

Weekly Market Movements - Week Ended 7 April 2024

Overview

National hydro storage decreased last week and now sits at 83% of the historic mean. Wind generation was nominal for much of the week. However, residual generation remained healthy with over 1,000 MW of residual available throughout the week as thermal commitment remained high. In this week's insight we look at the market schedules which inform the system operator's security assessments and provide information to market participants understand market conditions from a week-ahead down to real-time.

Security of Supply

Energy

National hydro storage fell to 83% of the historic mean last week, down from 88% the previous week. It is now nearing the lowest 10% of historic storage levels. South Island storage is at 80% of the historic mean while North Island storage dropped from 139% to 129% of the historic mean. Inflows expected in the South Island this week should translate into a better hydro storage position.

Capacity

Capacity margins were healthy last week as a result of consistently high thermal unit commitment over the week and high wind generation in the second half of the week.

Forecast N-1-G margins are high until late April and early May when there are five days with lower margins forecast. The lowest N-1-G margin during the forecast period is 82 MW on 29 April. The latest NZGB report is available on the [NZGB website](#).

Electricity Market Commentary

Weekly Demand

Total demand decreased to 732 GWh, with reduced demand on Monday 1 April during the Easter public holiday. Demand peaked at 5,500 MW on the morning of Wednesday 3 April.

Weekly Prices

Energy prices were steady for most of the week with the average wholesale price up slightly to \$258/MWh from \$249/MWh the week prior. Wholesale prices peaked at \$350/MWh at Otahuhu on Friday morning at 8:00AM. There was some inter-island price separation and price inversion on Monday 1 April during an [unplanned pole 3 outage](#). For further information on price inversion see our [previous insight](#).

Generation Mix

The renewable percentage of the generation mix remained around 80% last week; hydro generation increased from 48% to 53% which offset the reduction in wind generation from 12% to 5%. Thermal generation increased marginally from 18% to 19% of the mix, continuing to provide a higher than average share. There was also a marginal reduction in the share of cogeneration due to an outage.

HVDC

Over the past week, HVDC flows were northward during the day and southward overnight, reflecting the typical lower overnight demand profile. A reduction in wind generation in the North Island and high hydro generation in the South Island coincided with periods of higher northward flow. However, as the week progressed and wind generation picked up, HVDC northward flows reduced during the day and southward overnight flows increased.

Annual Industry Exercise

The Electricity Authority and Transpower are planning an industry exercise of a major power system event over two days on 1 and 8 May 2024.

Wednesday 1 May - for control room operators

This day will be led by the system operator to test grid emergency processes and interactions between the system operator and generators, lines companies and direct connect industrial customers.

Wednesday 8 May - for digital communications/social media/customer leads

This day will be led by the Electricity Authority alongside Transpower's communication team and will test communications and interactions from Transpower out through lines companies to retailers and end consumers. More information is available on our [website](#).

New Zealand Energy Risk

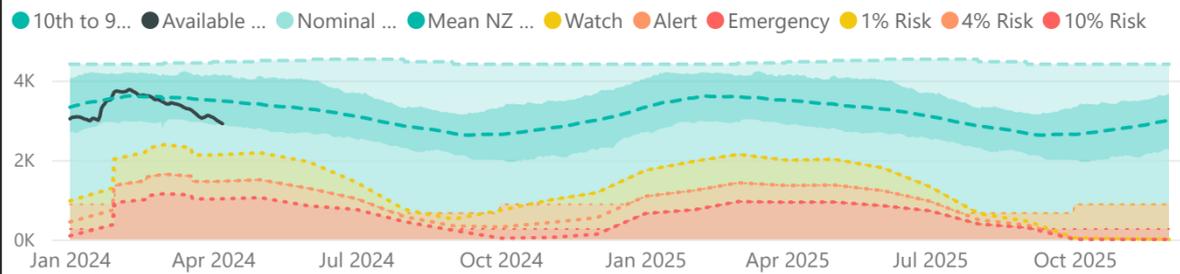


South Island Energy Risk

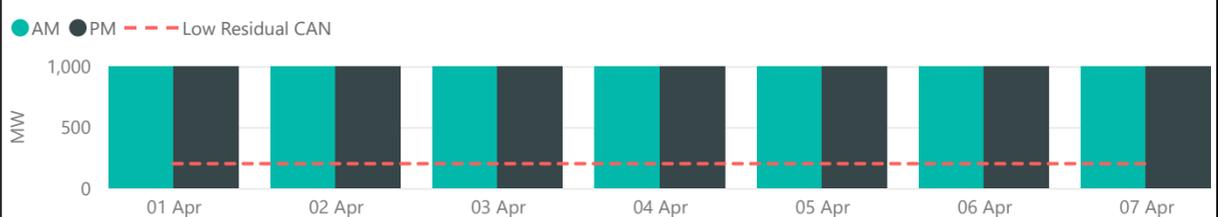


Normal Watch Alert Emergency

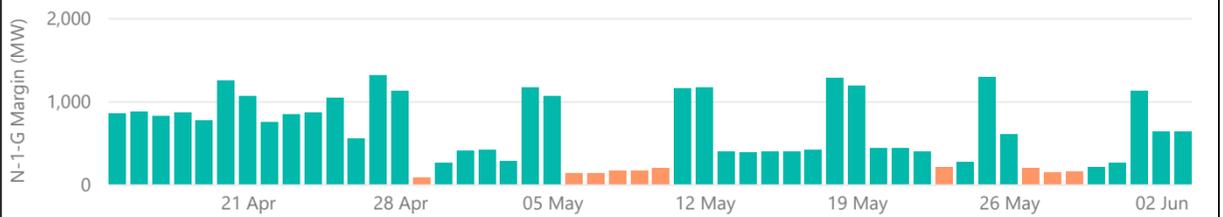
New Zealand Energy Risk Status Curves (Available GWh)



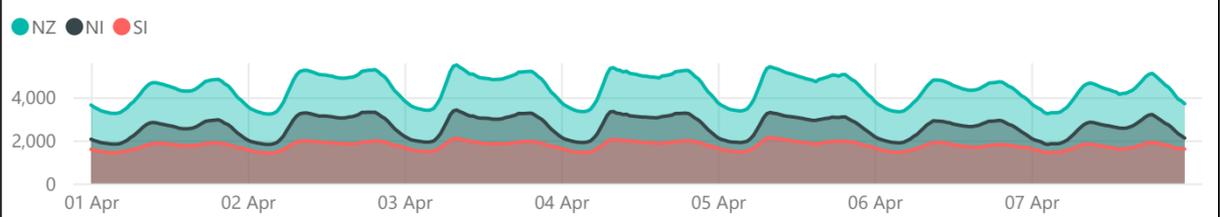
Lowest Residual Points - MW



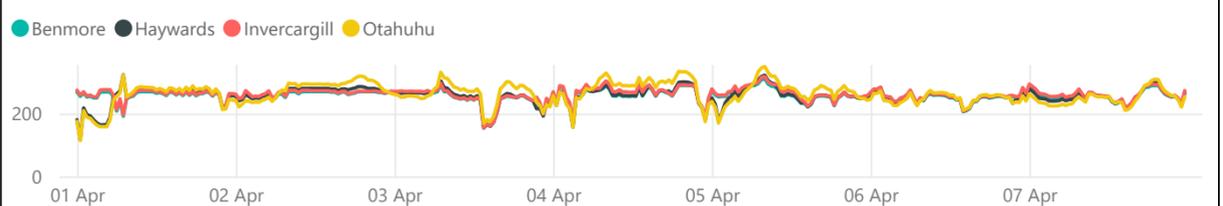
NZGB Look-Ahead (excluding next 7 days)



