



## Weekly Market Movements - Week Ended 19 November 2023

### Overview

The November update to the [Electricity Risk Curves](#) (ERCs) shows a significant increase to the risk curves for winter 2024, relative to the October ERCs. The main cause of this is the delayed commissioning of the Tauhara B geothermal plant. See the Energy section below for more details.

In this week's insight we discuss a new AC risk group that combines Turitea Wind Farm and Tararua Wind Farms 1 & 2.

### Security of Supply Energy

We have published our November update to the [Electricity Risk Curves](#) (ERCs). Contact has [announced](#) a delay to the commissioning of their Tauhara B geothermal plant, from Q1 to Q3 2024. Tauhara B running at full capacity for the length of the modelled commissioning delay equates to roughly 800 GWh. This has caused an increase in the ERCs, meaning that the amount of hydro storage required to avoid a risk of energy shortage has increased.

National hydro storage remains average (101% of the mean for this time of year). South Island storage remained at 99% of its historical mean, while North Island storage increased from 106% to 112% of the mean.

### Capacity

Residual generation margins improved last week from the previous week, with a minimum residual of 488 MW on the morning of Wednesday 15 November. This was in part due to high wind generation during most weekday peaks.

The NZGB look-ahead is now showing low N-1-G margins for early December. A [Customer Advice Notice](#) (CAN) has been issued for a potential generation shortfall on Tuesday 5 December. Margins are healthy for mid-December and for January. The latest NZGB report is available on the [NZGB website](#).

## Electricity Market Commentary

### Weekly Demand

National demand was 732 GWh last week, 2.5% higher than the previous week. Demand peaked at 5,241 MW on Wednesday 15 November at 8:00 am, 109 MW lower than the previous week's peak.

### Weekly Prices

The average wholesale price at Haywards last week was \$130/MWh, up from \$120/MWh the previous week. Prices peaked at \$390/MWh at Otahuhu on Wednesday 15 November at 8:00 am, which coincides with the week's highest demand peak and a period of lower wind generation.

### Generation Mix

The renewable percentage of the generation mix last week remained at 93%. The thermal contribution remained low at 5.6%. Wind generation increased from 7% to 11%, resulting in a drop in hydro from 67% to 62%. The high renewable percentage this week reflects lower demand with the warmer weather and longer days, as well as high wind generation.

New Zealand's newest generator, the Harapaki wind farm, began generating on Friday 17 November. Its planned capacity when fully commissioned is 176 MW.

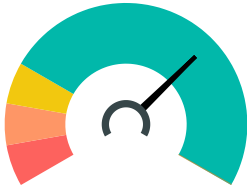
### HVDC

Net HVDC flows were northward for nearly all trading periods last week. There were net southward flows during a few overnight trading periods when North Island wind generation was high and demand was low.

### SOSA Consultation

The 2024 Security of Supply Assessment (SOSA) Reference Case and Sensitivities Consultation has been published on our website [here](#). We invite industry to provide feedback and comments around the proposed reference case and sensitivities by close of business 5 December 2023.

New Zealand Energy Risk

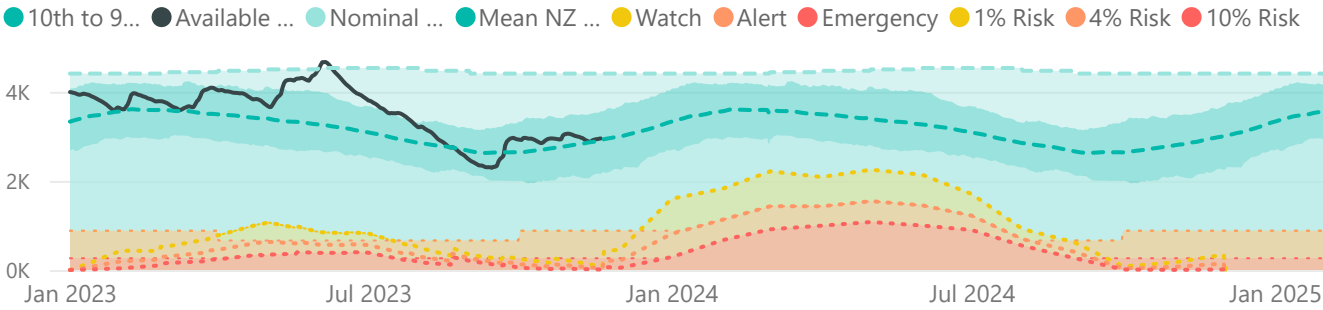


South Island Energy Risk

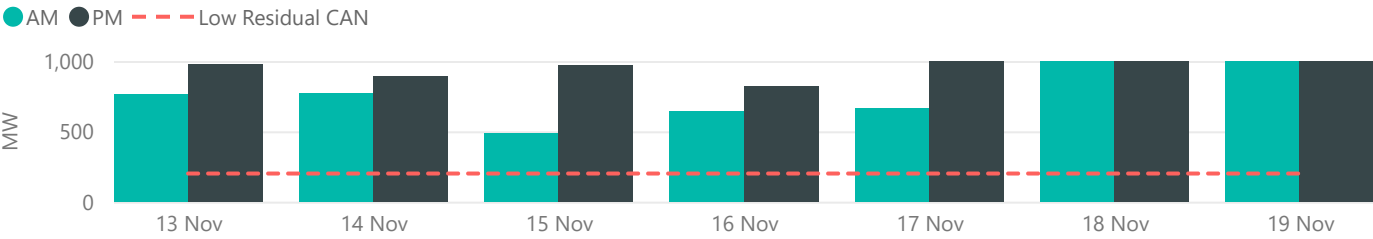


Normal Watch Alert Emergency

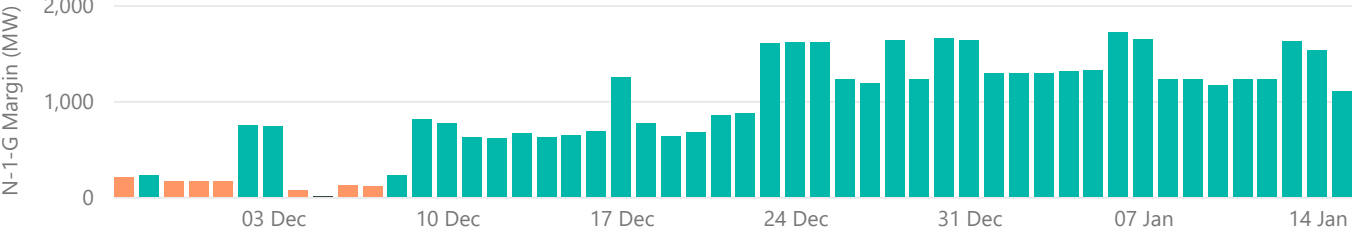
New Zealand Energy Risk Status Curves (Available GWh)



