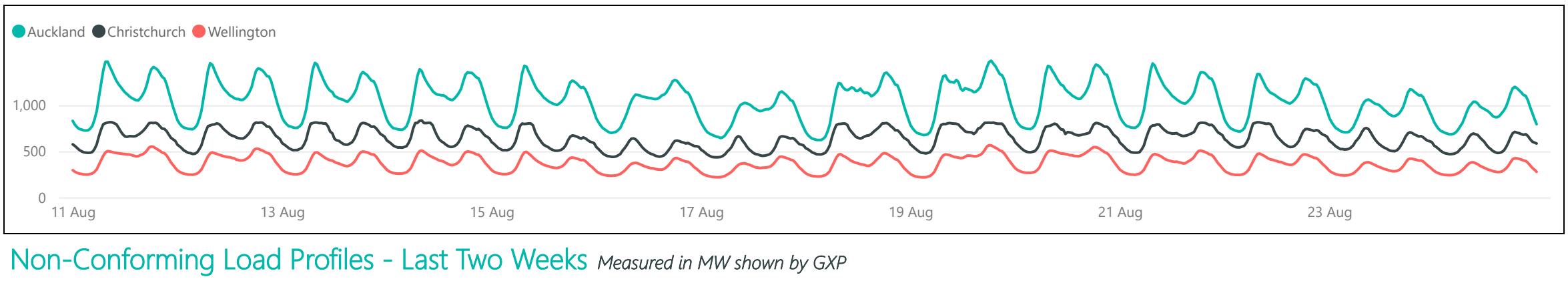
Weekly Spot Price - $/MWh



HVDC Transfer - Weekly GWh



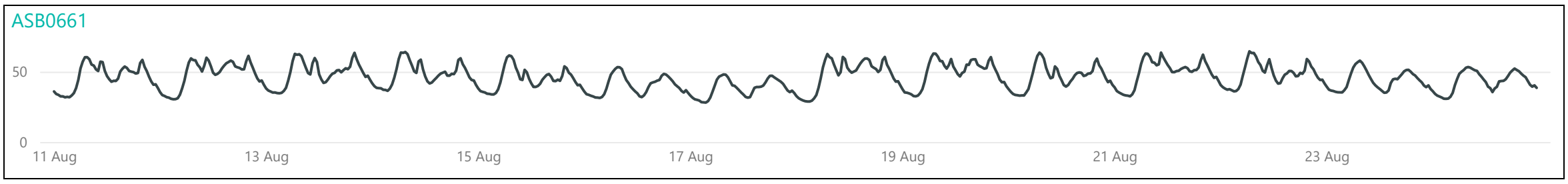
Conforming Load Profiles - Last Two Weeks *Measured in MW shown by region*



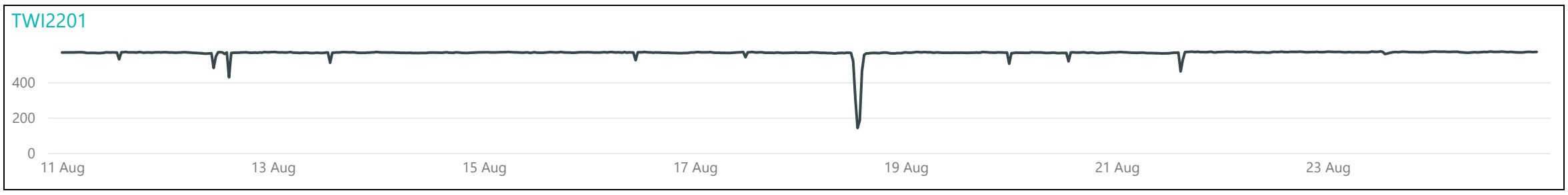
Non-Conforming Load Profiles - Last Two Weeks *Measured in MW shown by GXP*