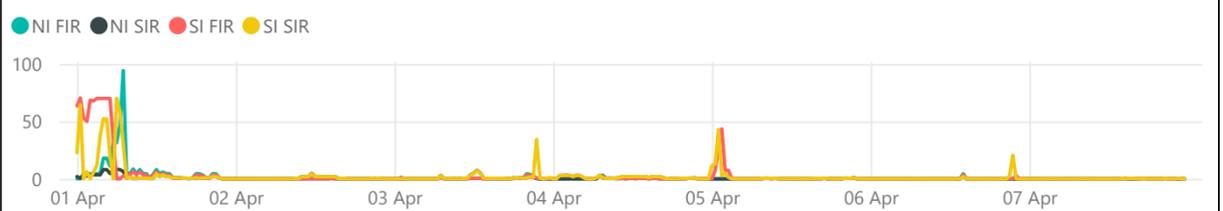
National Demand by Trading period - MW



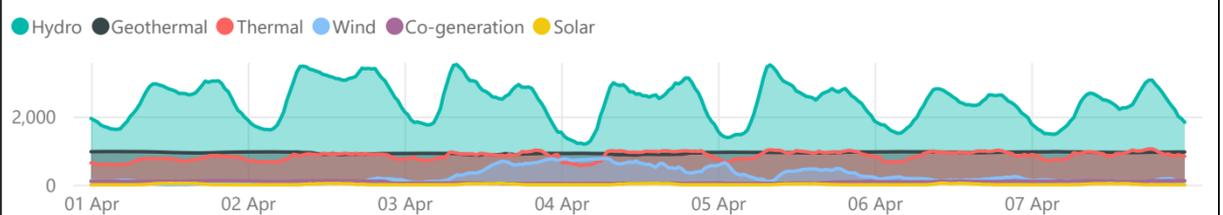
Energy Prices - \$/MWh



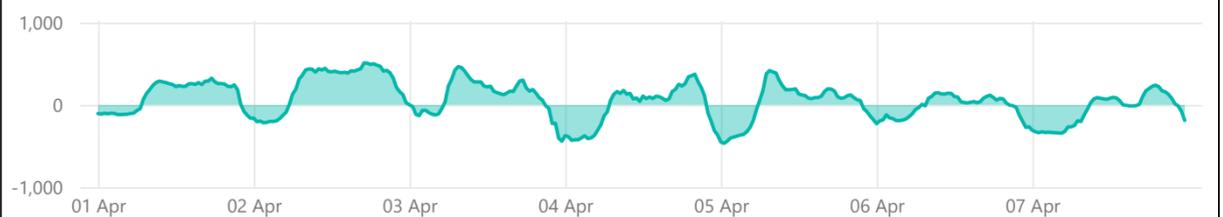
Reserve Prices - \$/MW



Generation - MW



Net HVDC Transfer - MW



Weekly Summary Insight - Overview of Market Schedules

The System Operator publishes six schedules on the Wholesale Information and Trading System ([WITS](#)) which are available to market participants. The inputs required for these schedules determine how well the schedules perform so it is imperative that market participants provide up to date and accurate offers, bids, and outage information.

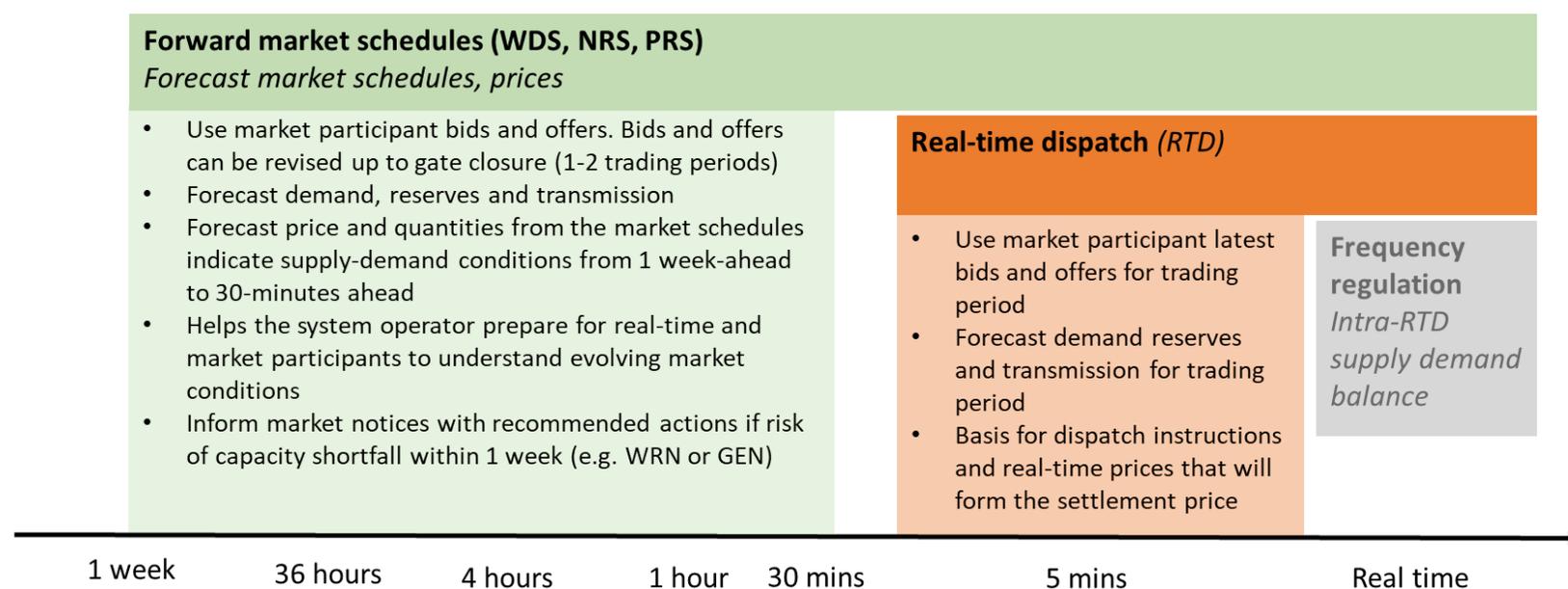
The *Real Time Dispatch schedule (RTD)* is produced every 5 minutes and is the basis for dispatch of energy, reserves, and demand and determines settlement prices.

The remaining five schedules provide a forecast of expected market and system conditions leading up to real time. Two of these schedules, the *Price-responsive Schedule Long (PRSL)* and the *Price-responsive Schedule Short (PRSS)* provide a forecast of market conditions considering the effects of signaled demand response through bids.

The three remaining schedules do not include the impact of price responsive demand on market outcomes (with the exception of dispatchable demand); two of these schedules are the *Non-response Schedule Long (NRSL)* and the *Non-response Schedule Short (NRSS)* and the third schedule is the *Week-ahead Dispatch Schedule (WDS)*.

Short schedules are produced every 30 minutes and cover four trading periods while long schedules are produced every two hours (on the even hours) and cover 72 trading periods. The WDS is produced daily at 1:30AM and provides a seven-day look ahead timeframe.

These market schedules provide indicative market prices to highlight any supply and demand tight points and to allow a feedback loop for participants to respond to these and update their bids and offers.



