Market Operations Weekly Report - Week Ended 14 September 2025

Overview

New Zealand hydro storage remained at 83% of the mean for this time of year with inflows being offset by an increase in hydro generation. Wind generation remained above average and despite having less thermal unit commitment residuals remained healthy.

This week's insight looks at the change of peak-to-average load ratios over the last decade.

Security of Supply

Energy

National hydro storage remained at 83% of the historic mean for this time of year. South Island hydro storage decreased from 80% to 78% of historic mean while North Island storage increased from 104% to 110%.

Capacity

Capacity margins were healthy last week with residual over most peaks exceeding 500 MW, the exception being on the morning of Monday 8 September where residual dropped to 475 MW.

The N-1-G margins in the NZGB forecast are healthy through to the start of November. 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 remained in line with the last few weeks at 822 GWh. The highest demand peak occurred at 7:30am on Tuesday 9 September, at 6,408 MW.

Weekly Prices

The average wholesale electricity spot price at Ōtāhuhu last week decreased to $174/MWh from $182/MWh the week prior, in line with increased hydro generation. Wholesale prices peaked at $286/MWh at Benmore at 6:00am on Thursday 11 September.

Generation Mix

Renewable generation contributed 89% of the generation mix last week. Hydro generation contributed 54%, 2% higher than the previous week but still below the average of the last 52-weeks. Wind generation decreased from 13% to 11% of the mix. Thermal generation decreased from 11% to 10%. The geothermal share remained average at 23% of the mix.

HVDC

HVDC flow last week returned to being predominantly northward with an increase in hydro generation. In total, 28 GWh was sent north and 14 GWh was sent south.

CACTIS Consultation Open

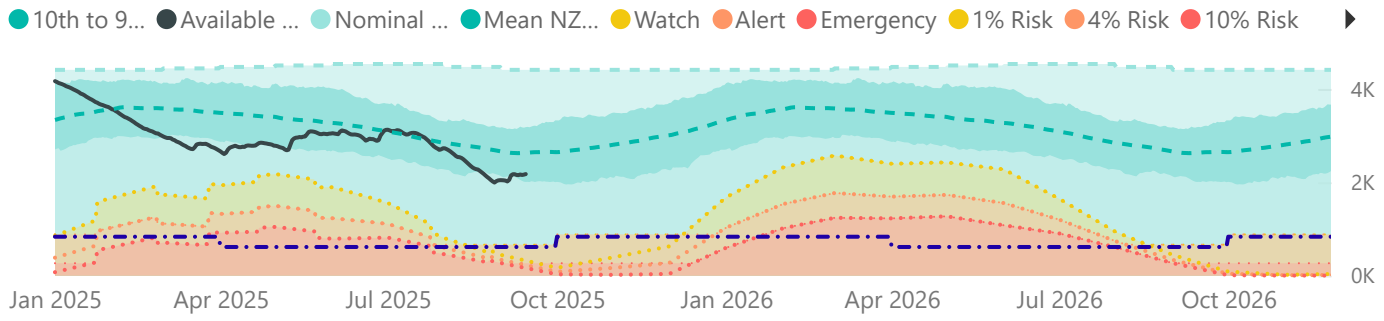
Consultation to seek feedback on the proposed Connected Asset Commissioning, Testing and Information Standard (CACTIS) opened on 1 September. The closing date for submissions is 29 September. More information on this consultation can be found here.

New Zealand Energy Risk

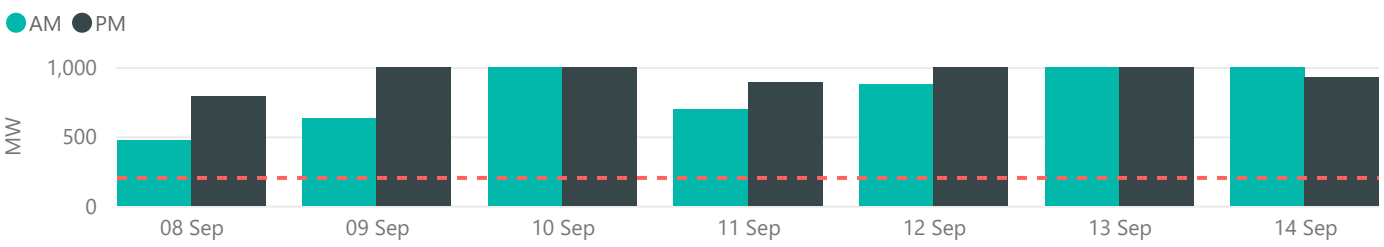
South Island Energy Risk

Normal Watch Alert Emergency

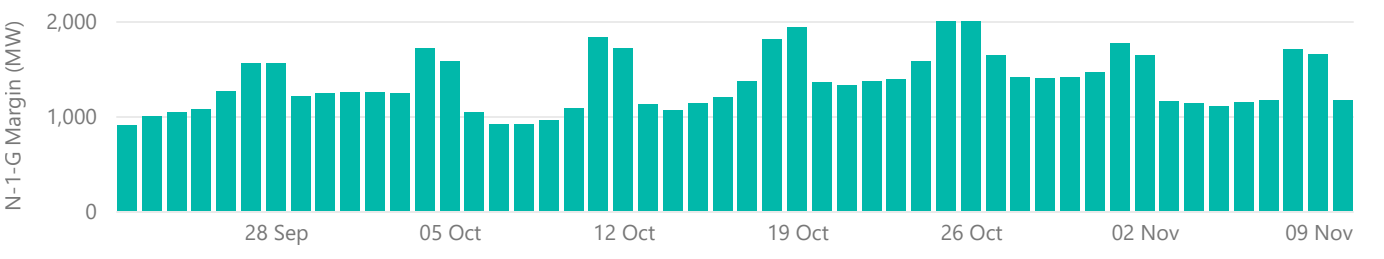
New Zealand Electricity Risk Status Curves (Available GWh)



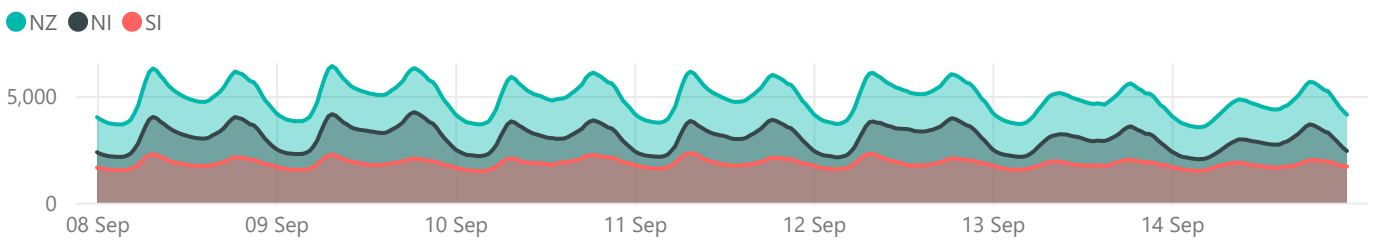
Lowest Residual Points - MW



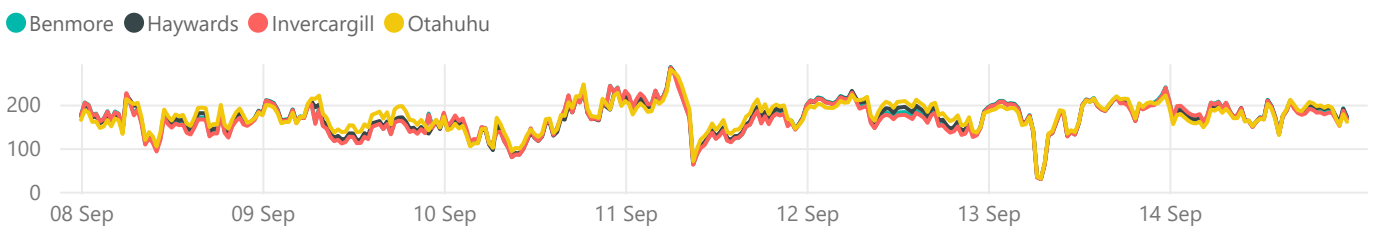
NZGB Look-Ahead (excluding next 7 days)