GLN0331

ASB0661



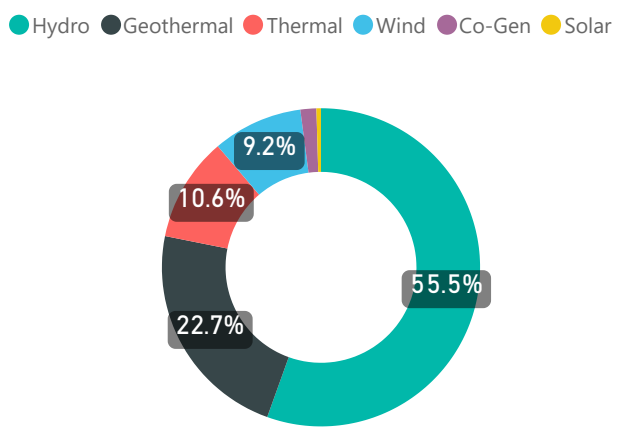
TWI2201



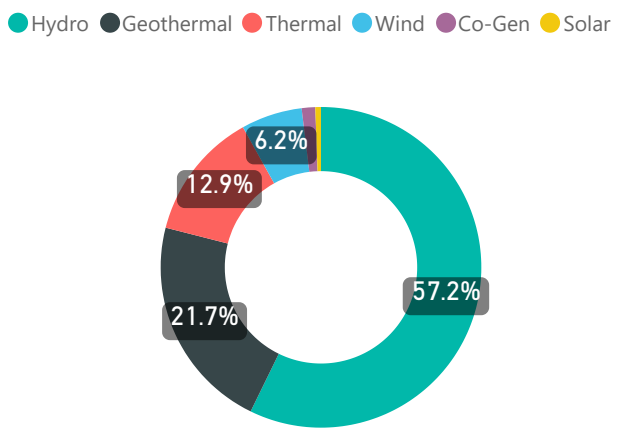
TRANSPOWER

Generation Mix

Last 52 Weeks Generation Mix - Weekly GWh



Last 7 Days Generation Mix - Weekly GWh