All forecast schedules use the following inputs:

- Load forecast (medium term)
- Outages from outage scheduler
- Constraints
- Reactive profiles for SFT ([Simultaneous Feasibility Test](#))
- Nominated bids (WDS uses rollover bids)
- Offers for energy (WDS uses rollover offers where there are no offers).
- Offers for reserves (apart from the WDS).

The price responsive schedules also use difference bids and dispatchable demand as inputs to inform price impacts from demand response.

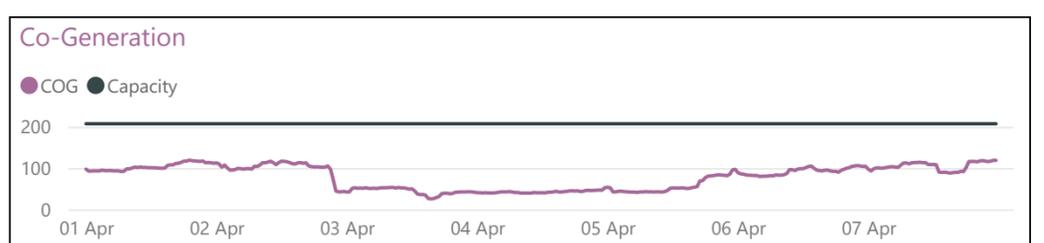
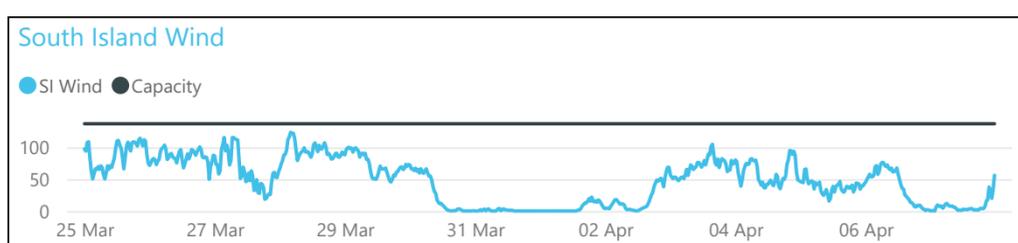
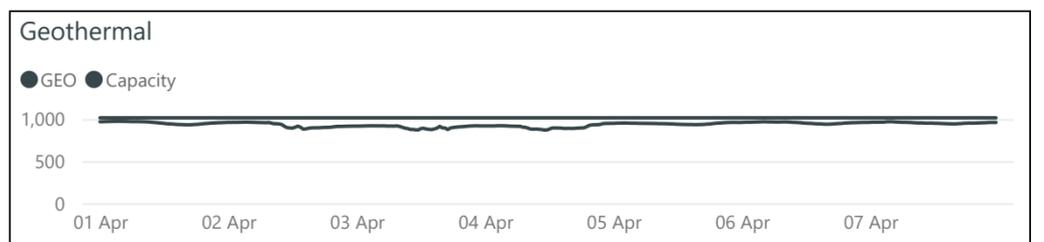
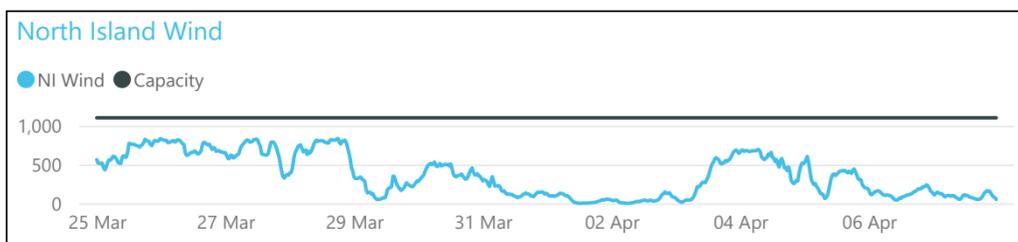
