Market Operations Weekly Report - Week Ended 1 November 2026

Overview

Renewable generation made up 98% of the mix this week. The increase in South Island inflows contributed to an increase in national hydro storage to 125% of the seasonal average from 114% the previous week.

In this week's insight we look at how the rise in embedded solar generation is resulting in bi-directional flows at grid exit points, and what this means operationally for real-time security.

Security of Supply

Energy

National hydro storage increased to 125% of the seasonal average from 114% the week prior. Lower than average hydro generation and above average inflows in the South Island contributed to South Island storage increasing from 120% to 133%. While North Island storage decreased slightly from 77% to 74%.

Capacity

Residual generation was healthy last week. The lowest residual was 929 MW on the evening of Tuesday 27 October.

The N-1-G margins in the NZGB forecast are at healthy levels through to late December. 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 increased last week to 764 GWh from 747 GWh the week prior. The highest demand peak occurred at 7:30 am on Friday 30 October at 5,597 MW with cooler temperatures in parts of the country.

Weekly Prices

Wholesale electricity spot prices decreased last week with the average Ōtāhuhu price down to $36/MWh from $66/MWh the previous week. The Ōtāhuhu price peaked at $230/MWh at 9:00 pm on Tuesday 27 October, coinciding with lower wind generation and constrained HVDC northward flow.

Periods of inter-island energy price separation occurred throughout the week during periods of high HVDC northward transfer, with outages of lower North Island grid equipment lowering the northward transfer limit. This was also over the weekend with lower geothermal generation during the WRK ring (WKM_WRK) outages.

Periods of intra-island energy price separation occurred in the North Island throughout the week This was due to constraints to protect BPE_TKU circuits with the HLY_SFD outage and high northward flow.

Generation Mix

Hydro generation was below average last week at 56%, down from 57% the week prior. Solar generation remained at its new record share of 4%. Wind increased to 15% of the mix, well above its average. The geothermal share decreased to 23% last week from 25% the week prior. A highly renewable generation mix this week left thermal and co-generation at around 1% of the mix each.

HVDC

HVDC flows last week were almost entirely northward, consistent with above average South Island hydro storage. In total 93 GWh was transferred north.

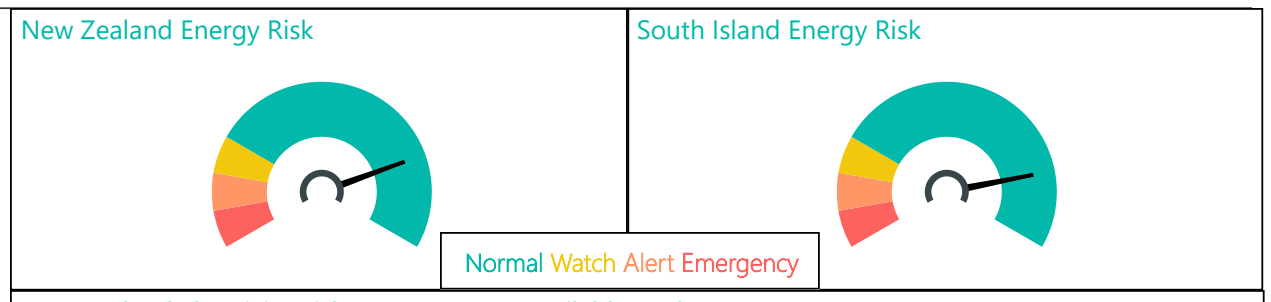
Consultations

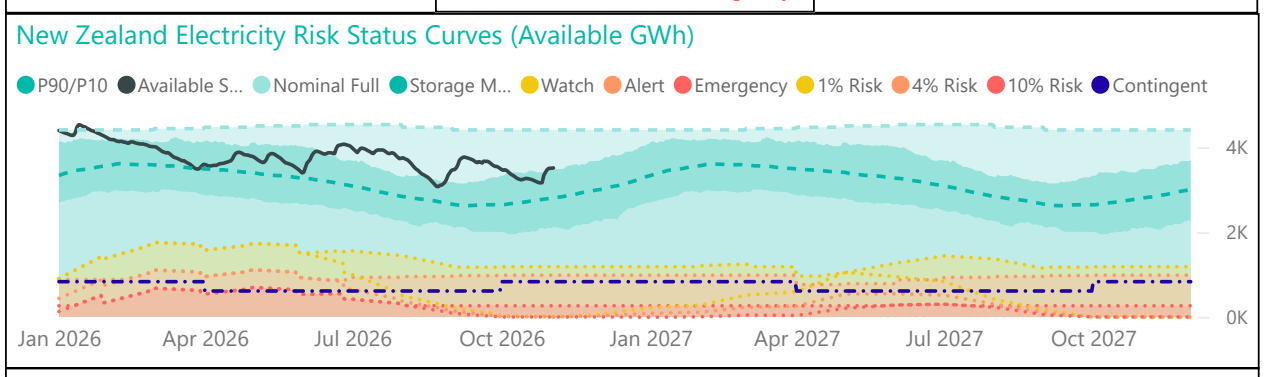
We are consulting on the TSO:DSO coordination: operations requirements paper. Please send your feedback by email to system.operator@transpower.co.nz by 5pm on Friday 6 November 2026.

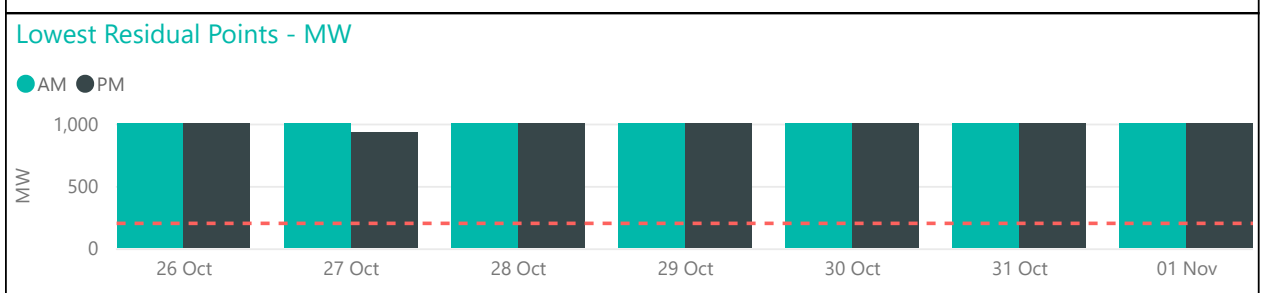
Ancillary Services Tender

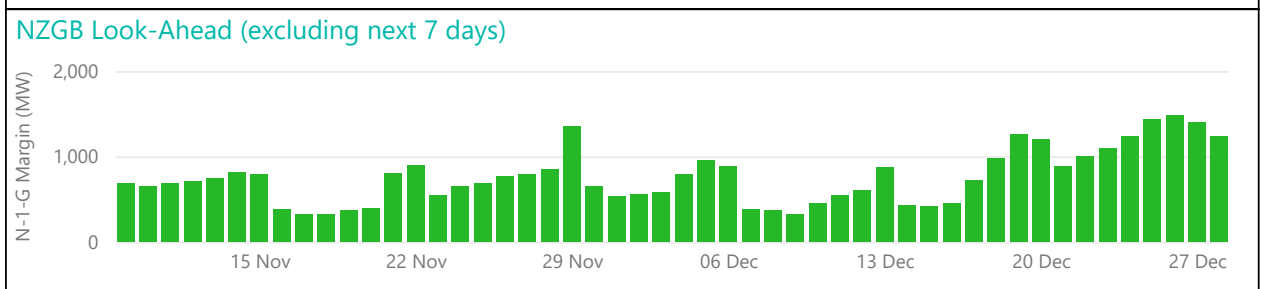
The 2026 Ancillary Services tender has now closed. The System Operator invited tenders for the provision of Over-Frequency Reserve and South Island Black Start services.

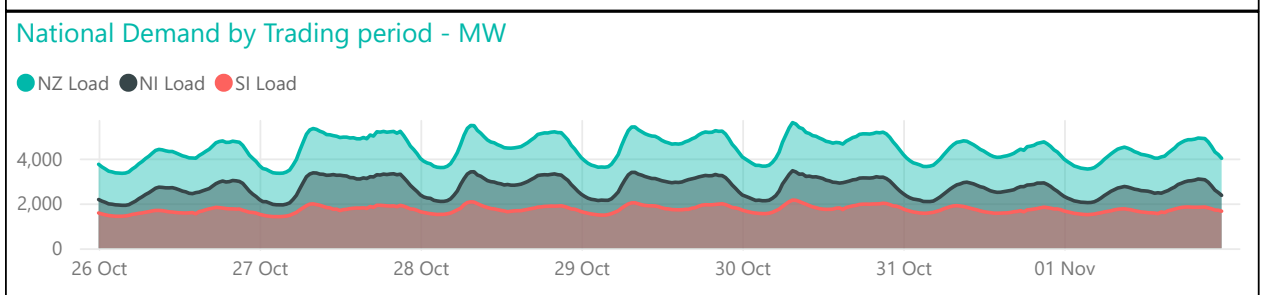
Successful respondents will be offered contracts commencing 1 January 2027. Any questions about the tender process can be sent to system.operator@transpower.co.nz.