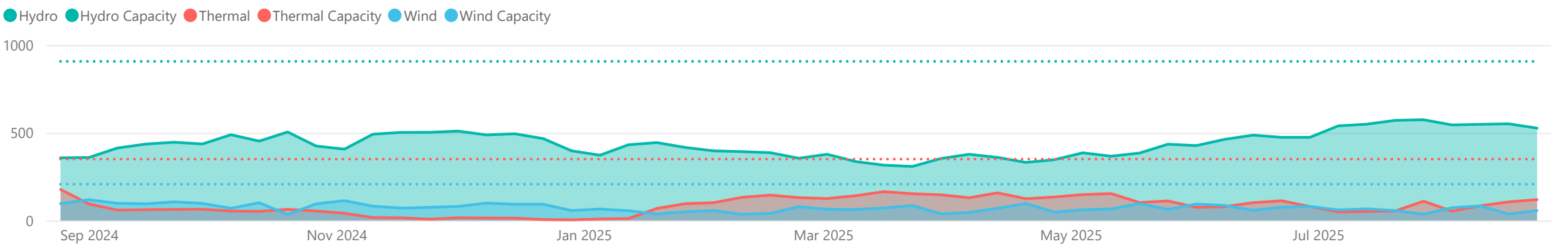
Average Metrics Last 7 Days

Renewable Percentage	CO2e Tonnes/Week	CO2e g/kWh
86%	90,108	99.0

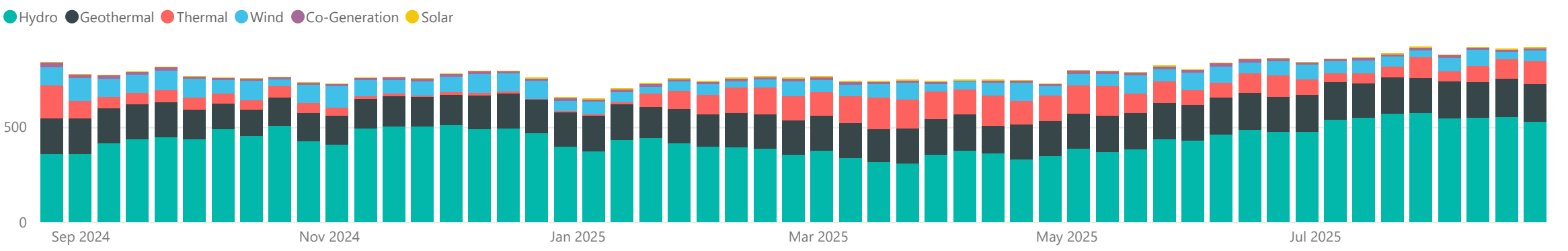
Average Metrics Last 52 Weeks