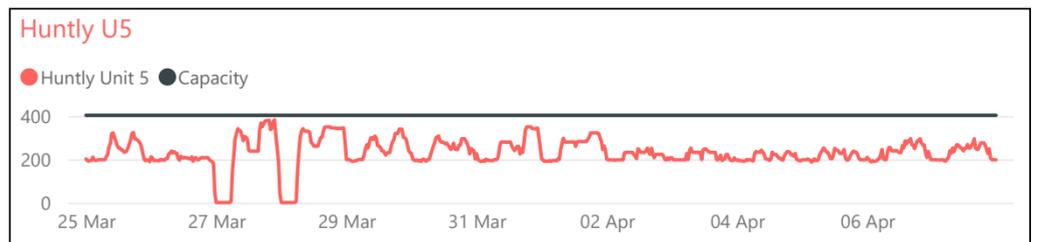
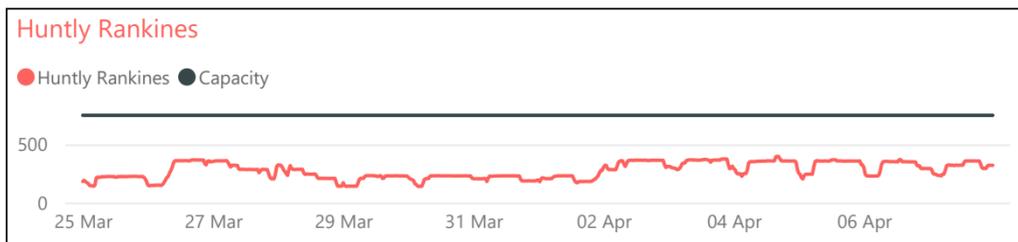
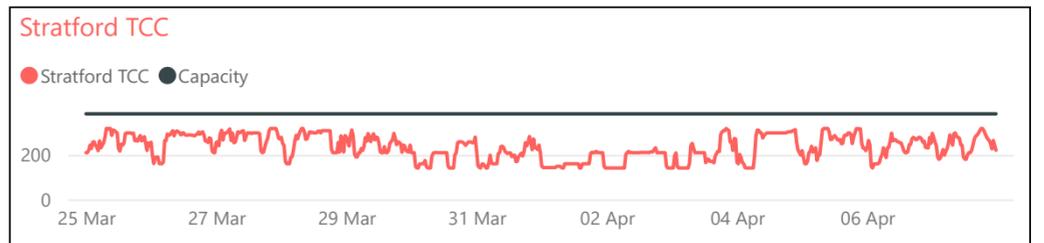
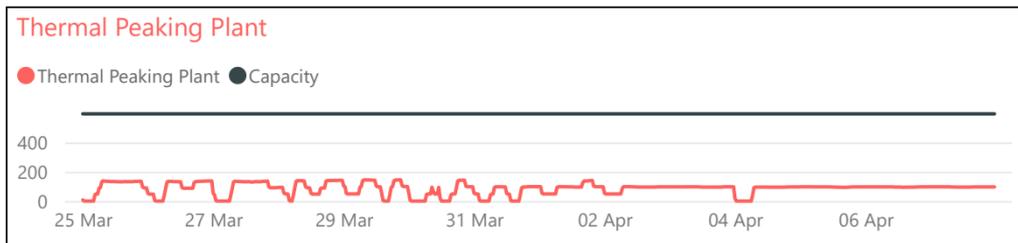
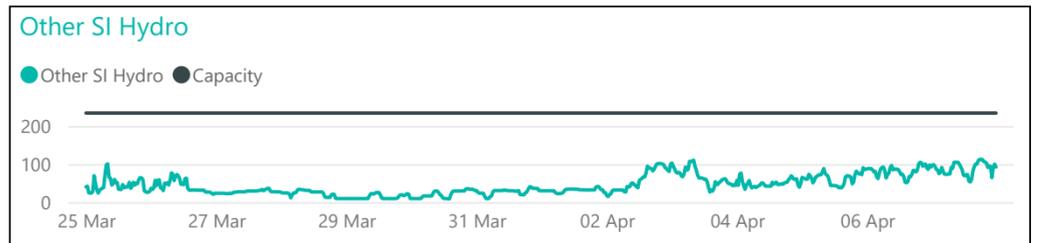
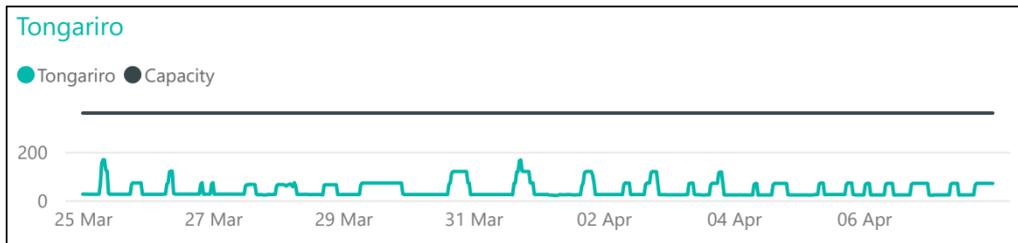
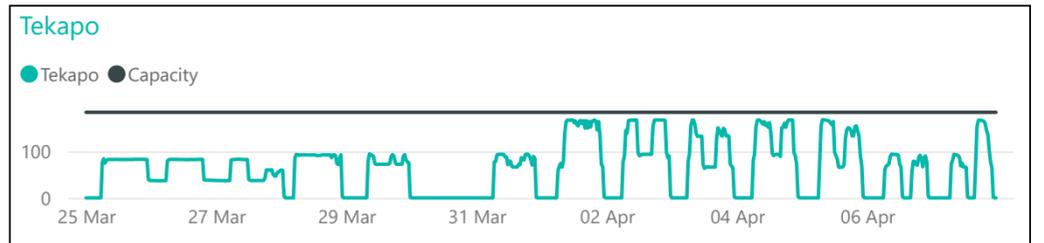
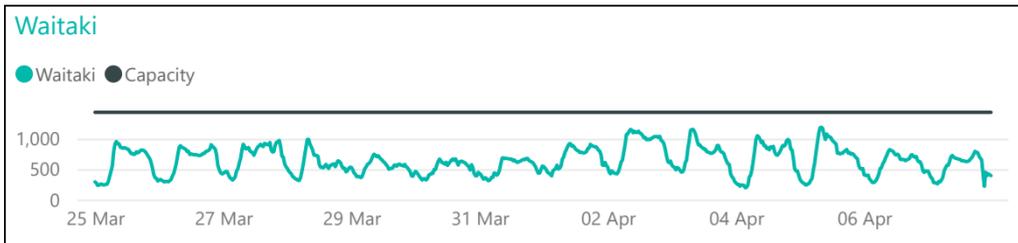
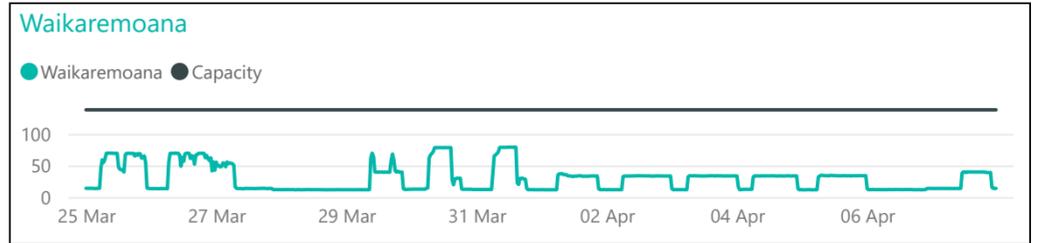
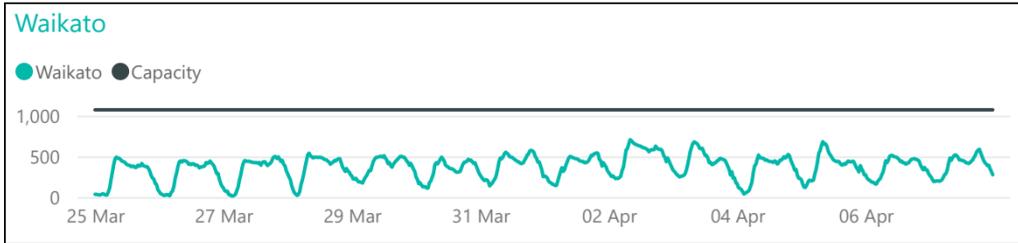
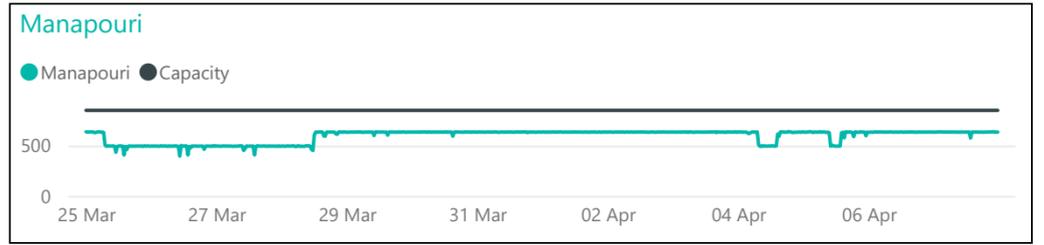
All schedules produced in the Market System are listed in the summary document [GL-OC-209 SPD Schedule Inputs \(transpower.co.nz\)](#) on the Transpower website along with the inputs to each schedule and the information that is published.