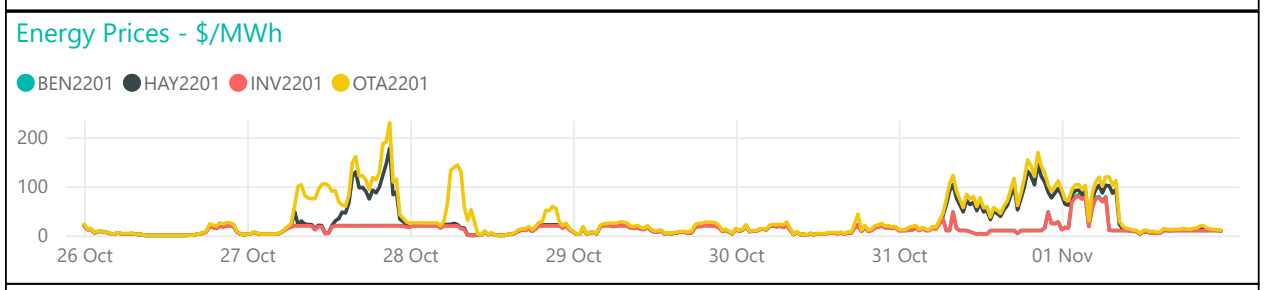


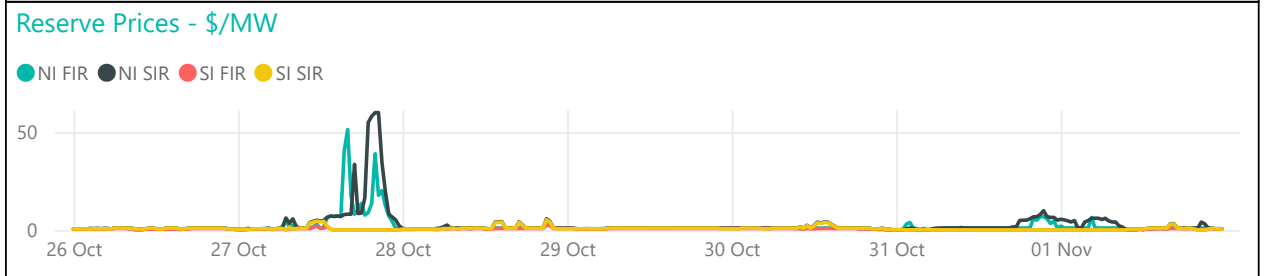


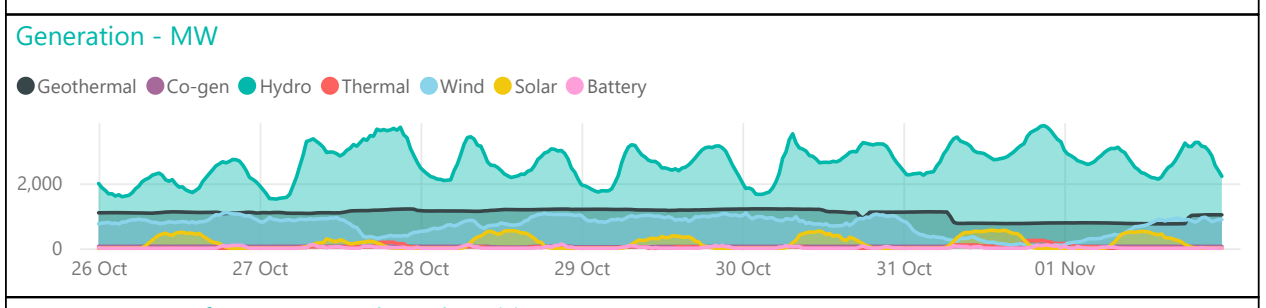


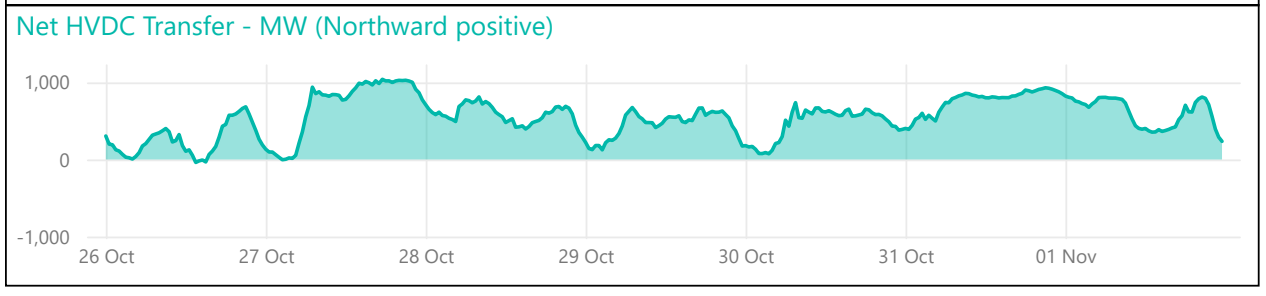












Weekly Insight - Effects of embedded solar on bi-directional flows at grid exit points

In last week's insight, we looked at the impact of small distributed solar generation on daily demand profiles. This week, we look at how increasing levels of embedded solar generation is resulting in bi-directional flows at grid exit points (GXPs), and what this means operationally for real-time security.

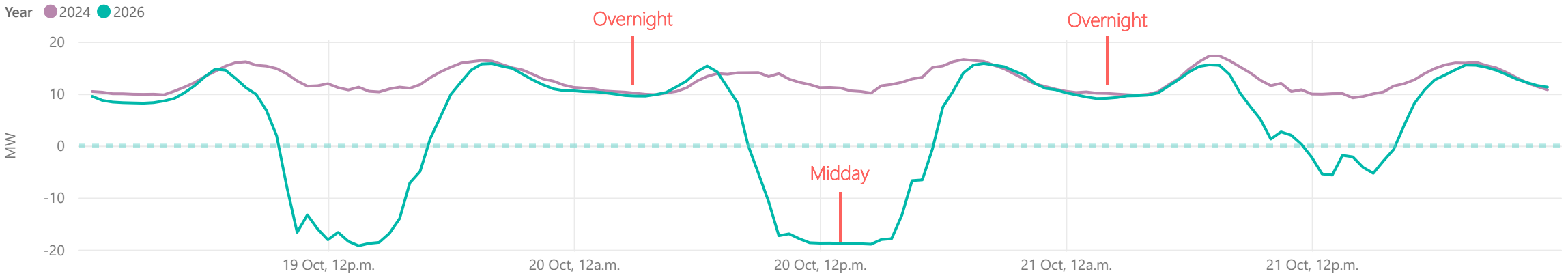
Historically, GXPs have predominantly experienced one-way power flows, with electricity moving from the transmission network into local distribution networks to supply consumers. However, increasing levels of embedded solar generation are changing this dynamic. During sunny periods, local solar production can exceed the electricity demand of the surrounding community. When this occurs, the excess energy is exported back through the GXP into the transmission network, reversing the traditional direction of flow. This creates bi-directional power flows and effectively transforms the local area from a net consumer of electricity into a net generator, supplying energy to the wider power system.

As discussed last week, we are seeing early signs of a 'duck curve' emerging in the market (a.k.a. solar 'ducklings'), where the midday demand trough in the South Island is falling below the overnight trough. At a local level, this behaviour can be even more pronounced, with midday demand at some GXPs becoming negative as embedded solar generation exceeds local consumption.

This shift is not readily visible in wholesale market demand [1] as market calculations are based on gross load at each GXP, which adjusts measured net load for embedded generation that is offered into the wholesale market. However, it is important at the power system level where actual net flows can impact power system stability and voltage management, critical aspects for maintaining real-time security.

To illustrate what is being observed, Figure 1 below shows the active power flow measured at Maungaturoto 33 kV GXP (MTO0331) from 19 to 21 October, comparing 2024 and 2026. The embedded solar farms Golden Stairs and Ruawai begun commissioning in Nov 2025 and Dec 2024 respectively and are connected to this GXP at the distribution side.

Figure 1: Active Power Flow at MTO0331



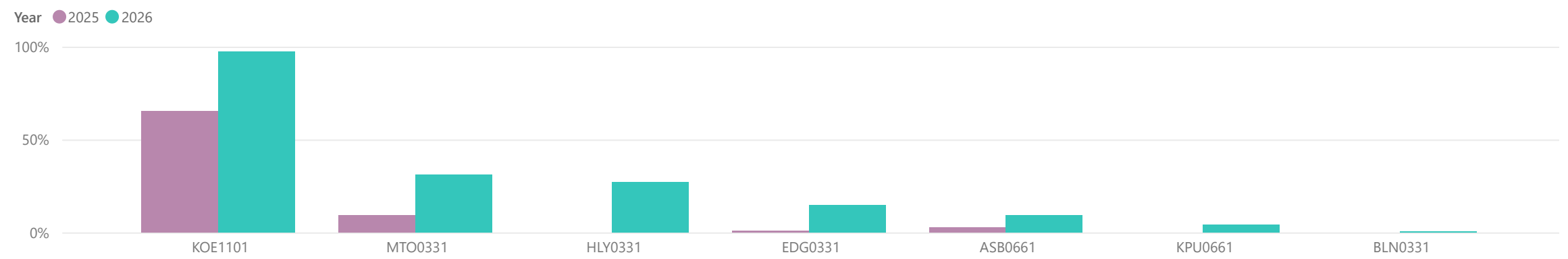
This is one example of how the System Operator is seeing the shifting behaviour at a GXP level. As solar irradiance increases the active power flow switches direction in the middle of the day as embedded solar generation is exported from the distribution to transmission side into the wholesale market.

Rank	Grid Exit Point	Name	Island	Total Embedded Solar Installed Capacity (MW)	Market Embedded Solar Installed Capacity (MW)	Non-Market Embedded Solar Installed Capacity (MW)
1	ISL0661	Islington	SI	210	160	50
2	KOE1101	Kaikohe	NI	86	72	15
3	ASB0661	Ashburton	SI	73	47	26
4	EDG0331	Edgecumbe	NI	58	52	6
5	MTO0331	Maungaturoto	NI	44	34	9
6	BLN0331	Blenheim	SI	41	0	41
7	HLY0331	Huntly	NI	39	22	17
8	KPU0661	Kopu	NI	32	24	8
9	TMK0331	Temuka	SI	26	24	2
10	STK0331	Stoke	SI	25	0	25

Table 1: Top 10 GXPs with the greatest installed capacity of embedded solar farms [2]

As more embedded solar is coming online, this shifting behaviour is becoming more frequent and across more GXPs. Figure 2 contains GXPs from Table 1 that have active power export back to the grid. It compares the proportion of trading periods for which net power flow was into the grid at these GXPs in October 2025 and 2026, showing a clear increase between these two periods and an indication of current trends. At a GXP, active power is exported from the transmission grid to the distribution network via a transformer where the voltage 'steps down' from high to low. Reverse power flows at the GXP occur when active power is exported from the distribution network back into the transmission grid.

Figure 2: Proportion of trading periods for which net power flow was into the grid at GXPs containing embedded solar: October 2025 vs 2026



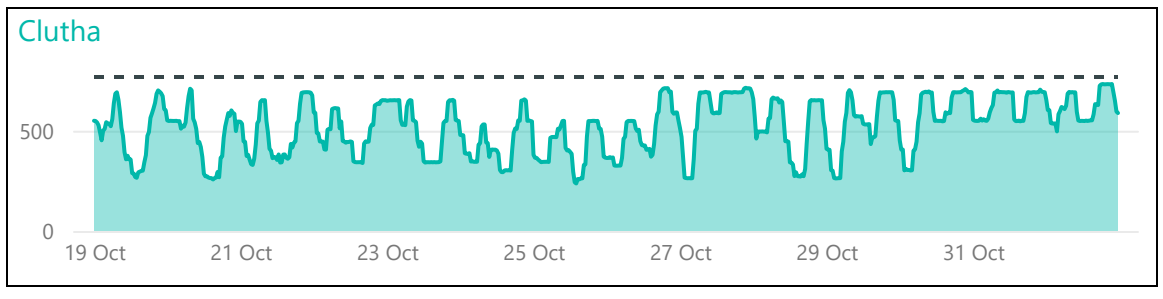
So, what does this mean for real-time security and voltage management?
From a real-time operations perspective, periods of midday power flow reversal can require increased attention from control room operators. As power increasingly flows from distribution networks back onto the national grid, voltage levels require closer management to maintain a secure operating state.

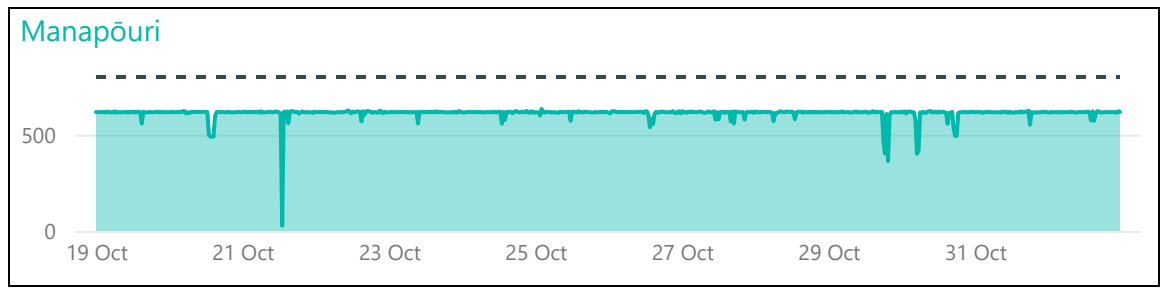
1 "Wholesale market demand" refers to demand that must be met by generators trading in the wholesale market. This matches the definition of demand used elsewhere in this report and excludes demand met by generators that aren't traded, including all generators under 10 MW.