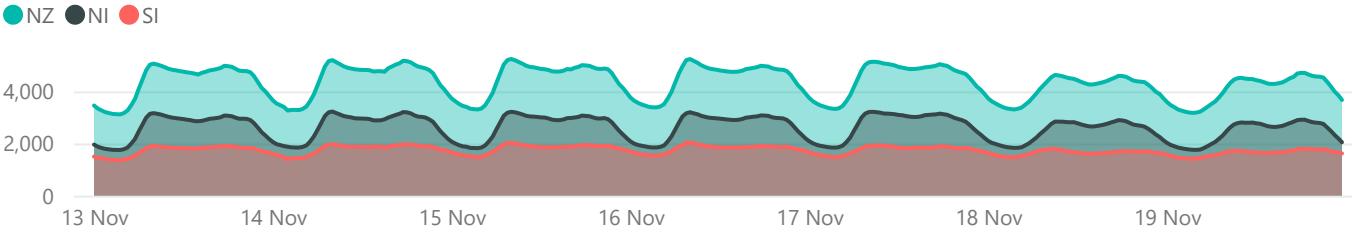
Lowest Residual Points - MW



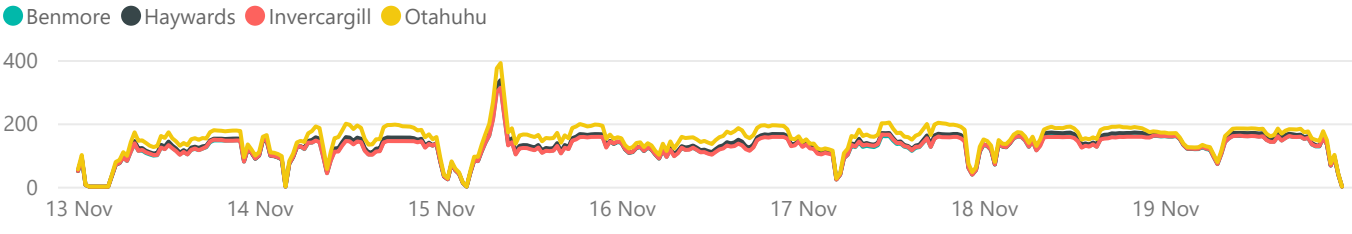
NZGB Look-Ahead (excluding next 7 days)



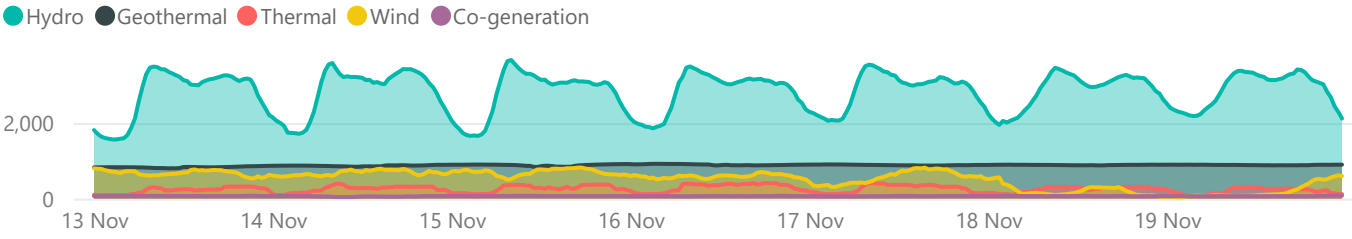
National Demand by Trading period - MW



Weekly Prices - \$/MWh



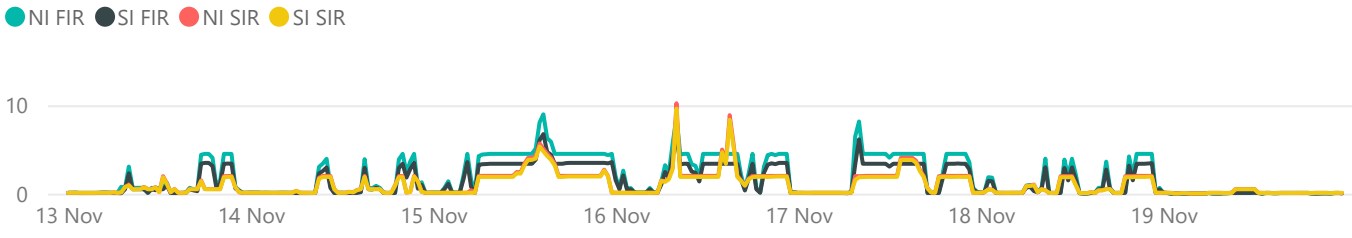
Generation - MW

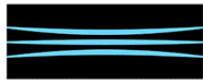


Net HVDC Transfer - MW



Reserve Prices - \$/MWh





## Weekly Summary Insight - New wind risk group setting North Island risk

As stated in a [Customer Advice Notice](#) (CAN) issued on Thursday 9 November, a new permanent AC risk group has been created that includes Turitea Wind Farm and Tararua Wind Farms 1 and 2. This came into effect at 2pm on Tuesday 14 November.

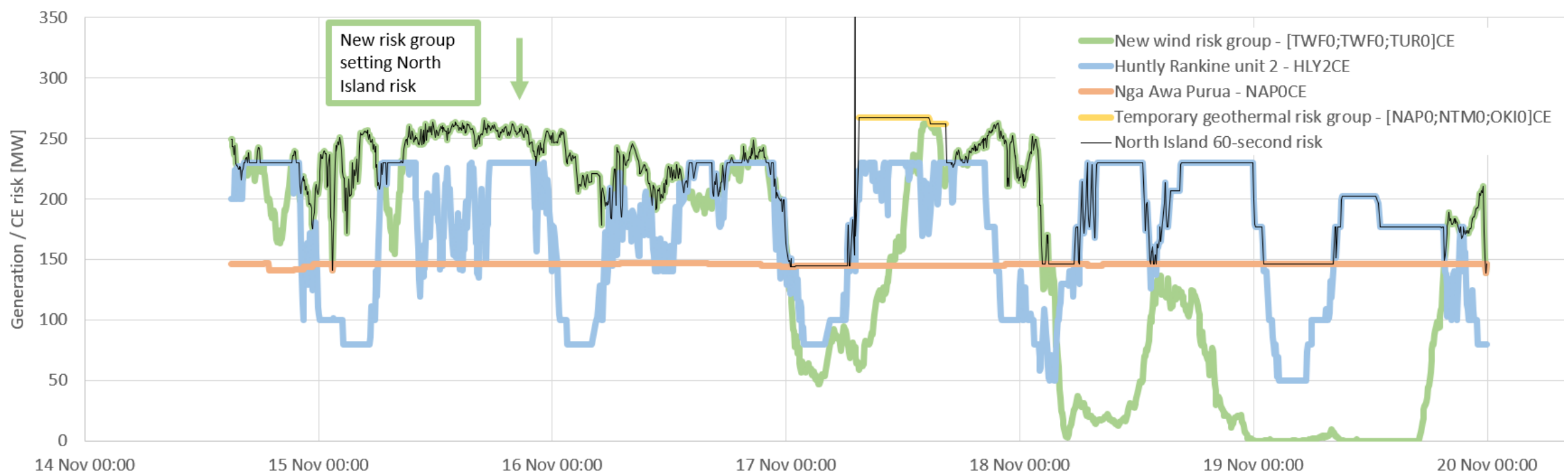
A risk group is a set of generators whose output is treated as a single contingent event risk [1]. In each dispatch schedule, enough reserves (back-up generation and interruptible load) must be procured to cover the largest contingent event risk in each island, which is known as that island's risk setter. The most common risk setters are the HVDC link and large generation units such as Huntly unit 5 or Taranaki Combined Cycle (TCC).

