



# Weekly Market Movements - Week Ended 14 January 2024

## Overview

National hydro storage is now 88% of the average for this time of year, slightly down from 90% at the end of last week. Demand increased by 13% with the holiday period ending. All residual generation margins were above 1,000 MW. Looking ahead, N-1-G margins are healthy throughout January and February.

In this week's insight, we look at summer load profiles around the country.

## Security of Supply

Hydrology in both islands declined slightly over the week. South Island storage is 82% of the average for this time of year, down from 84%, and North Island storage has reduced from 143% to 140% of the historic mean. With most of New Zealand's hydro storage capacity in the South Island, this means national hydro storage is low at 88% of the average.

## Capacity

Residual generation margins were very healthy last week, with all residual points over 1000 MW. The minimum residual was 1,046 MW on the morning of Wednesday 10 January.

Forecast N-1-G margins are healthy throughout January and February. The latest NZGB report is available on the [NZGB website](#).

## Electricity Market Commentary

### Weekly Demand

Demand increased to 744 GWh last week, up 13% from 659 GWh the week prior. 744 GWh is not unusual for a summer week with the stark increase predominantly due to much lower demand the previous week due to the holidays. Demand peaked at 5276 MW on the evening of Thursday 11 January.

### Weekly Prices

The average wholesale price at Haywards last week was \$223/MWh, a significant increase from \$150/MWh the week prior. Prices at all four reference nodes did not drop below \$140/MWh at any point over the week, usually sticking close to the \$200/MWh mark. The Otahuhu price peaked at \$319/MWh on Wednesday 10 January at 4:30 pm.

Higher prices coincided with higher demand and increased thermal generation as hydro generators eased off to conserve hydro storage. At this time in 2023, average wholesale prices were ~\$50/MWh and national hydro storage was 112% of the historic mean.

## Generation Mix

The renewable percentage of the generation mix last week was 83%. Wind generation was 9%, hydro was 55% and geothermal 19%. The thermal contribution was 14%, an increase from 9% the week before. This time last year, hydro generation made up around 69% of the energy mix, and thermal just 5.2%.

## HVDC

HVDC flow was net southward last week, in line with declining South Island hydro generation and North Island demand. Flow direction switched frequently, usually heading southward overnight and northward in the day.

New Zealand Energy Risk

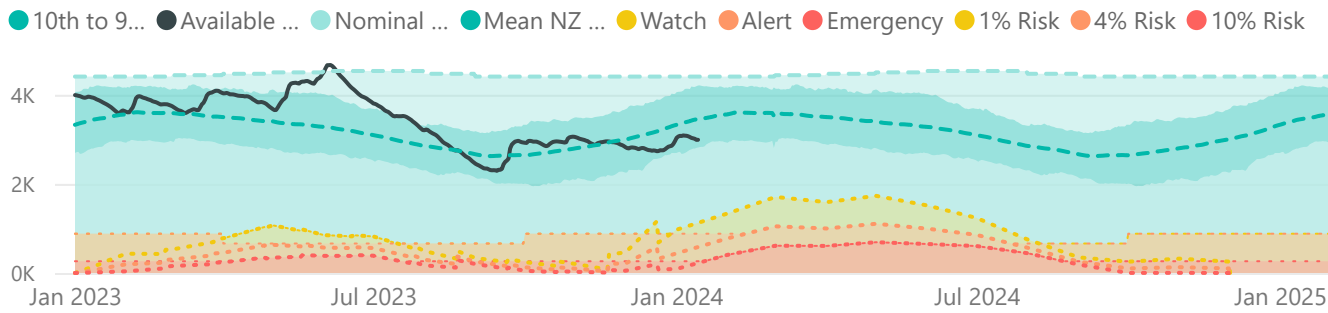


South Island Energy Risk

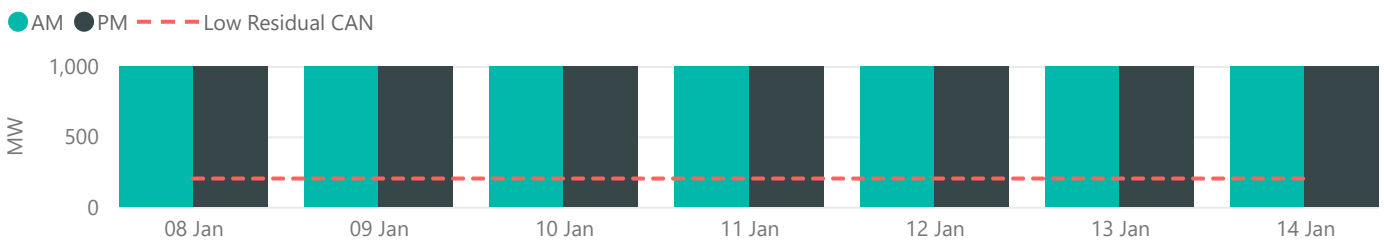


Normal Watch Alert Emergency

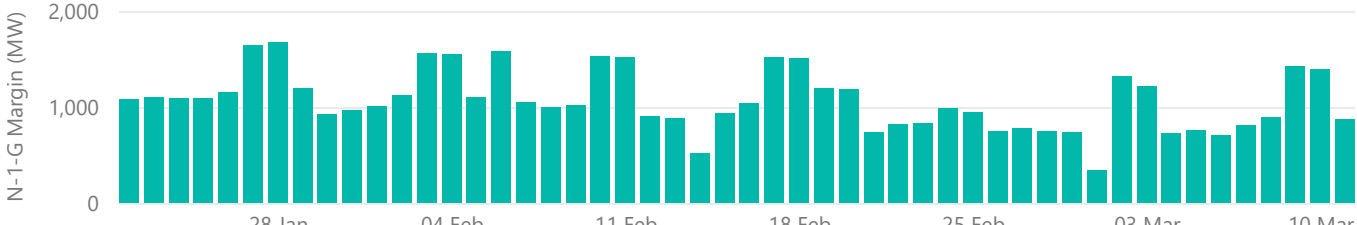
New Zealand Energy Risk Status Curves (Available GWh)



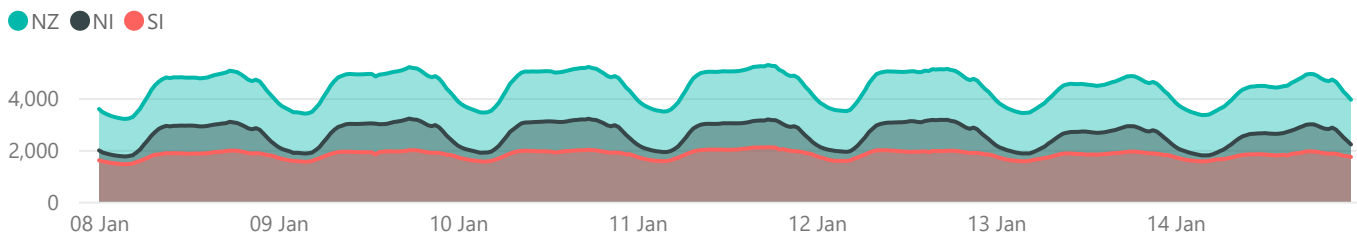
Lowest Residual Points - MW



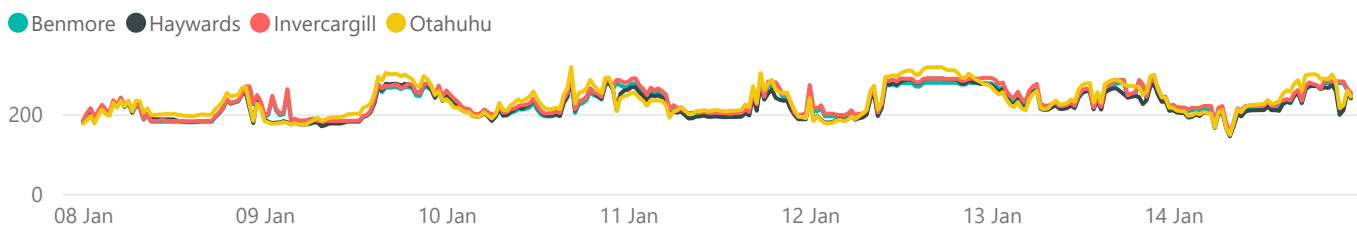
NZGB Look-Ahead (excluding next 7 days)