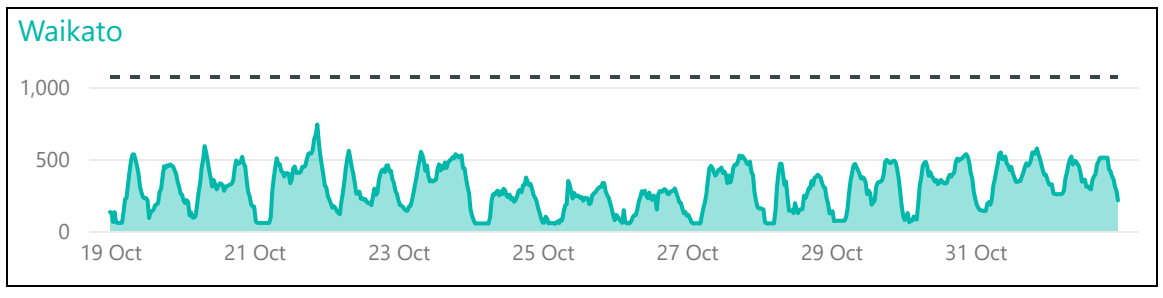
2 embedded generating station means 1 or more **generating units** that are directly connected to a **local network** or an **embedded network** and that injects into a **local network** or an **embedded network** at a single point of **injection**

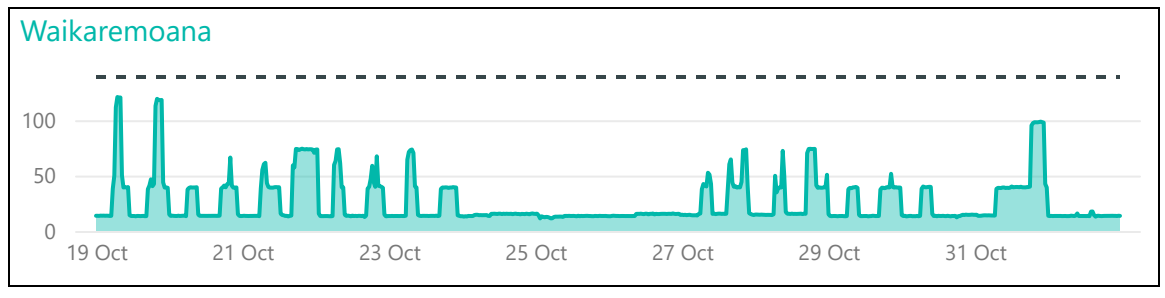
Generation Breakdown - Last Two Weeks

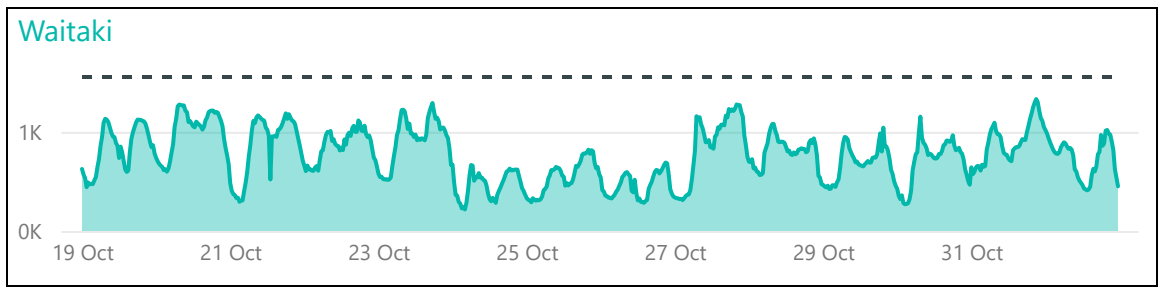
Measured in MW and displayed at trading period level for last 14 days