Renewable Percentage	CO2e Tonnes/Week	CO2e g/kWh
88%	66,915	84.8

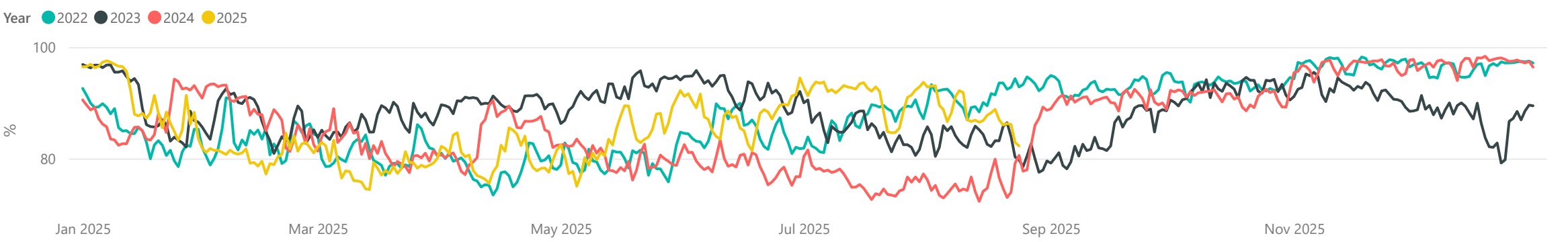
Weekly Generation Mix vs Capacity - GWh



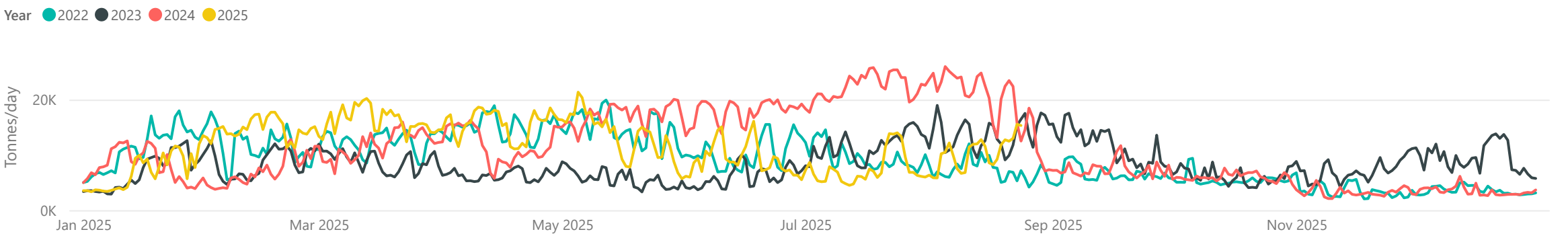
Weekly Generation Mix - GWh