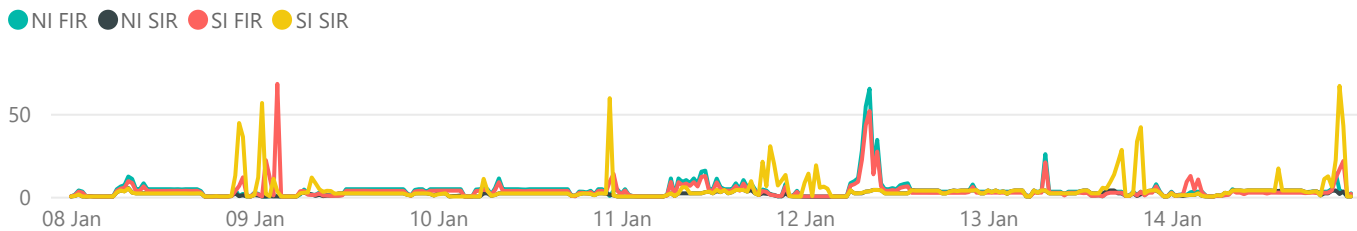
National Demand by Trading period - MW



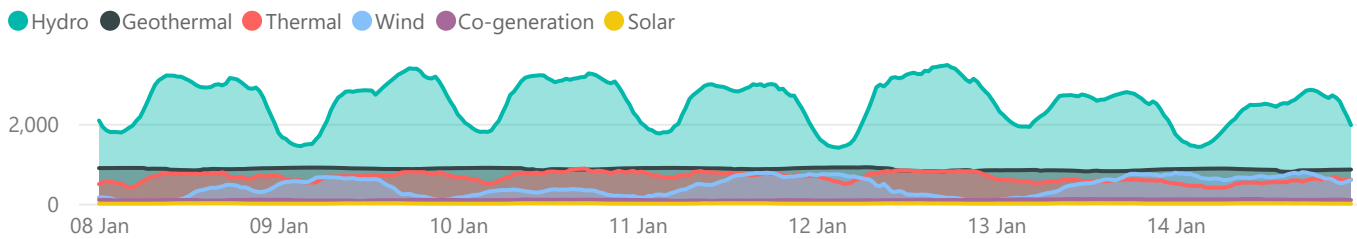
Weekly Prices - \$/MWh



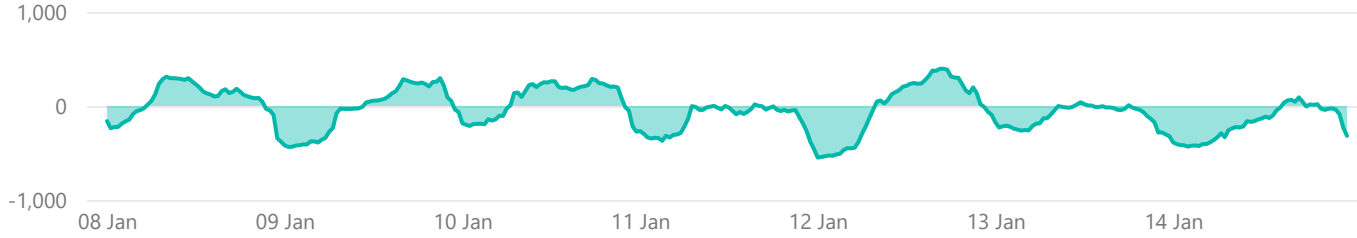
Reserve Prices - \$/MWh

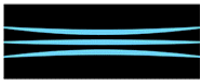


Generation - MW



Net HVDC Transfer - MW

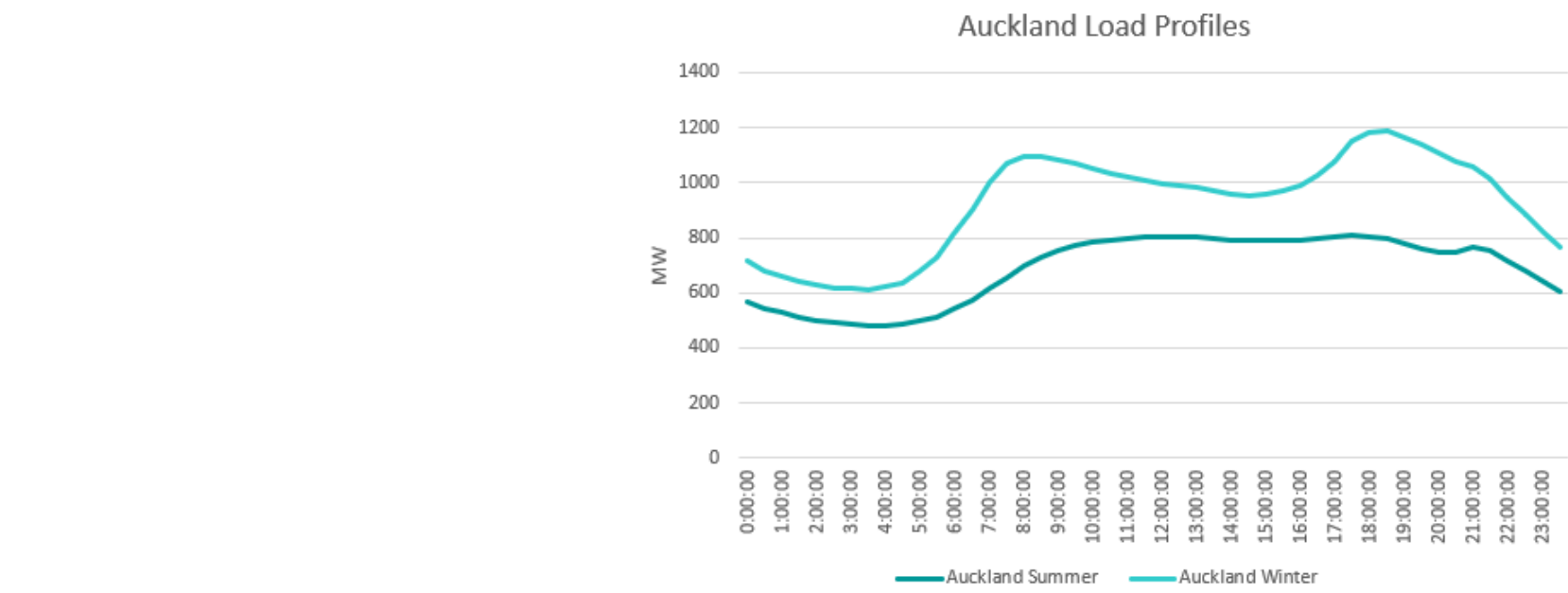




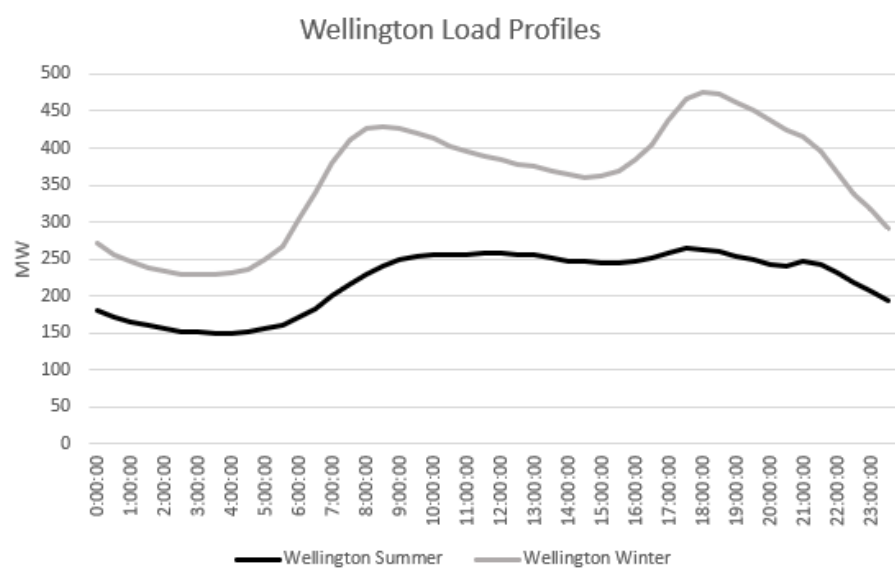
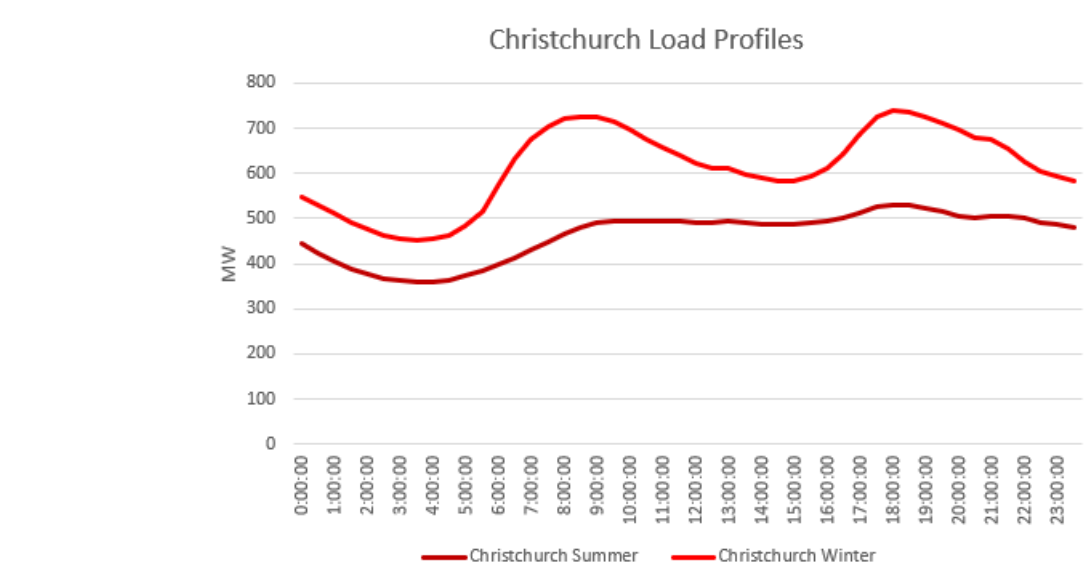
## Weekly Summary Insight - Summer load profiles

