



Weekly Market Movements - Week Ended 4 February 2024

Overview

Not much changed last week in terms of demand and hydro storage, but there were some interesting periods with high prices and lower residuals, which we explore below and in this week's insight.

Security of Supply Energy

Hydro storage remained steady last week, National hydro storage is at 103% of the historic mean, down from 104% the week prior. South Island storage is at 98% of average for this time of year, down from 99%. North Island storage increased from 157% to 160% of historic mean.

Capacity

There were some lower residual generation margins last week, with the lowest residual of 253MW on Wednesday evening. This coincided with the period of highest demand of the week and low wind generation. It is discussed further in the insight.

Forecast N-1-G margins are healthy throughout the forecast horizon to late March. The HVDC outages running from 21 February - 14 March are considered in the margin calculation. The lowest N-1-G margin during the forecast period is 407 MW on 21 March. The latest NZGB report is available on the [NZGB website](#).

Electricity Market Commentary Weekly Demand

Last week demand increased slightly to 743 GWh from 738 GWh the week prior. Demand peaked at 5,457 MW on the evening of Wednesday 31 January, coinciding with the lowest residual period of the week.

Weekly Prices

The average wholesale price at Haywards last week was \$87/MWh, a 33% decrease from \$129/MWh the week prior. The decrease was likely attributable to the continued strong hydro inflows, and more wind generation. The price peaked at Ōtāhuhu at \$860/MWh on Tuesday at 16:30. The price volatility observed last week is typical after periods of strong hydro inflows. The abundance of water and wind meant the average price was too low for slow start thermal units to commit, so higher prices were observed during periods of higher demand to access enough generation.

Sustained Instantaneous Reserve (SIR) prices spiked to ~\$369/MW in the North Island and ~\$337/MW in the South Island on Tuesday at 16:30. There was also a period of price separation for energy and reserves on Wednesday due to more energy and reserves needing to be purchased in the North Island due to high HVDC transfer north.

Generation Mix

The renewable percentage of the generation mix increased further to 93% from 91% the week prior. Wind generation rose from 9% to 11%, whilst thermal was down from 7% to 5%. Hydro generation remained at 63%. Solar generated 1.1 GWh, just 0.15% of the mix.

HVDC

HVDC flows were mostly northward last week. There was some southward flow overnight during periods of low demand and high wind generation. The outages upcoming are:
Pole 3 outage: 21 February - 25 February
Pole 2 outage: 24 February - 14 March
Bipole outage: 24 February - 25 February

SOSA Generator, Distributor and Demand Response Survey

A reminder the [Generator, Distributor and Demand Response Survey](#) for the 2024 Security of Supply Assessment (SOSA) closes 13 February.

SOROP Consultation

Transpower is seeking views from the electricity industry on proposed changes to the System Operator Rolling Outage Plan (SOROP). The consultation runs from 7 February for four weeks until 6 March. There is then a two-week period for cross submissions until 20 March. Please see [our website](#) for further details. The SOROP is one of Transpower's key security of supply planning and policy documents in its system operator role. The review is required as the current version of the SOROP has been in place since 2016 and security of supply risks are changing.

New Zealand Energy Risk

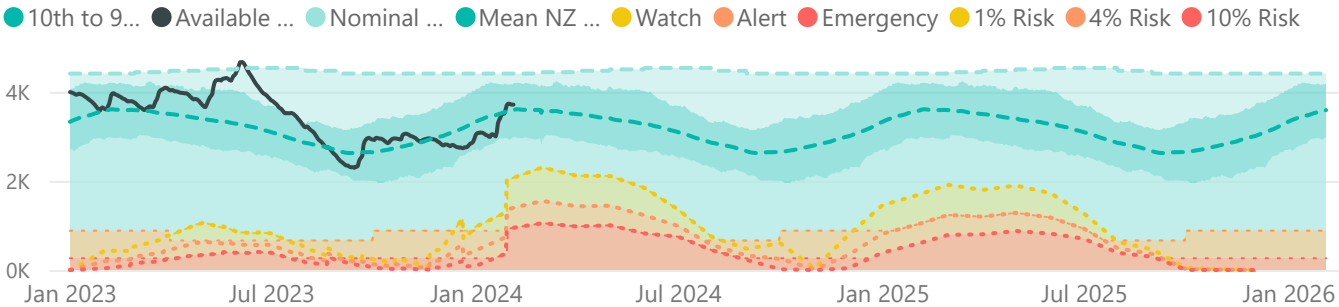


South Island Energy Risk

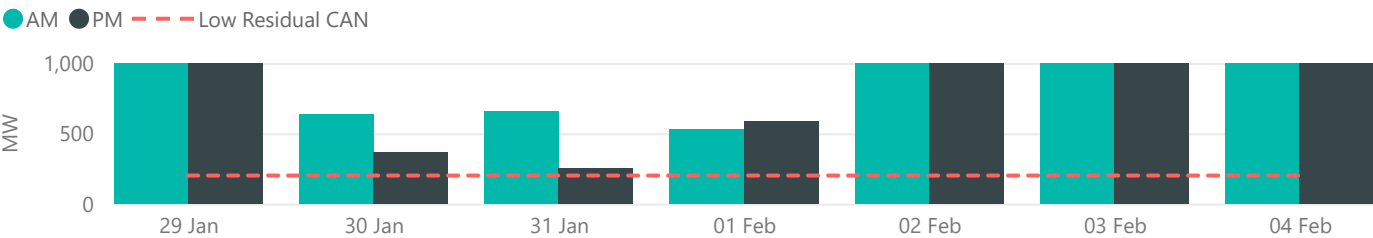


Normal Watch Alert Emergency

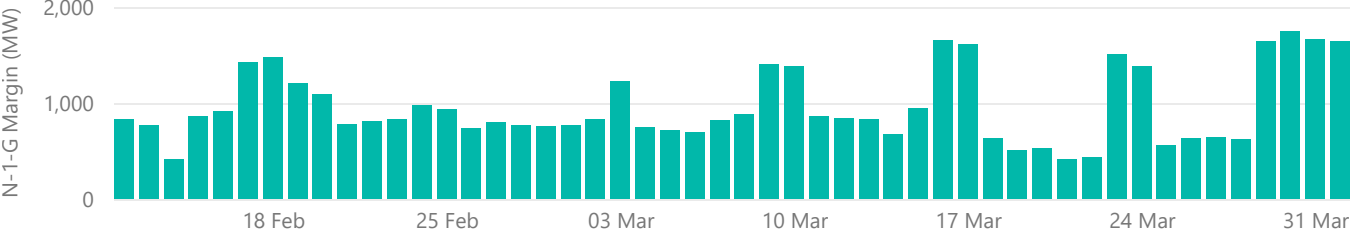
New Zealand Energy Risk Status Curves (Available GWh)