Last week neither Huntly unit 5 nor TCC was generating, so the North Island risk was often set by Huntly unit 2 at 230 MW. However the new wind risk group is capable of generating more than 230 MW when wind is high, and it also often set the risk when Huntly unit 2 was dispatched below 230 MW.

Wind generation setting the risk is fairly new for the New Zealand Electricity Market, but is likely to be more common in future. Turitea alone has set the risk previously during times of low thermal generation, but the new risk group means this will happen more often. Wind having the potential to set the risk means there is more uncertainty around what both the risk setter and the MW risk will be.

The risk spike on 17 November on the graph below is due to the HVDC setting the North Island risk for one dispatch schedule.

North Island 60-second risk setter, 14-19 November 2023

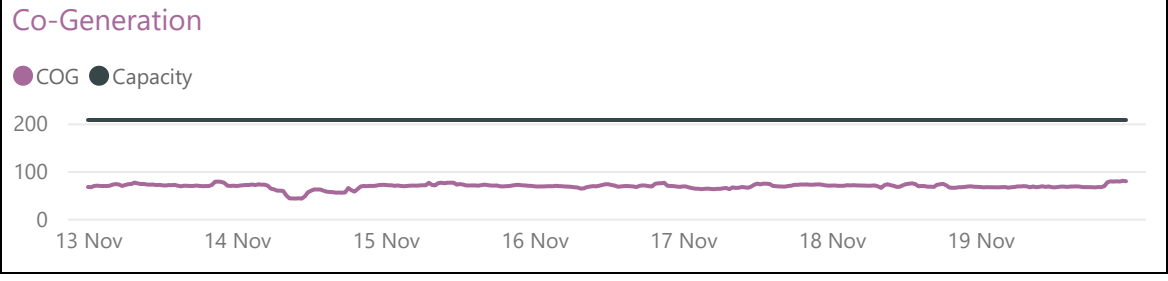
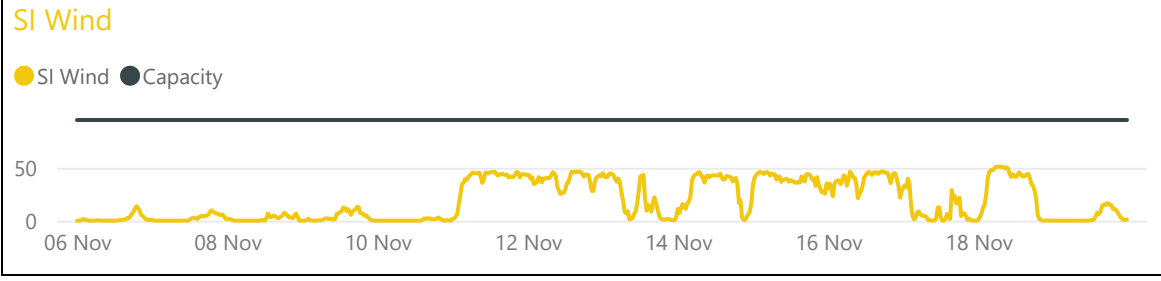
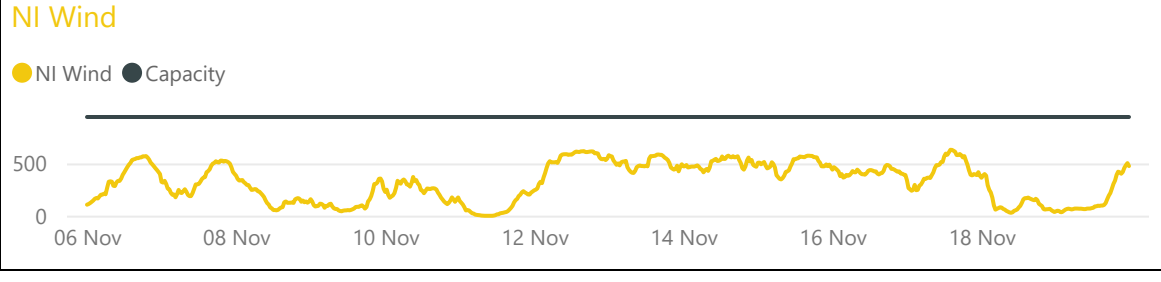
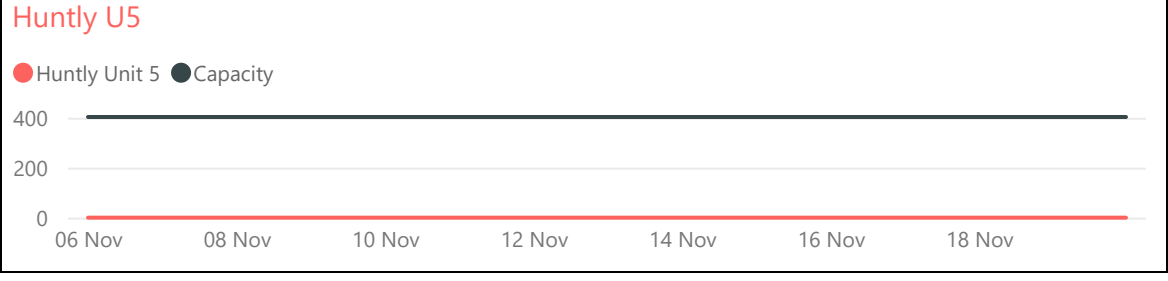
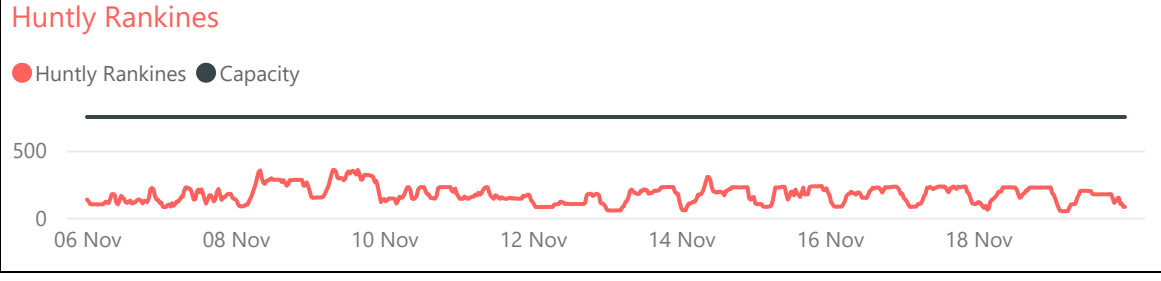
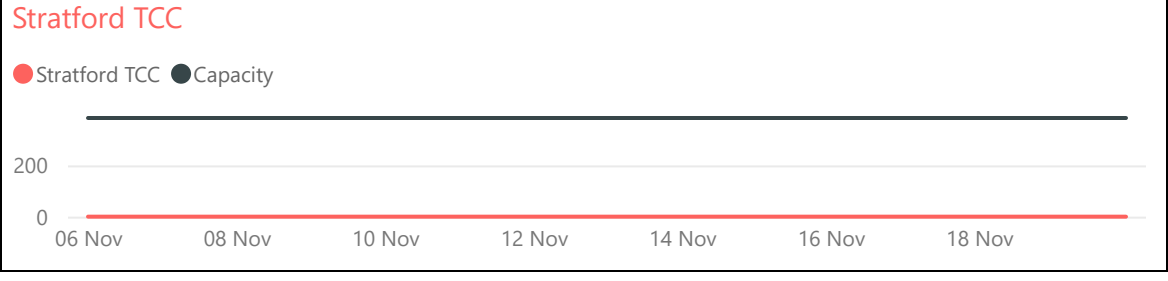
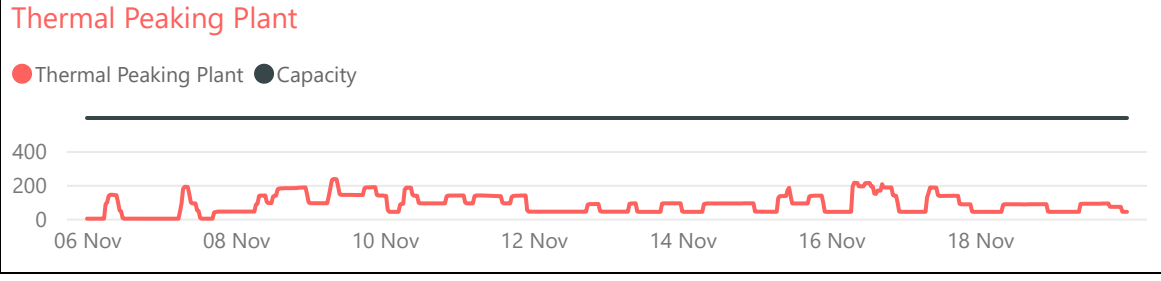
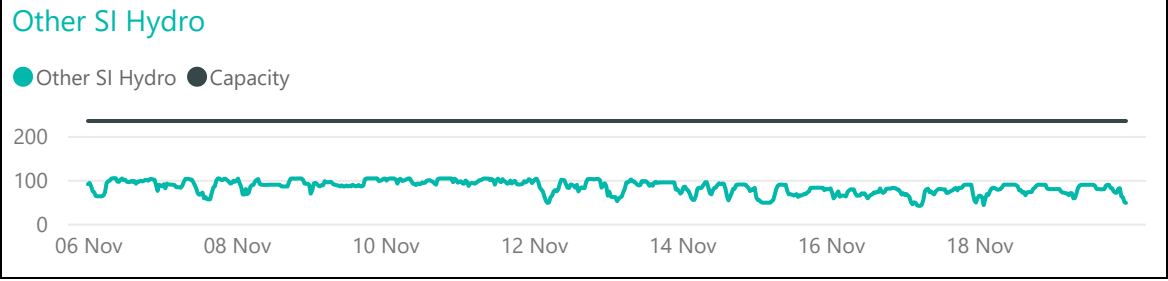
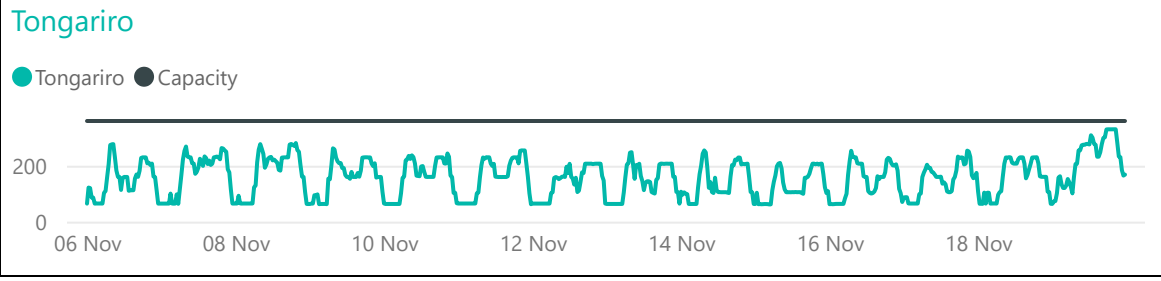
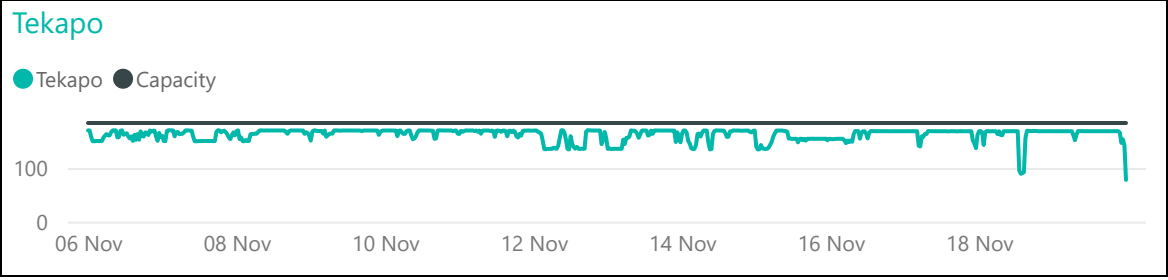
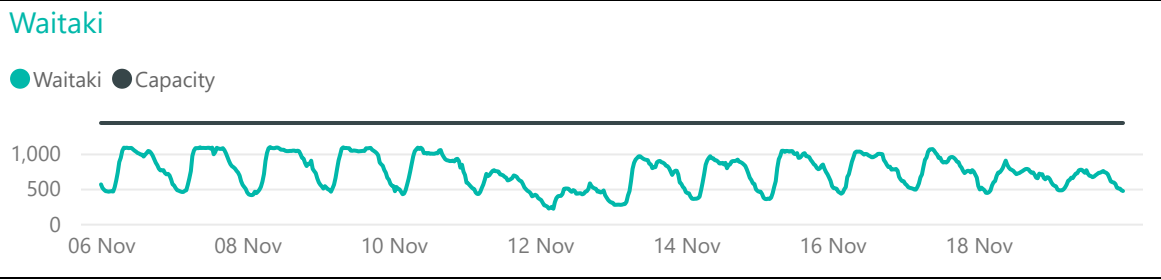
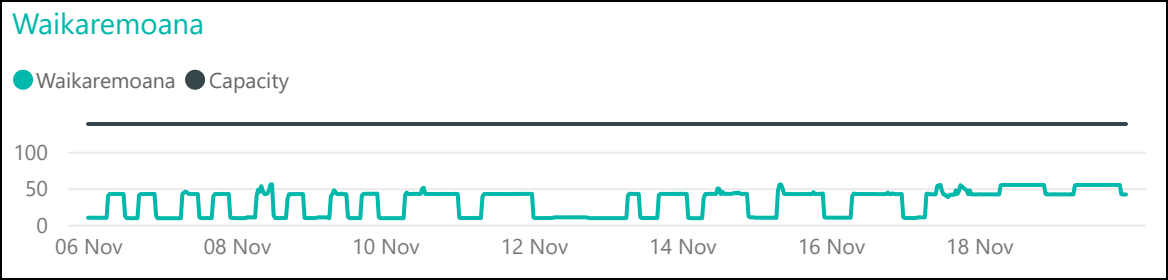
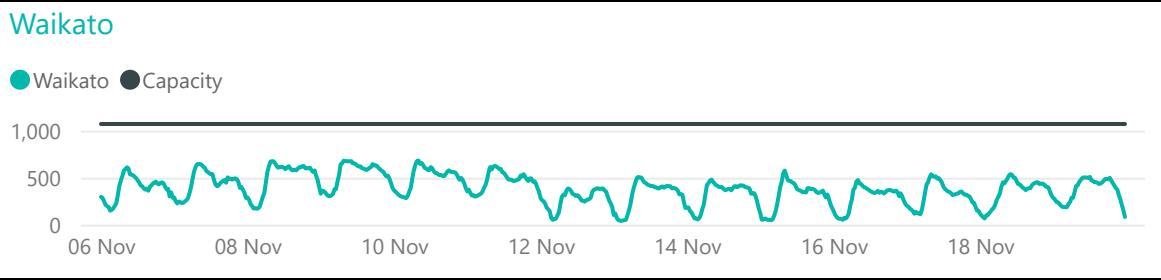
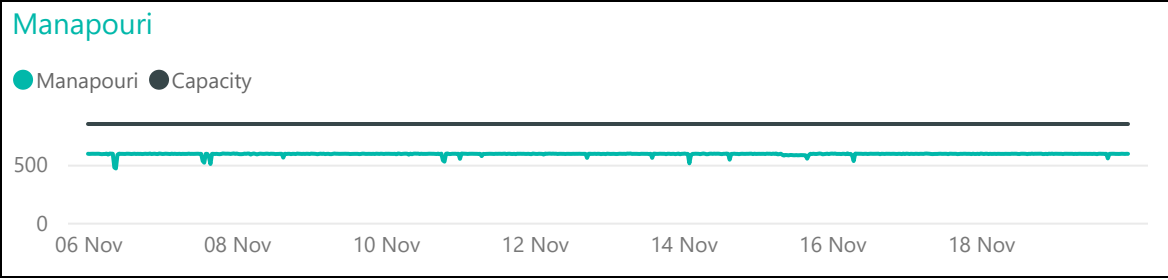
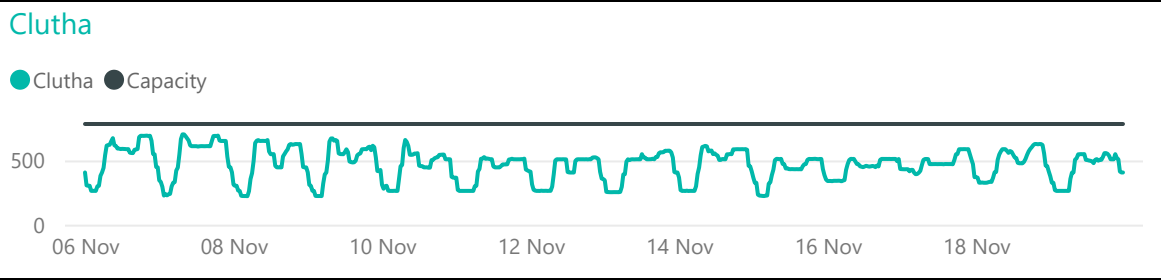