During winter the residential share of New Zealand's total electricity demand increases due mainly to more heating and lights being switched on for longer. All of the major load centres have fairly similar daily profiles; a morning peak as the country wakes up to get ready for the day, followed by a lull during the middle of the day when most people are at work or school, and finishing on a distinct evening peak when Kiwis return home, temperatures drop, and the sun disappears.

Outside of the winter season, and especially in summer, load profiles change quite dramatically, which is impacted by the varying types of energy usage in these regions in summer. The most obvious changes are the reduction in load and 'flattening' of the load profile throughout the day - all regions display significantly less obvious peaks and lulls throughout the day. The charts below compare load profiles in three major load regions from winter 2023 and the current summer.



With typically higher temperatures in Auckland than regions further south, air conditioning/cooling can make up a big chunk of Auckland's electricity demand in summer. This type of load is highest in the middle of the day and on some occasions it may lead to the midday peak being higher than morning and evening demand. There is also a small bump in the load at around 9 pm corresponding to lights being turned on as the sun sets and some customers taking advantage of retail plans that incentivise them to shift their demand outside of peak periods.



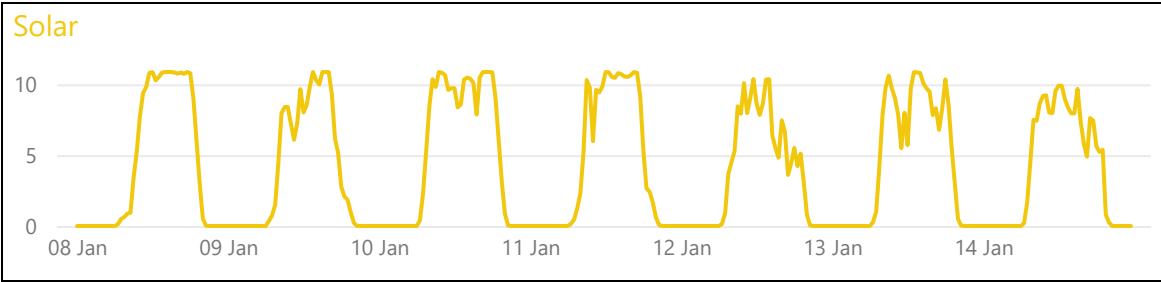
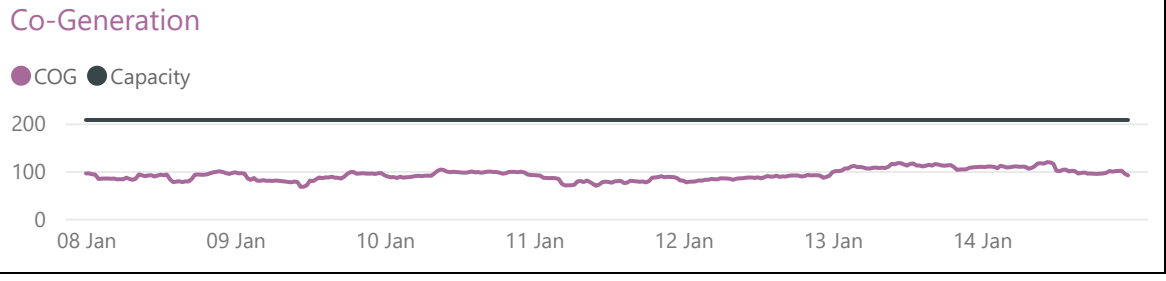
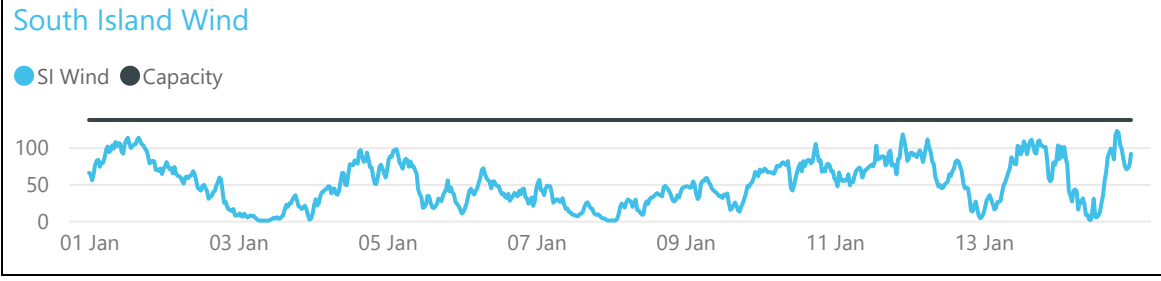
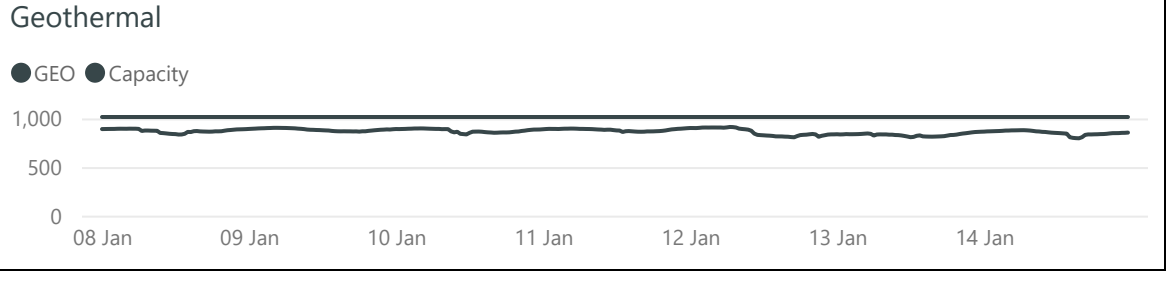
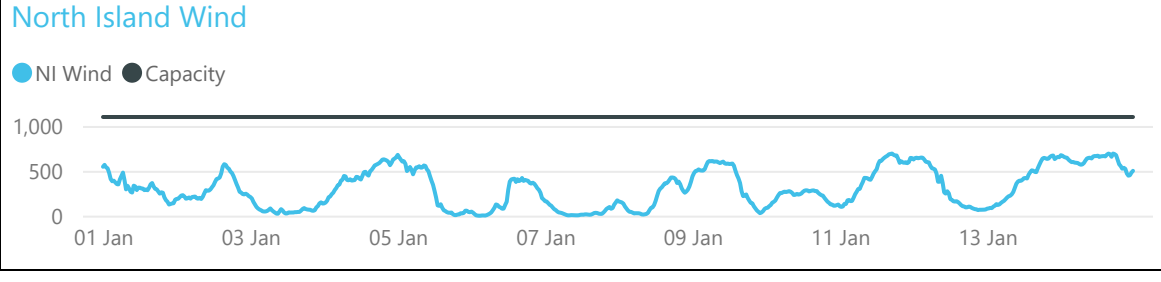
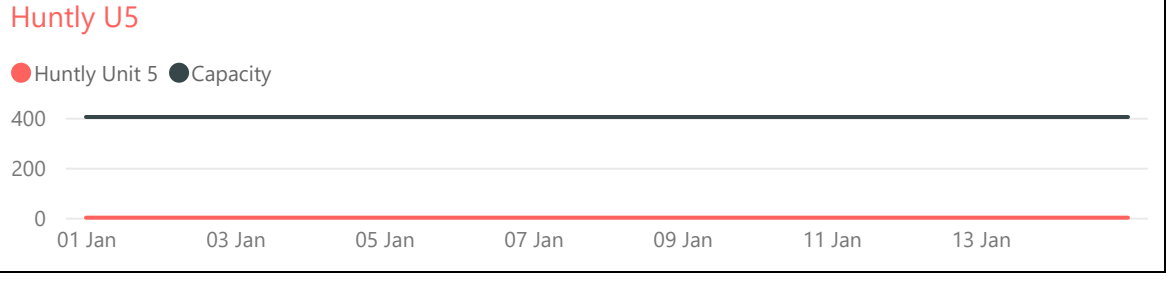
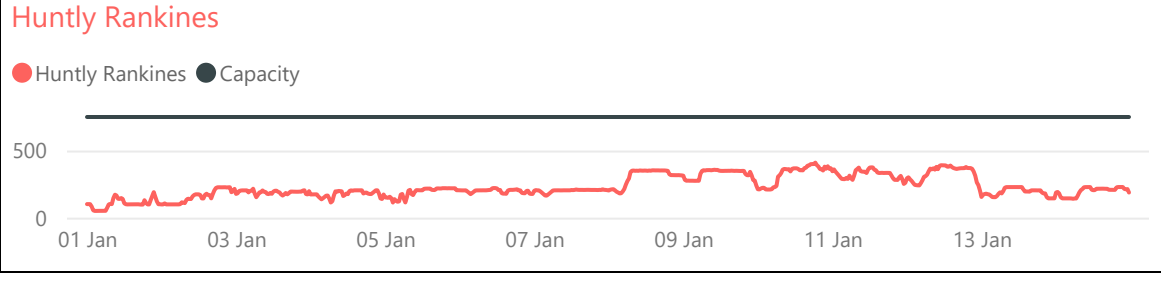
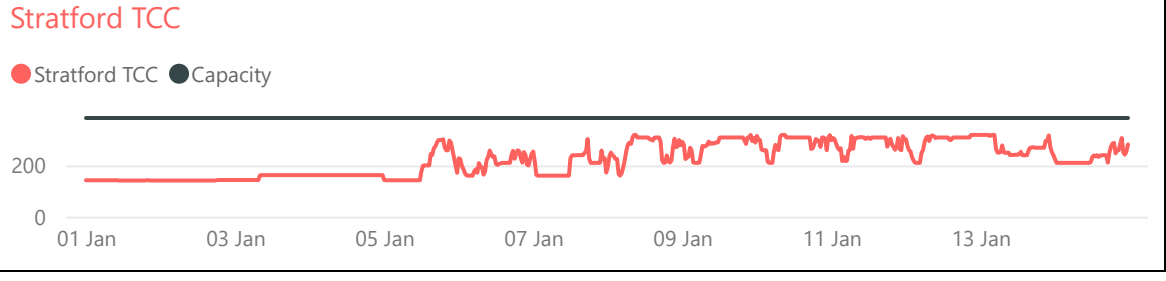
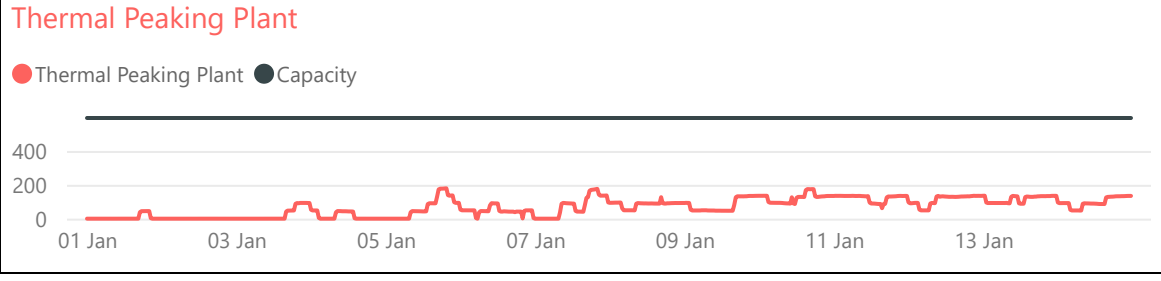
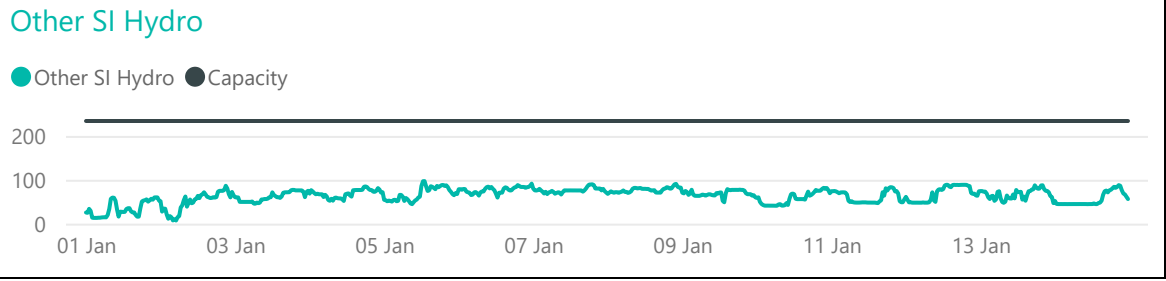
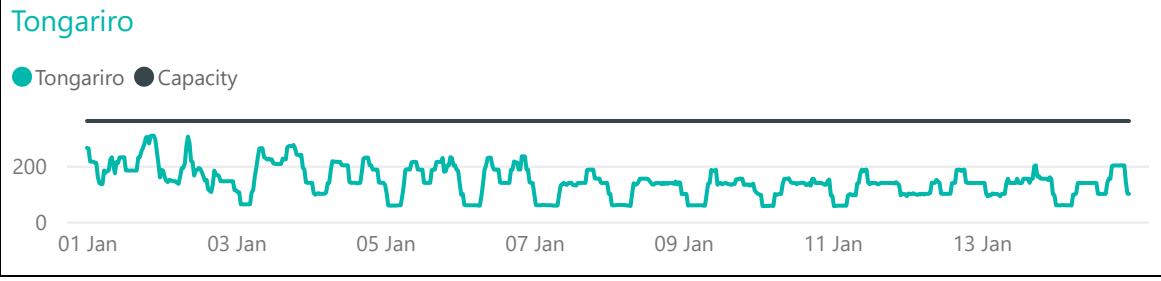
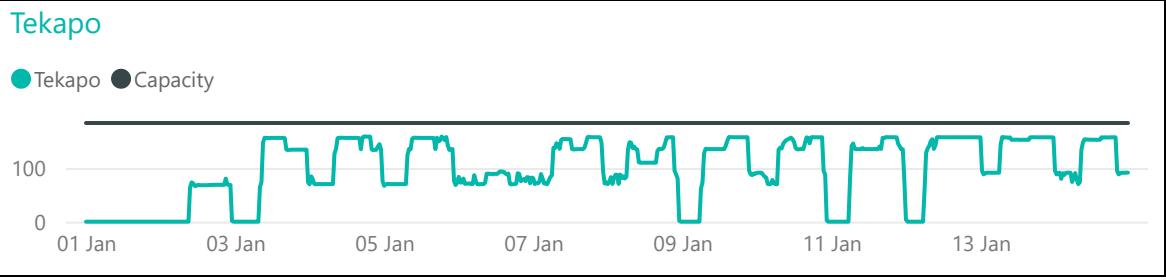
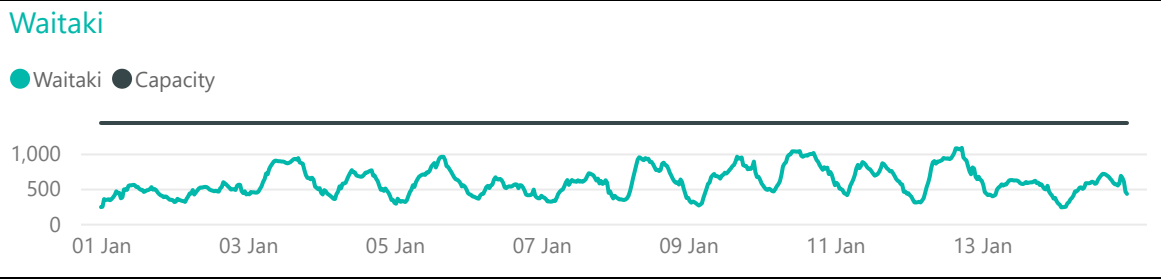
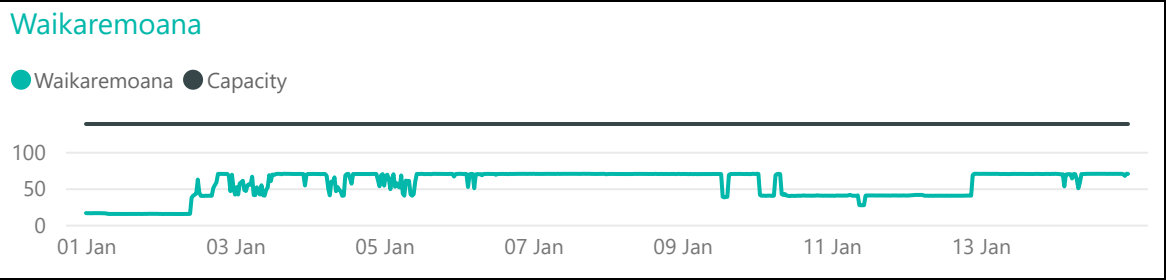
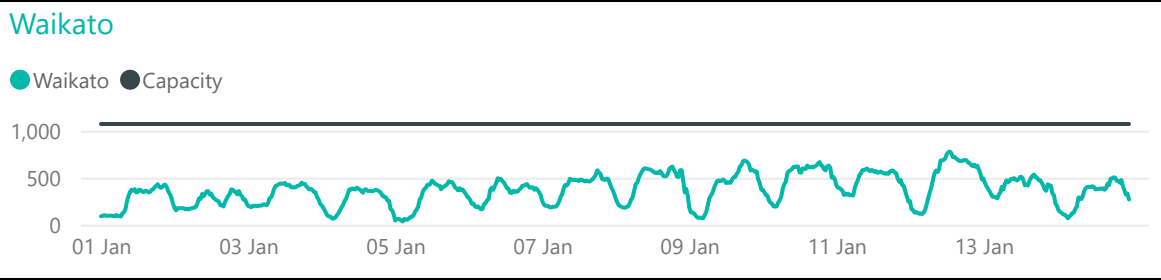
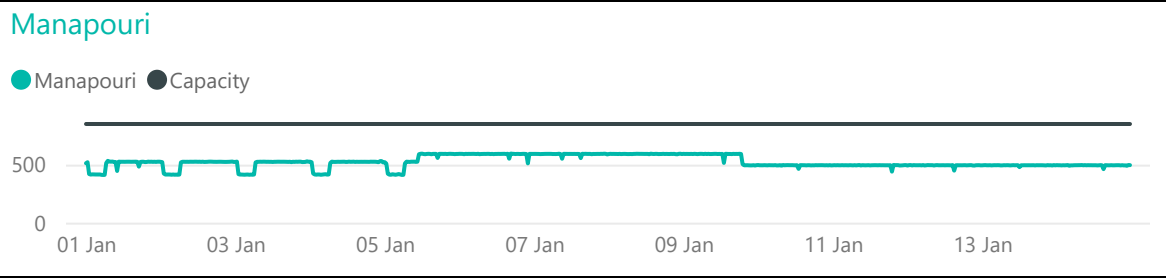
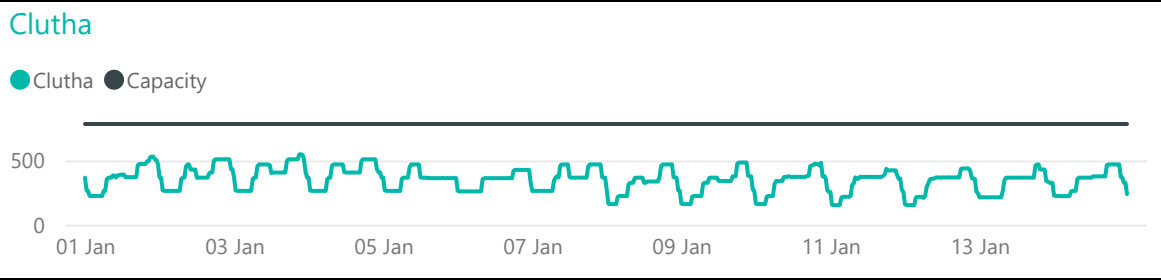
Christchurch is also flat throughout the day, and doesn't decline as much until later in the night. The 9pm load bump is also much less pronounced here than the other load regions. There isn't as big a gap between summer and winter demand in Christchurch because residential heating easing into the warmer seasons is offset by irrigation and cooling load ramping up.