As part of the Winter 2023 initiatives, an additional sensitivity schedule was produced and made available on WITS. The sensitivity schedules are based off the NRSS and NRSL schedules and show the effects on prices from changes in forecast demand. This helps participants understand and respond to price risks on the system. Volatility in spot prices reflects tight system conditions; small increases in demand result in high spot prices indicating the system is close to scarcity. Changes in demand are also a proxy for changes in other variables such as wind.

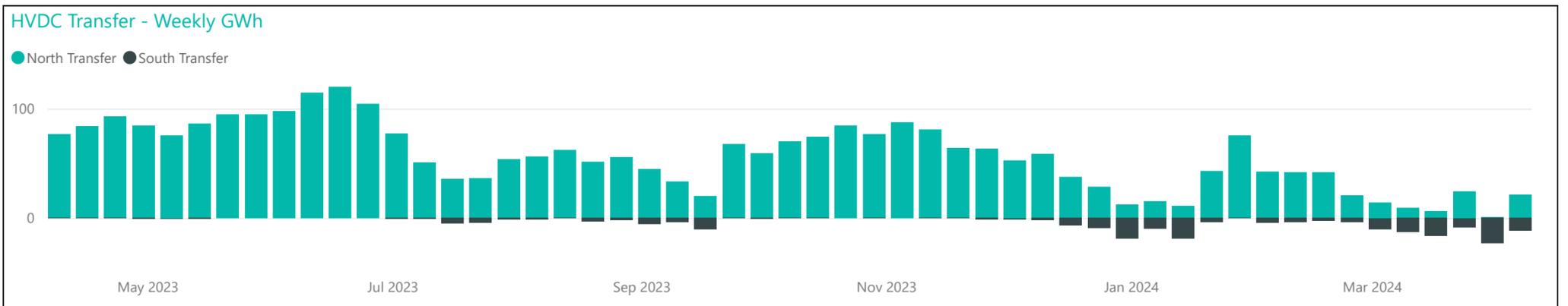
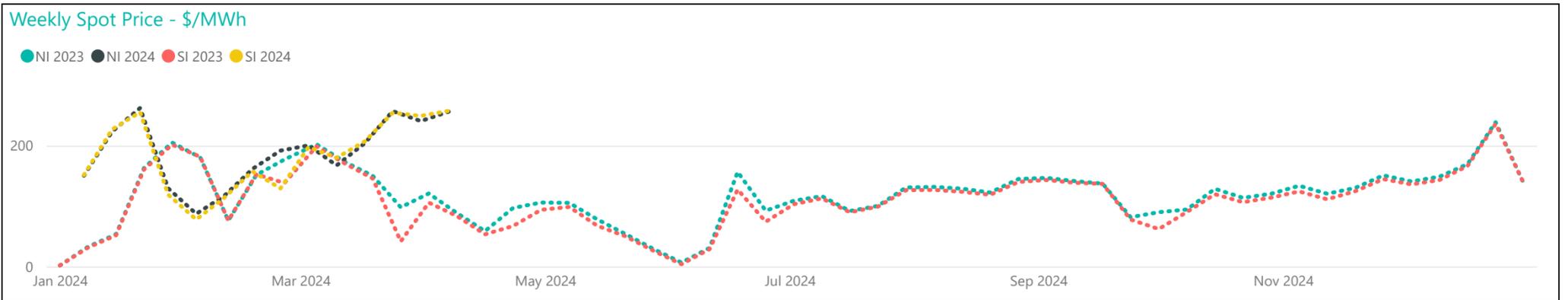
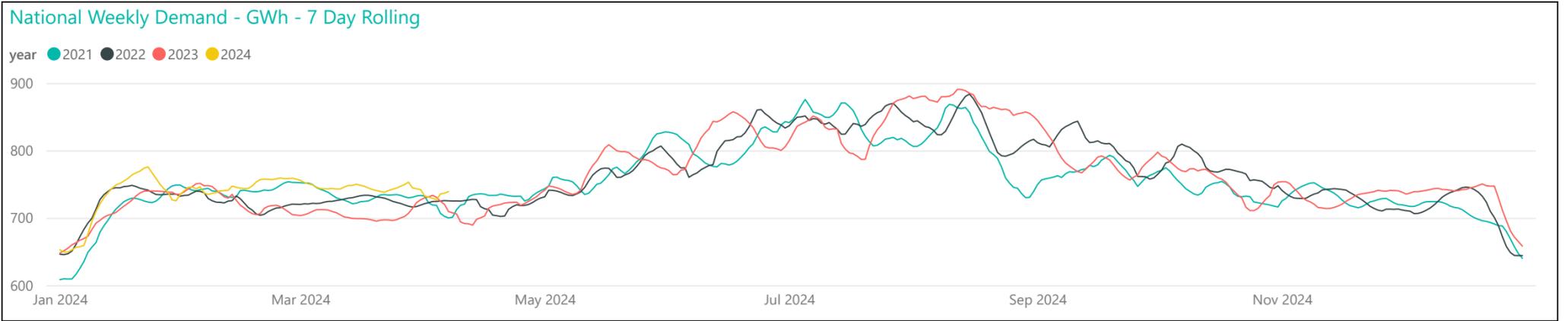
For more information or assistance please contact the market operations team at market.operations@transpower.co.nz



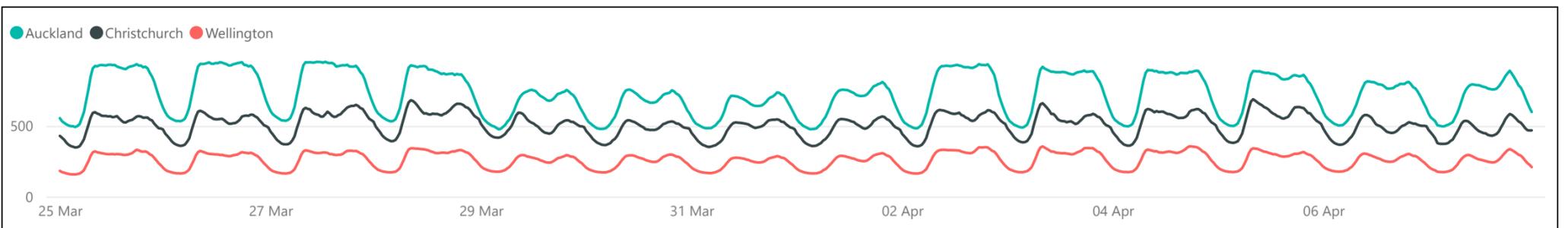
Generation Breakdown - Last Two Weeks *Measured in MW and displayed at trading period level for last 14 days*



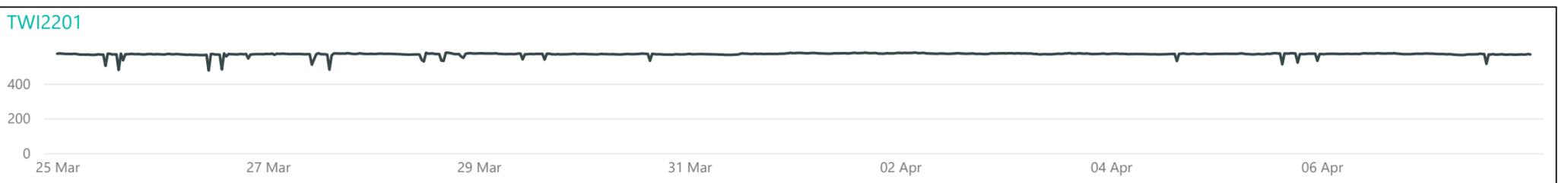
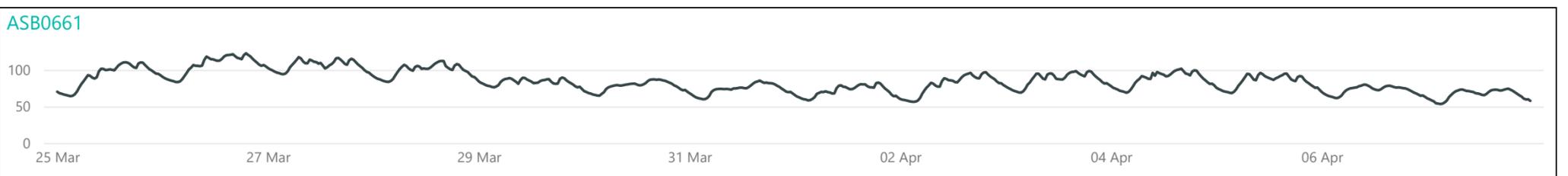
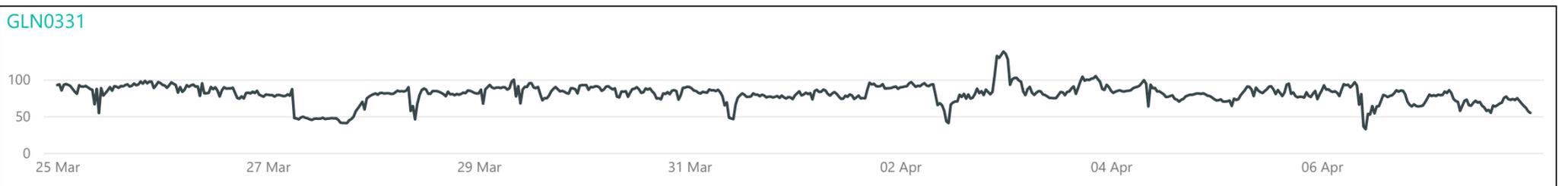
Weekly Profiles