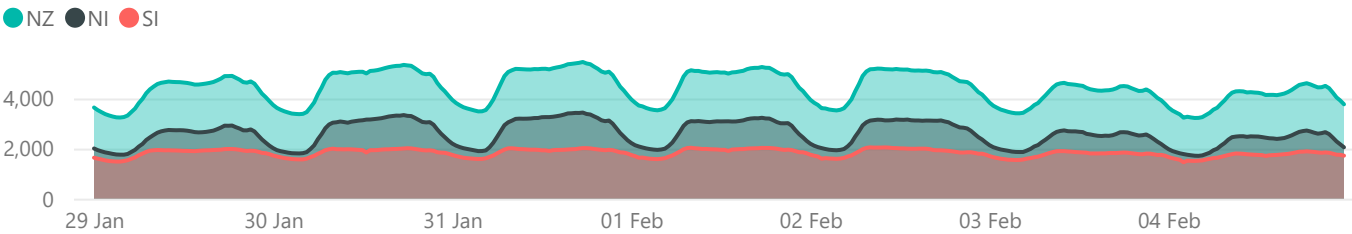
Lowest Residual Points - MW



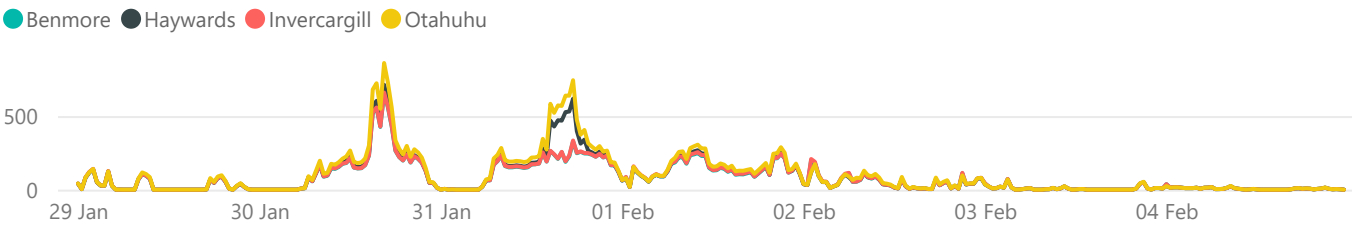
NZGB Look-Ahead (excluding next 7 days)



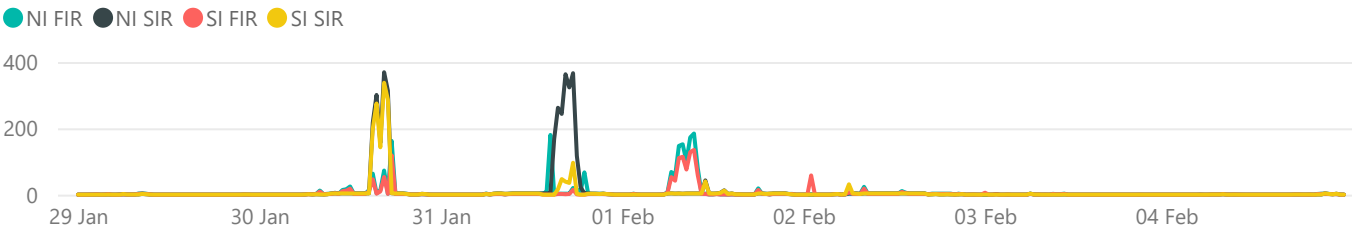
National Demand by Trading period - MW



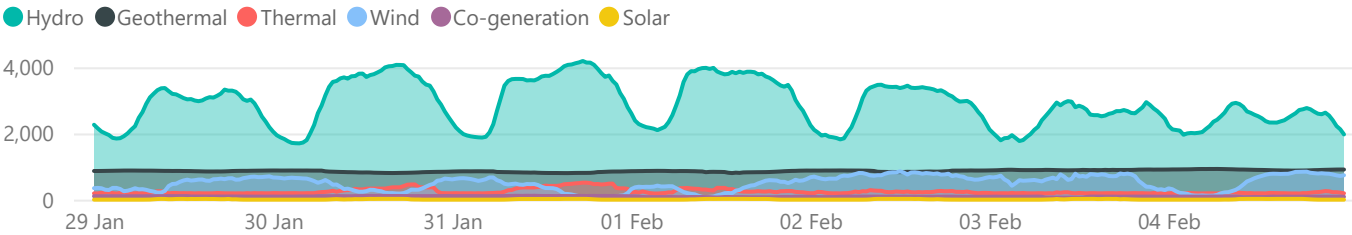
Weekly Prices - \$/MWh



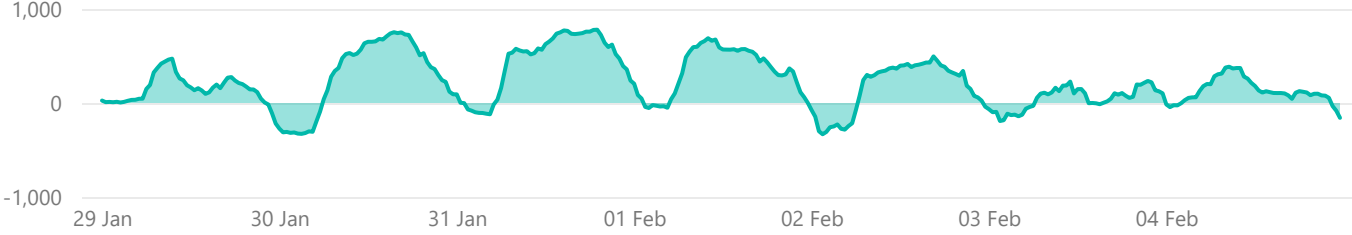
Reserve Prices - \$/MW

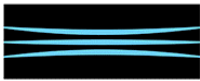


Generation - MW



Net HVDC Transfer - MW





Weekly Summary Insight - Deeper look at prices from last week

Last week on 31 January, residual dropped as low as 203 MW in the North Island. This is unusual for this time of year given demand was low in comparison to the coldest winter nights. The peak demand during this period was 5,457 MW, well below the highest demand of 7,122 MW we have seen before. This insight explores what was driving this lower residual.

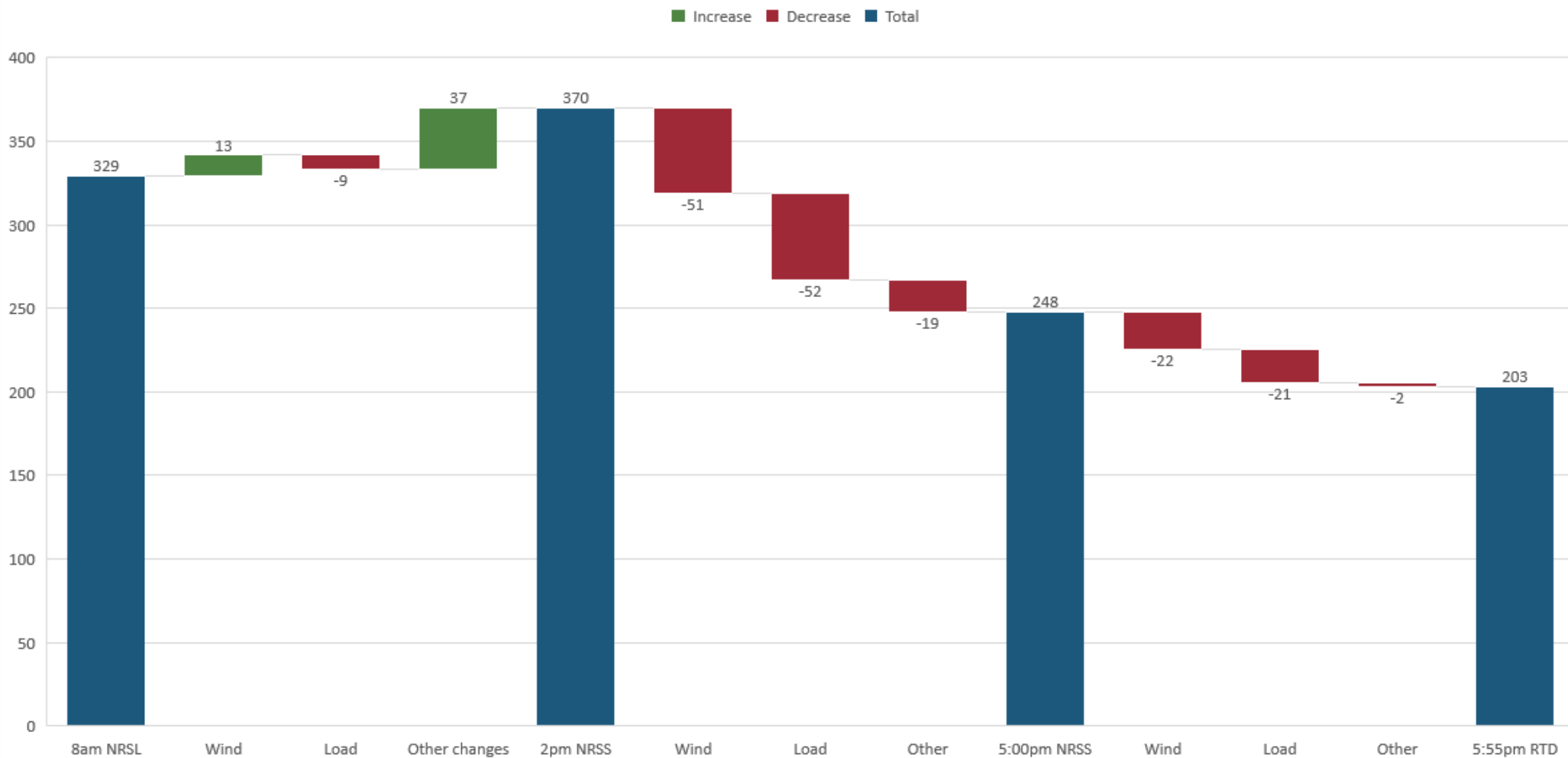
On the morning of 31 January during the System Operator's internal morning conference, the evening residual of 330 MW in the North Island was noted as something to keep an eye on, being unusually low for the time of year. When the 2pm market forward schedule was released it had actually increased to 370 MW due to a slight increase in wind and other offers, despite there also being an increase in load forecast.