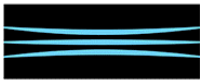
In Wellington, it is still possible to make out some morning and evening 'peaks' separated by a midday lull, though this is much less pronounced than in winter. This is because cooling is not as significant in Wellington, in line with consistently lower summer temperatures. Of all three regions, Wellington appears to show the largest proportional difference between summer and winter demand, as the decrease in residential heating load isn't offset as much by cooling or irrigation, as is the case in Auckland and Christchurch.



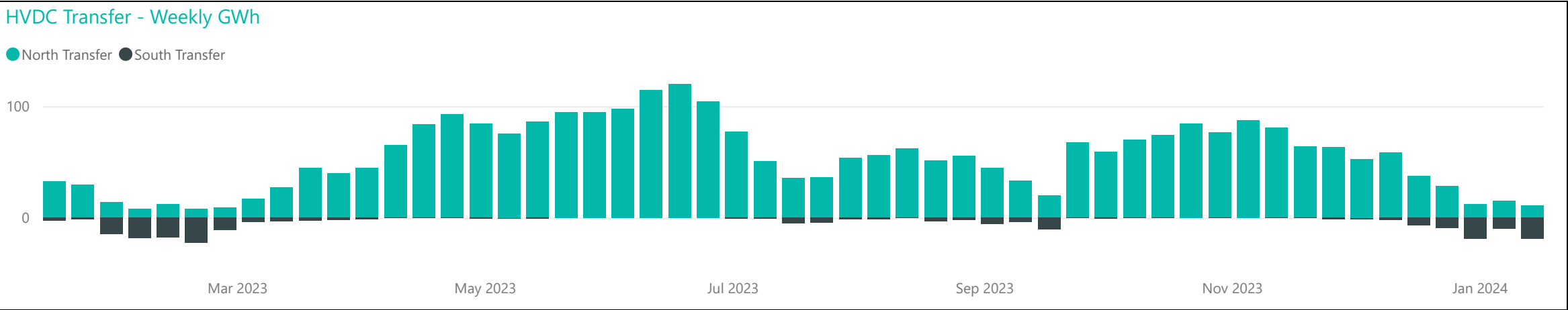
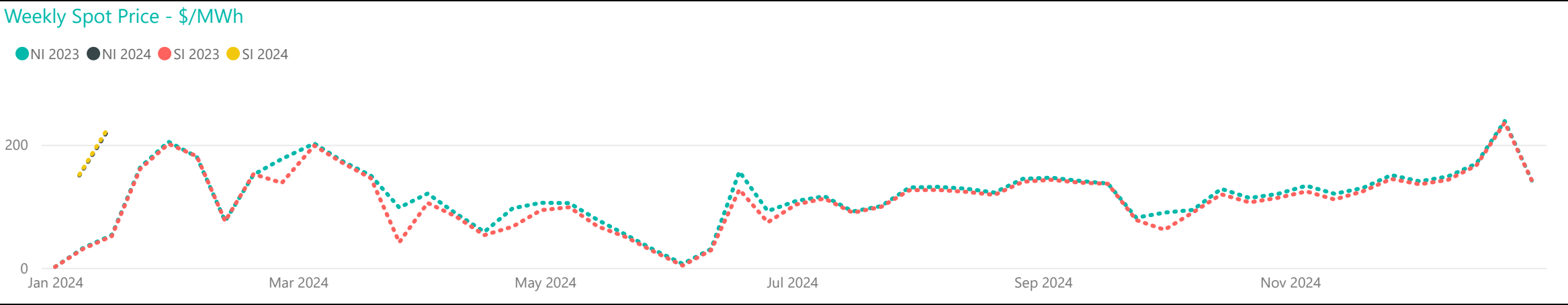
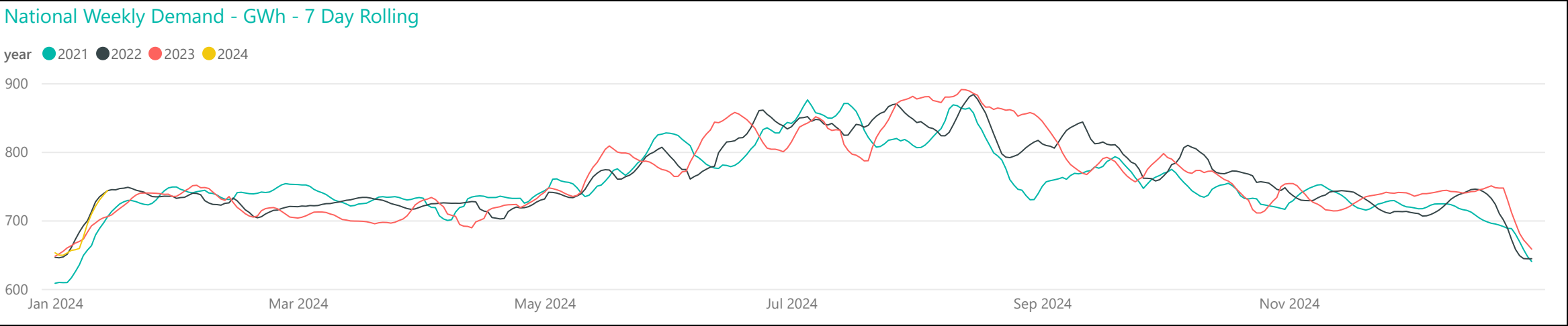
Generation Breakdown - Last Two Weeks