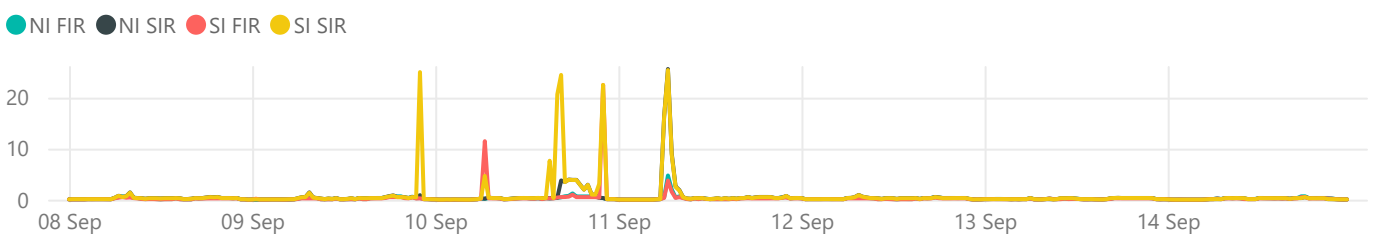
National Demand by Trading period - MW



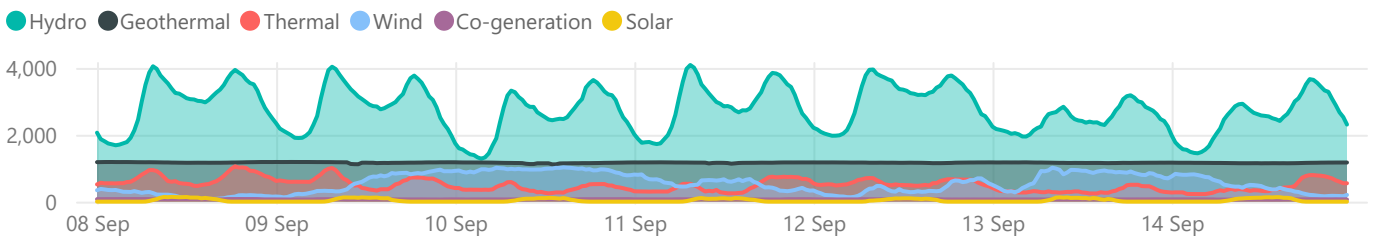
Energy Prices - $/MWh



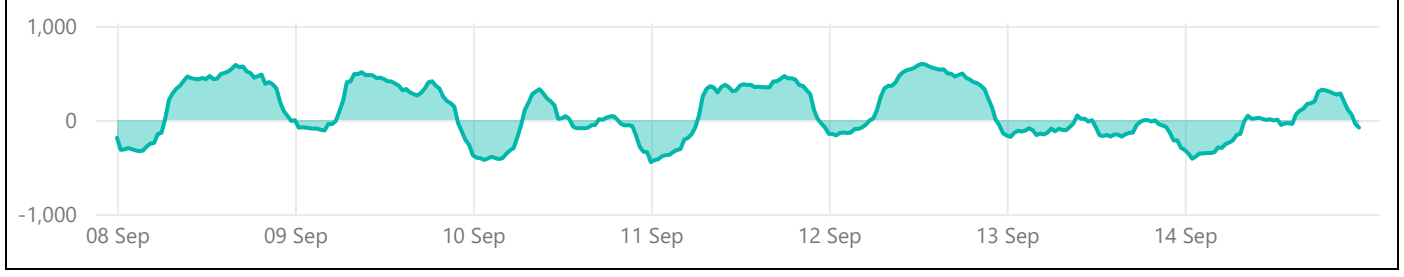
Reserve Prices - $/MW



Generation - MW



Net HVDC Transfer - MW (Northward positive)



Weekly Insight - changes in the peak-to-average load ratio

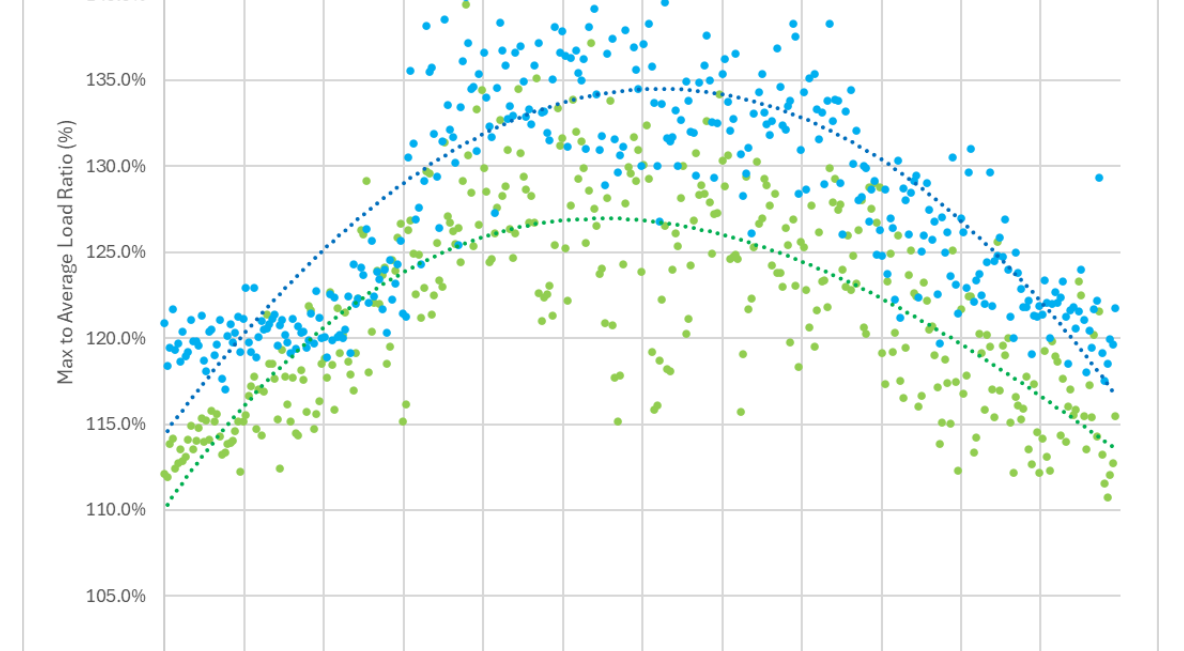
The peak-to-average load ratio reflects the extent of variability between a day's maximum electricity demand and its average. High ratios mean sharper peaks, requiring flexible infrastructure to maintain reliable supply over these periods. This could be a matter of having flexible supply that can ramp up and down as needed to meet demand, or shifting demand where possible away from these times of peak usage to flatten the demand profile.

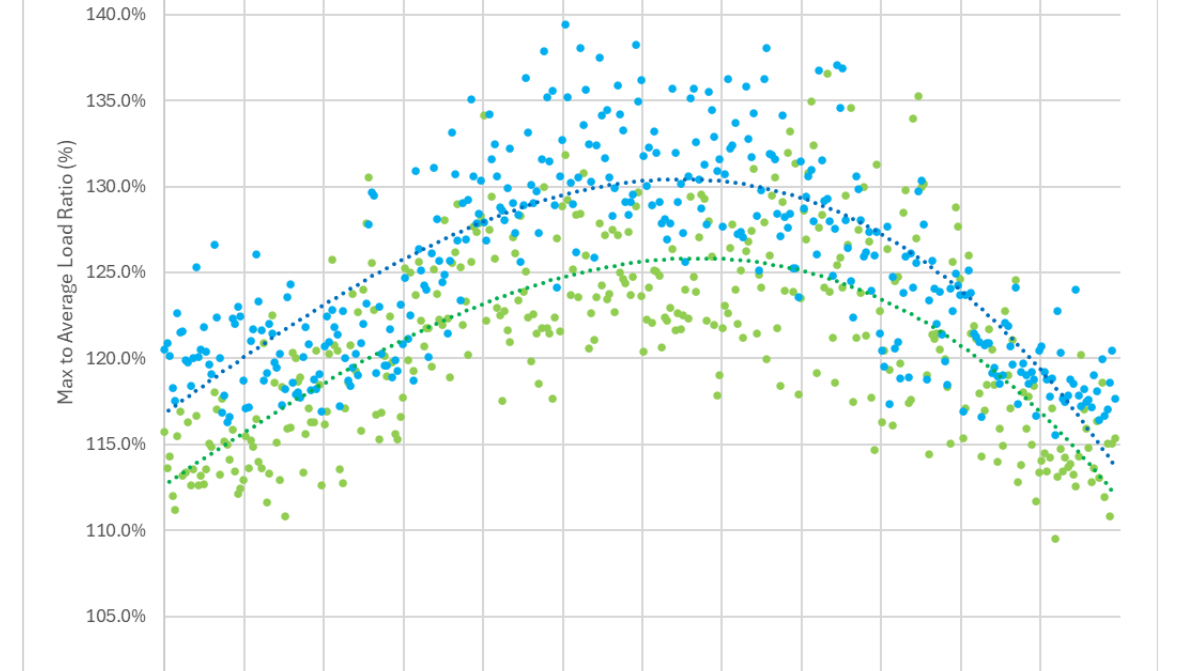
In recent years Aotearoa has seen an increase in residential and commercial time-of-use (ToU) plans as advertised by retailers. The first plan was introduced to the broader public in 2015, with a wider uptake by retailers from 2021. The plans focus on shifting demand from peak periods by offering free or cheaper power at times of lower demand (such as weekends or later at night), incentivising users to target these times for shiftable electricity consumption (such as doing the washing or charging electric vehicles).

Over the past decade, the North Island has seen a modest reduction in its peak-to-average load ratio, suggesting a slightly flatter demand curve. When considering conforming load actuals, the mean peak-to-average load ratio across the entire year has:

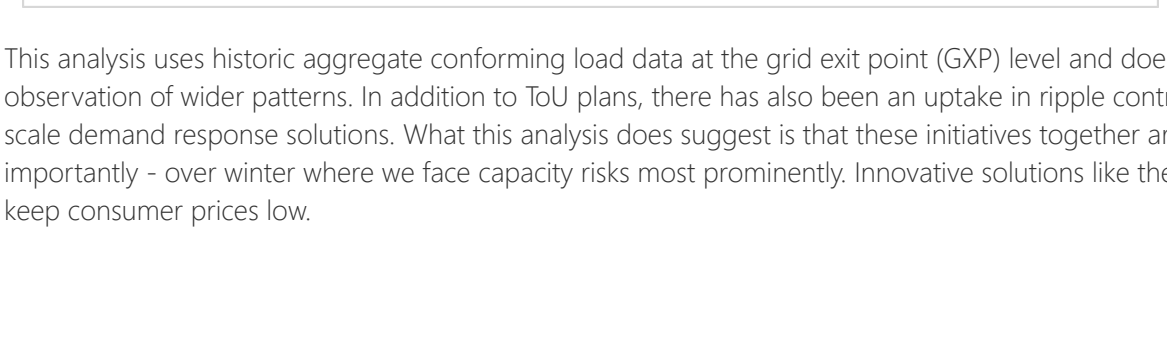
- decreased from 127.6% in 2015 to 124.7% in 2024 in the North Island;
- decreased slightly from 121.9% in 2015 to 121.4% in 2024 in the South Island; and
- decreased from 123.4% in 2021 to 121.1% in 2024 in the South Island, suggesting perhaps wider uptake of these plans became more prominent once launched by more retailers.

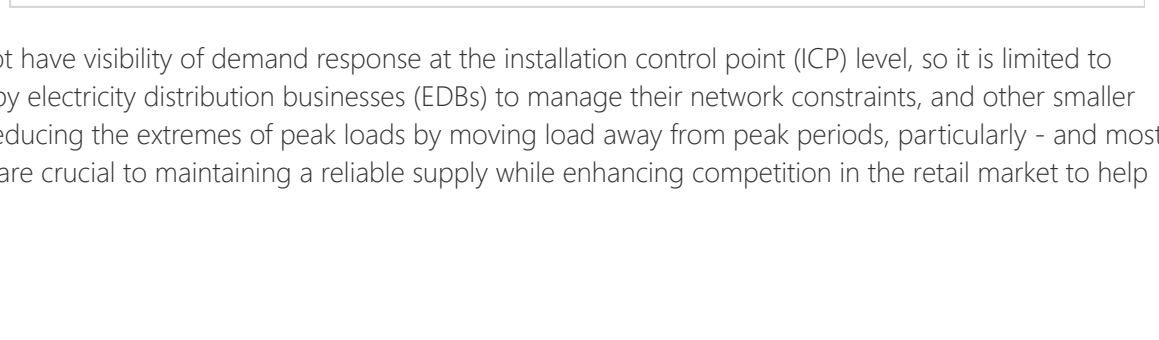
The annual distributions of the peak to average ratios for both the North and South Islands over the past decade can be seen below.