[1] Contingent events are potential credible events on the power system as a result of asset failure that may result in cascade failure and where the impact, probability of occurrence and estimated cost and benefits of mitigation are considered to justify implementing policies that are intended to be incorporated into the scheduling and dispatch processes pre-event.



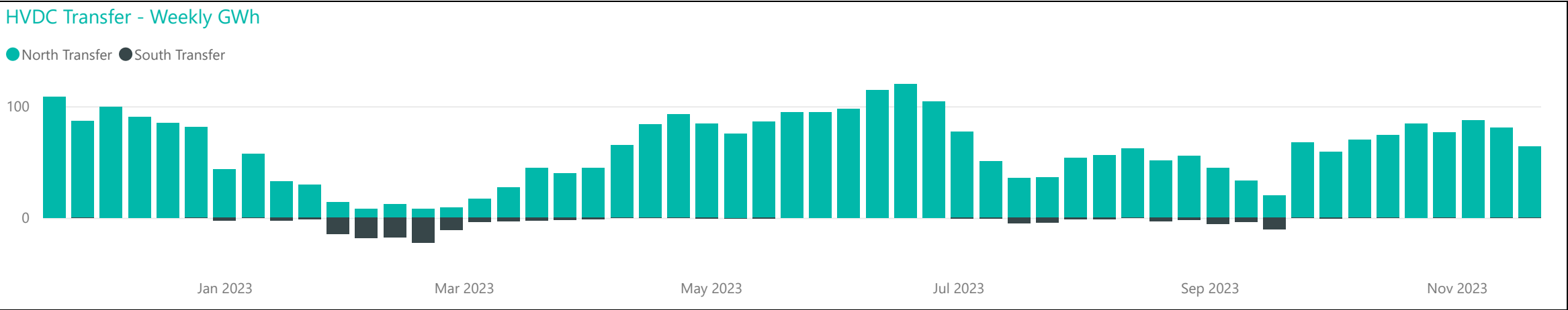
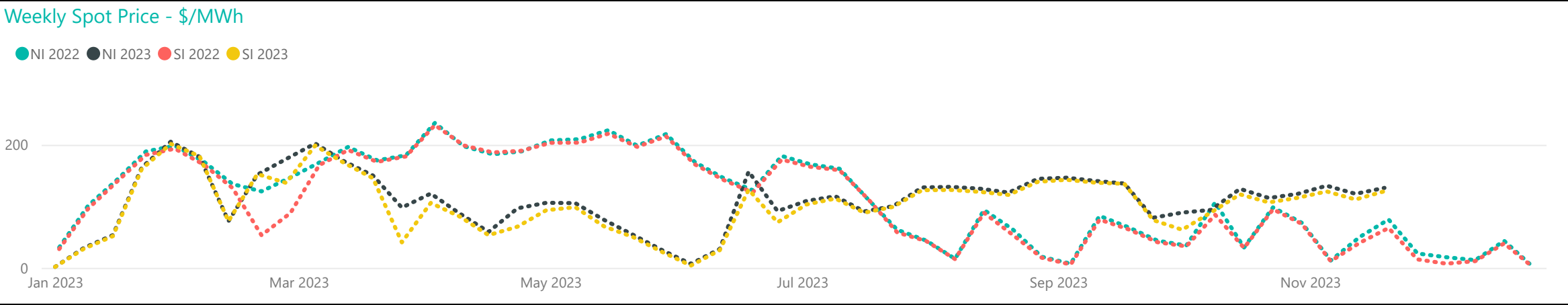
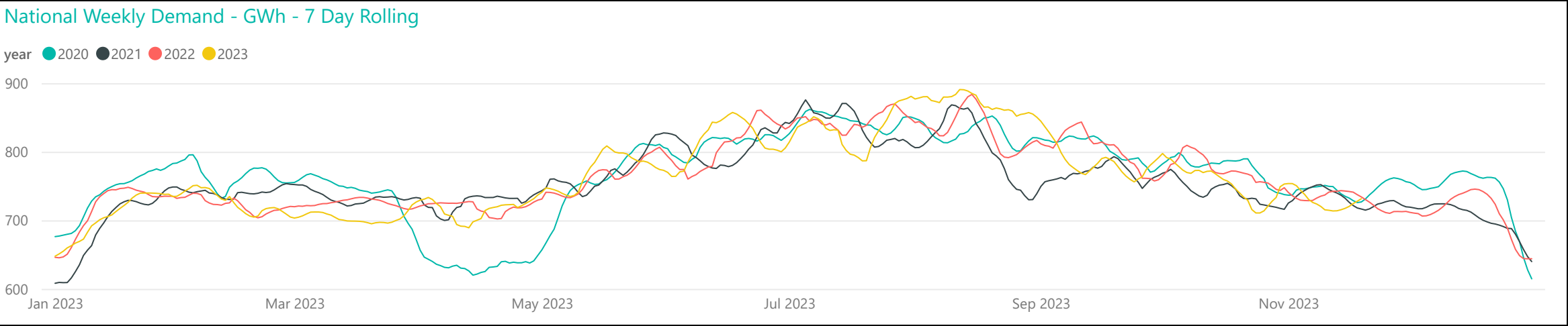
Generation Breakdown - Last Two Weeks