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

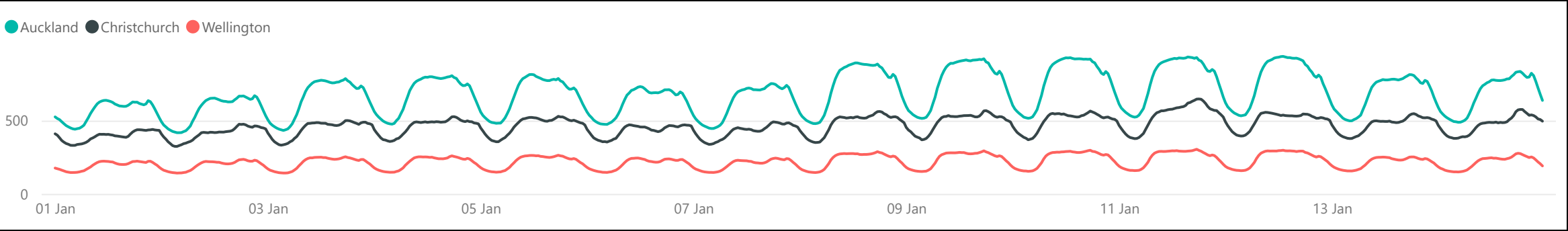




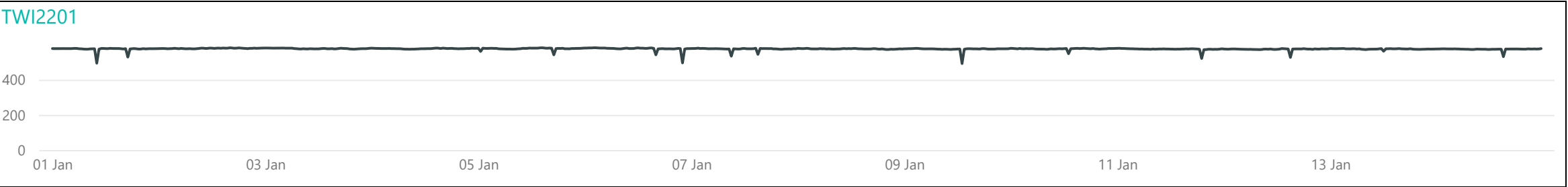
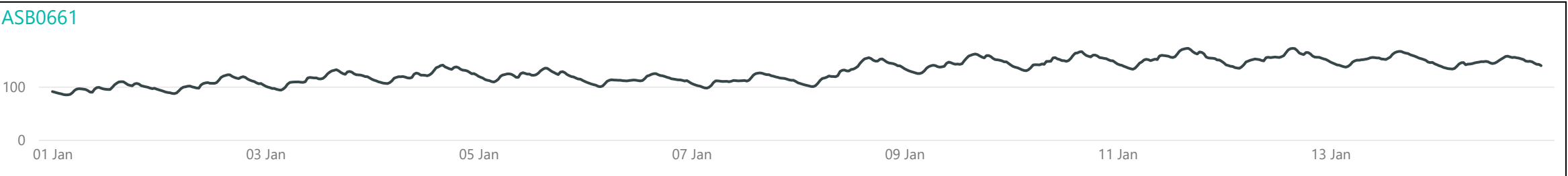
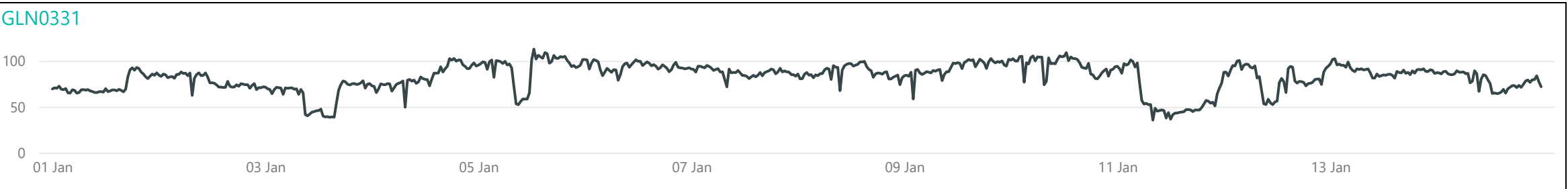
Weekly Profiles