The seasonal trends in 2015 (left) and 2024 (right) can be observed below. The highest peak-to-average ratios occur over mid-winter. In the North Island the trendline indicates the winter peak-to-average ratio dropped from about 5% between 2015 and 2024. There were also much fewer periods in 2024 where extreme peaks occurred, with none surpassing a peak-to-average ratio of 140%. The trendline for the South Island indicates the winter peak-to-average ratio decreased about 2% between 2015 and 2024.



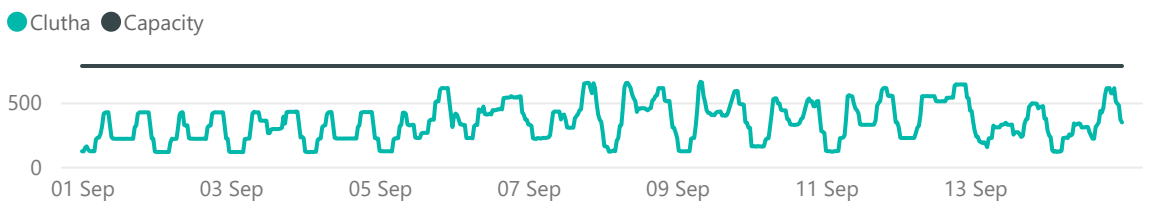


This analysis uses historic aggregate conforming load data at the grid exit point (GXP) level and does not have visibility of demand response at the installation control point (ICP) level, so it is limited to observation of wider patterns. In addition to ToU plans, there has also been an uptake in ripple control by electricity distribution businesses (EDBs) to manage their network constraints, and other smaller scale demand response solutions. What this analysis does suggest is that these initiatives together are reducing the extremes of peak loads by moving load away from peak periods, particularly - and most importantly - over winter where we face capacity risks most prominently. Innovative solutions like these are crucial to maintaining a reliable supply while enhancing competition in the retail market to help keep consumer prices low.