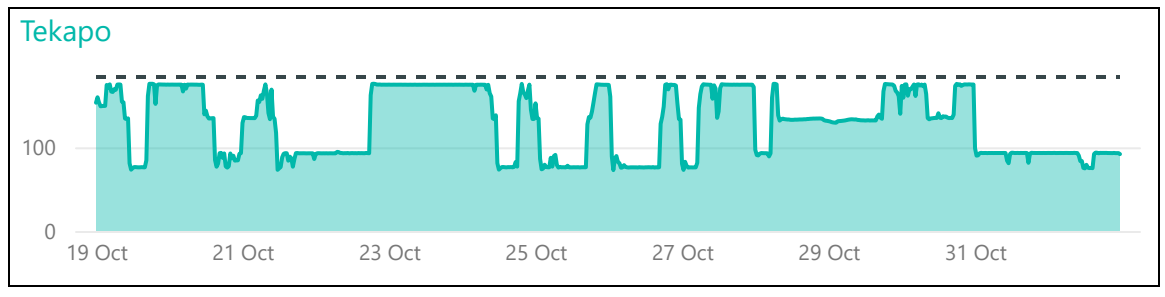


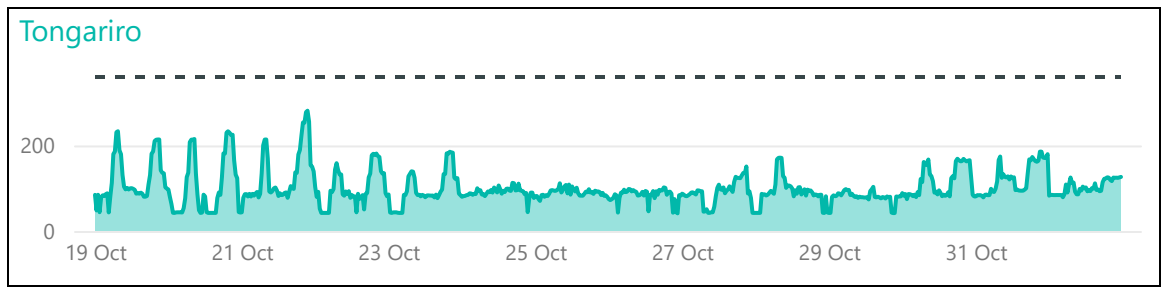


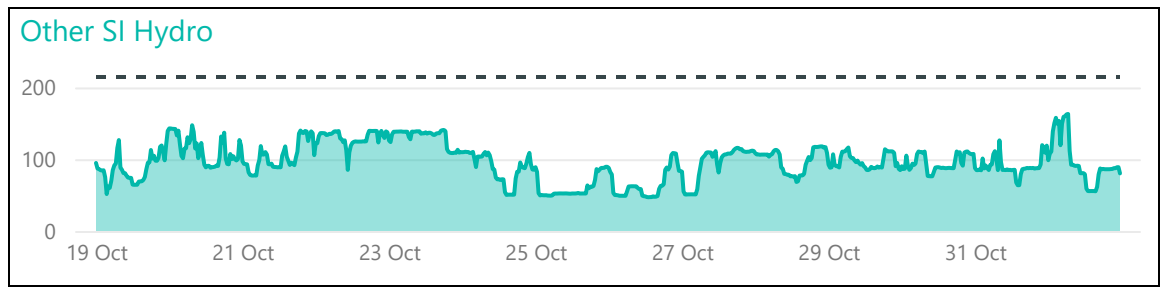


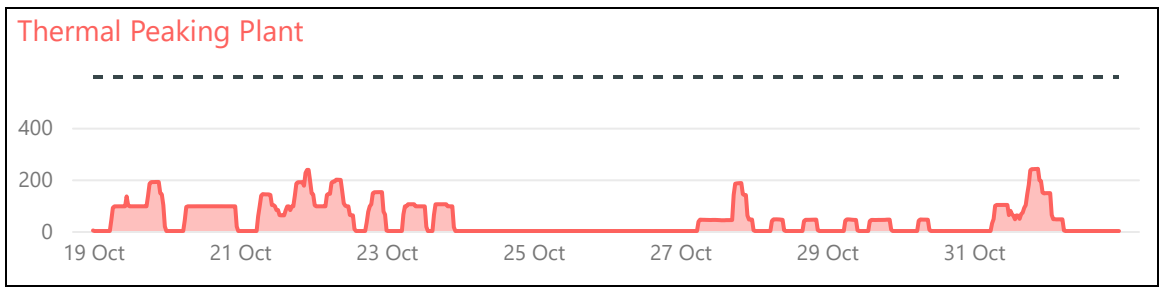


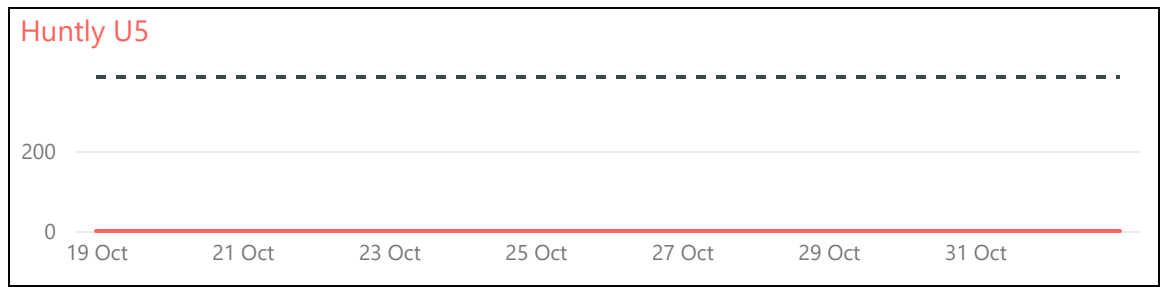


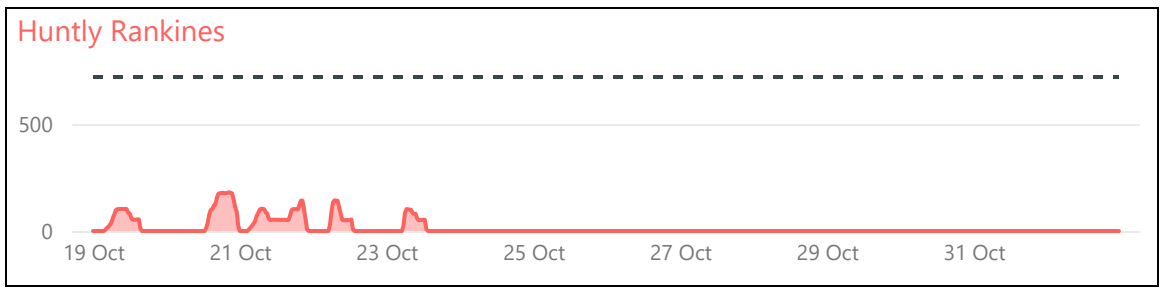


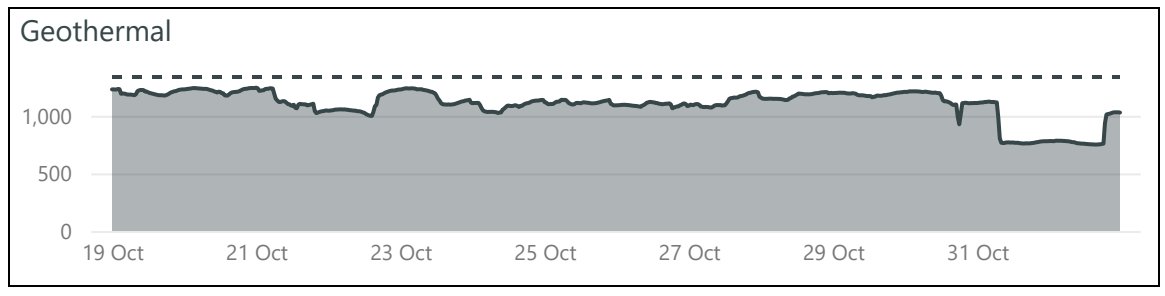


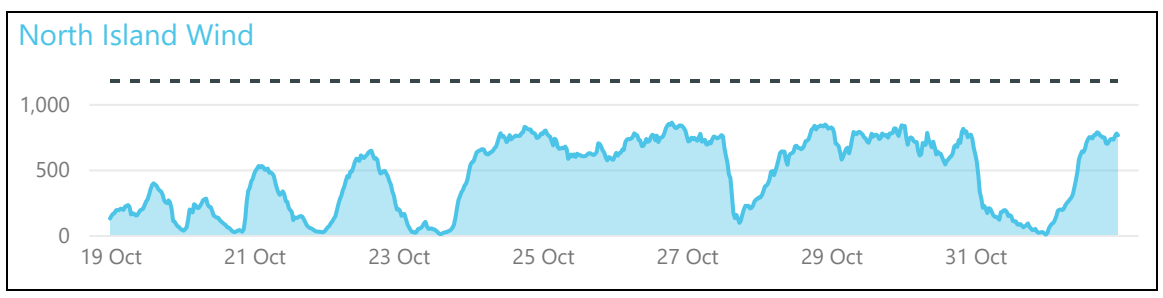


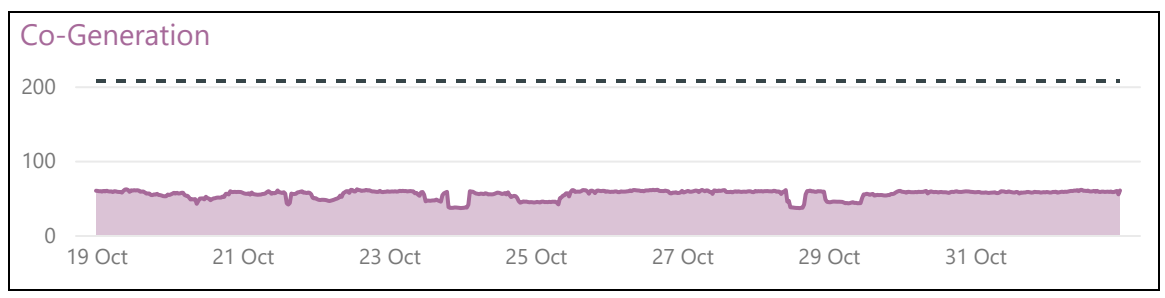


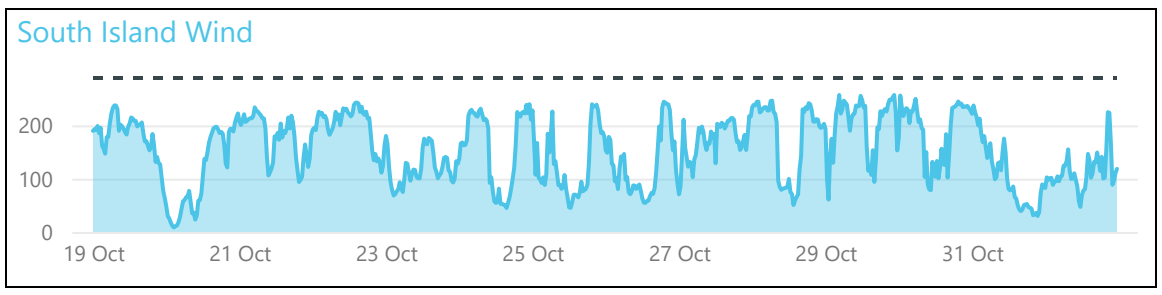


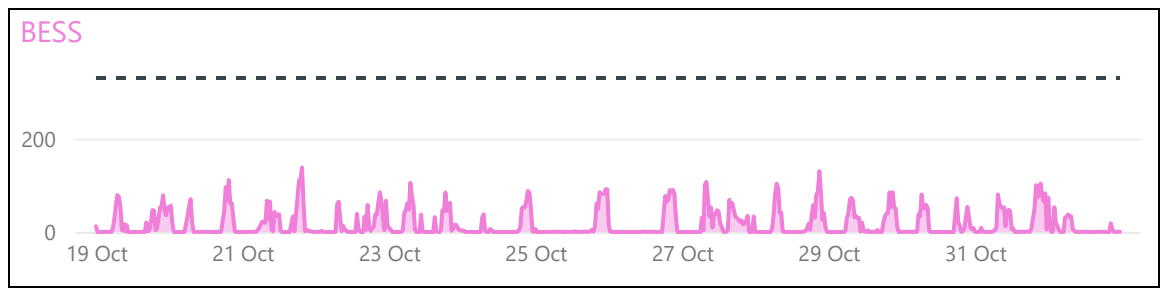


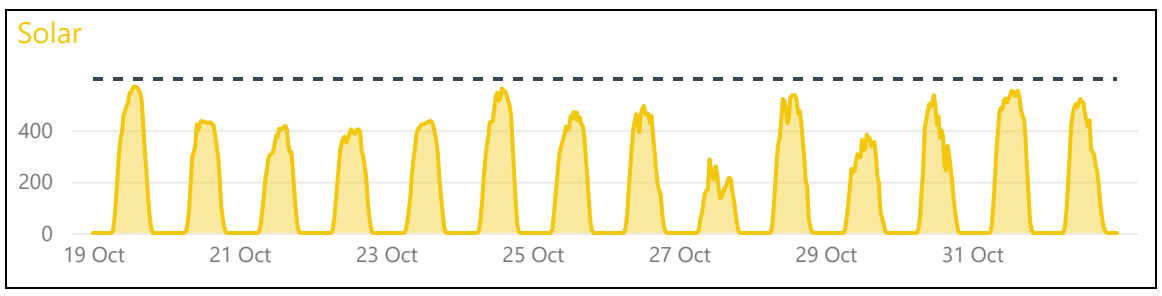






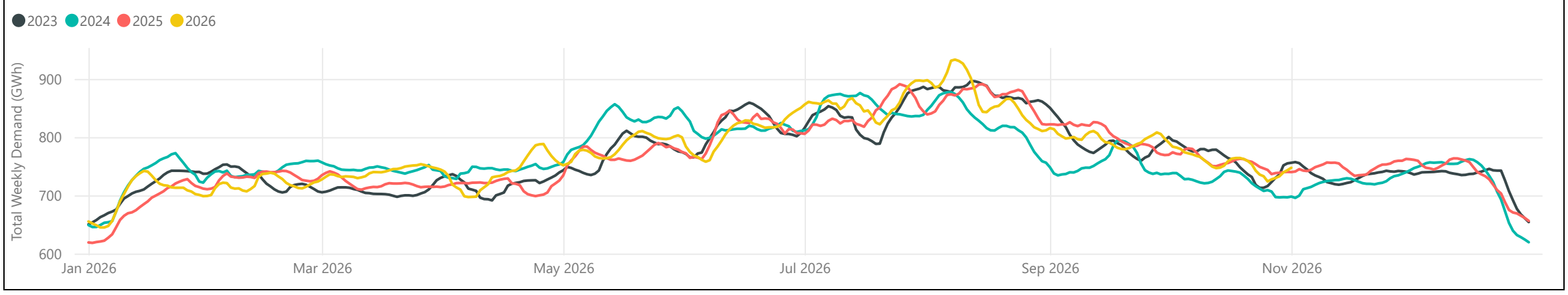




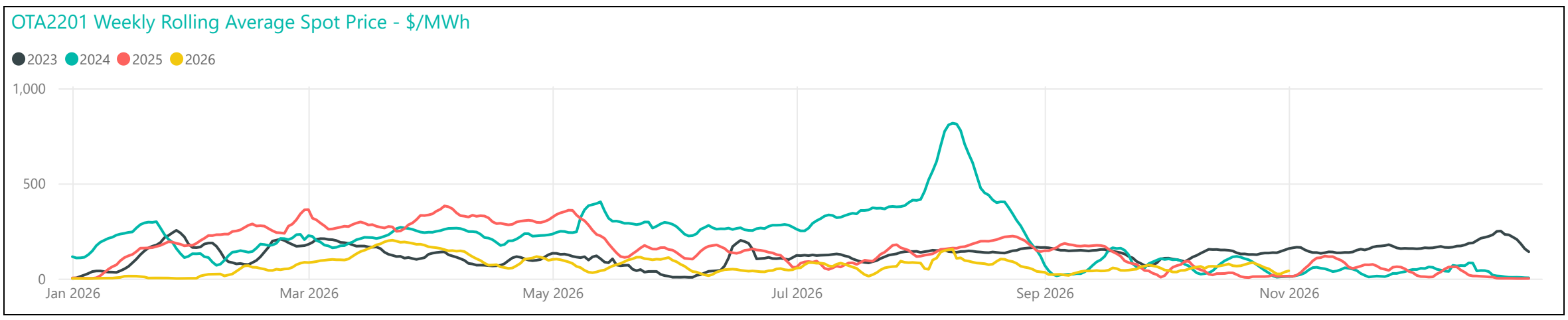


Weekly Profiles

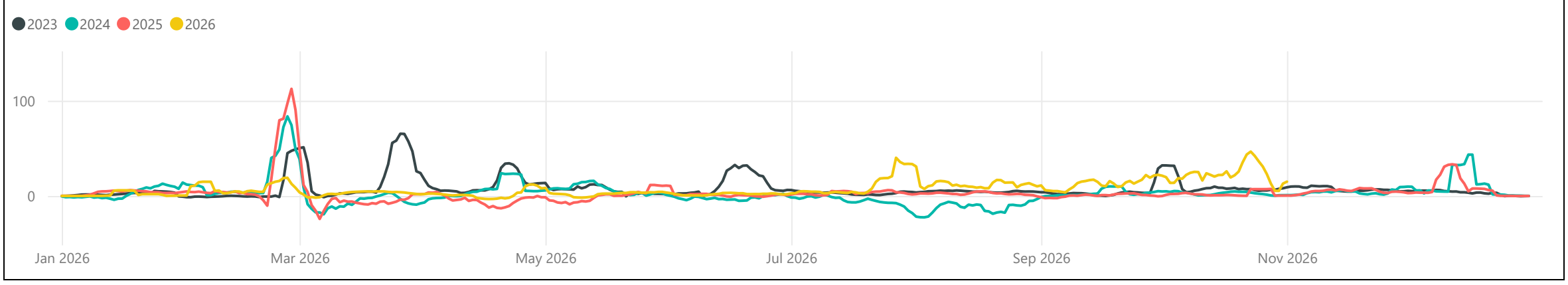
National Weekly Demand - GWh - 7 Day Rolling