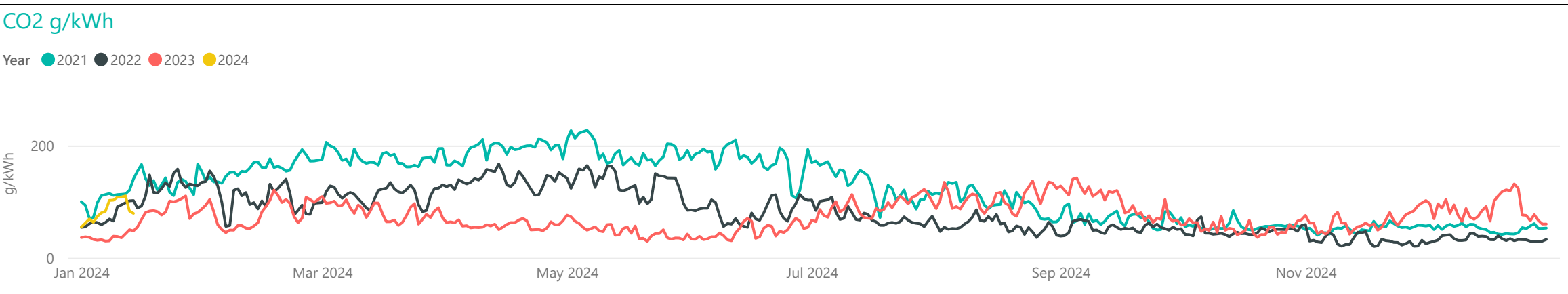
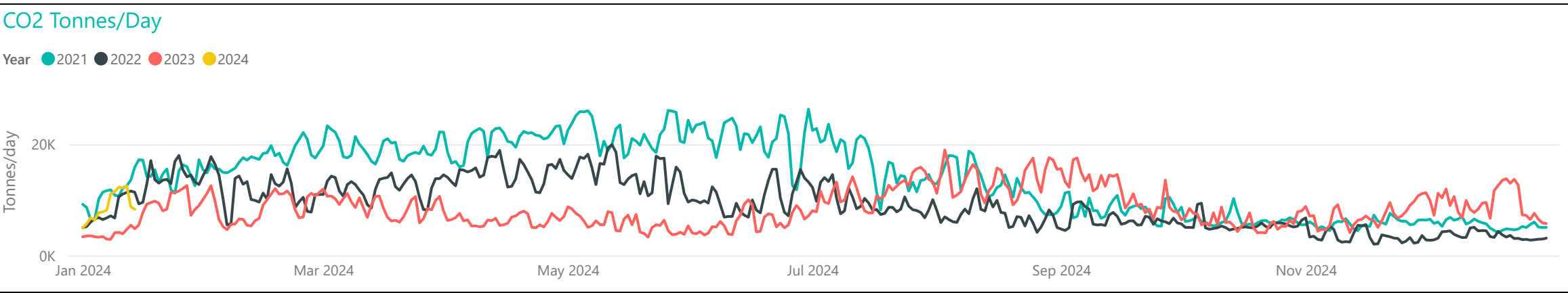
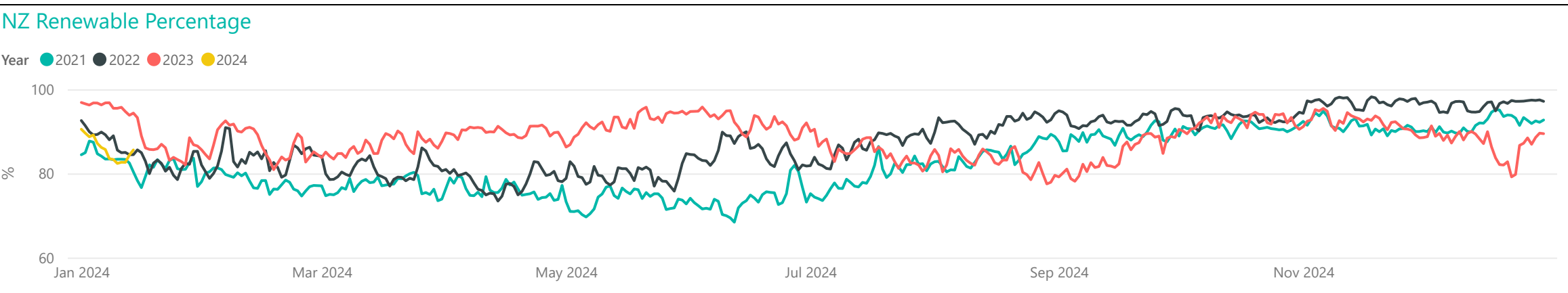
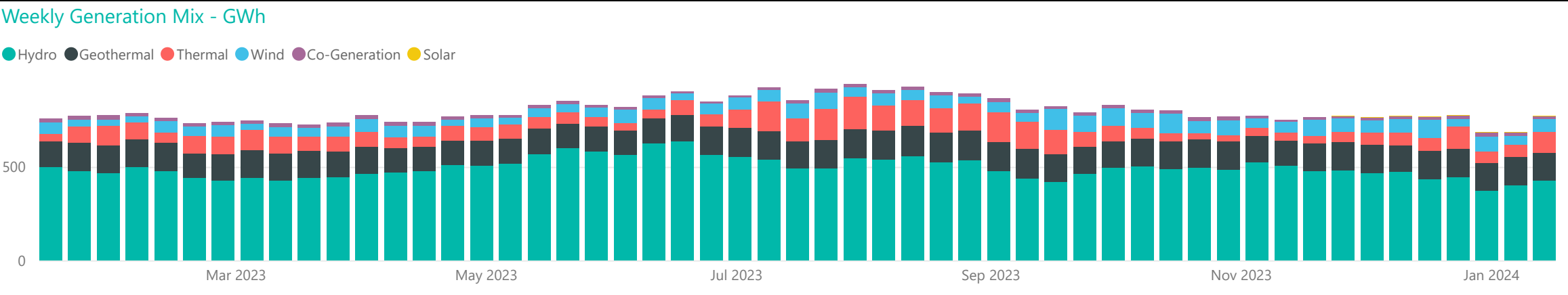
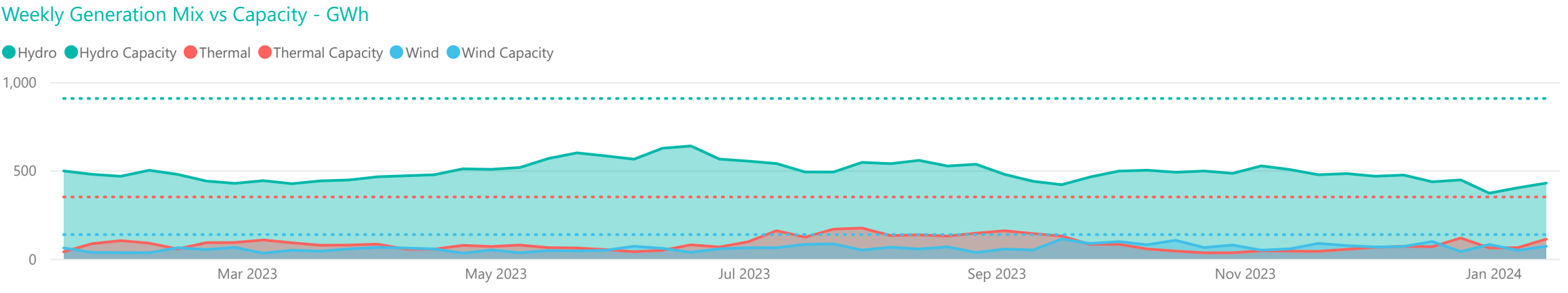
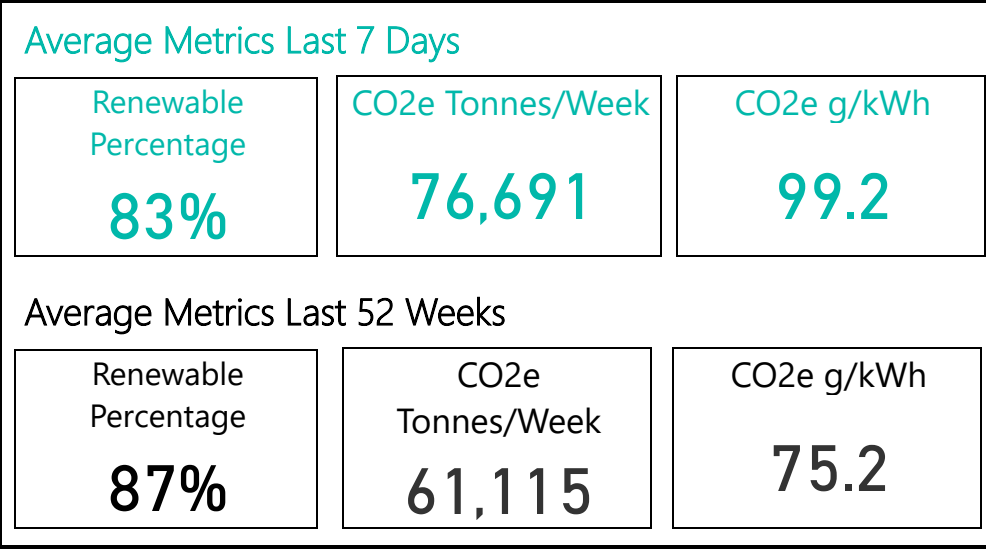
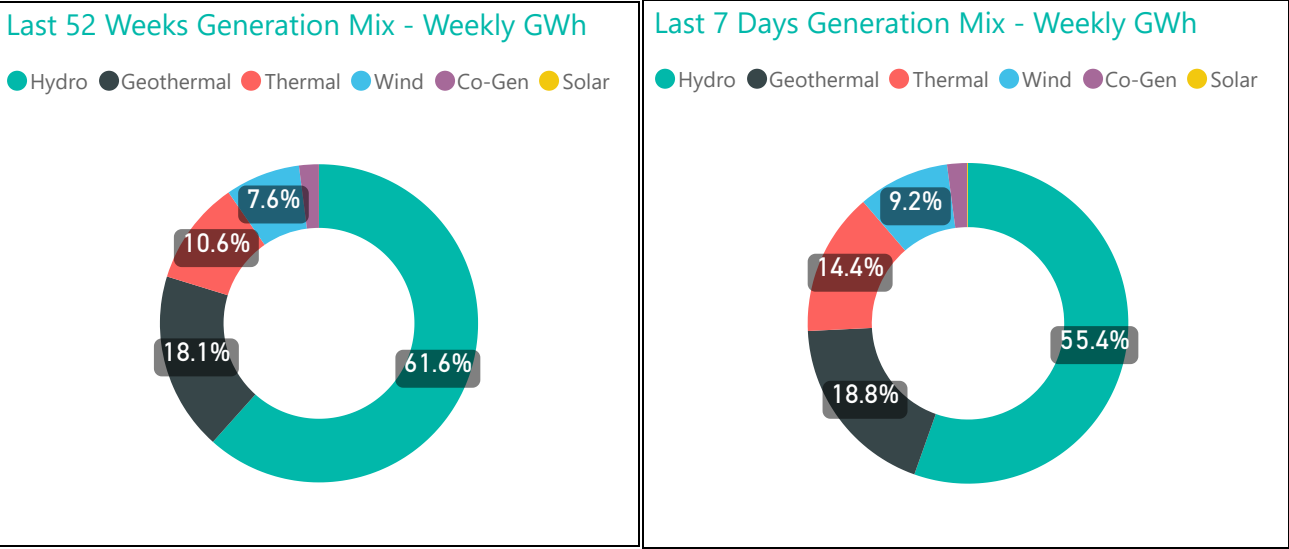
Conforming Load Profiles - Last Two Weeks *Measured in MW shown by region*