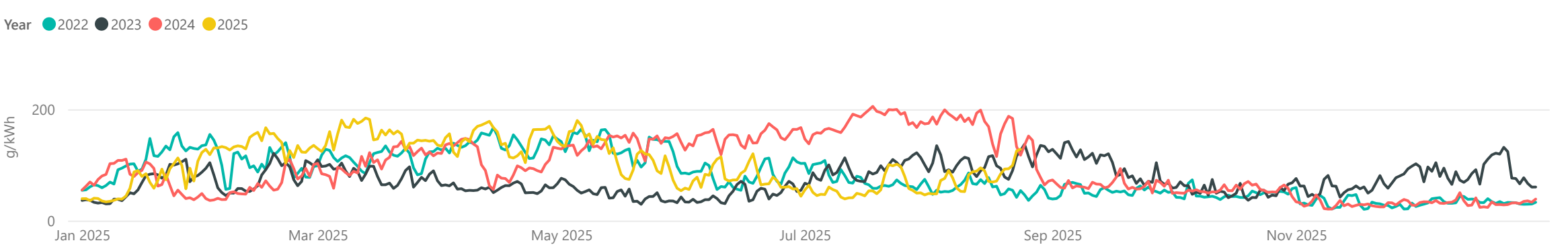
NZ Renewable Percentage



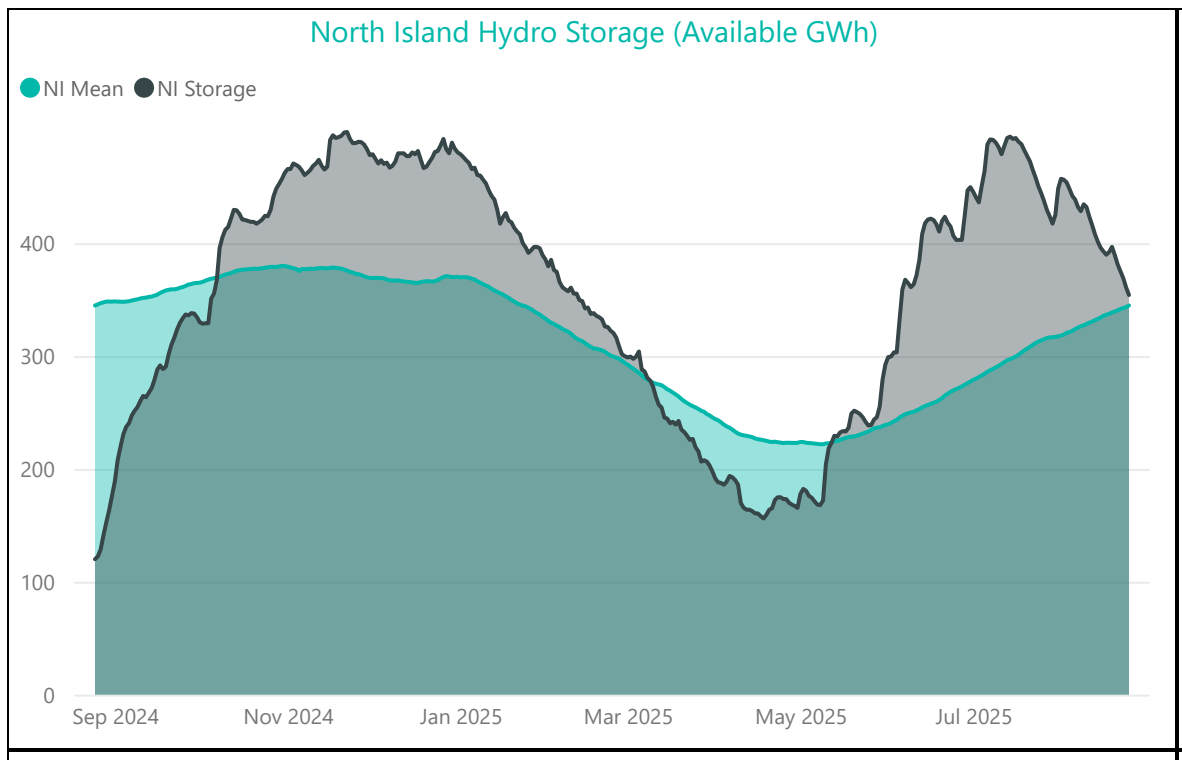
CO2 Tonnes/Day

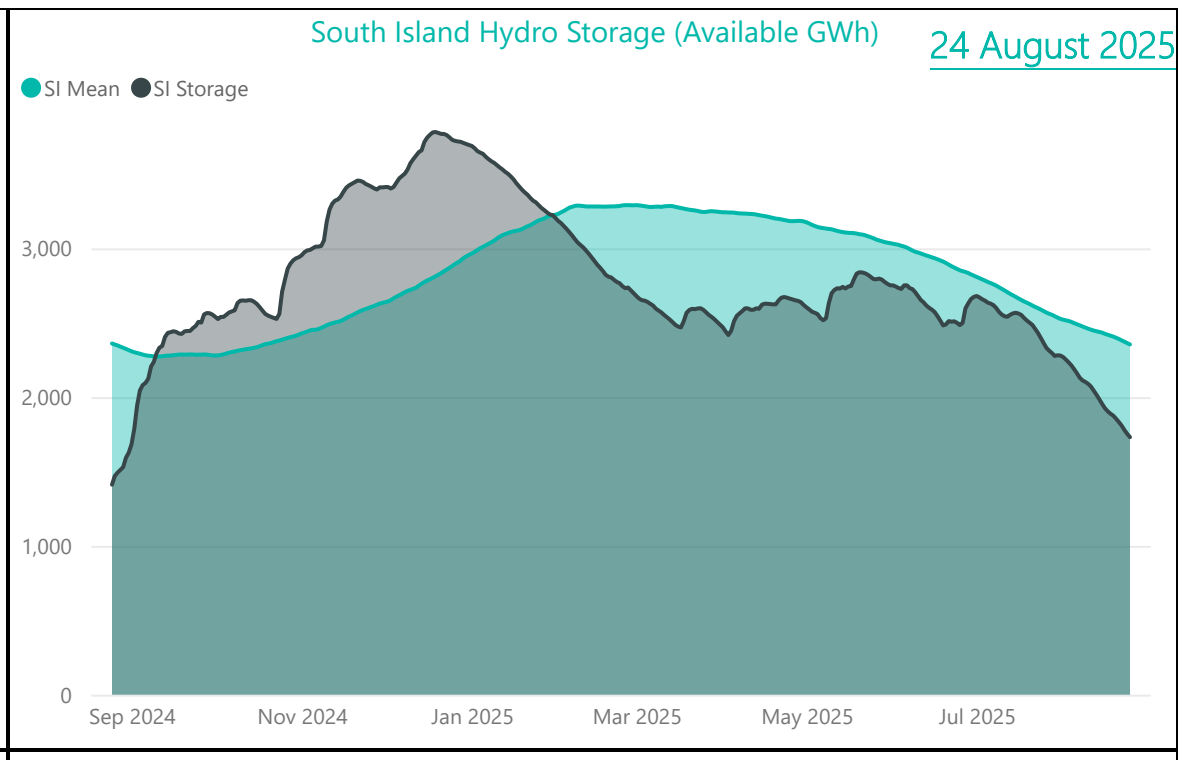


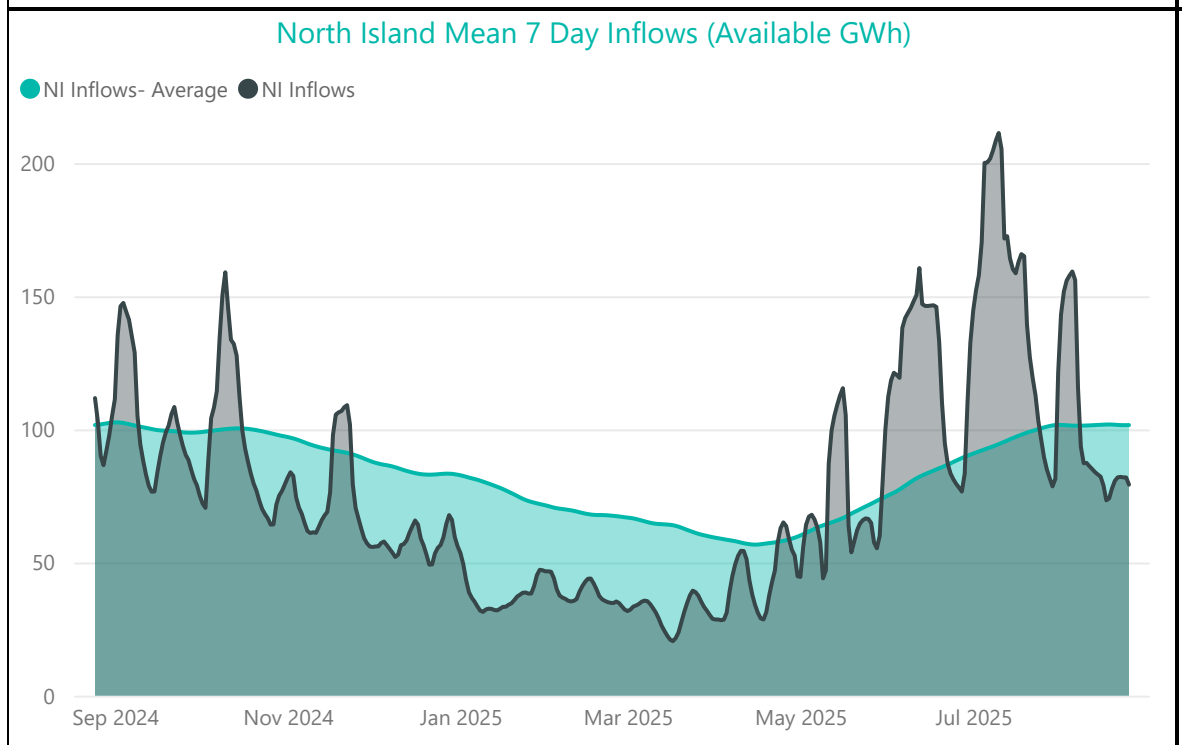
CO2 g/kWh

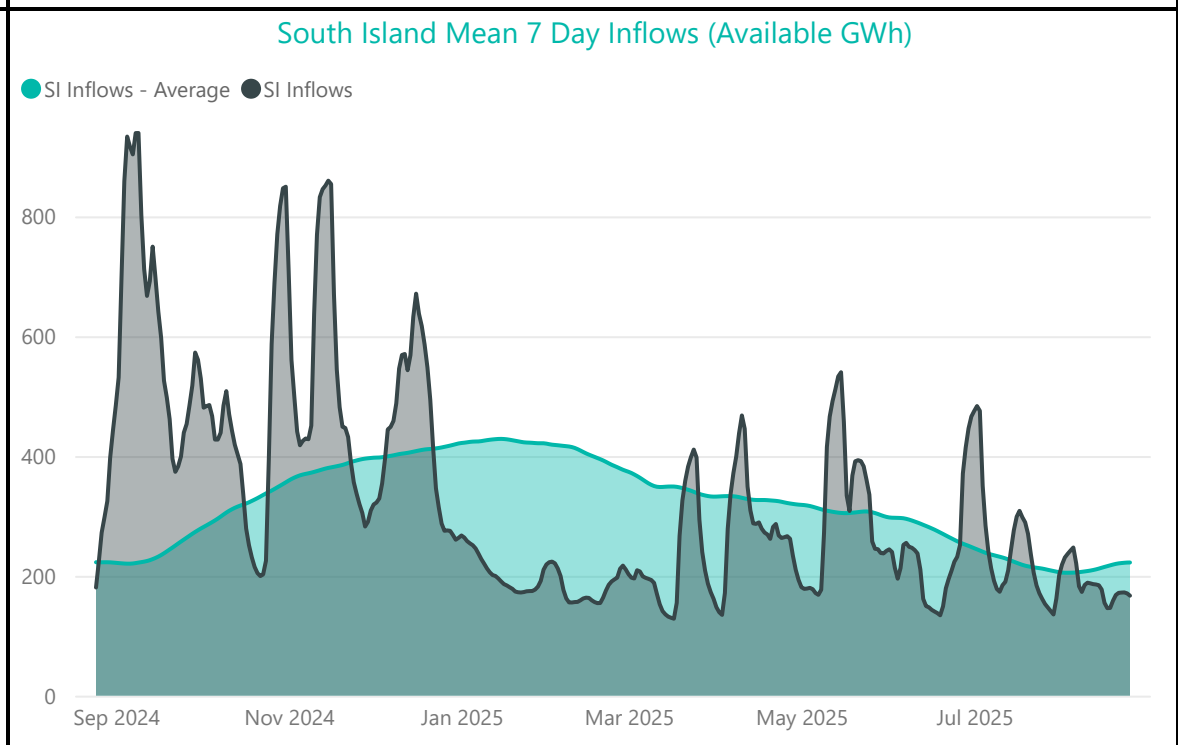