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

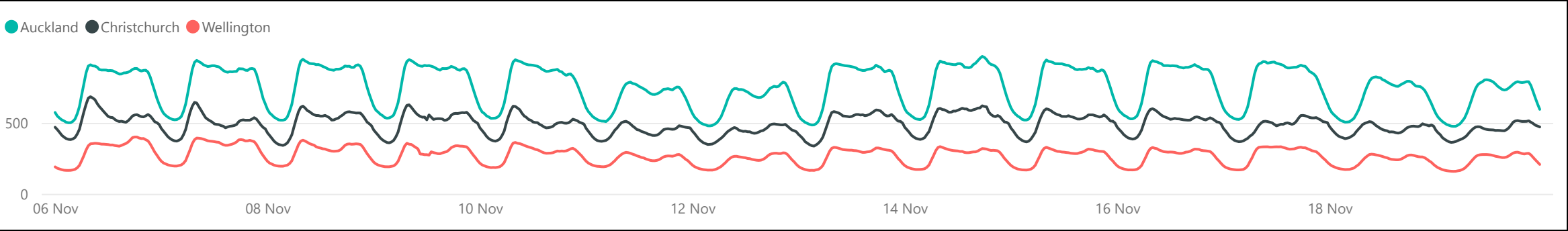




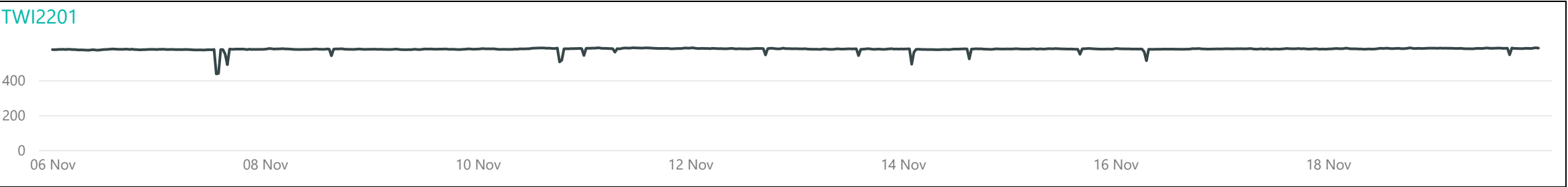
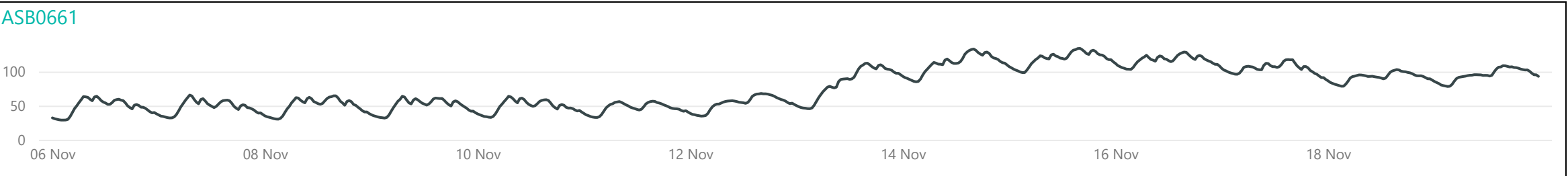
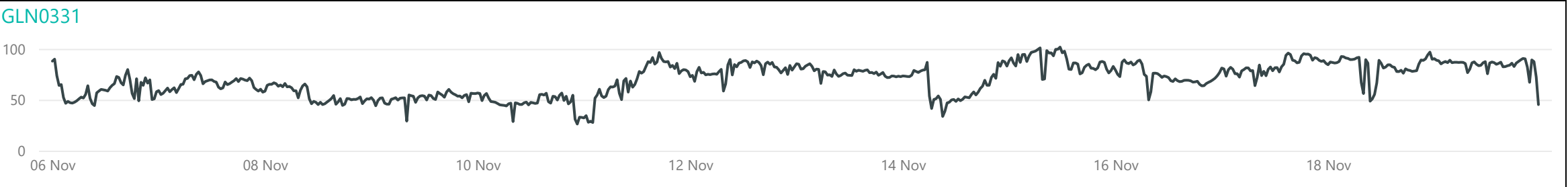
Weekly Profiles



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



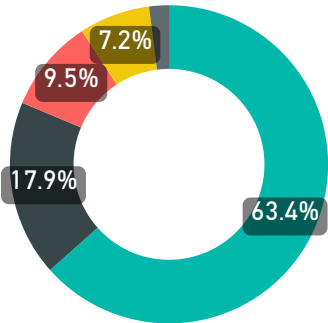
Non-Conforming Load Profiles - Last Two Weeks *Measured in MW shown by GXP*



Generation Mix

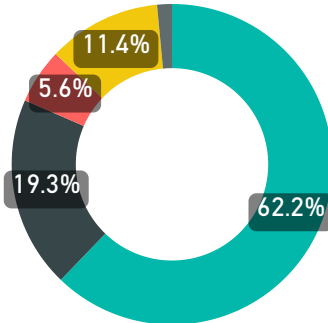
Last 52 Weeks Generation Mix - Weekly GWh