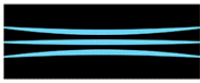


Non-Conforming Load Profiles - Last Two Weeks *Measured in MW shown by GXP*

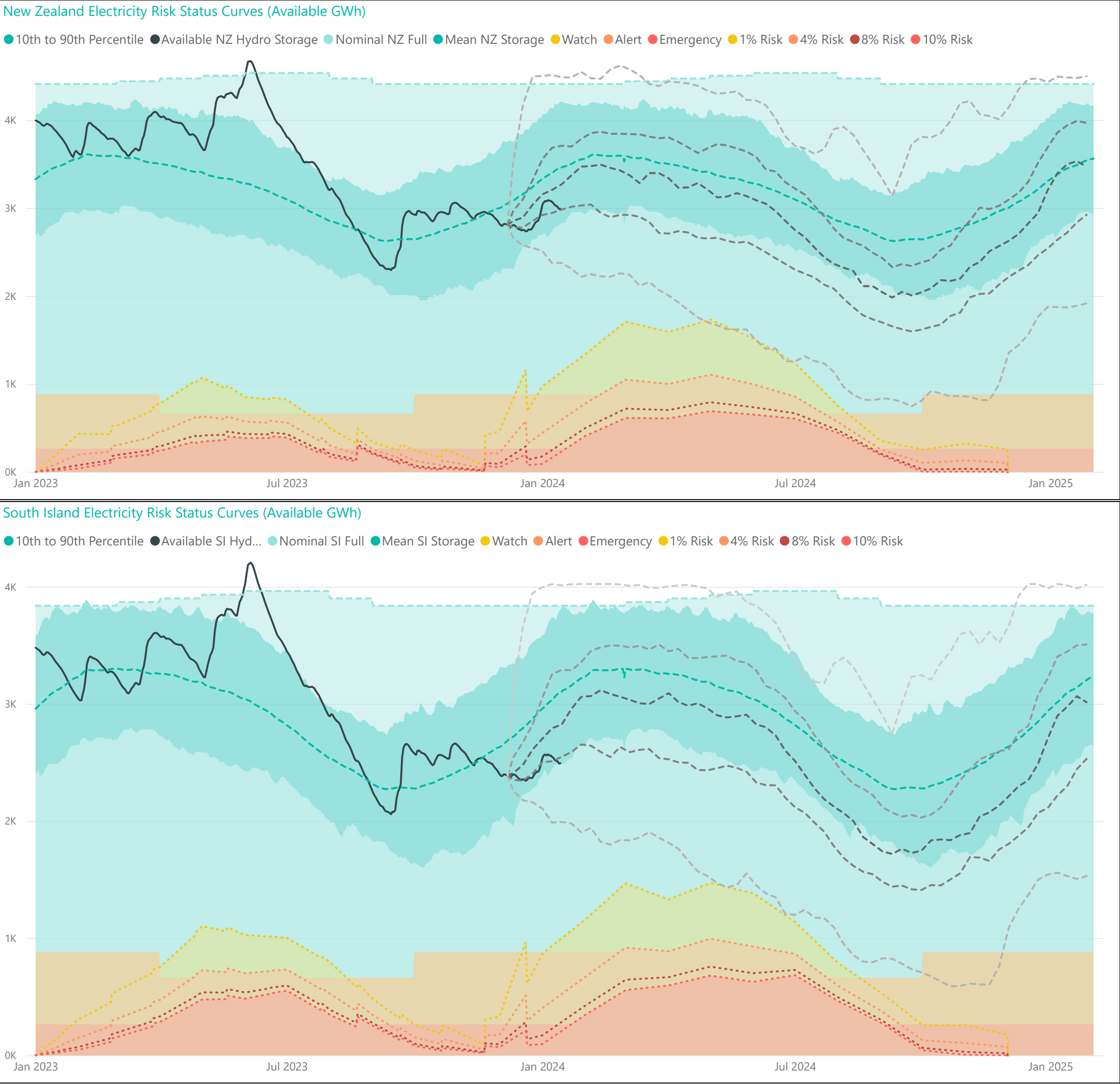


Generation Mix





Electricity Risk Curves

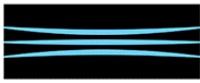


Electricity Risk Curve Explanation:

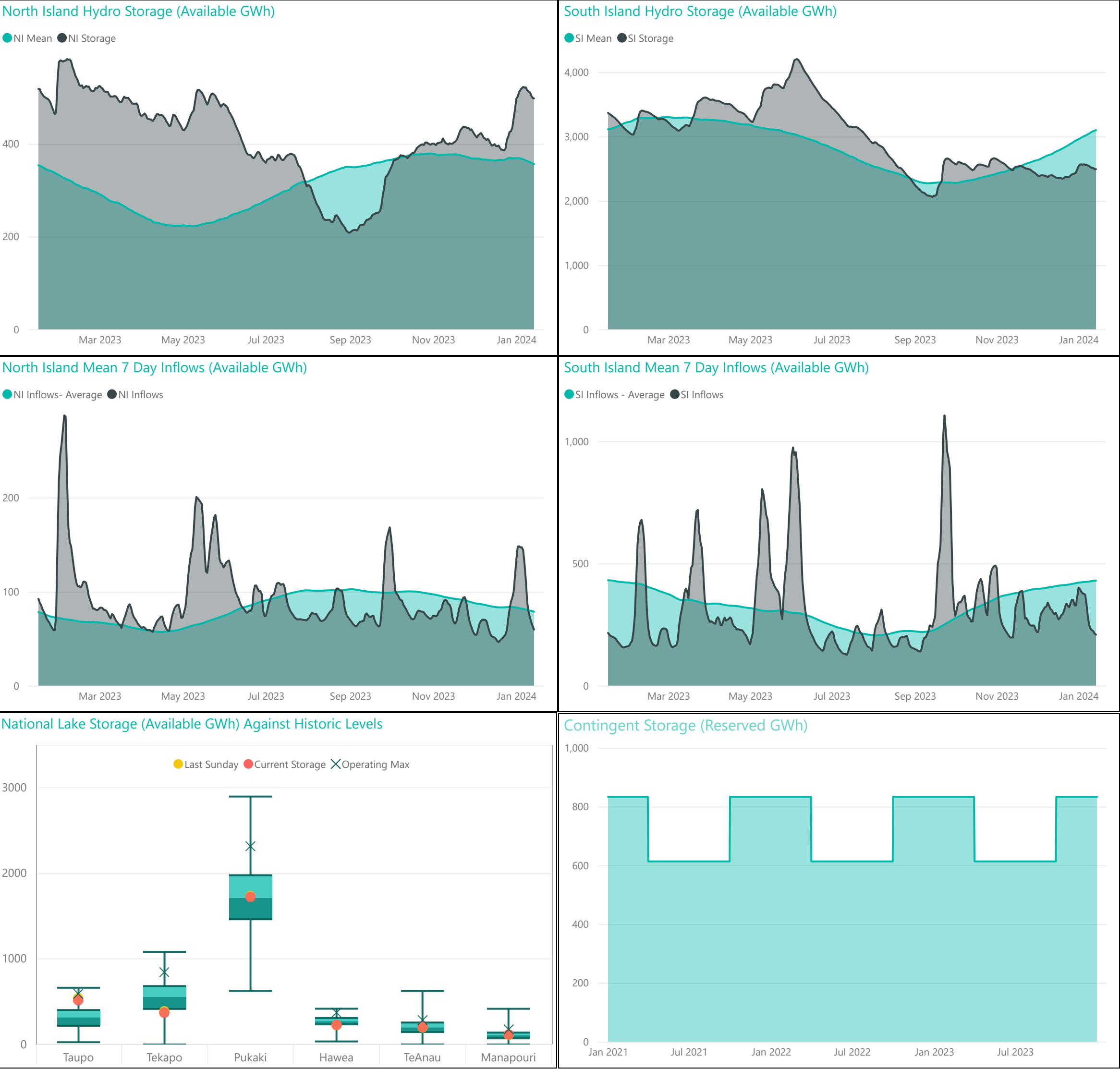
- Watch Curve - The maximum of the one percent risk curve and the floor and buffer
- Alert Curve - The maximum of the four percent risk curve and the floor and buffer
- Emergency Curve - The maximum of the 10 percent risk curve and the floor and buffer
- Official Conservation Campaign Start - The Emergency 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](mailto: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>