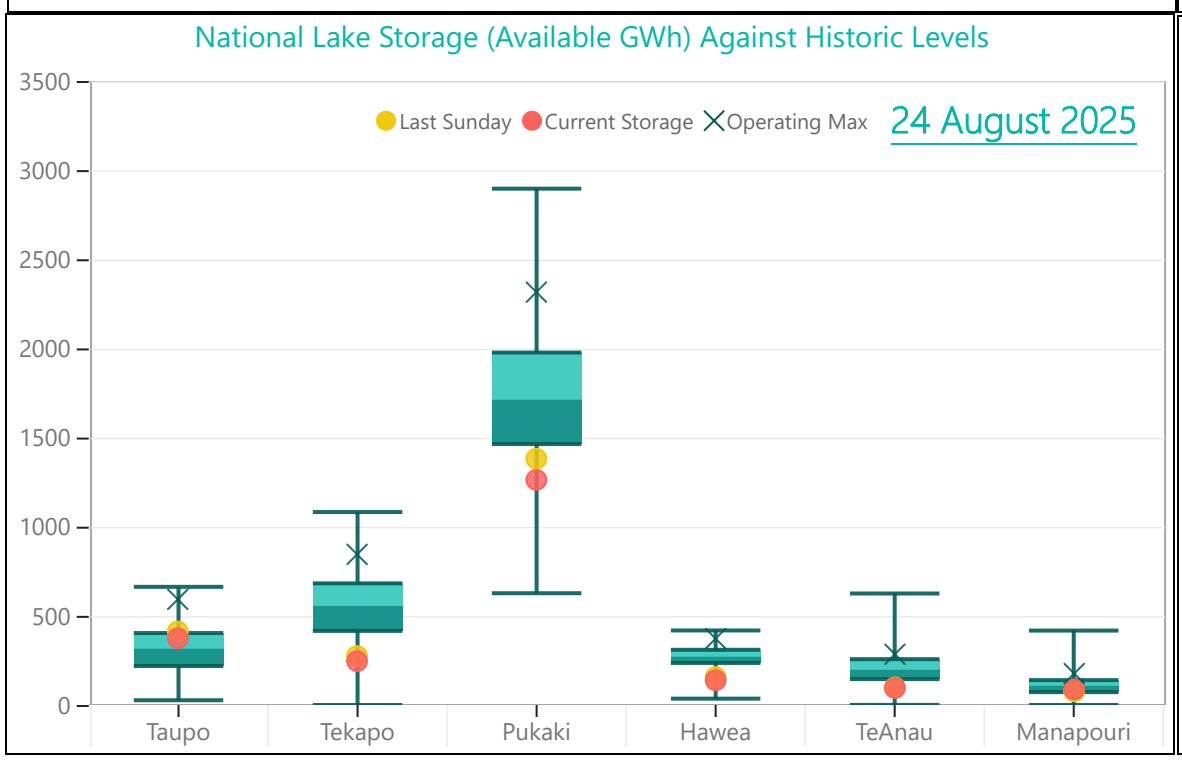
Hydro Storage

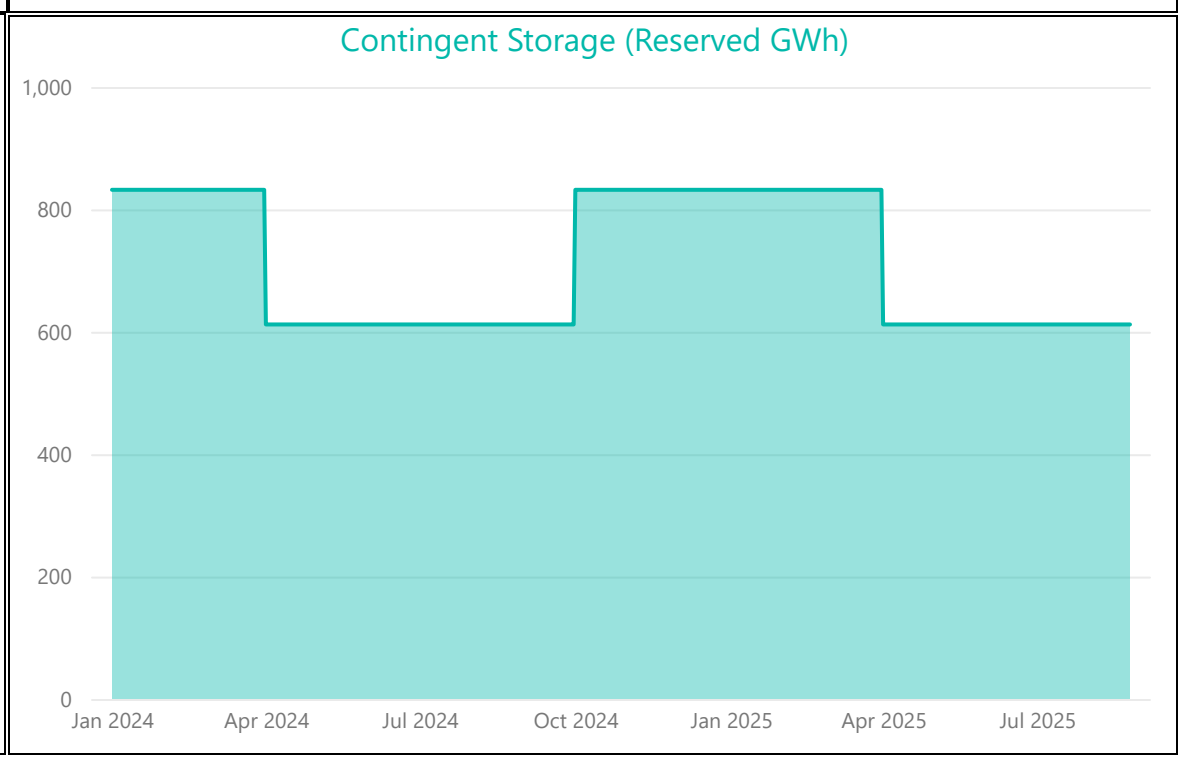












For further information on security of supply and Transpower's responsibilities as the System