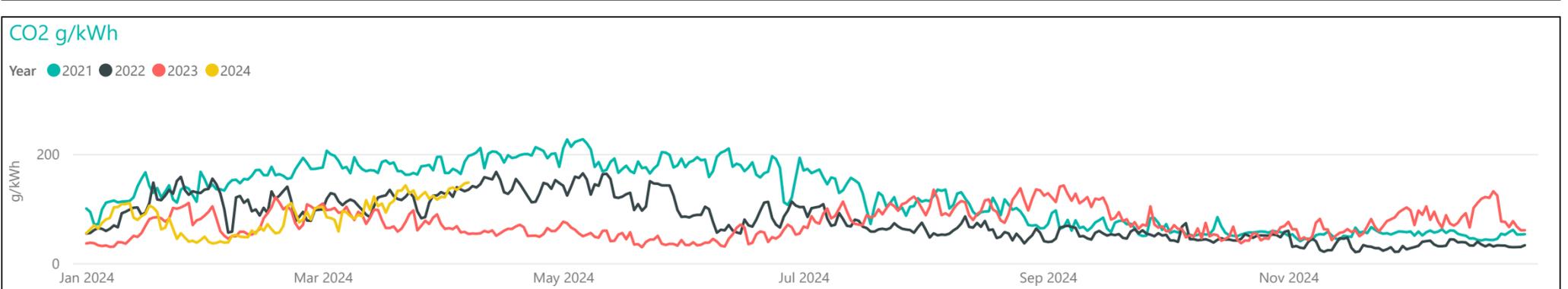
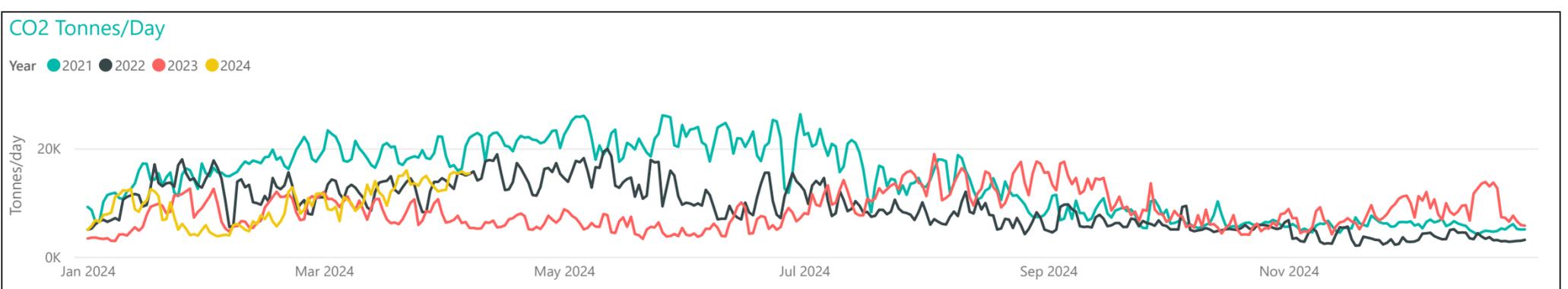
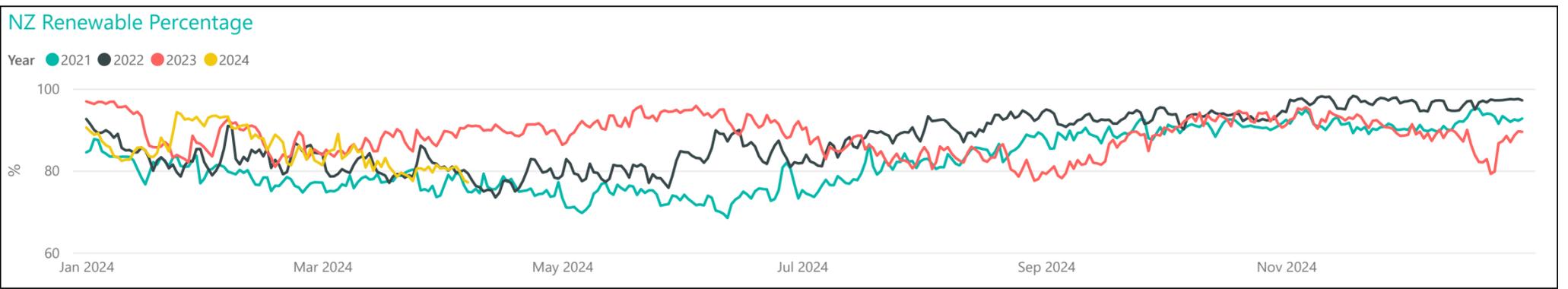
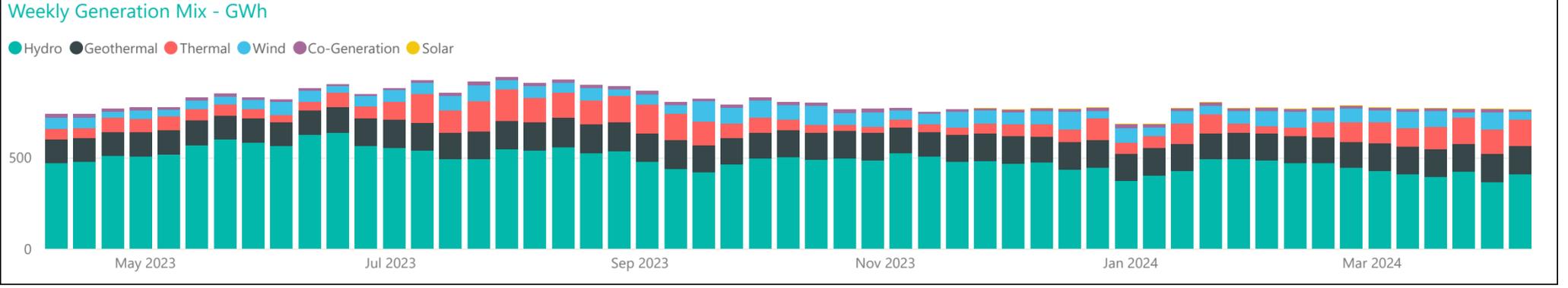
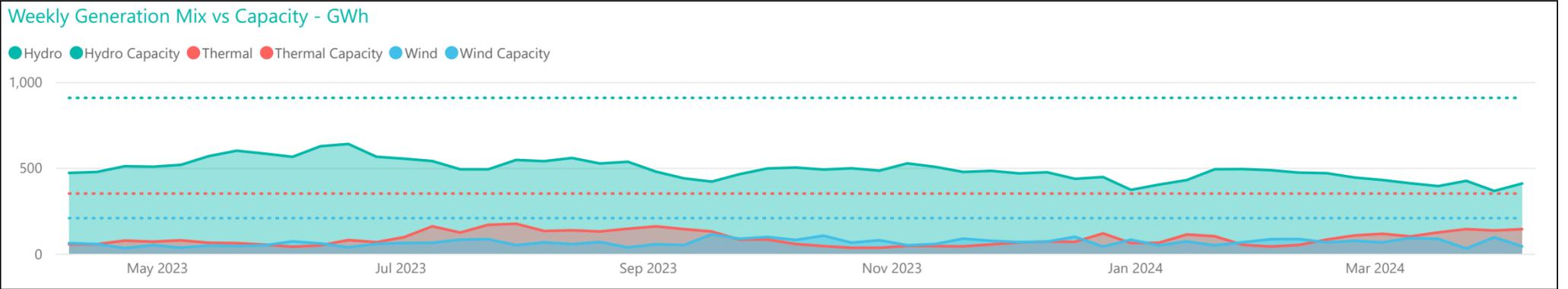
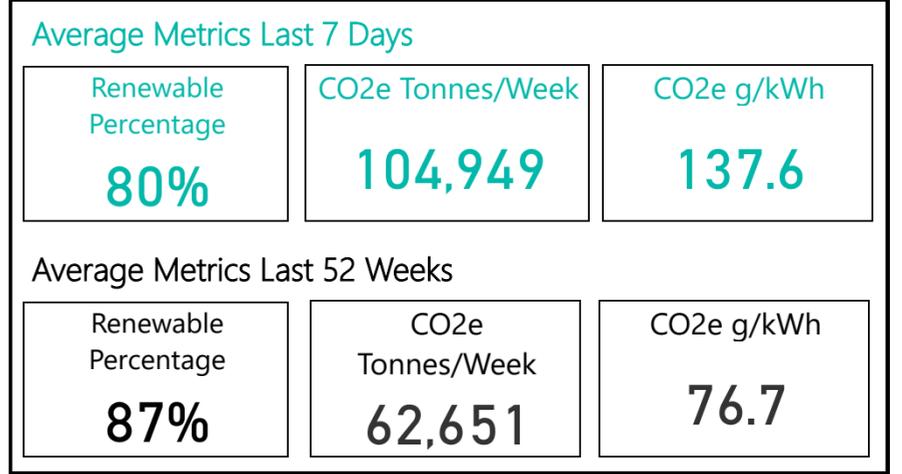
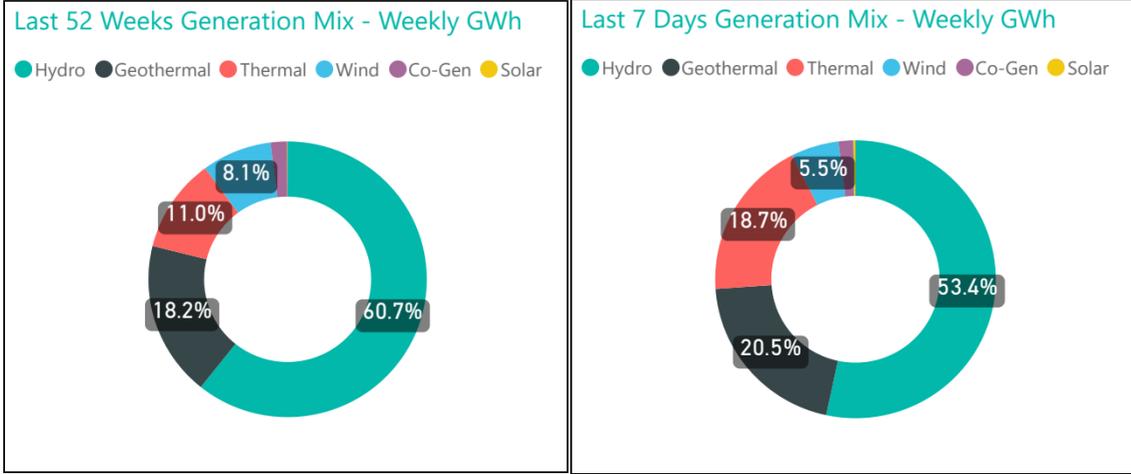
Conforming Load Profiles - Last Two Weeks *Measured in MW shown by region*