Over the evening, residual continued to drop until the lowest residual was forecast for the 5:30pm trading period of 248 MW in the North Island. The change in residual was primarily due to a change in wind and load forecast. The forecast wind gradually decreased over the evening, with the final North Island wind generation during this trading period of 70 MW (being around 50% of what was forecast at 8am).

Similarly, North Island load increased by around 80 MW (2.4% increase) from what was forecast at 8am. This is likely due to the actual temperature being hotter than what had been forecast earlier. For example, the Auckland temperature was up to a degree higher than what was forecast at 8am, so additional load was likely due to increased cooling load from air conditioners.

There was a decrease in residual due to other factors (perhaps offer changes of other generators) of 21 MW - which is not as substantial as the other factors discussed above. In addition to the developments that occurred over the day, there was low thermal unit commitment associated with lower average prices over the week. There was also no more generation offered in the South Island that could be sent North.

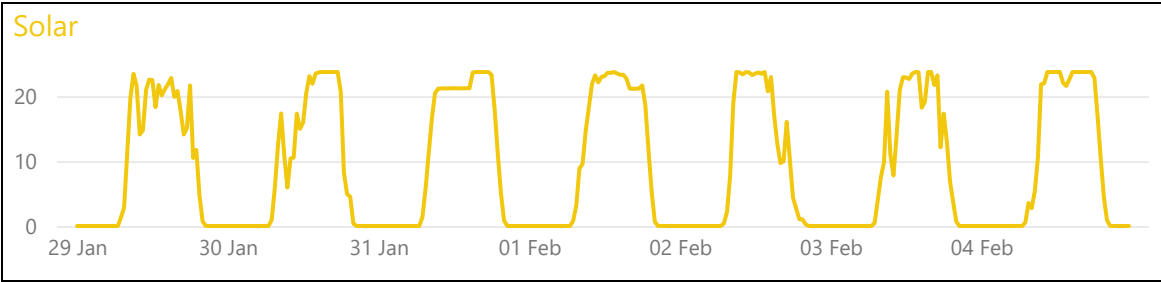
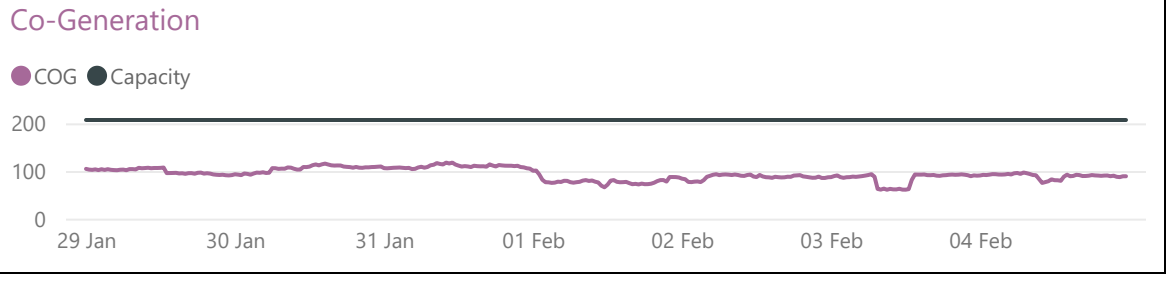
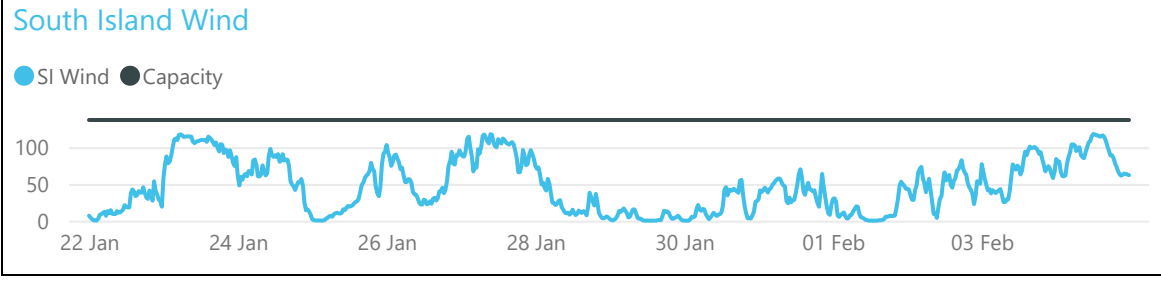
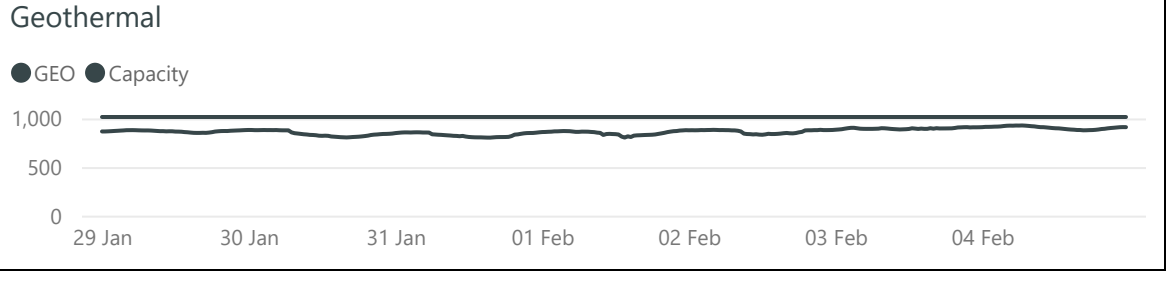
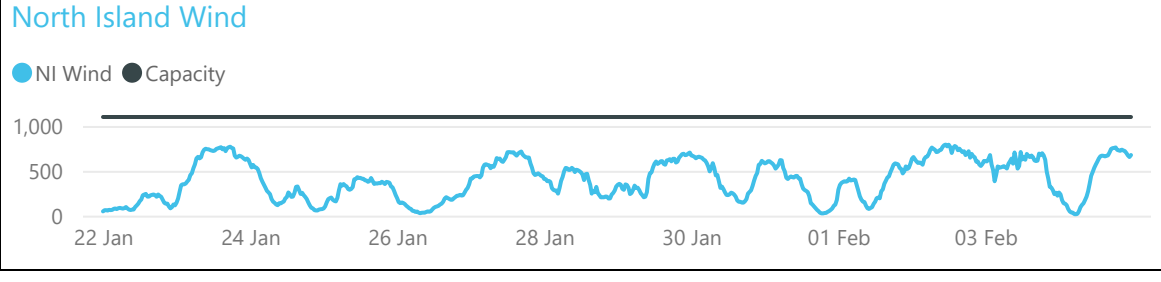
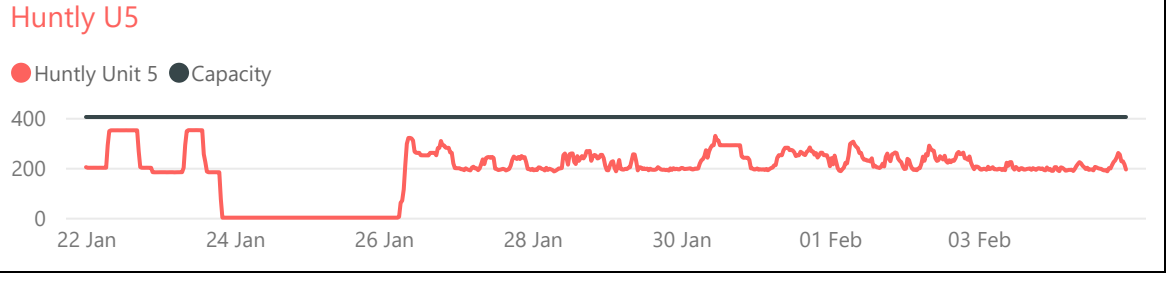
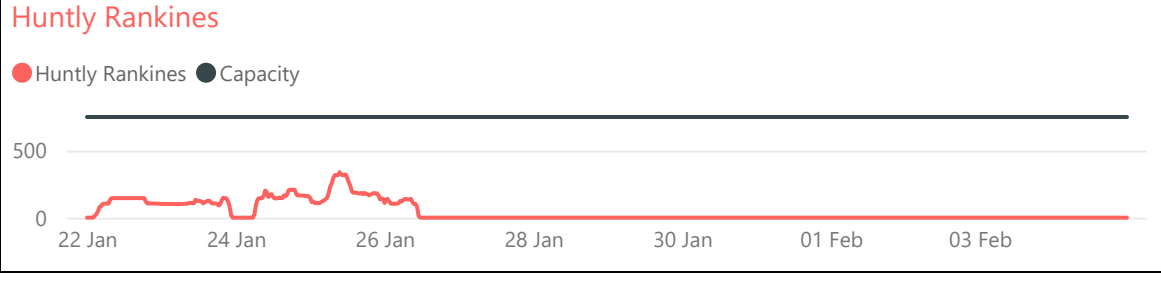
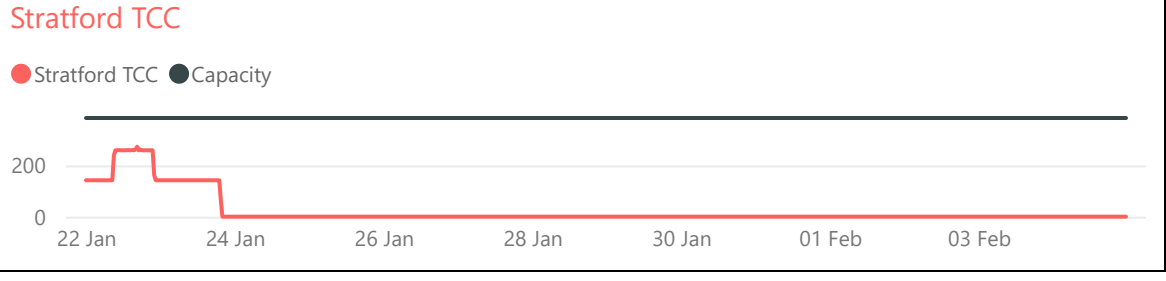
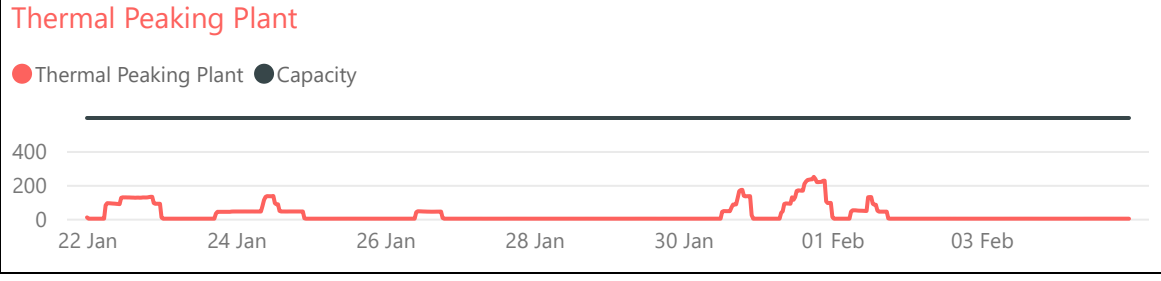
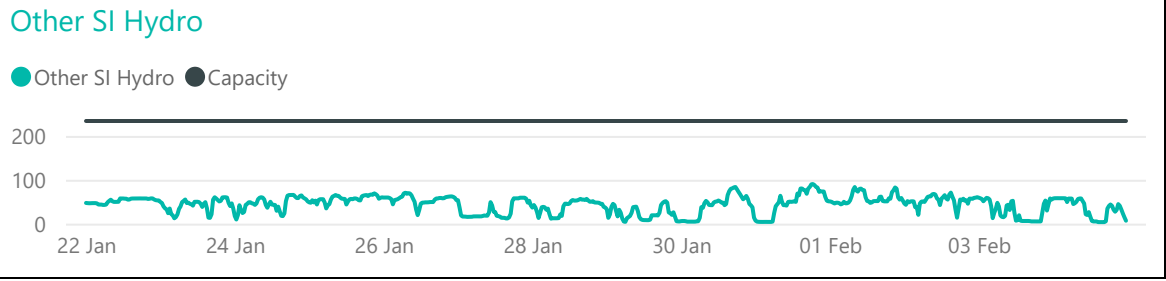
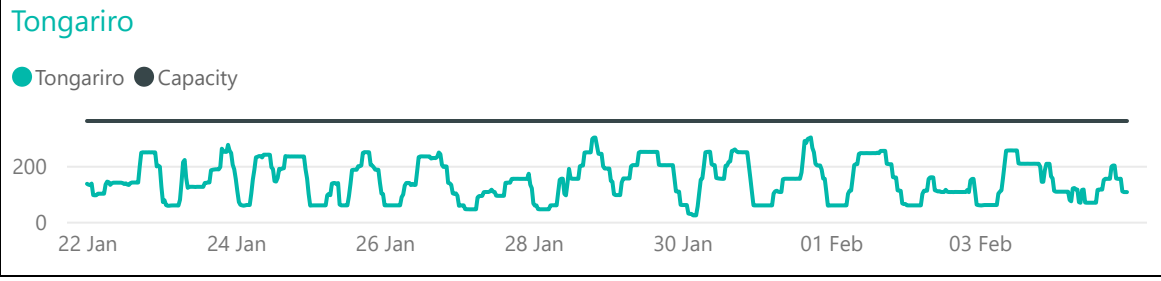
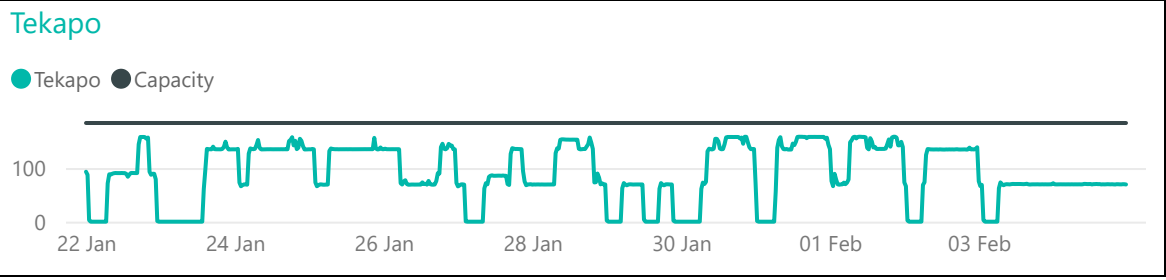
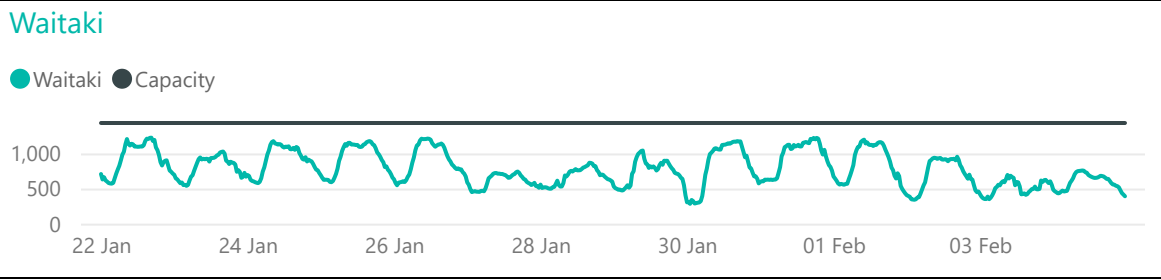
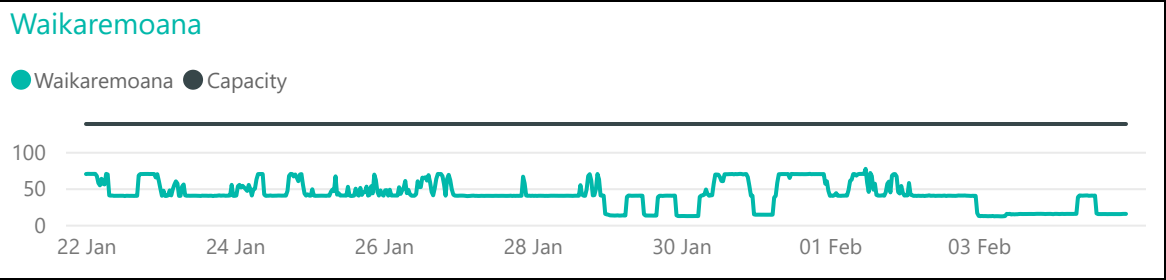
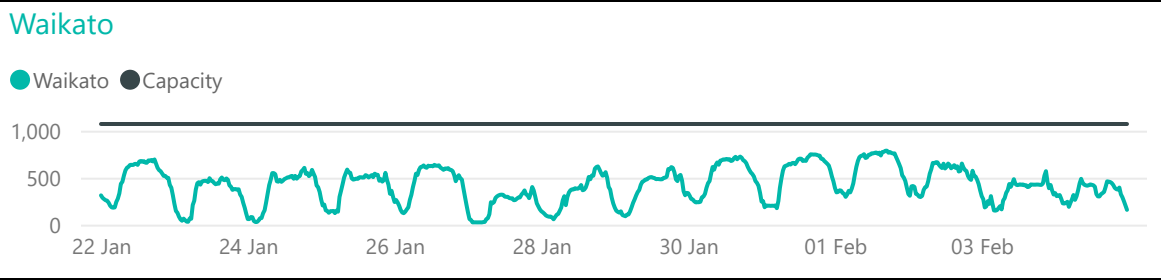
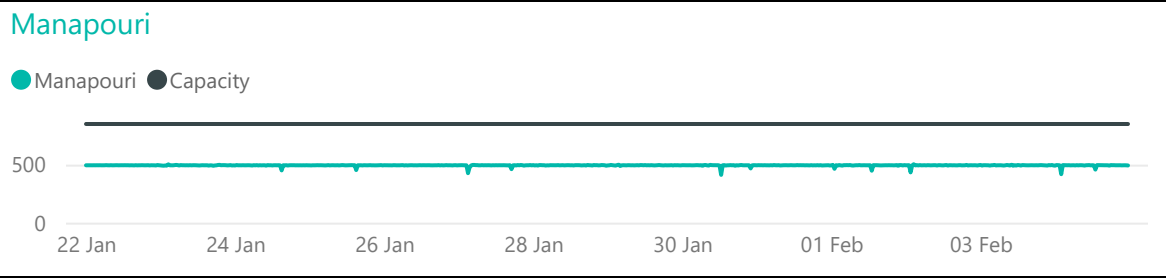
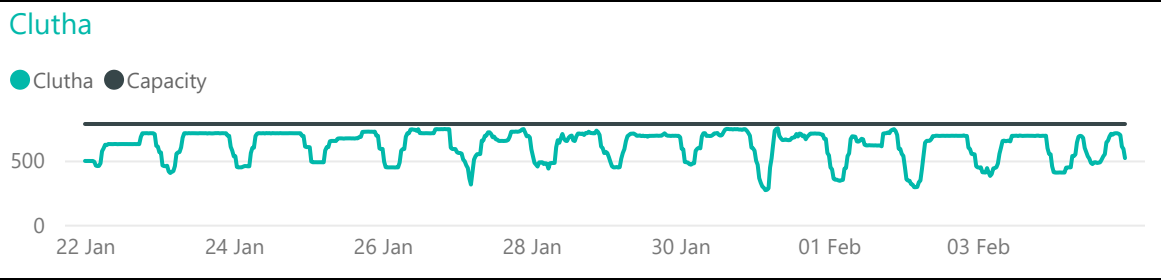
31 January 17:30pm - Changing wind and load forecast effects on residual