Operator, refer to our webpage here: https://www.transpower.co.nz/system-operator/security-supply

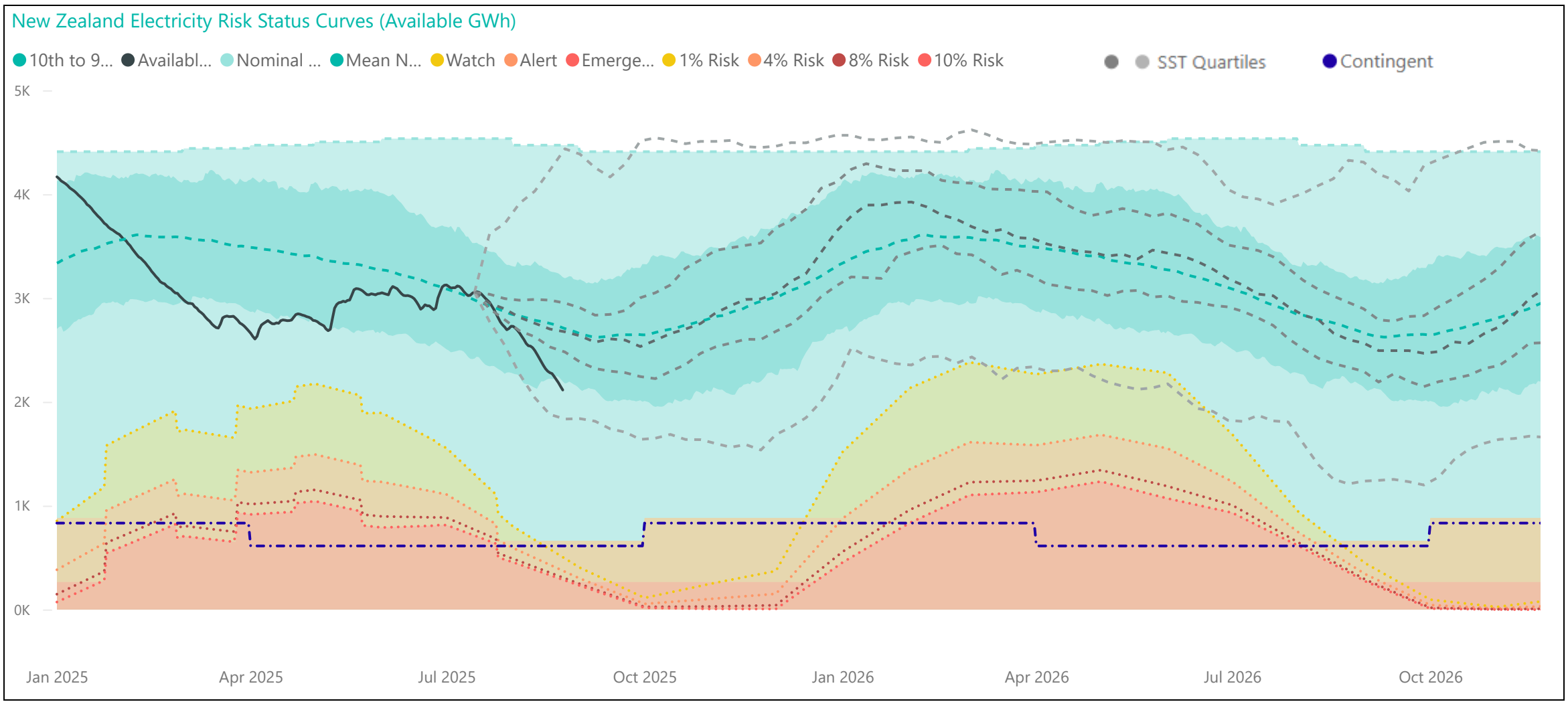
For any inquiries related to security of supply contact market.operations@transpower.co.nz