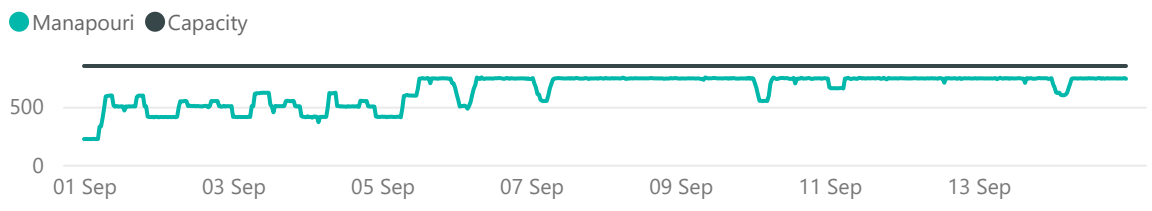
Generation Breakdown - Last Two Weeks

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

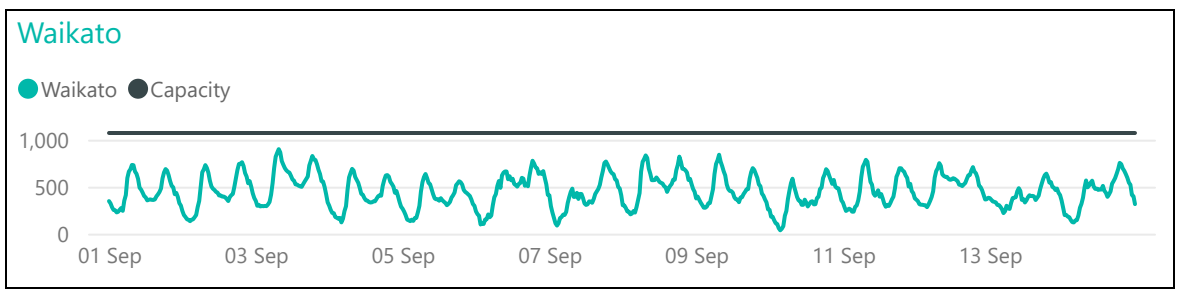
Clutha



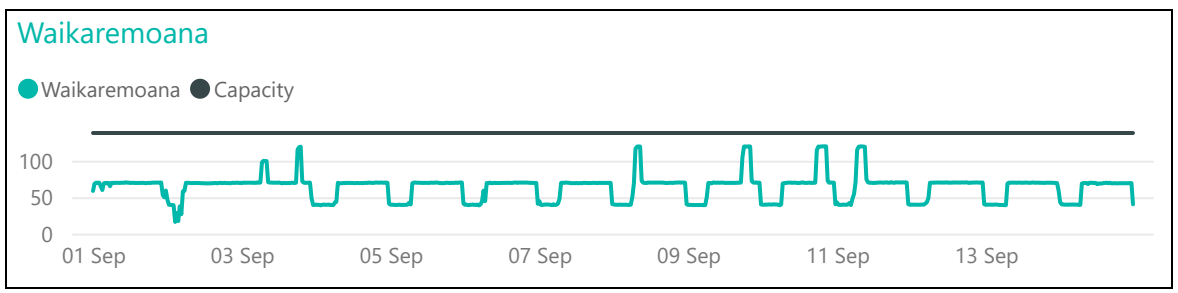
Manapouri



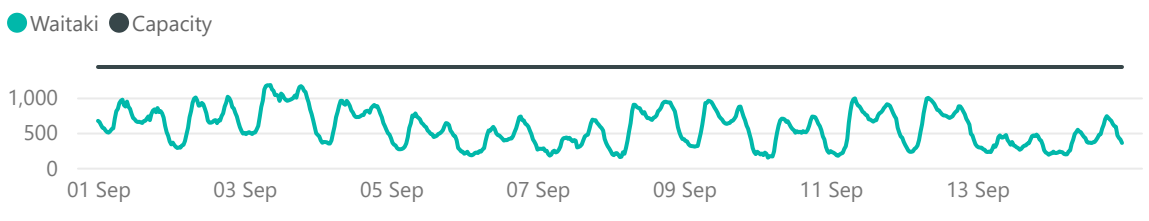
Waikato



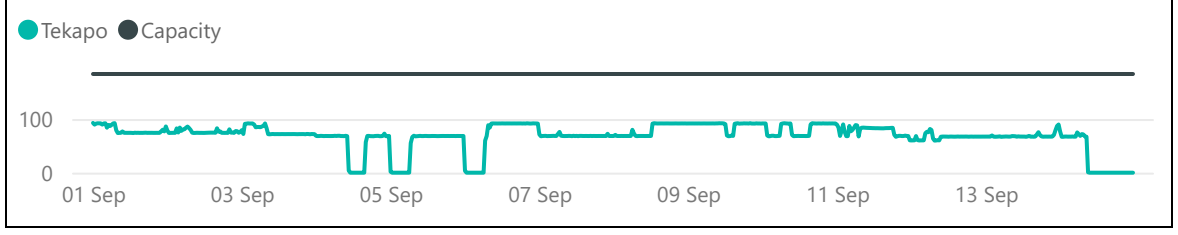
Waikaremoana



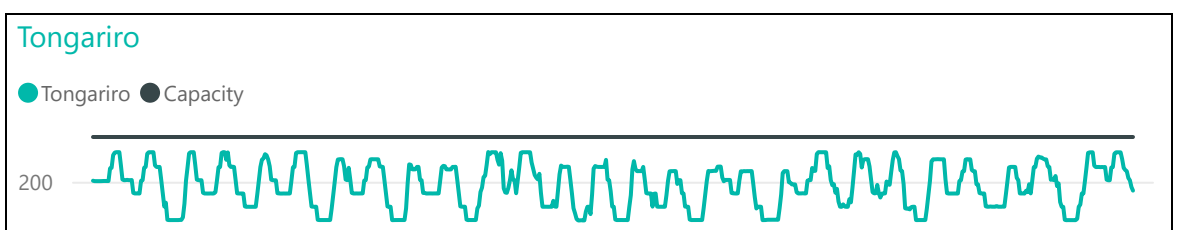
Waitaki



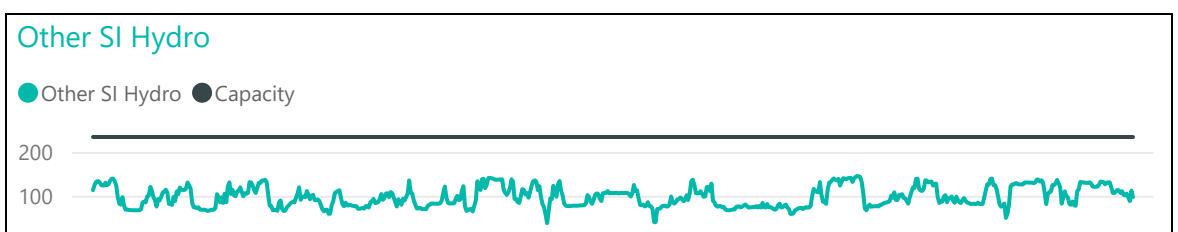
Tekapo



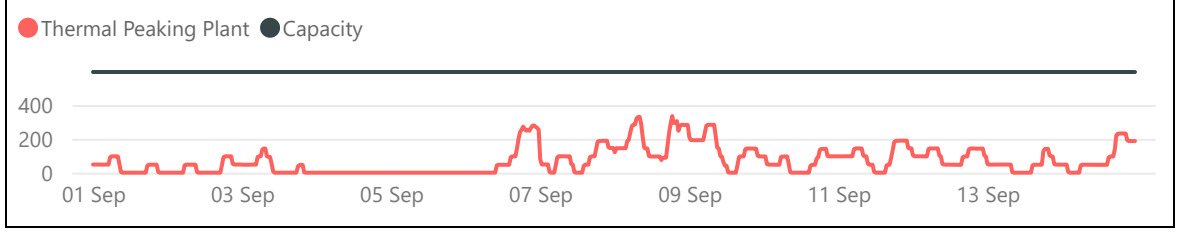
Tongariro



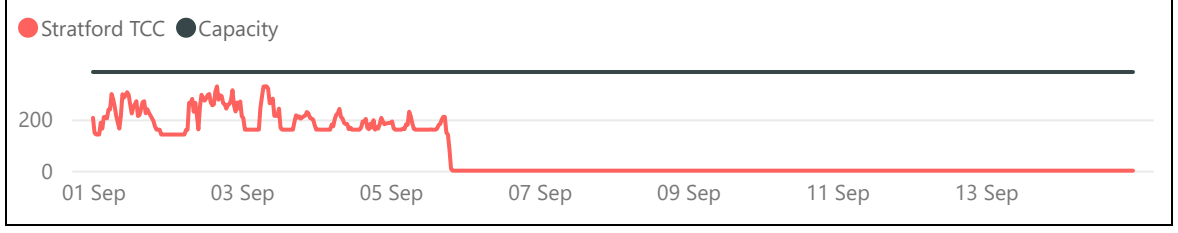
Other SI Hydro



Thermal Peaking Plant

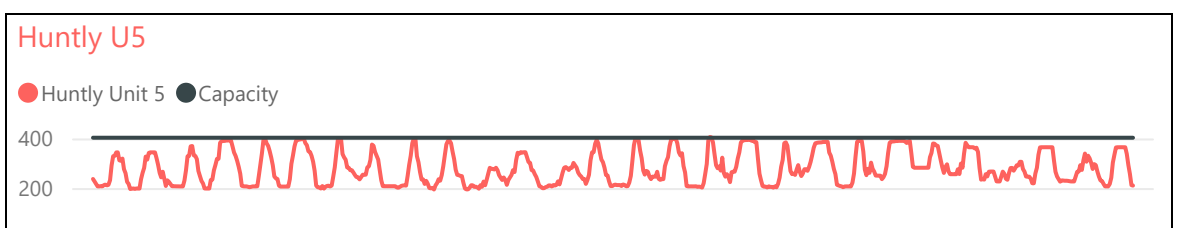


Stratford TCC

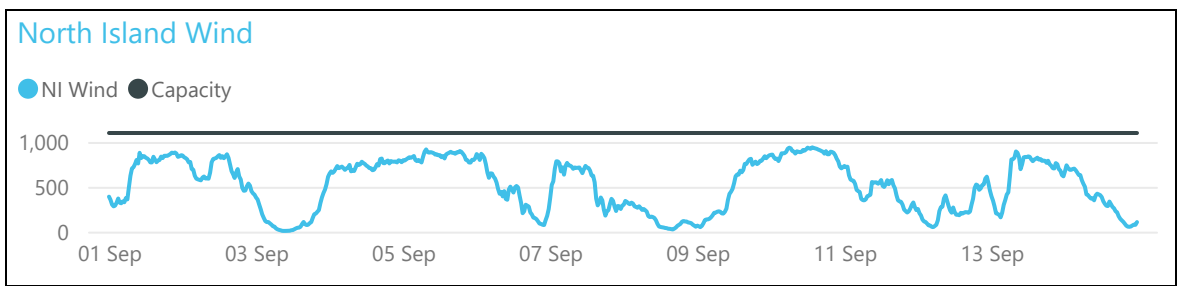


Huntly Rankines

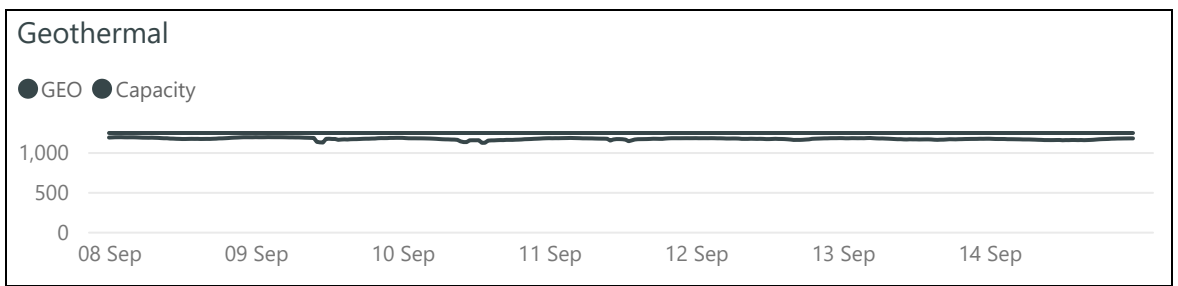
Huntly U5



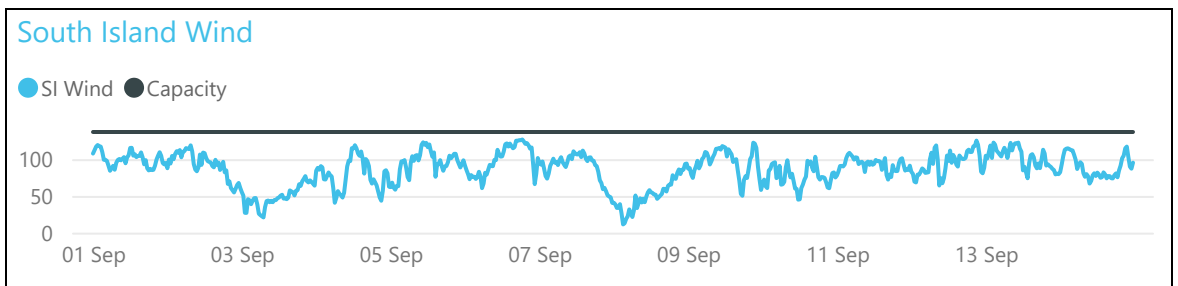
North Island Wind