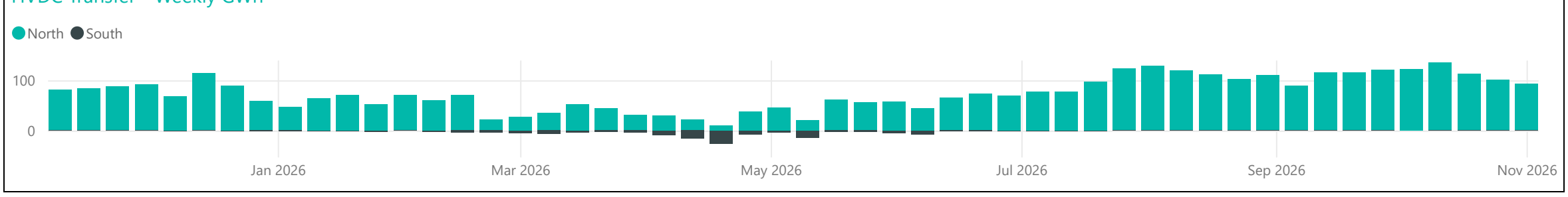
OTA2201 Weekly Rolling Average Spot Price - $/MWh



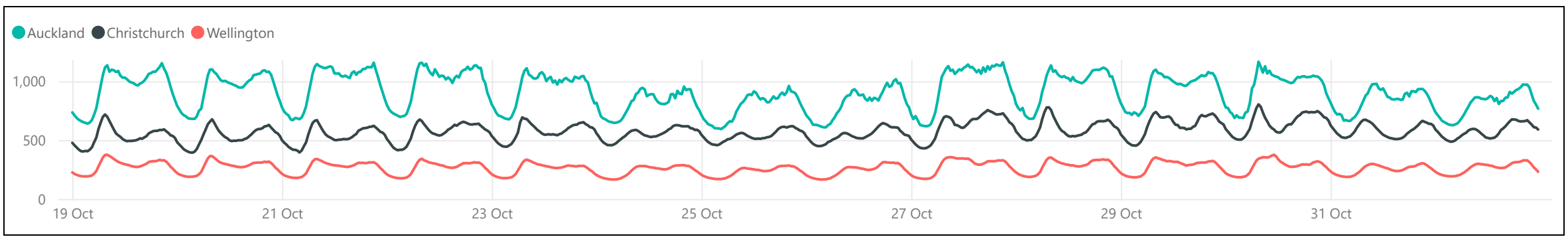
Weekly Rolling Price Separation (HAY2201 - BEN2201) - $/MWh



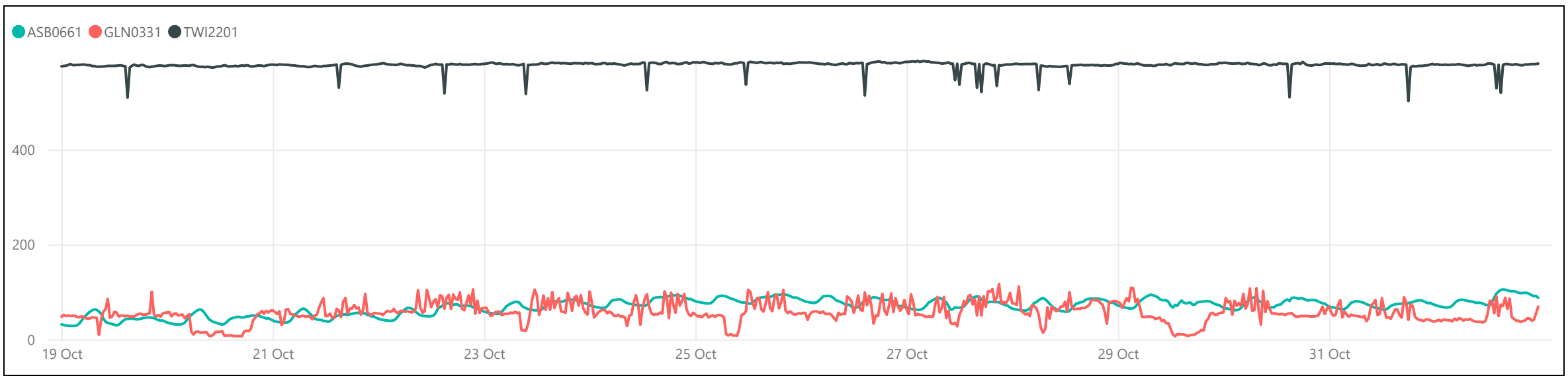
HVDC Transfer - Weekly GWh



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



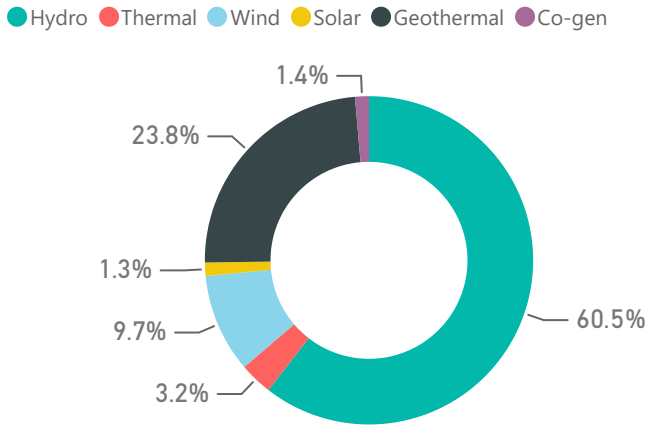
Non-Conforming Load Profiles - Last Two Weeks *Measured in MW shown by GXP*