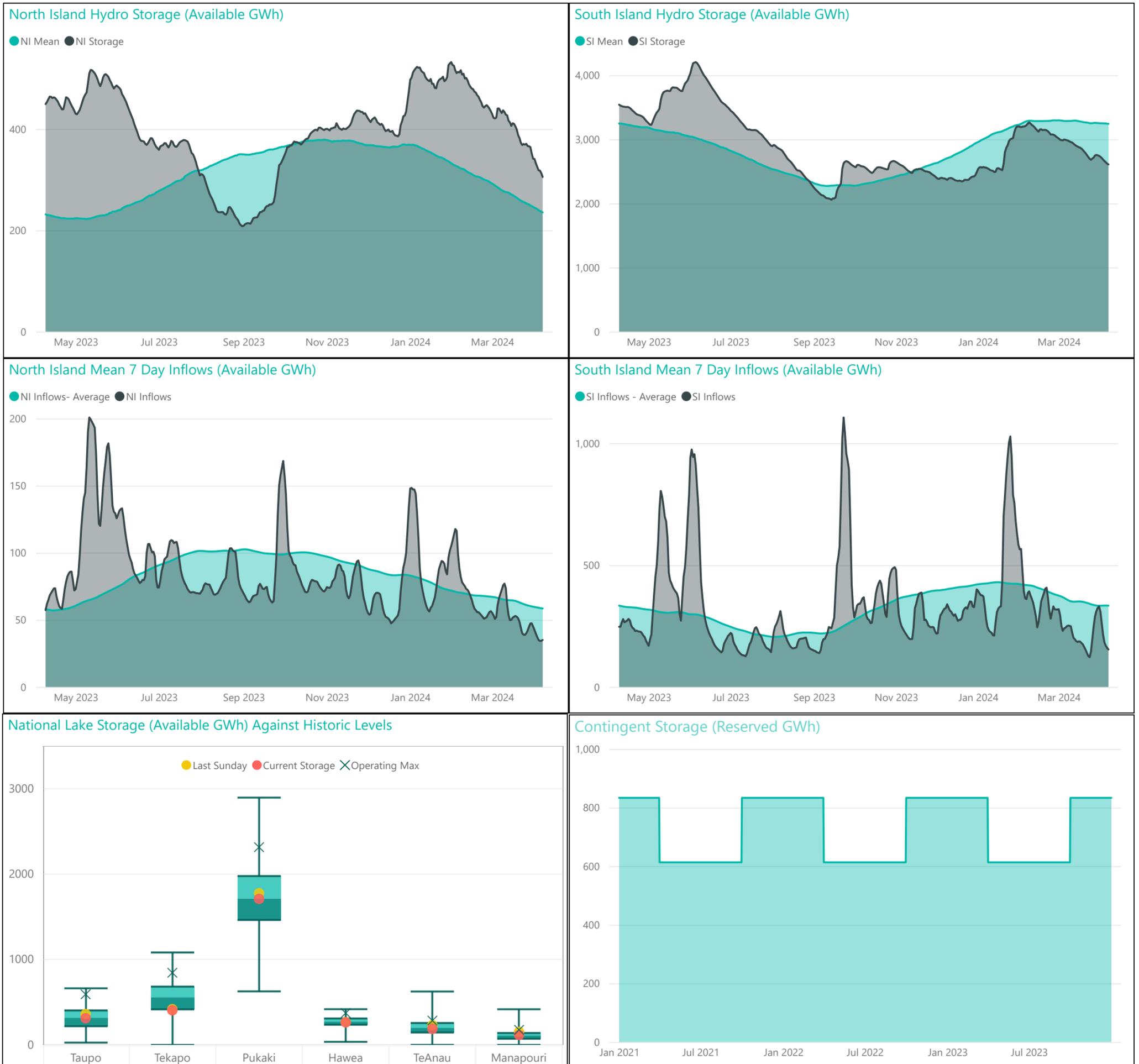
Non-Conforming Load Profiles - Last Two Weeks *Measured in MW shown by GXP*



Generation Mix



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>.