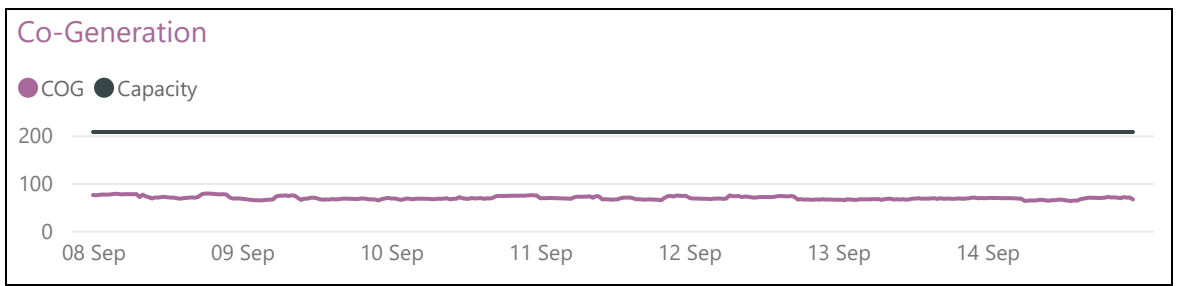
Geothermal



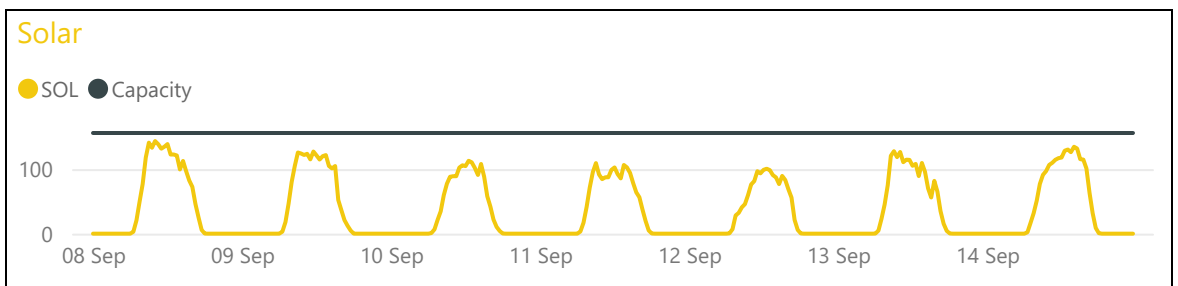
South Island Wind



Co-Generation

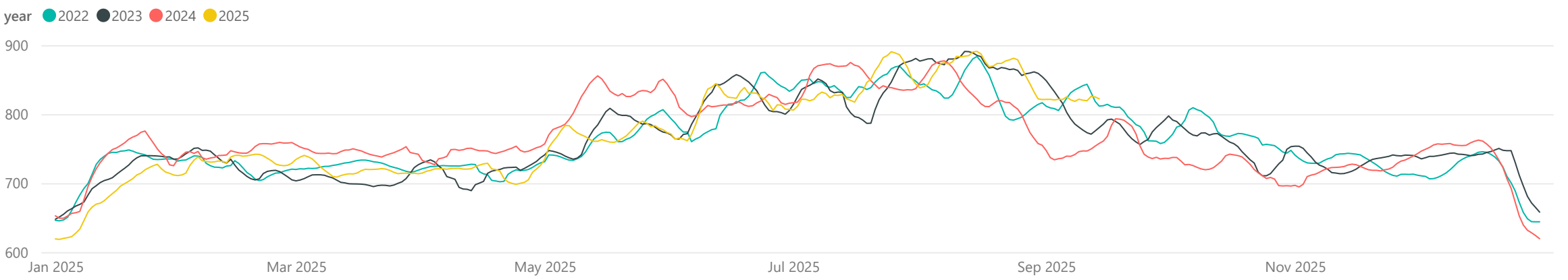


Solar

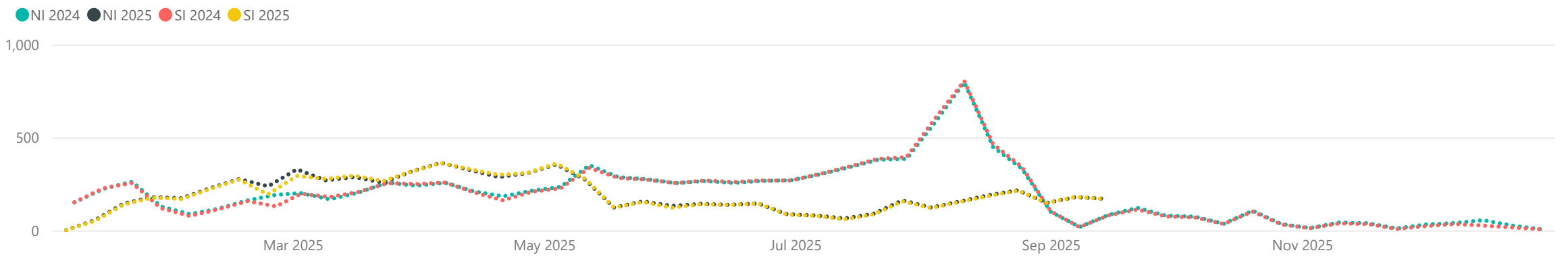


Weekly Profiles

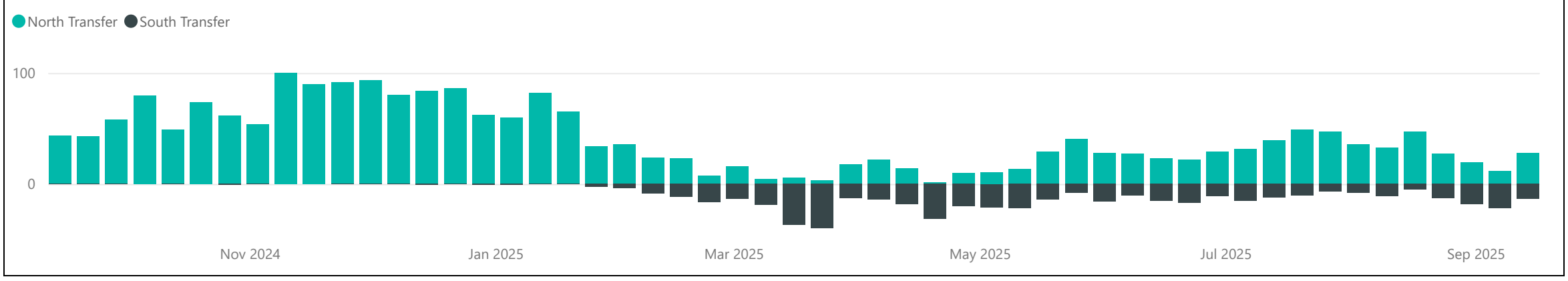
National Weekly Demand - GWh - 7 Day Rolling



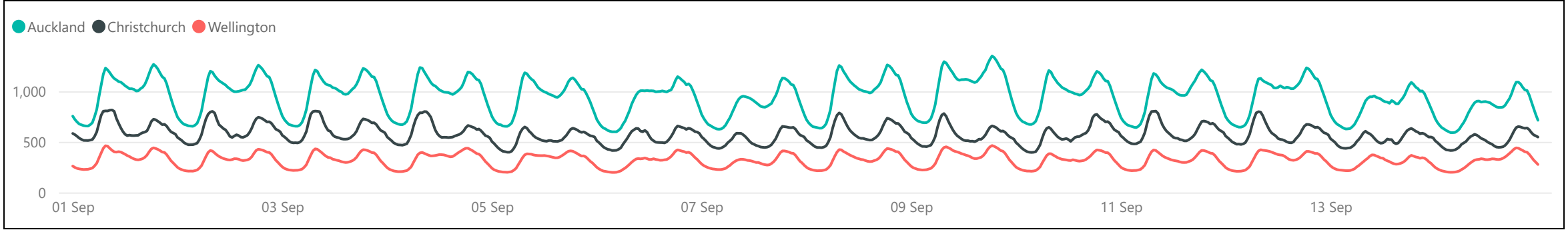
Weekly Spot Price - $/MWh



HVDC Transfer - Weekly GWh

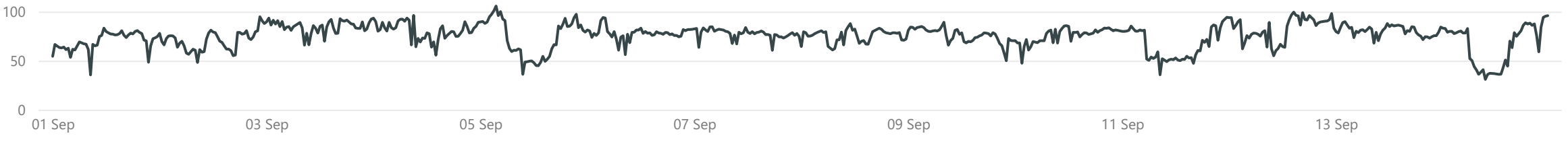


Conforming Load Profiles - Last Two Weeks *Measured in MW shown by region*



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

GLN0331



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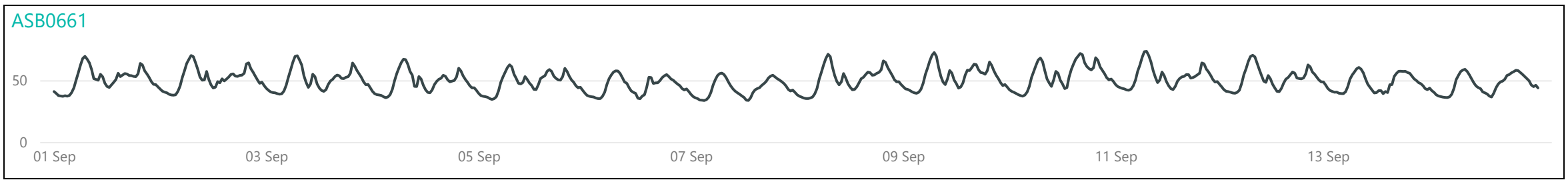

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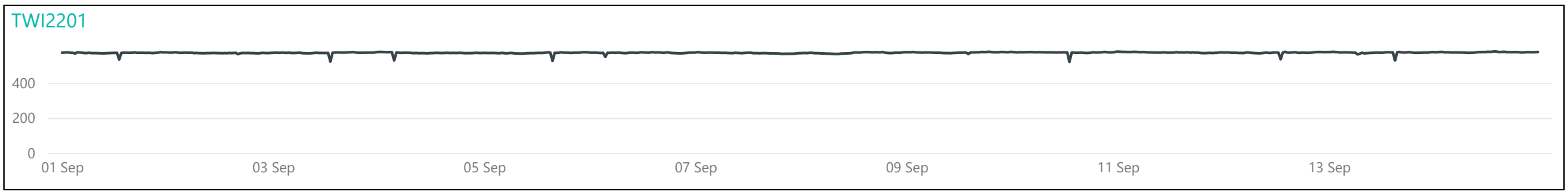
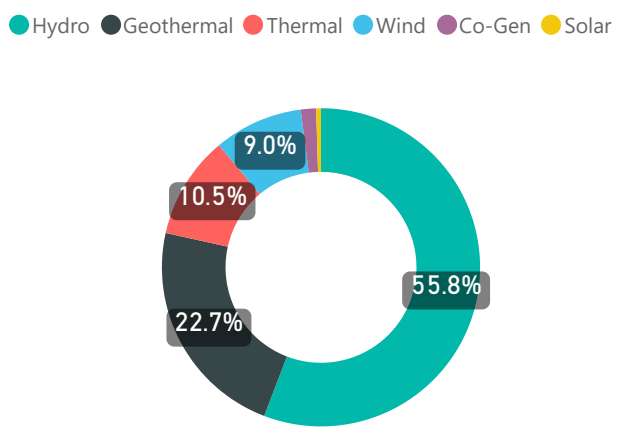