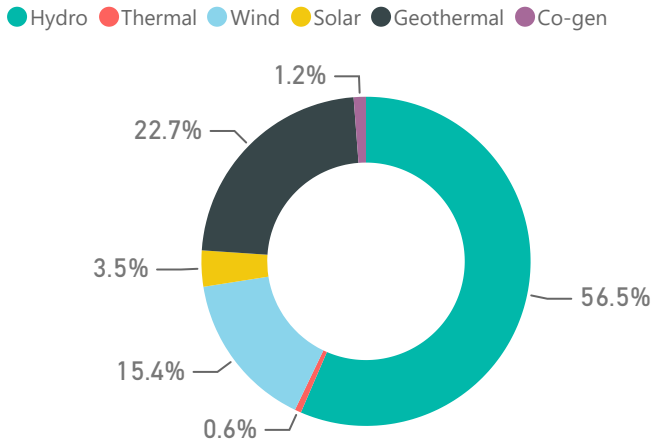
TRANSPOWER

Generation Mix

Last 52 Weeks Generation Mix - Weekly GWh



Last 7 Days Generation Mix - Weekly GWh



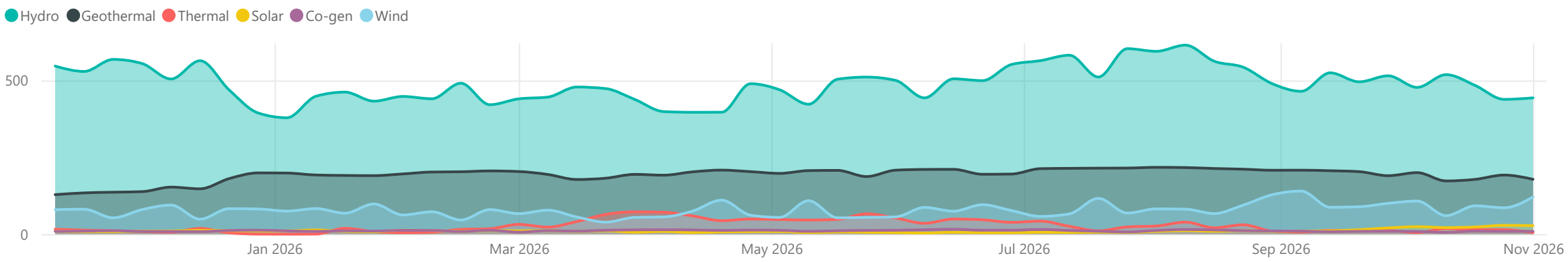
Average Metrics Last 7 Days

Renewable Percentage	CO2e Tonnes/Week	CO2e g/kWh
98%	21,054	26.8

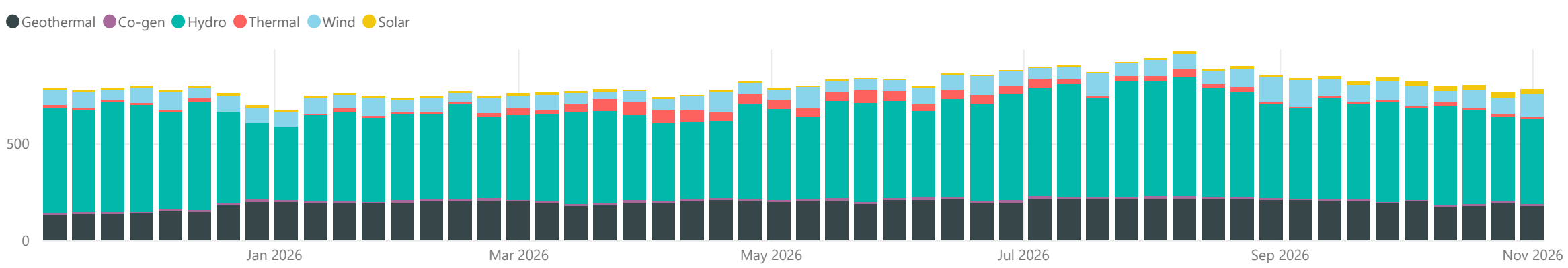
Average Metrics Last 52 Weeks

Renewable Percentage	CO2e Tonnes/Week	CO2e g/kWh
95%	33,973	41.5

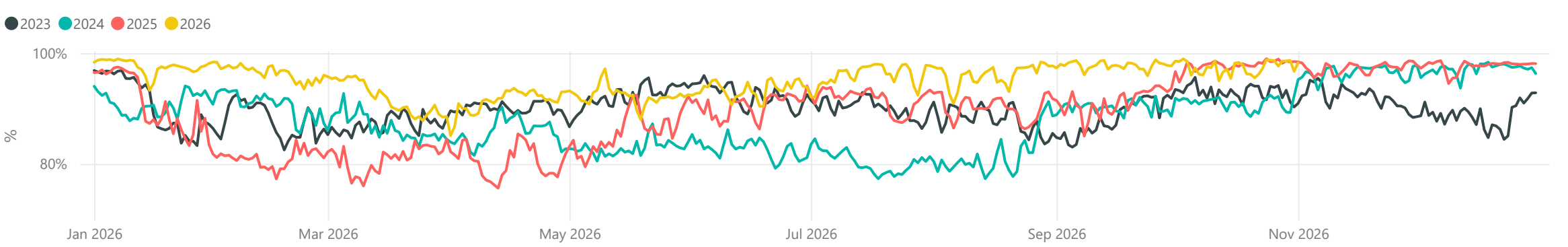
Weekly Generation Mix - GWh



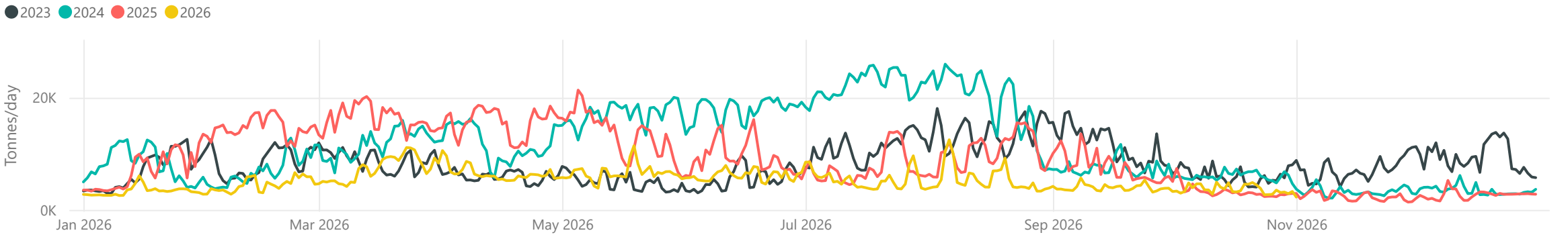