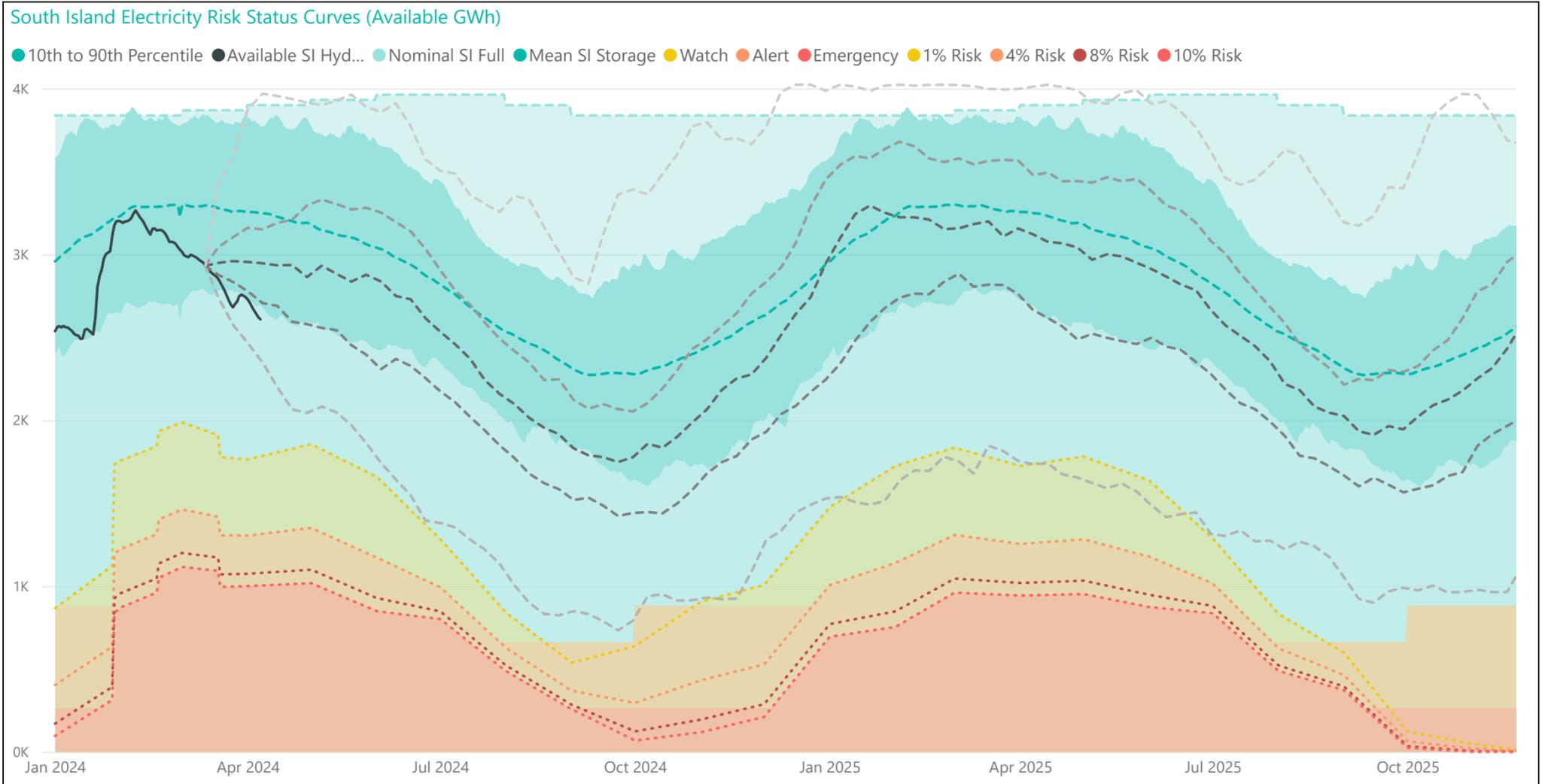
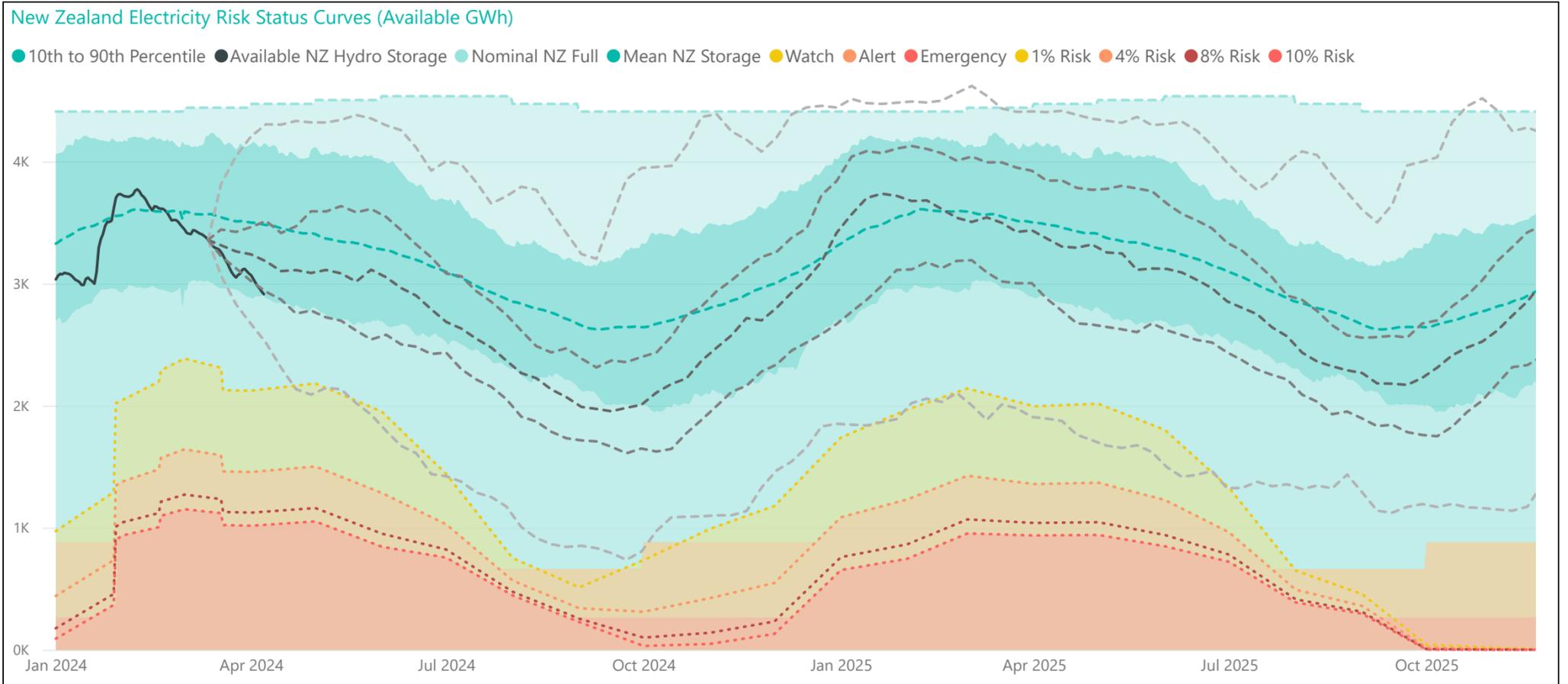
For any inquiries related to security of supply contact market.operations@transpower.co.nz

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).