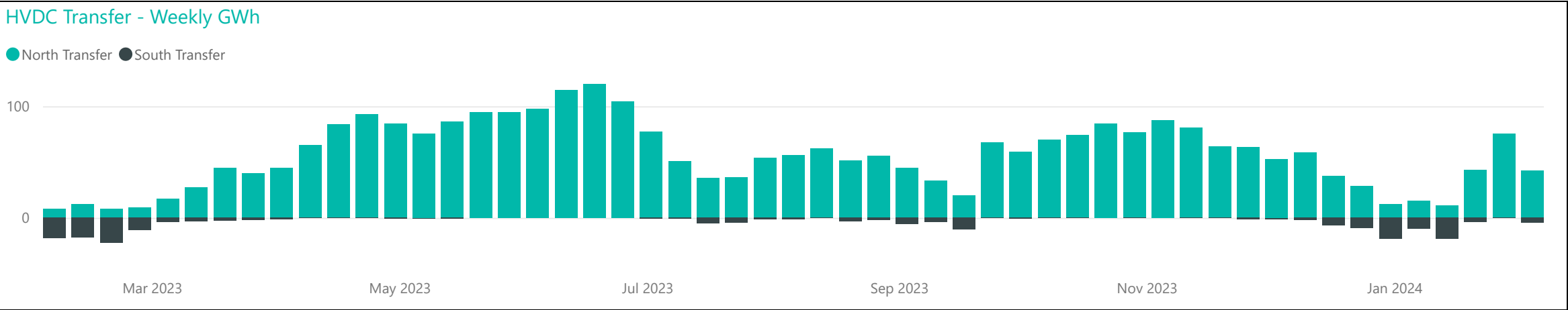
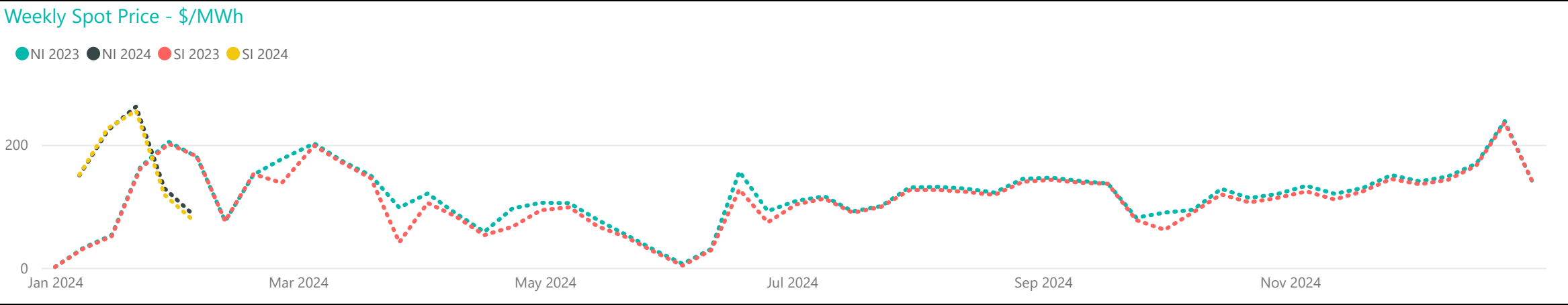
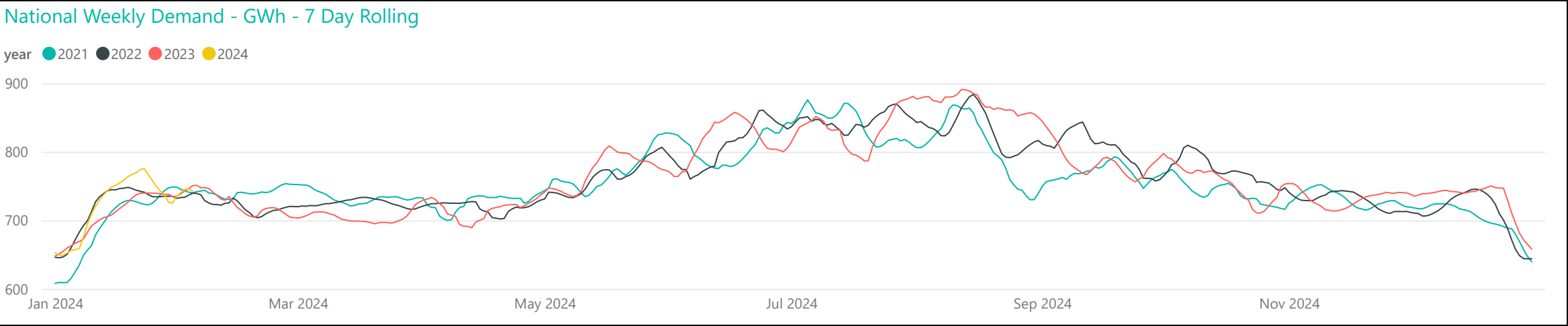
Generation Breakdown - Last Two Weeks