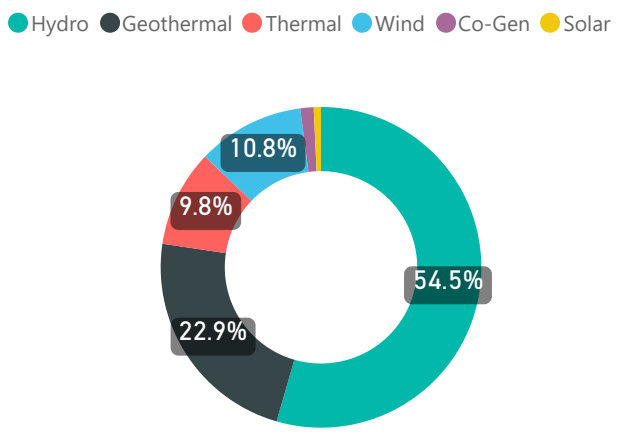
TRANSPOWER

Generation Mix

Last 52 Weeks Generation Mix - Weekly GWh



Last 7 Days Generation Mix - Weekly GWh



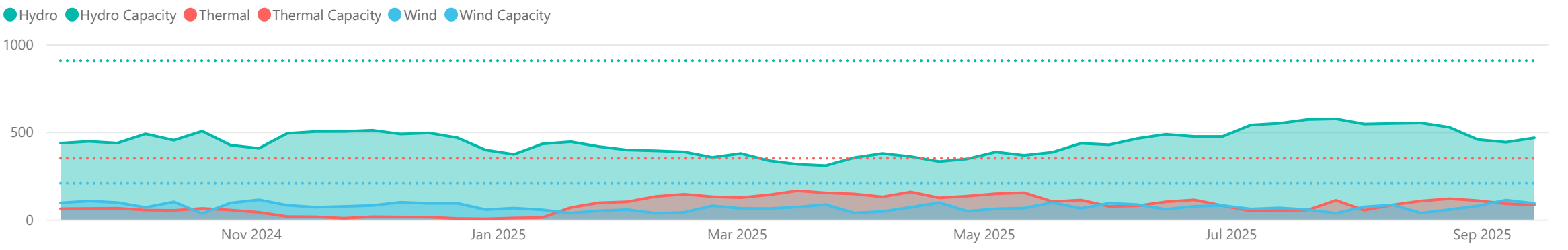
Average Metrics Last 7 Days

Renewable Percentage	CO2e Tonnes/Week	CO2e g/kWh
89%	66,703	78.0

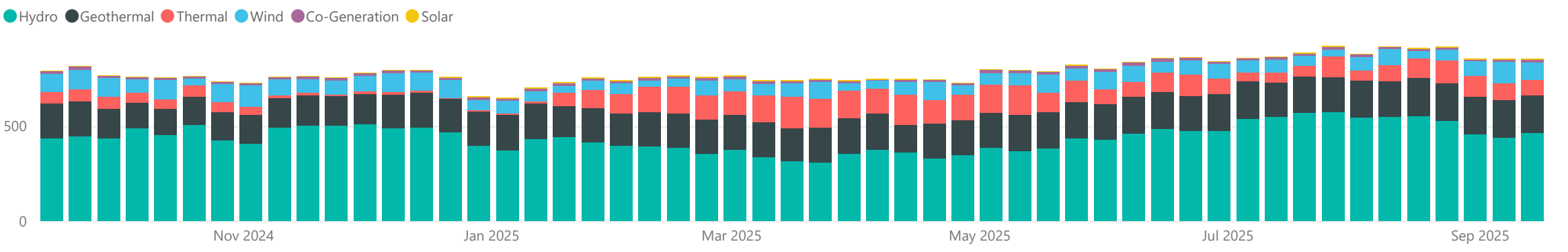
Average Metrics Last 52 Weeks

Renewable Percentage	CO2e Tonnes/Week	CO2e g/kWh
88%	67,446	85.1

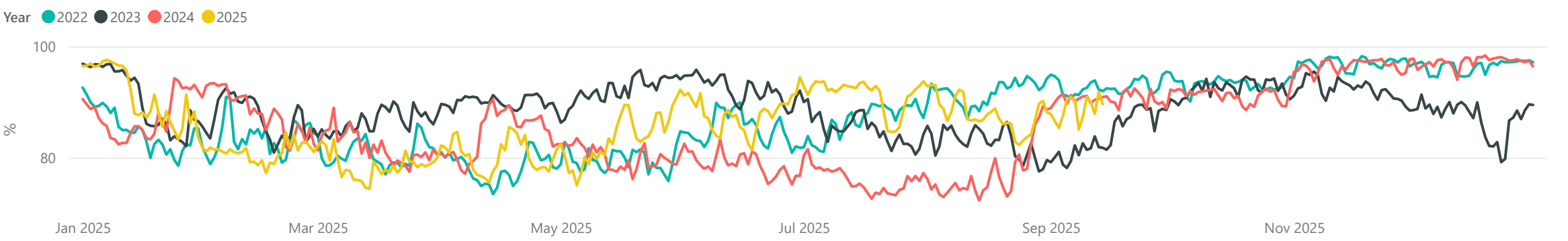