Weekly Generation Mix - GWh



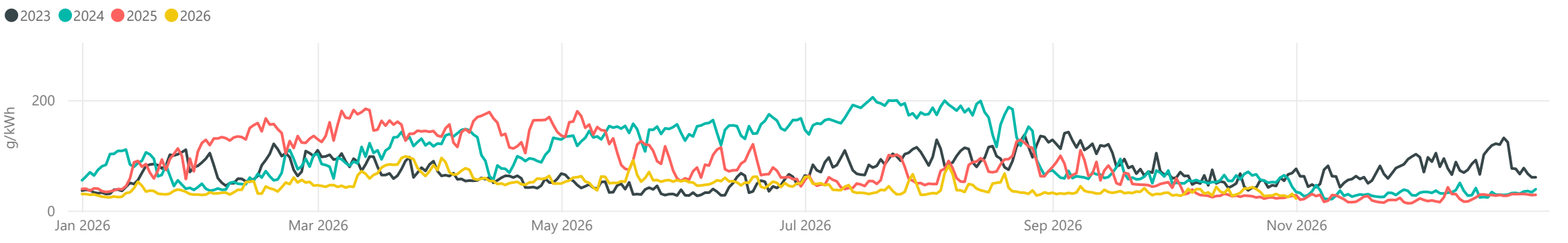
NZ Renewable Percentage



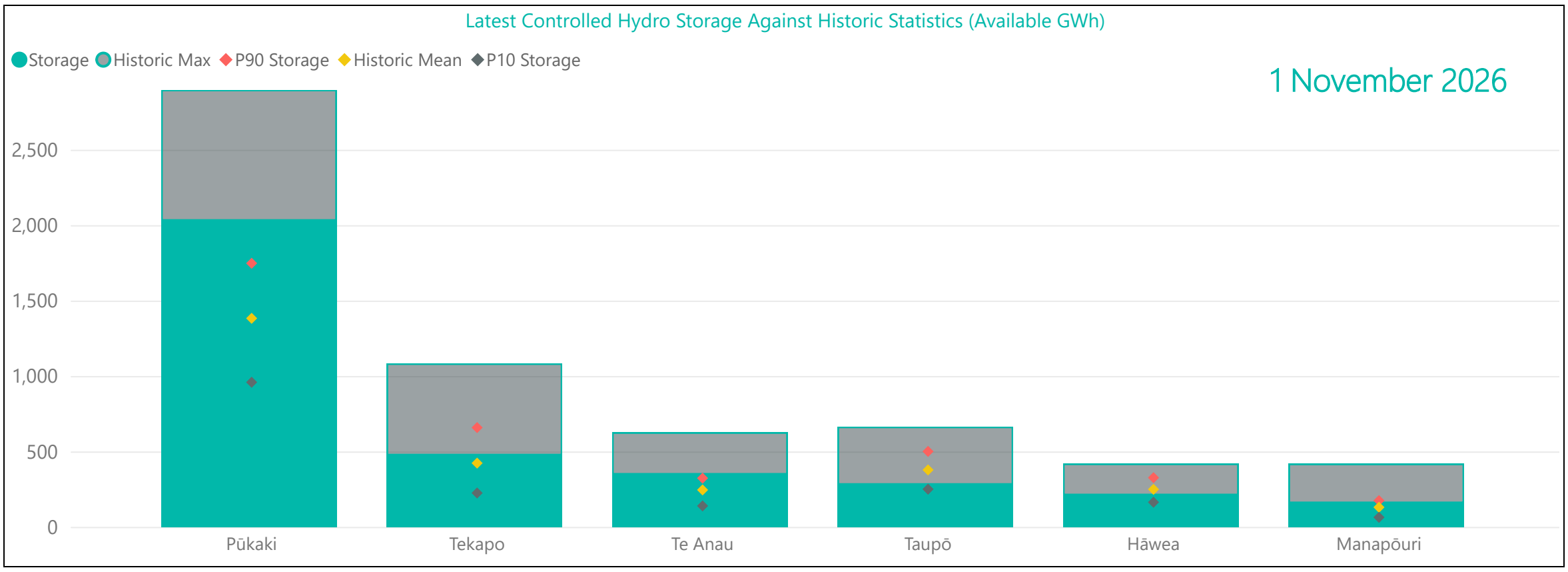
CO2 Tonnes/Day

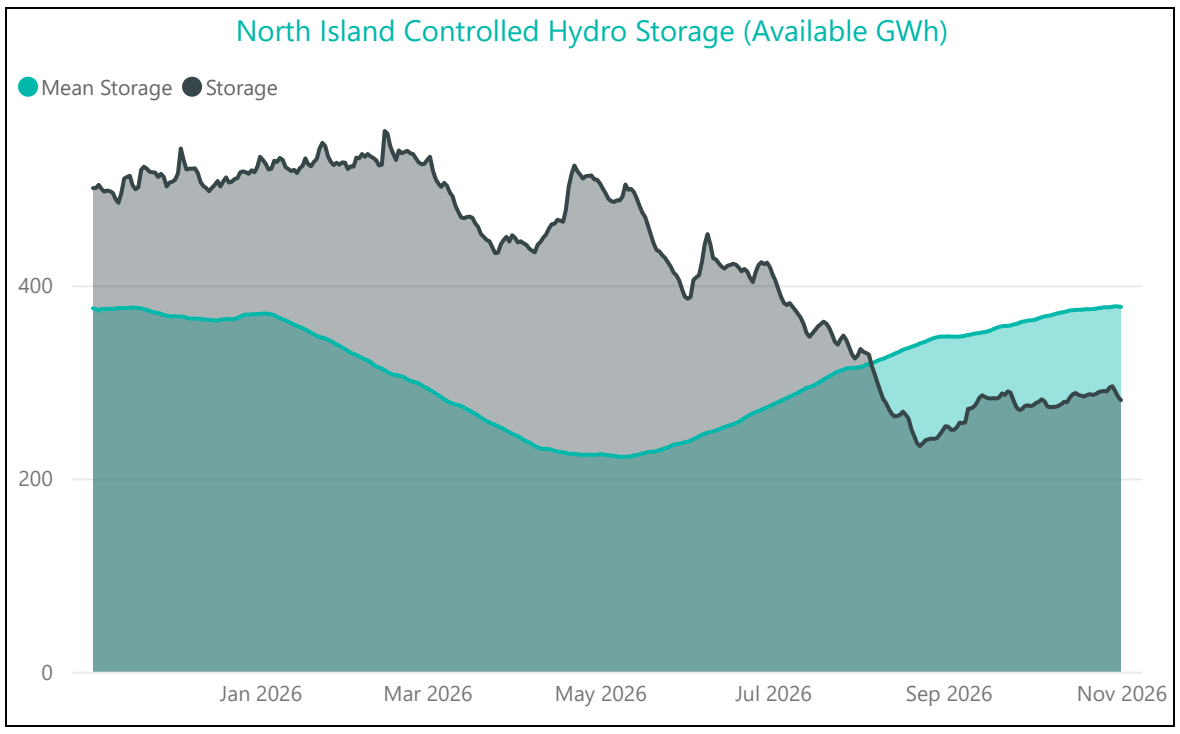


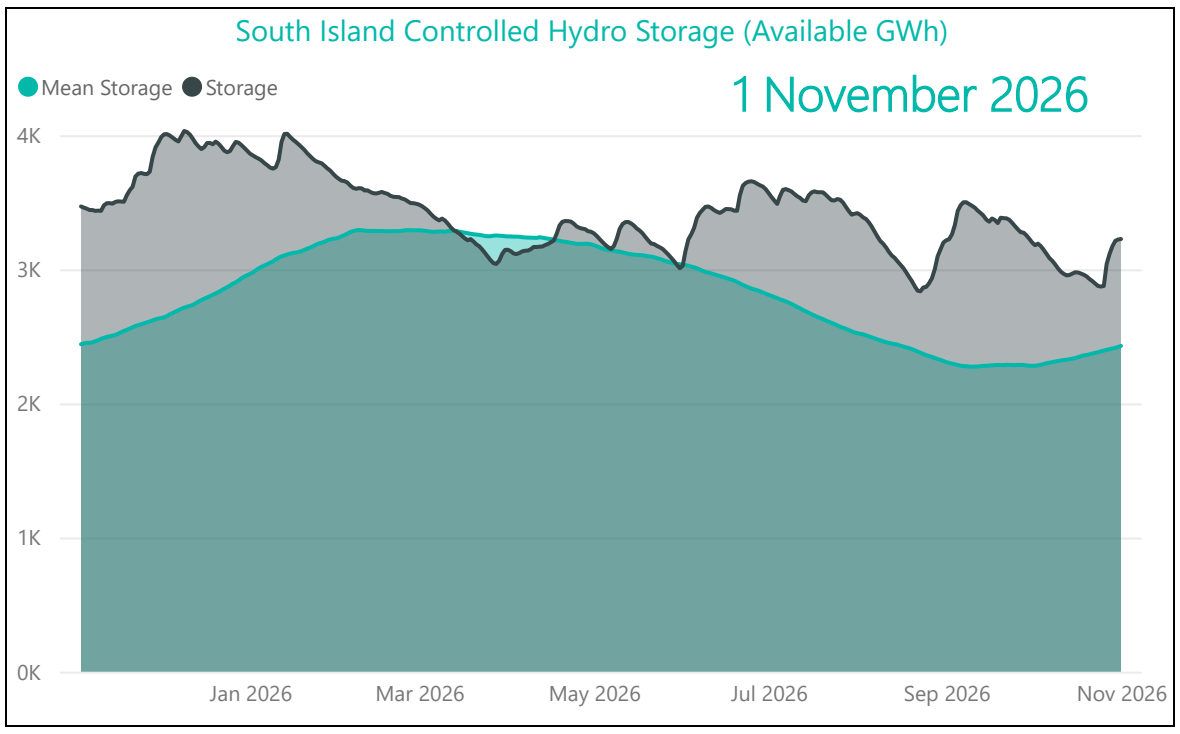
Average CO2 g/kWh

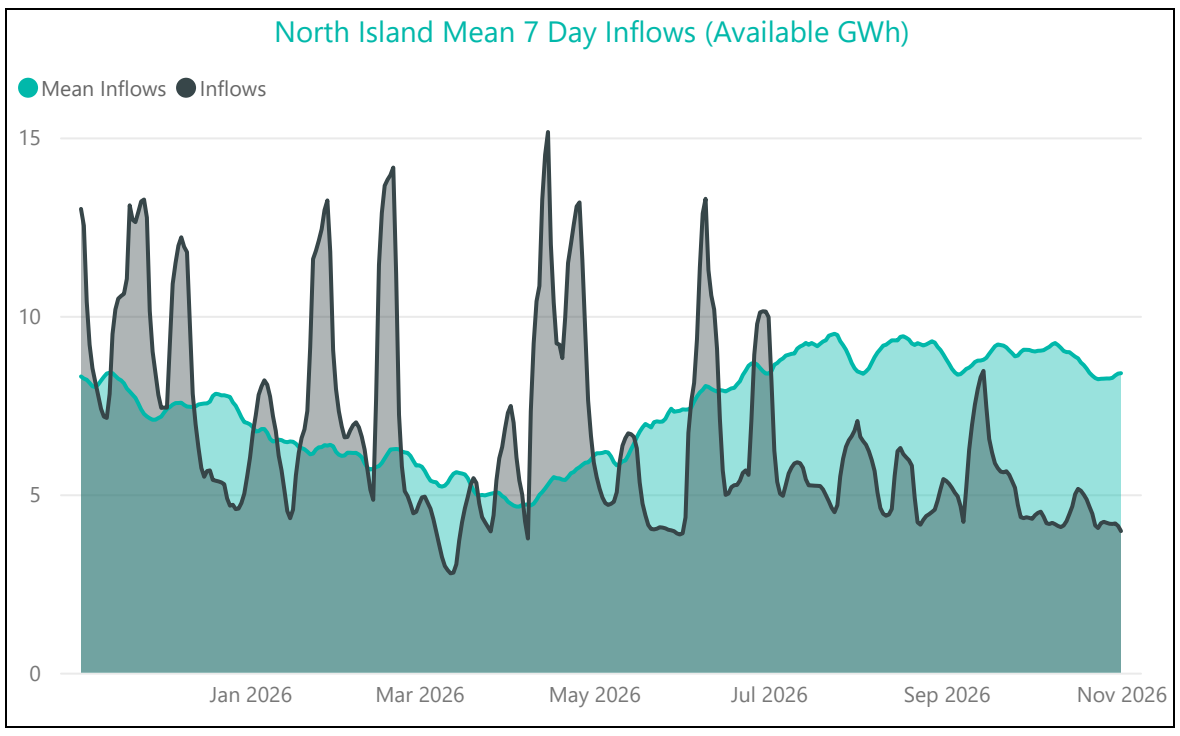


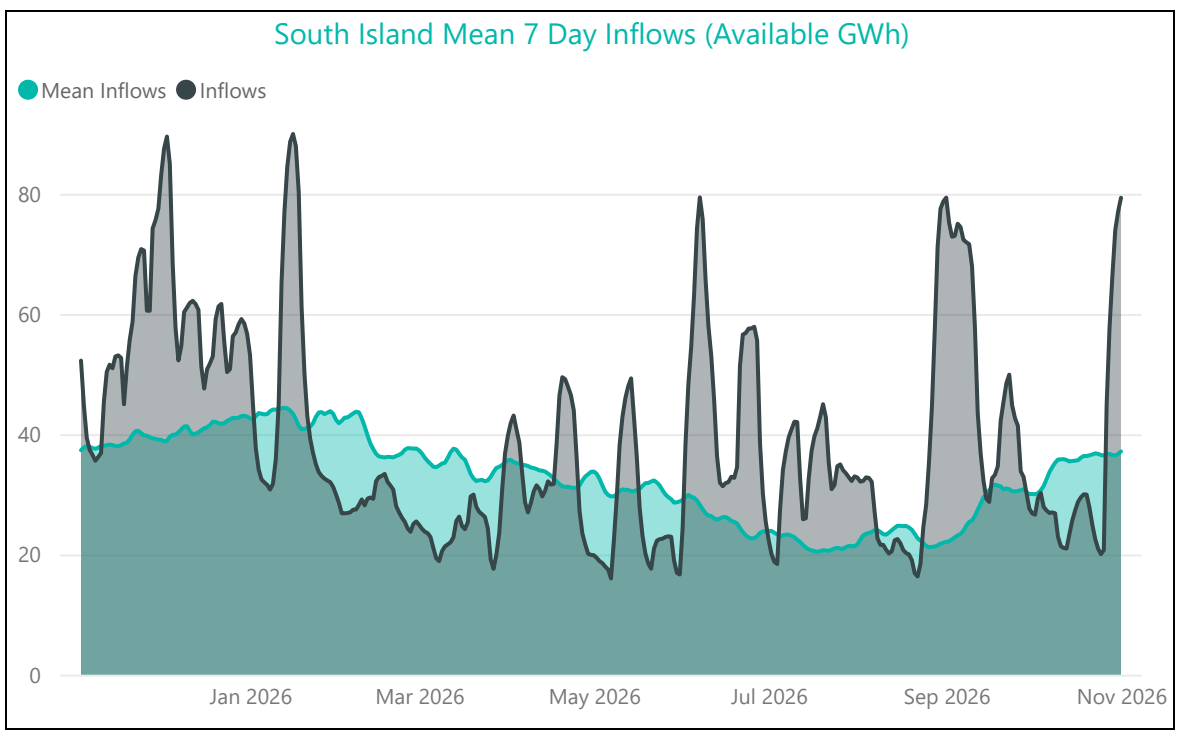
Hydro Storage











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

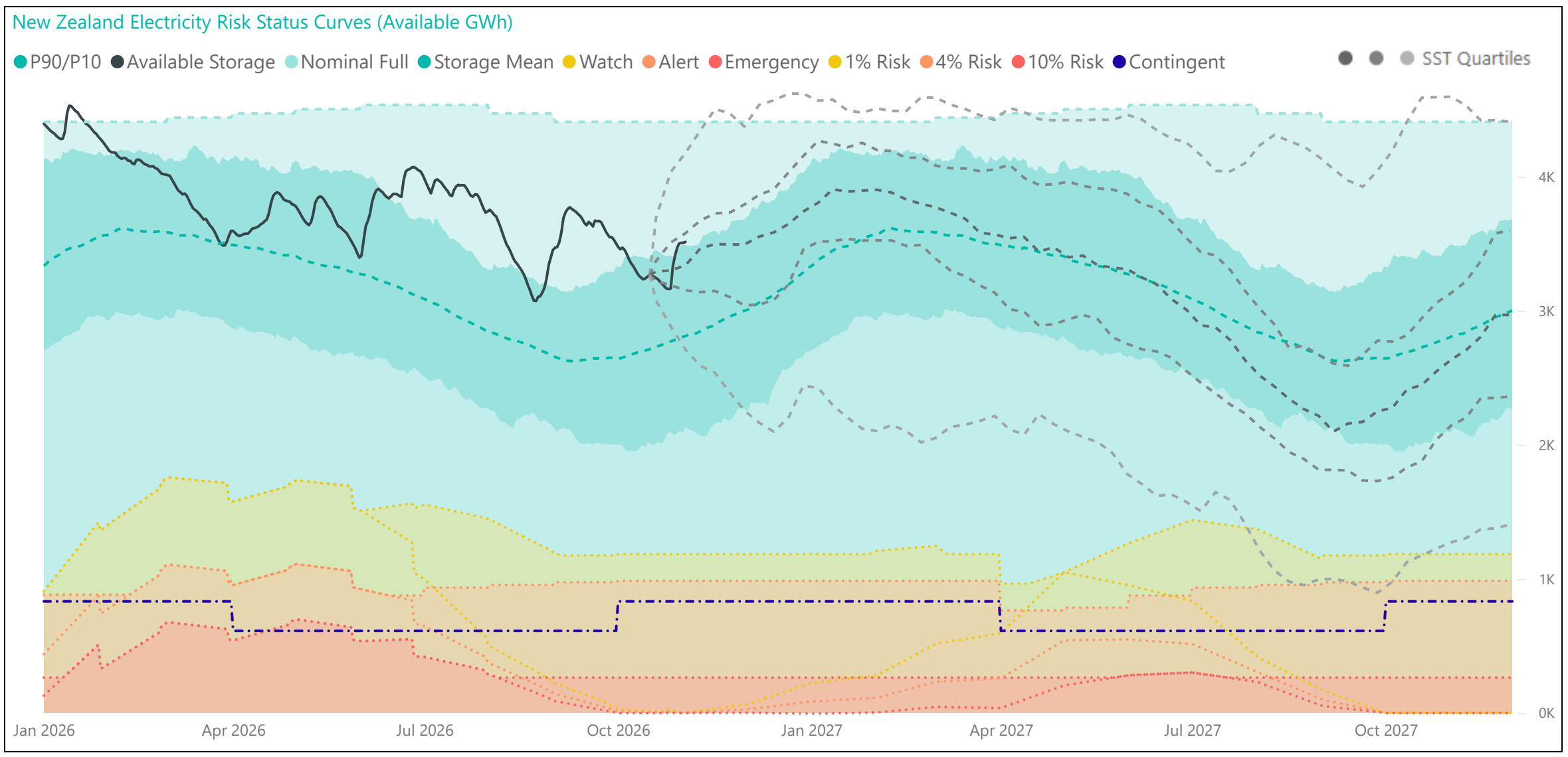
For any inquiries related to security of supply contact market.operations@transpower.co.nz