Hydro Geothermal Thermal Wind Co-Generation



Last 7 Days Generation Mix - Weekly GWh

Hydro Geothermal Thermal Wind Co-Generation



Average Metrics Last 7 Days

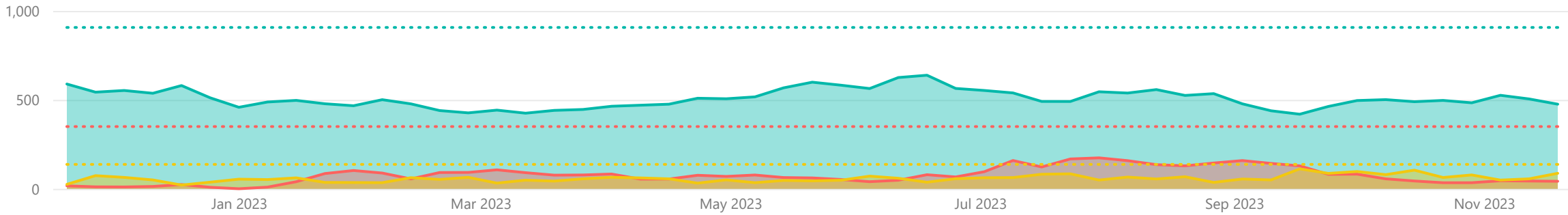
Renewable Percentage	CO2e Tonnes/Week	CO2e g/kWh
93%	43,485	56.0