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

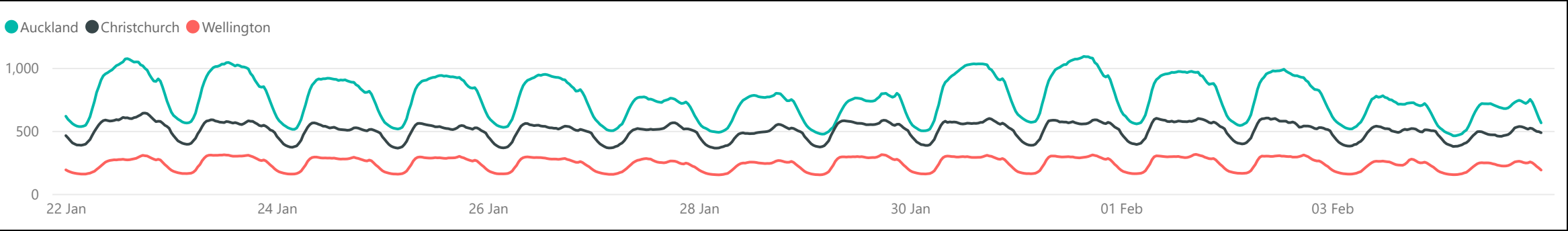




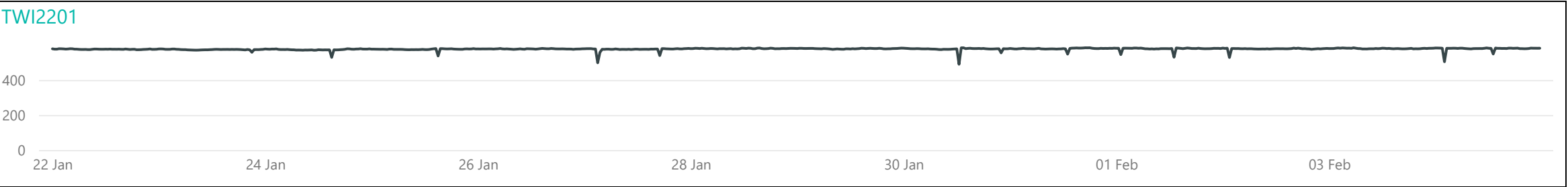
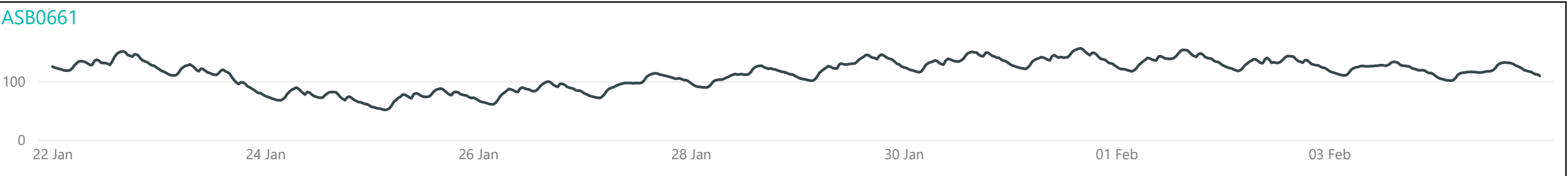
Weekly Profiles