Weekly Generation Mix vs Capacity - GWh



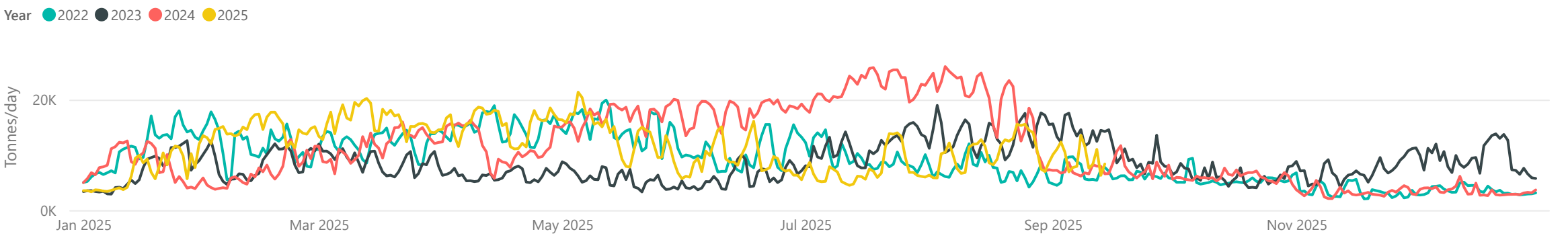
Weekly Generation Mix - GWh



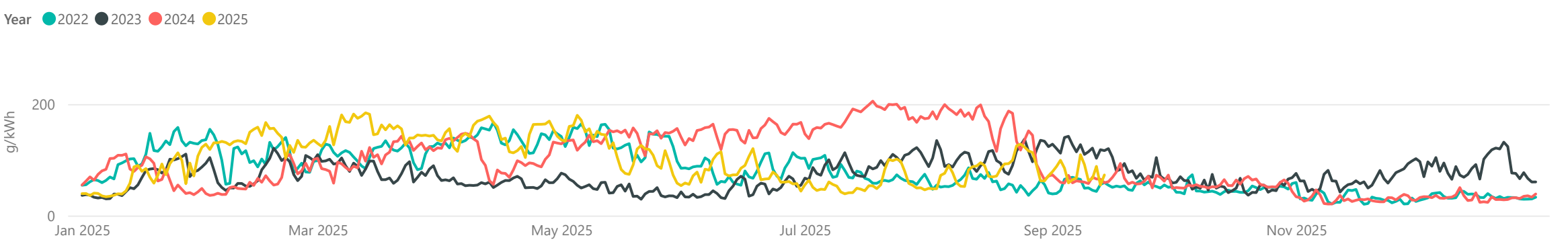
NZ Renewable Percentage



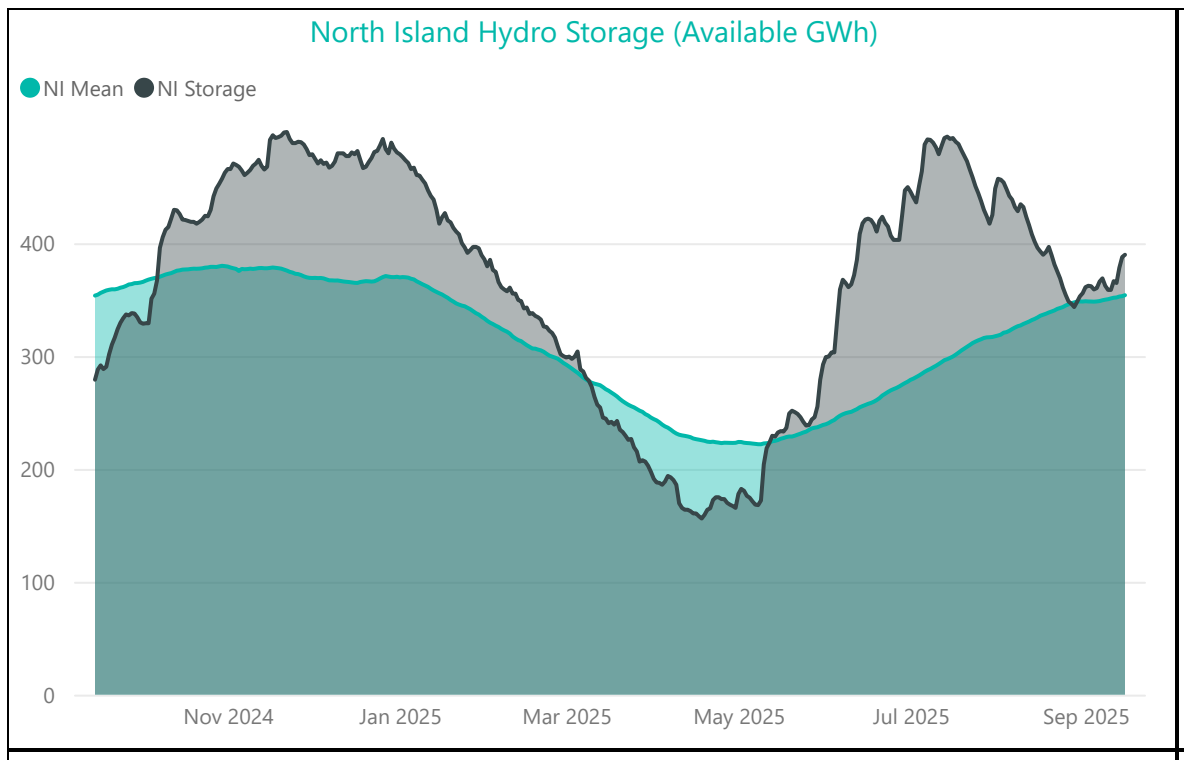
CO2 Tonnes/Day

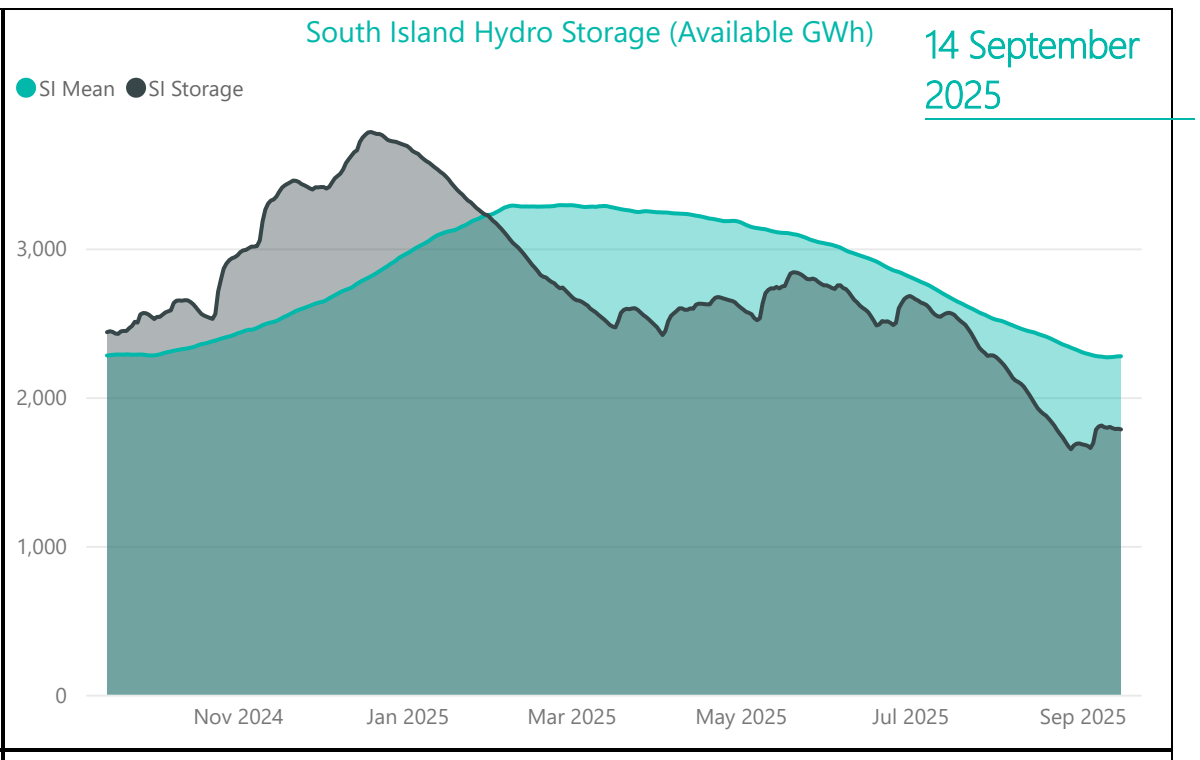


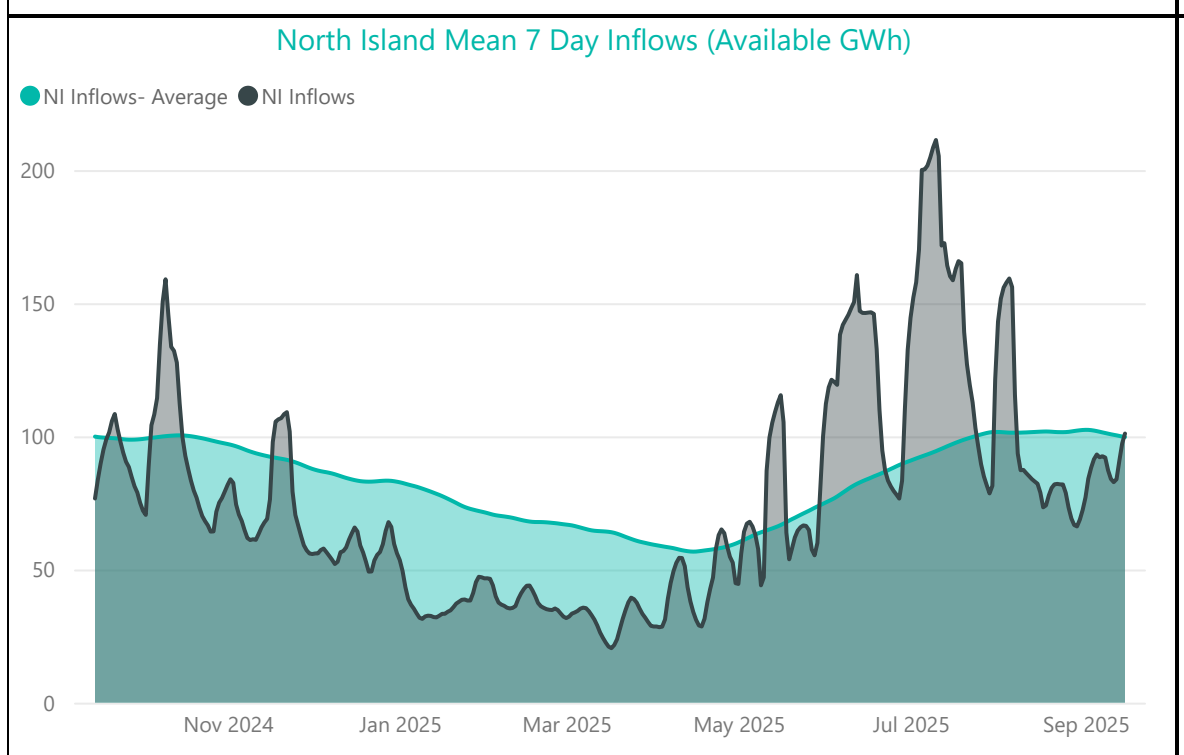
CO2 g/kWh

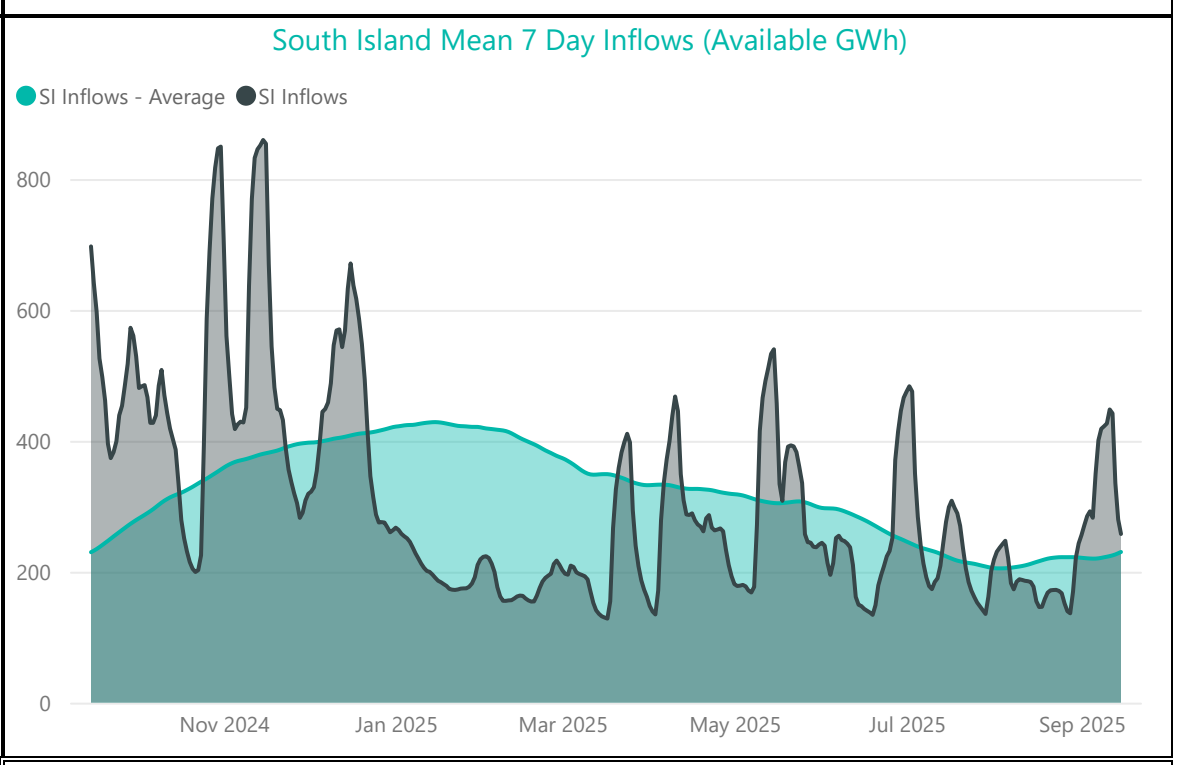


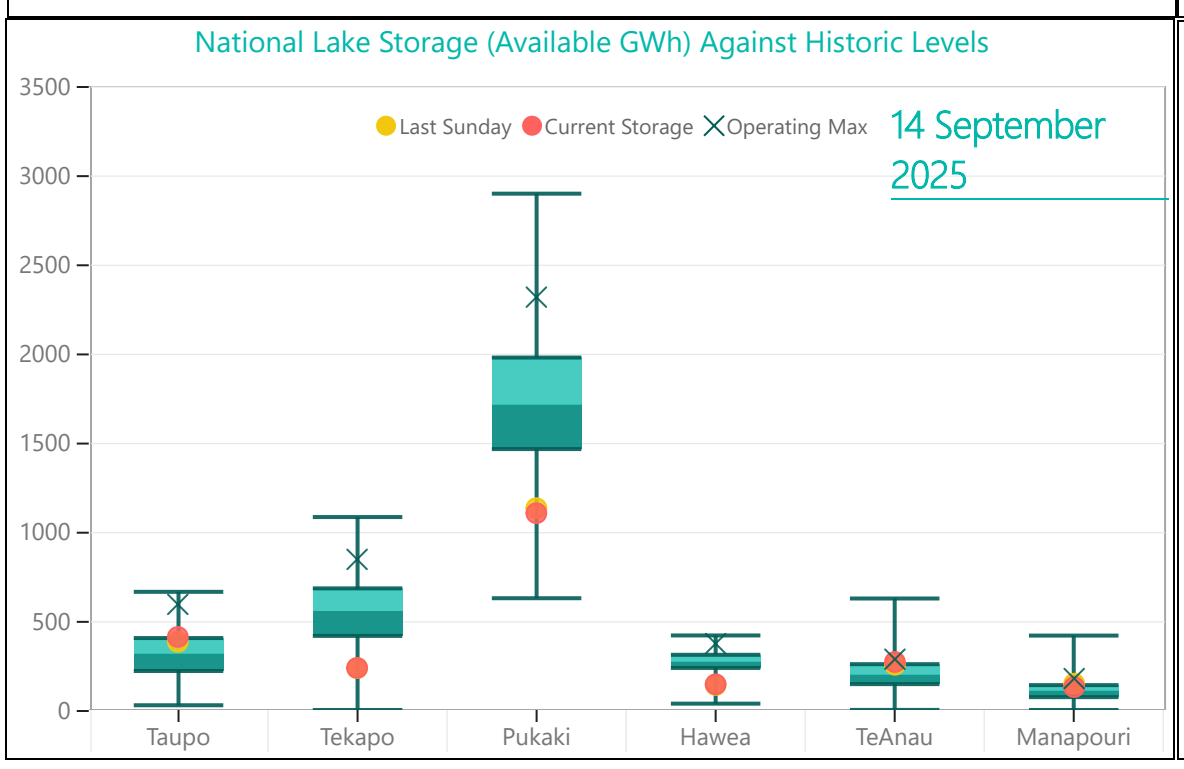
Hydro Storage

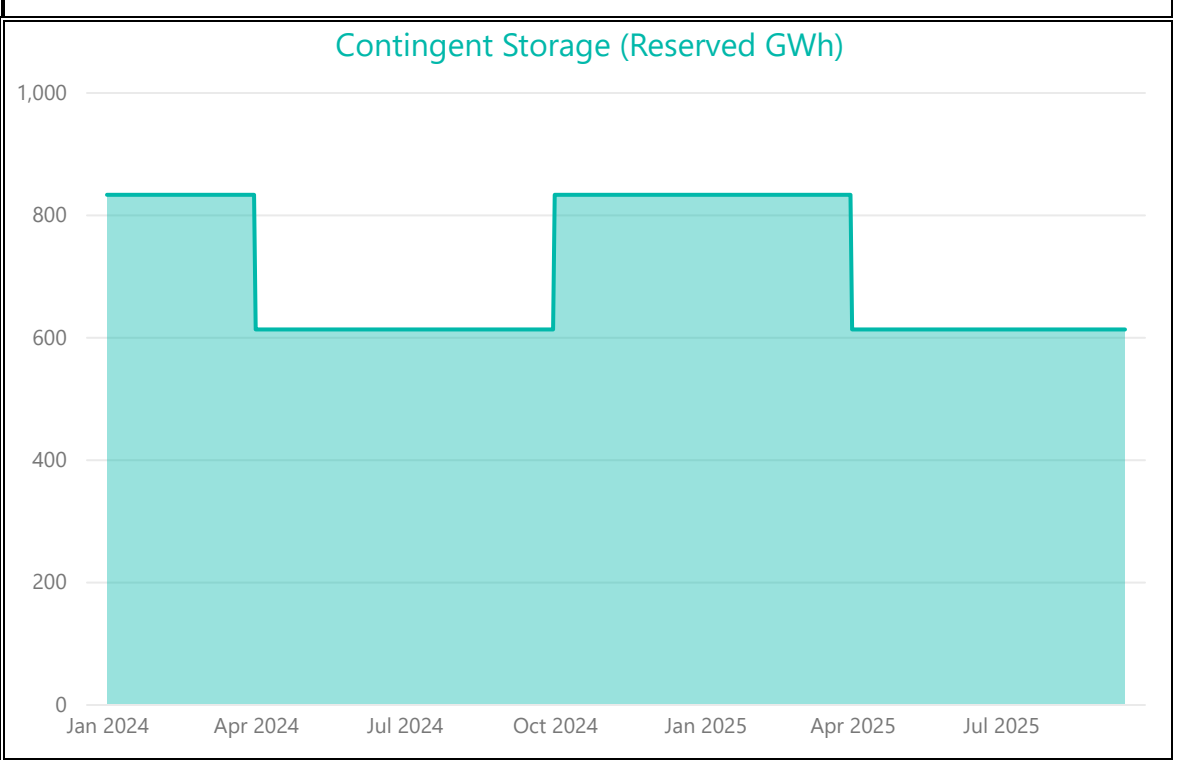