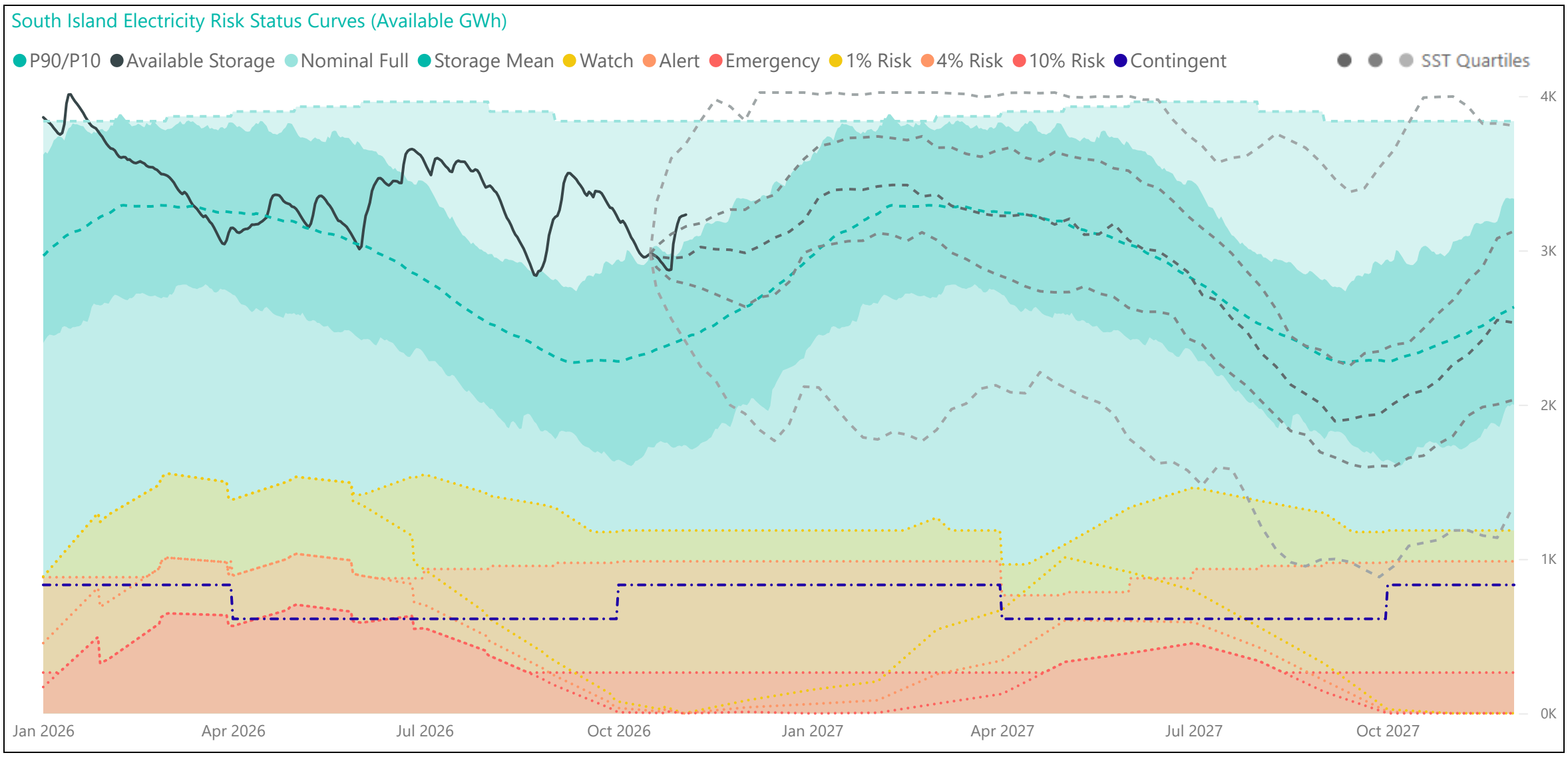
Hydro data used in this report is sourced from *NZX Hydro*.

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





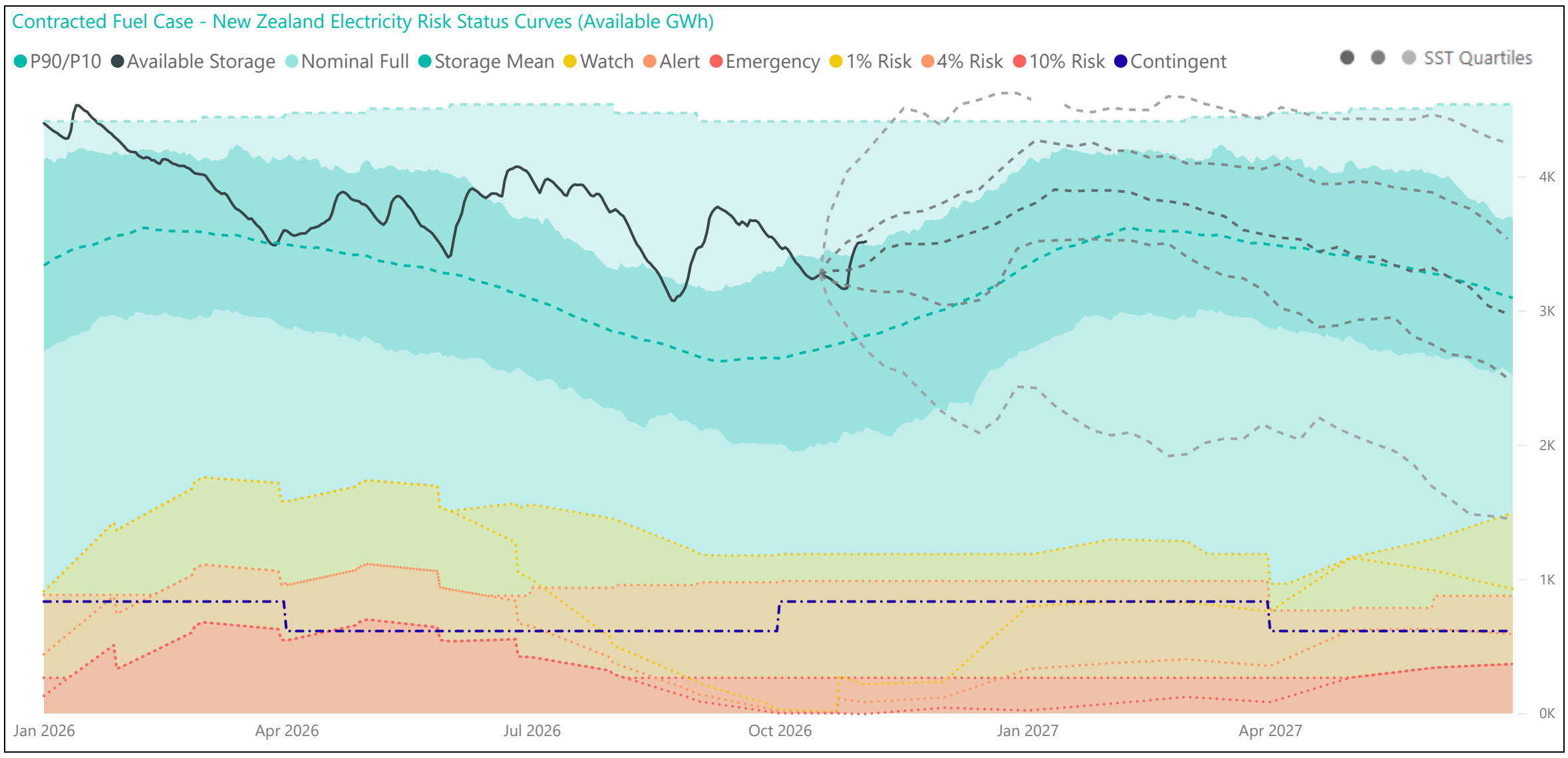
Electricity Risk Curve Explanation:

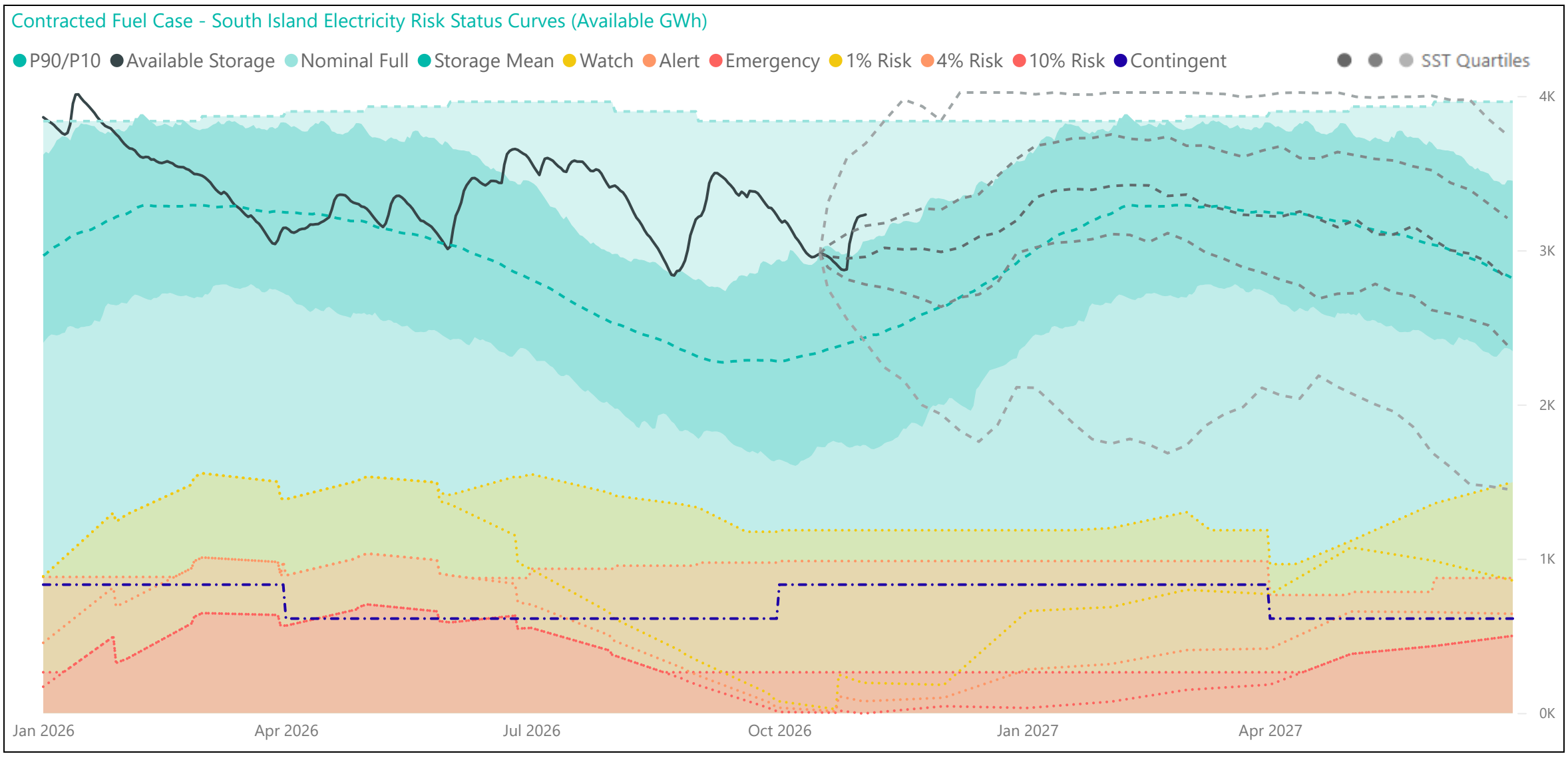
Watch Curve - The maximum of the one percent risk curve or the Alert curve plus the greater of the Watch adder or the worst-case simulated storage drop
Alert Curve - The maximum of the four percent risk curve and the floor and buffer
Emergency Curve - The maximum of the 10 percent risk curve and the 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, and the buffer as specified in the SOSFIP.

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).

Electricity Risk Curves - Contracted Fuel Case





Electricity Risk Curve Explanation:

Watch Curve - The maximum of the one percent risk curve or the Alert curve plus the greater of the Watch adder or the worst-case simulated storage drop
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

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, and the buffer as specified in the SOSFIP.

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).