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

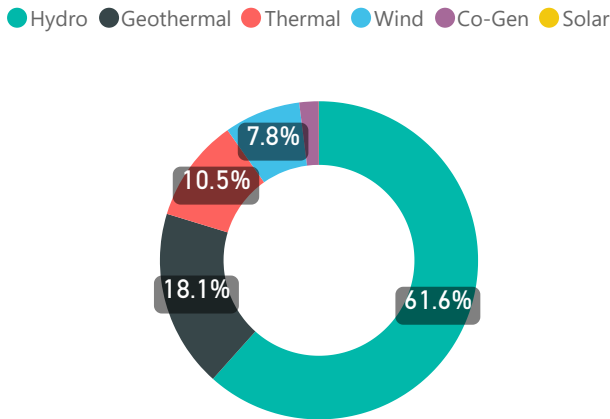


Non-Conforming Load Profiles - Last Two Weeks *Measured in MW shown by GXP*

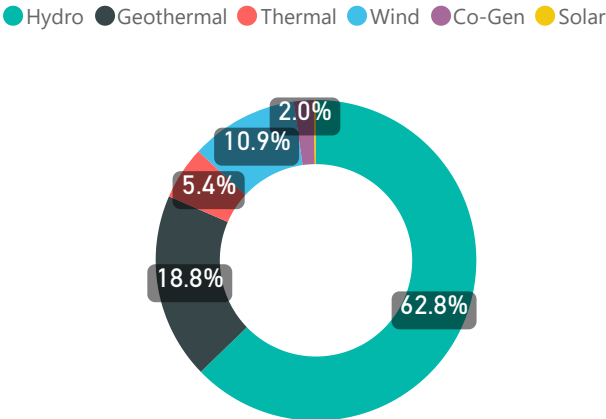


Generation Mix

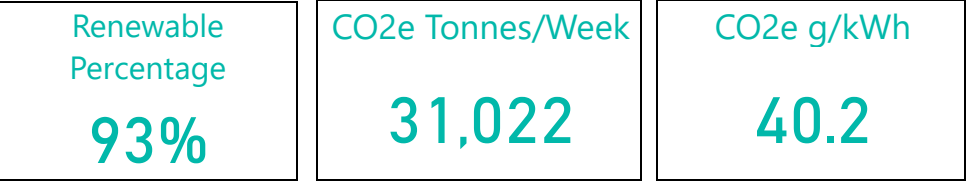
Last 52 Weeks Generation Mix - Weekly GWh