Average Metrics Last 52 Weeks

Renewable Percentage	CO2e Tonnes/Week	CO2e g/kWh
89%	55,058	67.3

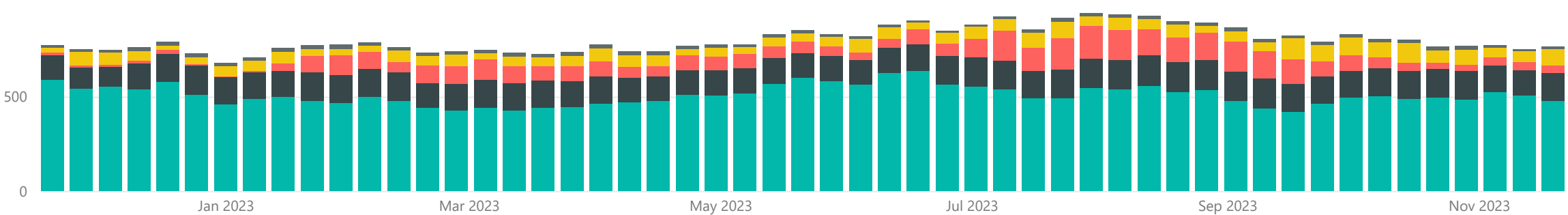
Weekly Generation Mix vs Capacity - GWh

Hydro Hydro Capacity Thermal Thermal Capacity Wind Wind Capacity



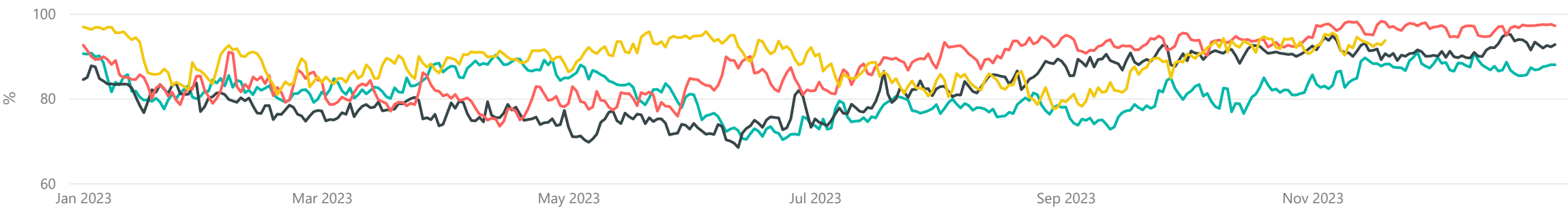
Weekly Generation Mix - GWh

Hydro Geothermal Thermal Wind Co-Generation



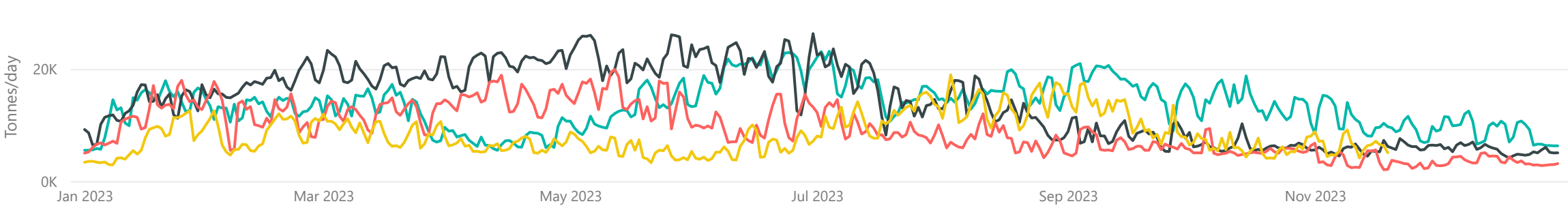
NZ Renewable Percentage

Year 2020 2021 2022 2023



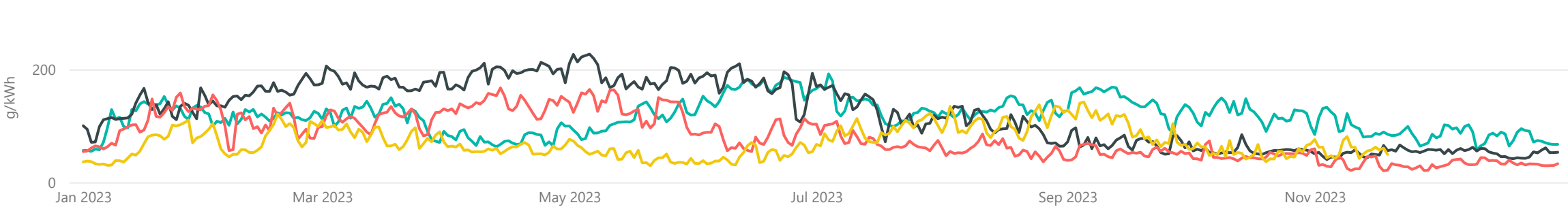
CO2 Tonnes/Day

Year 2020 2021 2022 2023



CO2 g/kWh

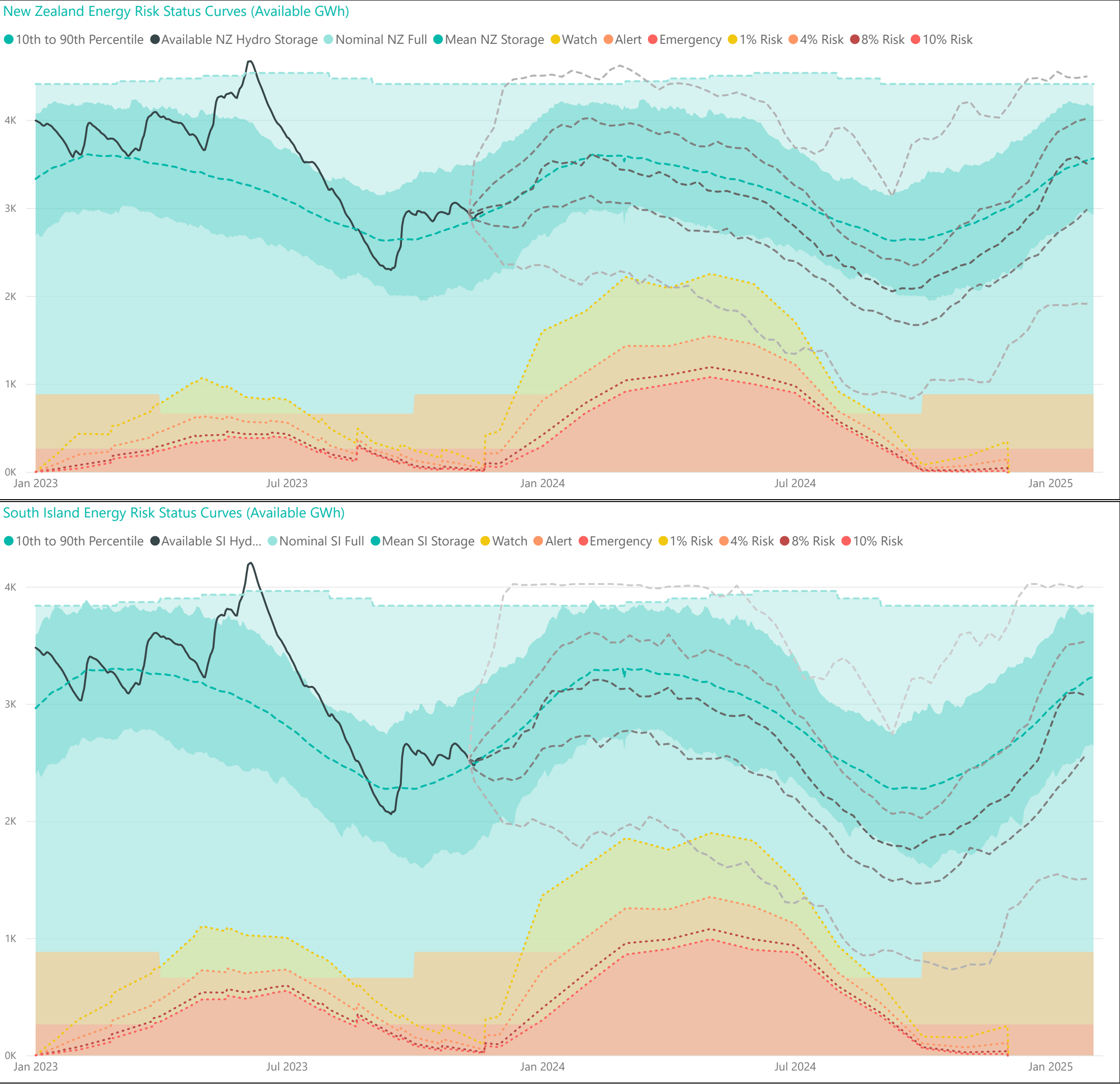
Year 2020 2021 2022 2023







Energy Risk Curves



Electricity Risk Curve Explanation:

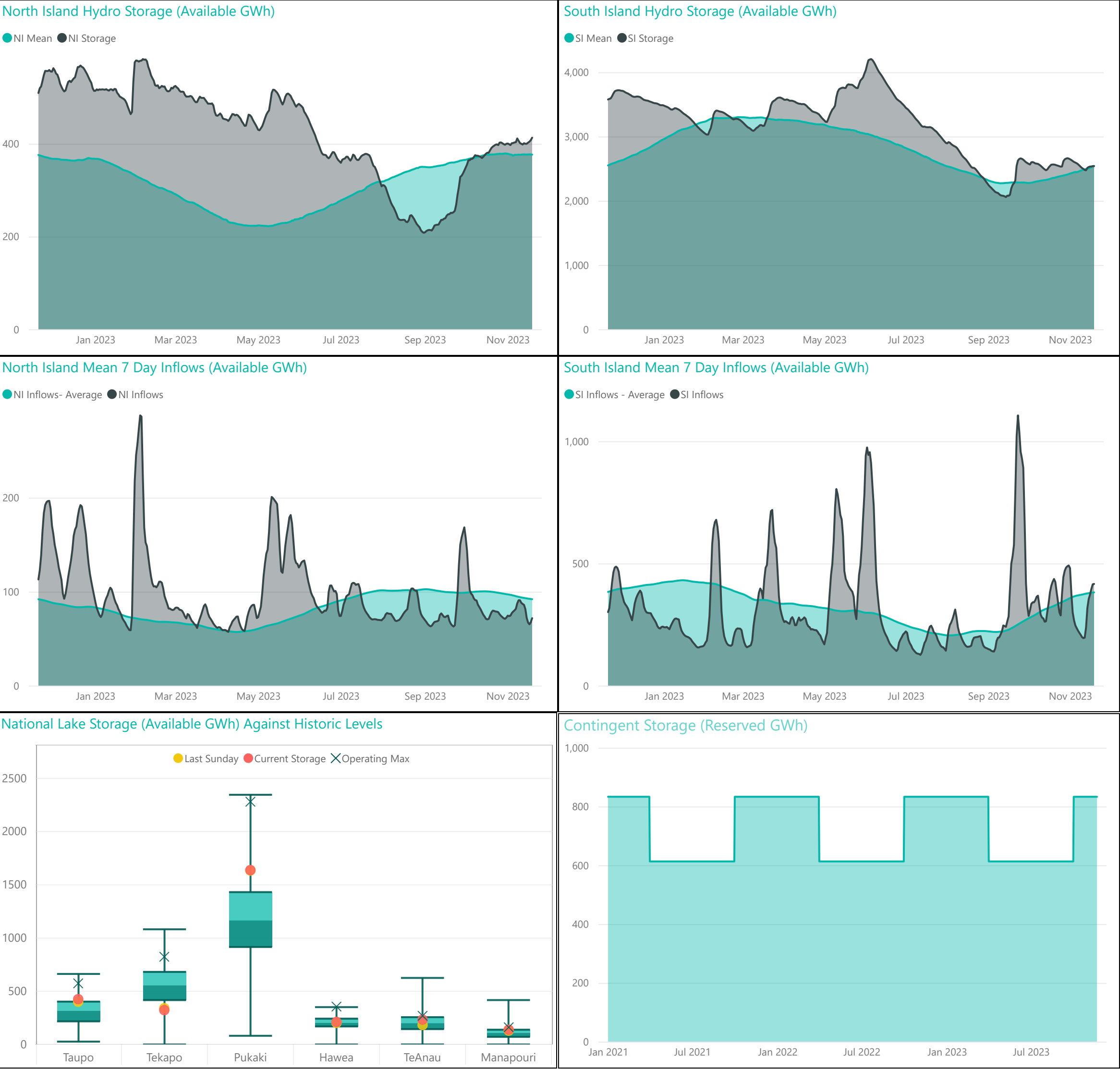
- Watch Curve - The maximum of the one percent risk curve and the floor and buffer
- Alert Curve - The maximum of the four percent risk curve and the floor and buffer
- Emergency Curve - The maximum of the 10 percent risk curve and the floor and buffer
- Official Conservation Campaign Start - The Emergency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