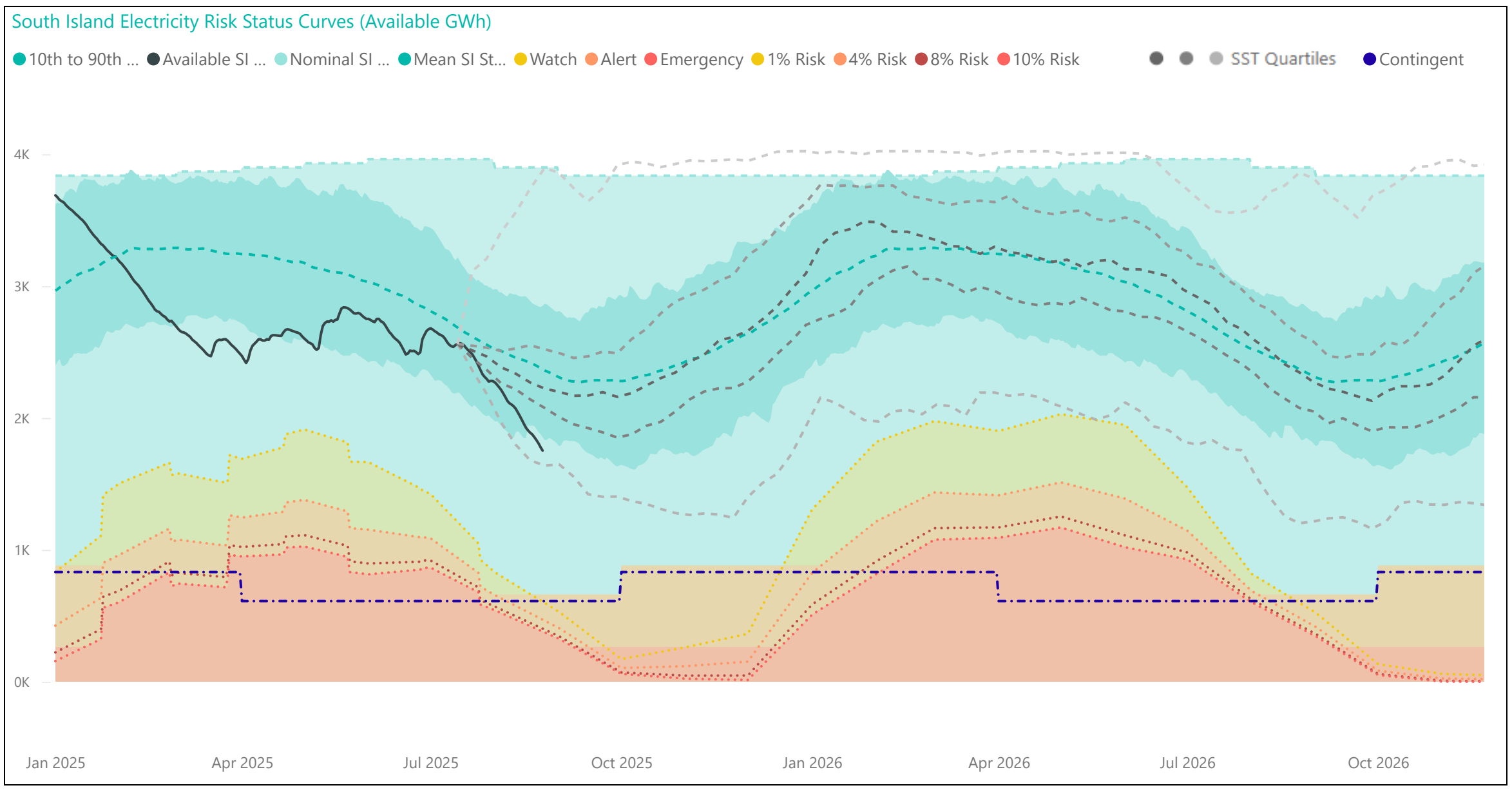
Hydro data used in this report is sourced from *NZX Hydro*.

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

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).