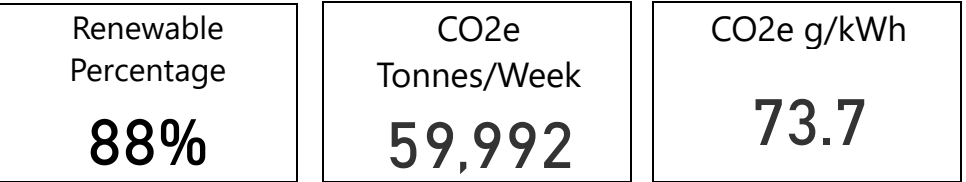
Last 7 Days Generation Mix - Weekly GWh



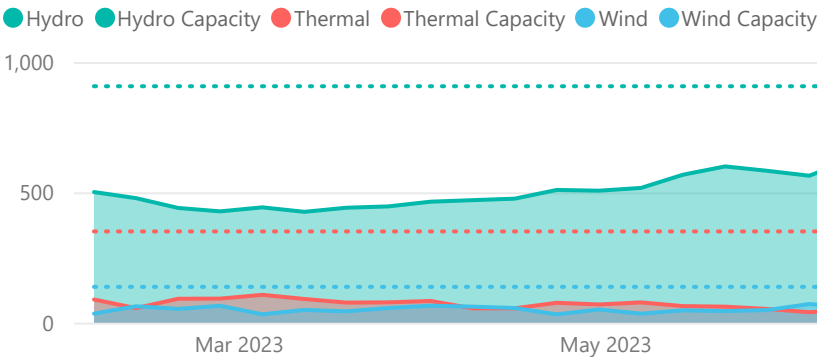
Average Metrics Last 7 Days



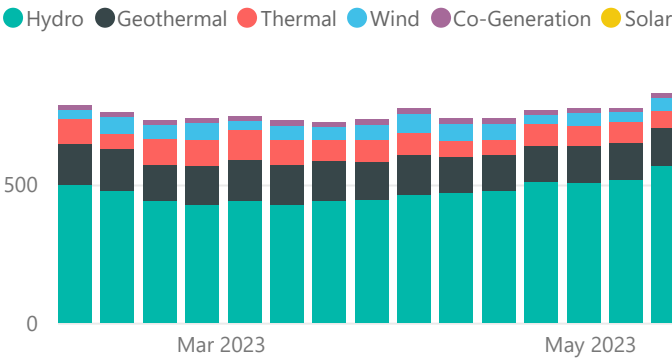
Average Metrics Last 52 Weeks



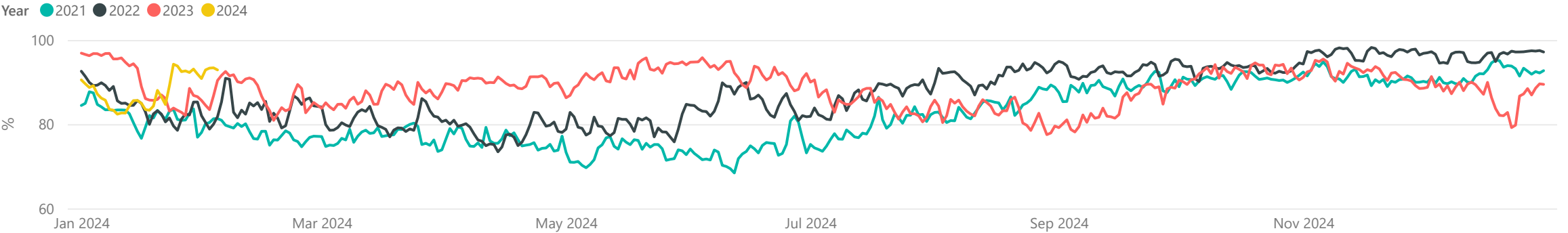
Weekly Generation Mix vs Capacity - GWh



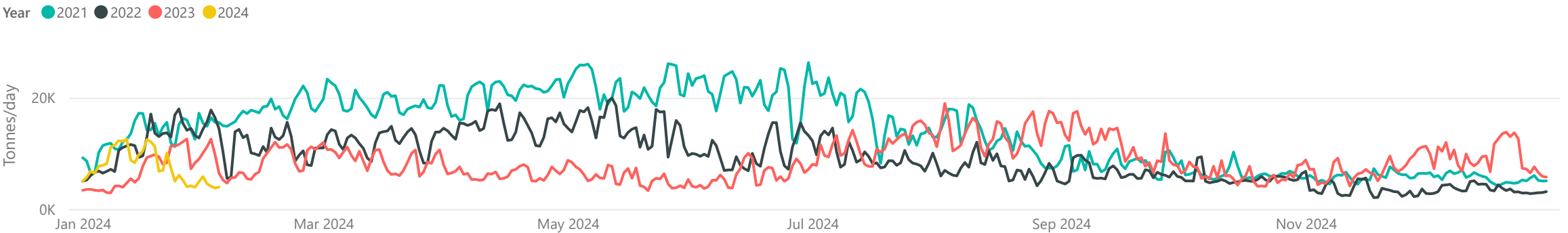
Weekly Generation Mix - GWh



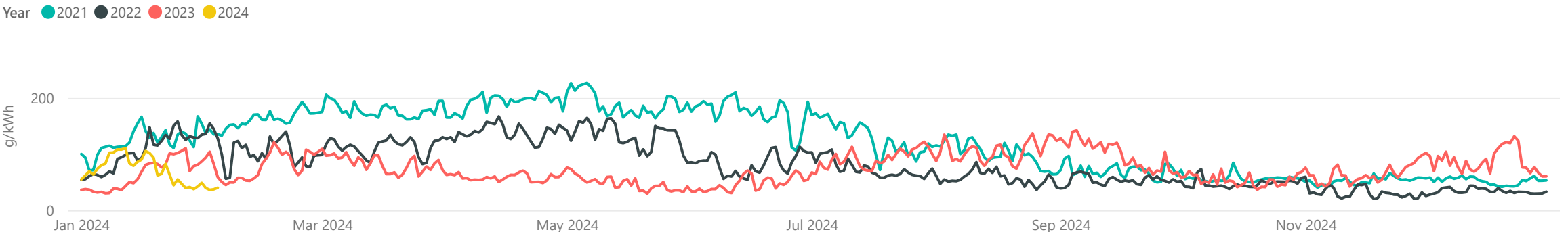
NZ Renewable Percentage



CO2 Tonnes/Day

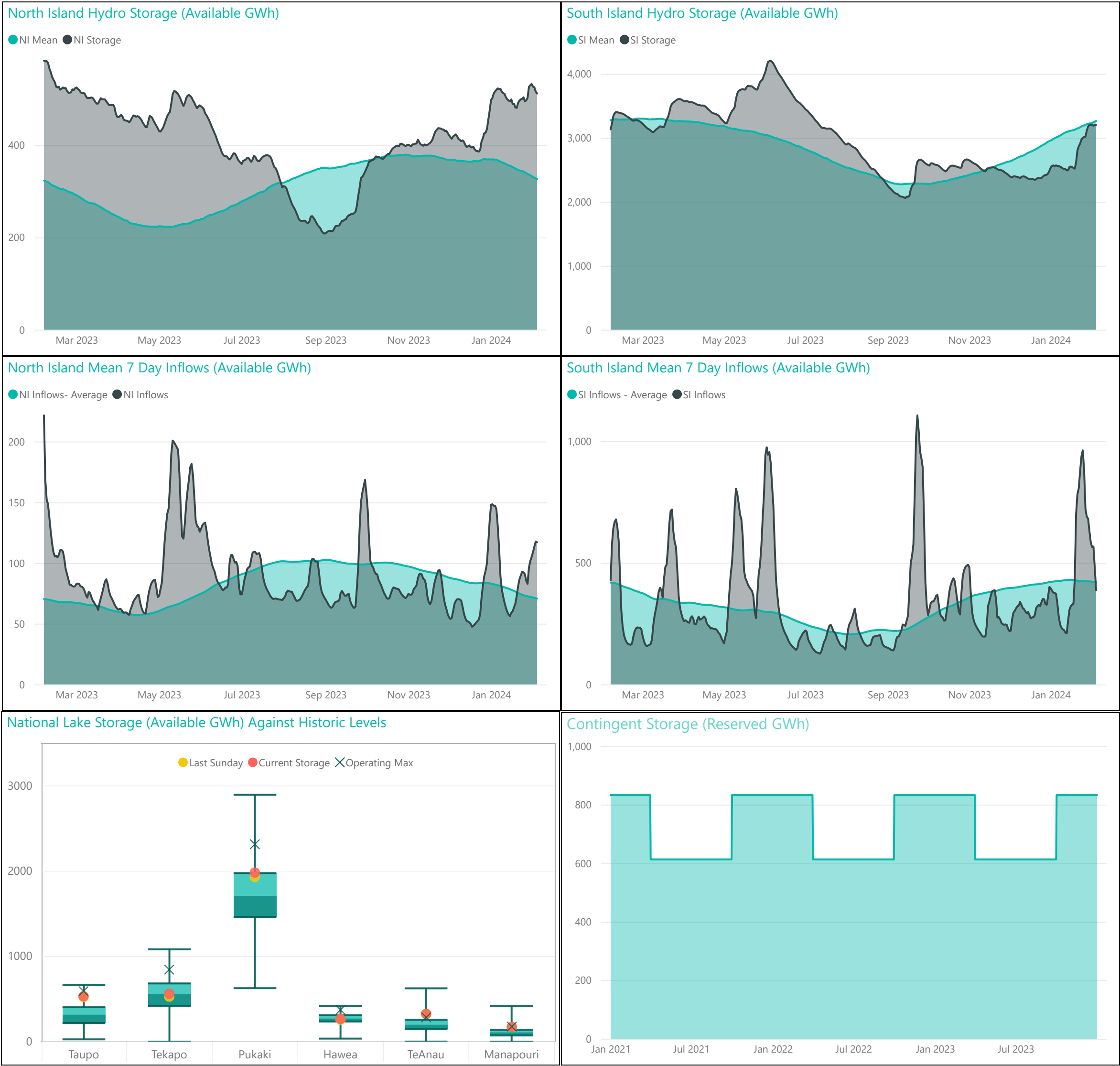


CO2 g/kWh





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

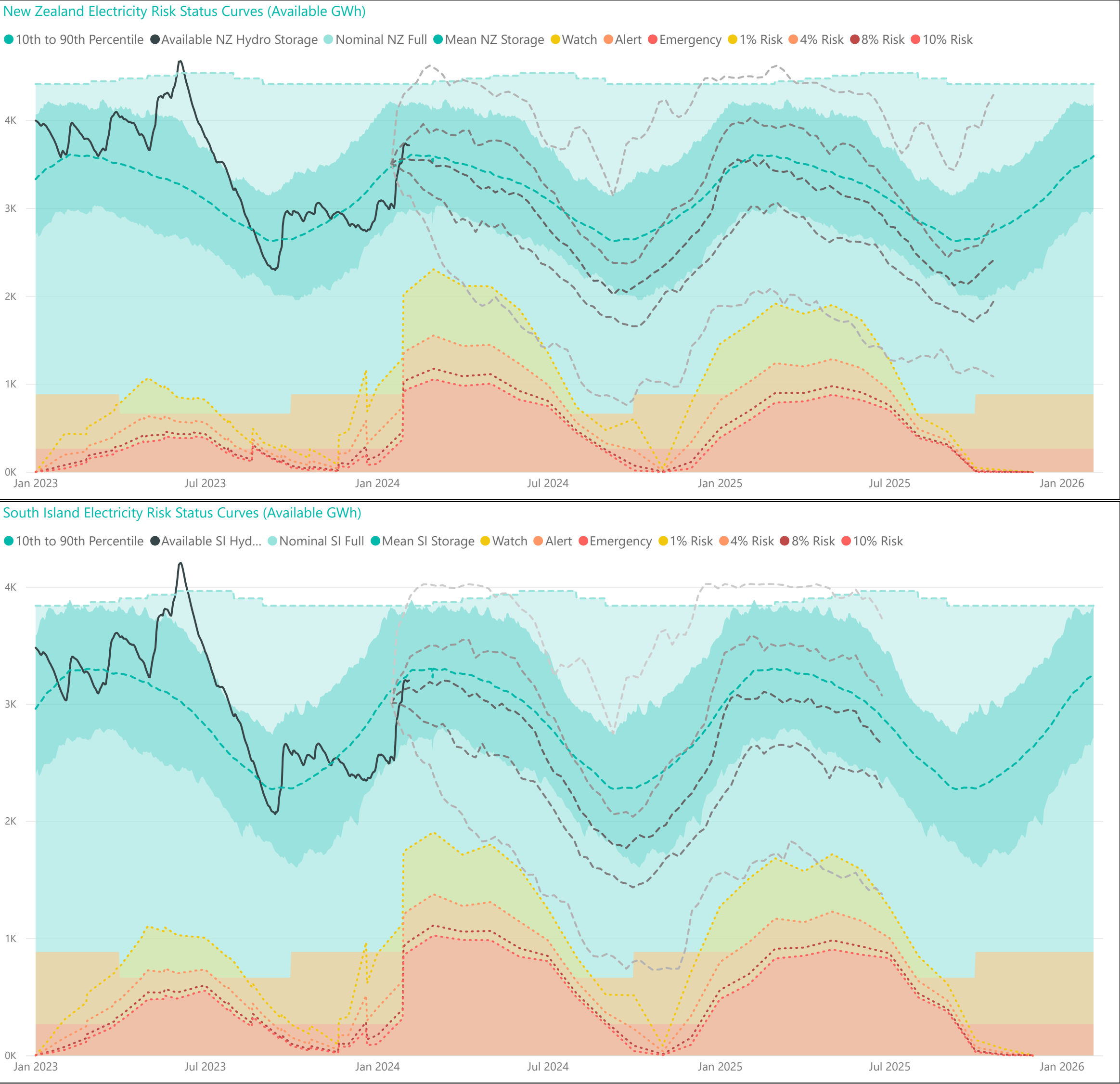
Hydro data used in this report is sourced from [NZX Hydro](#).

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).