For further information on security of supply and Transpower's responsibilities as the System Operator, refer to our webpage here: https://www.transpower.co.nz/system-operator/security-supply

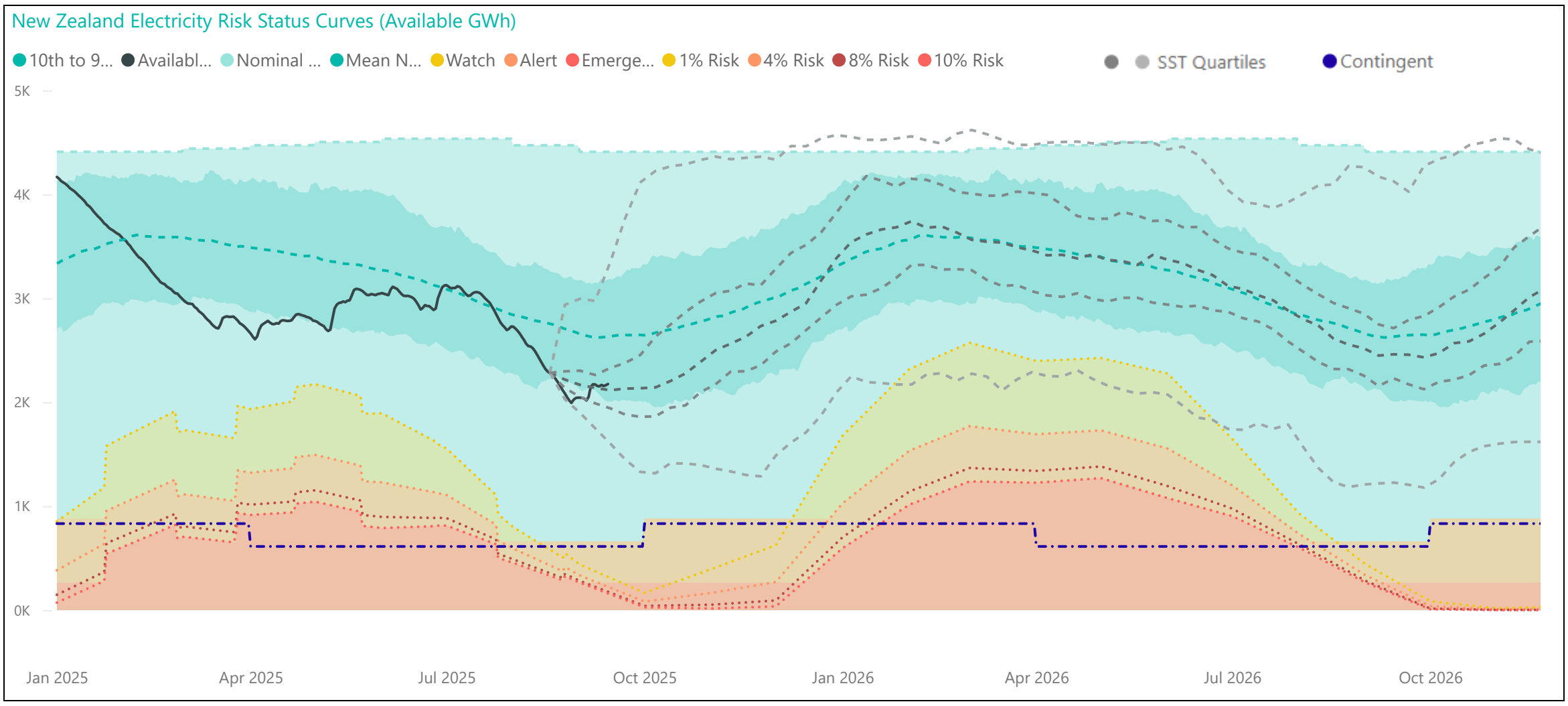
For any inquiries related to security of supply contact market.operations@transpower.co.nz

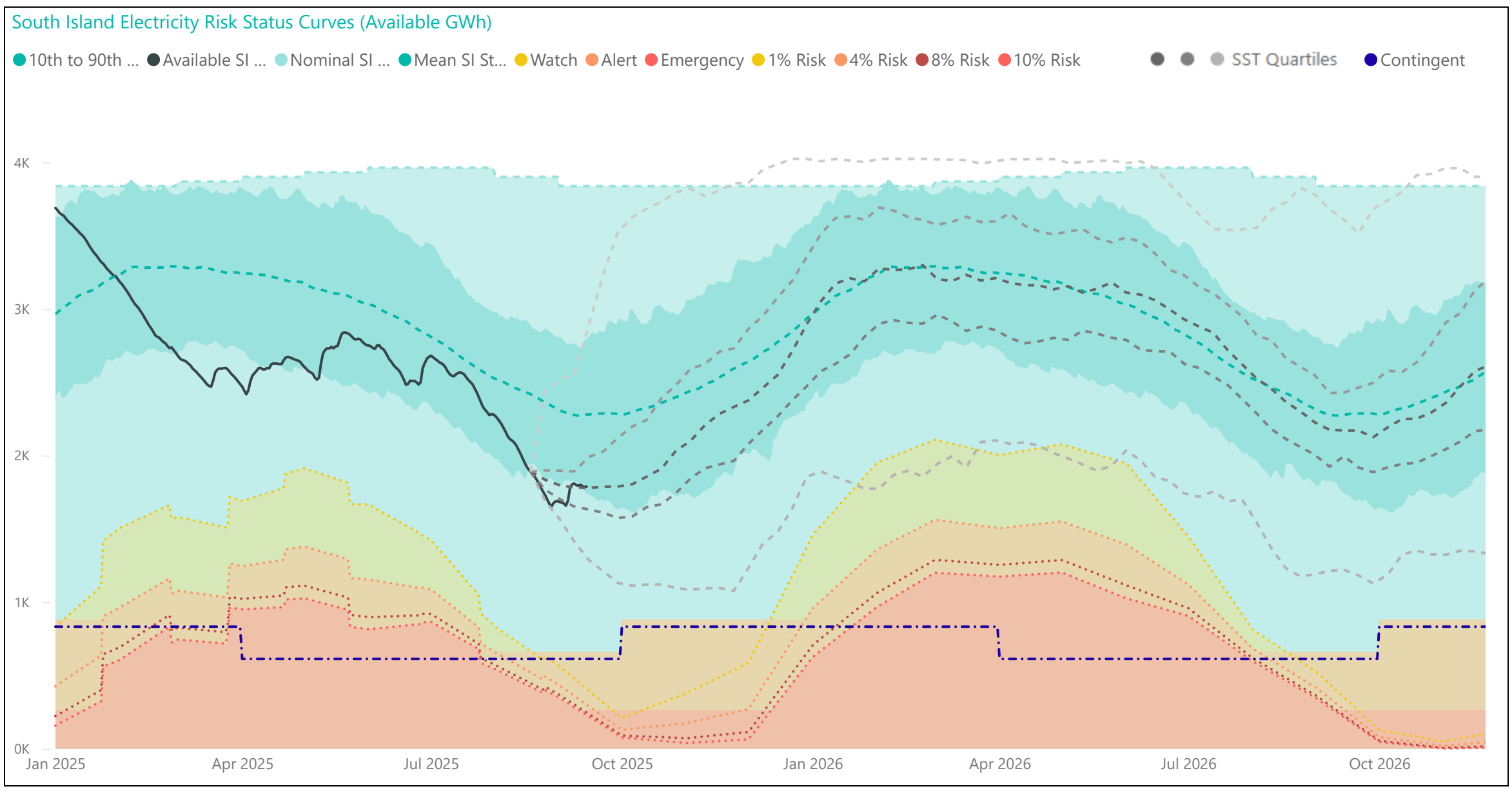
Hydro data used in this report is sourced from *NZX Hydro*.

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).