TRANSPOWER

System Operator Industry Forum

14 July 2026

Today’s agenda

- Key messages
- Market update
- Security of supply update
- NZGB update
- Outage update – next four weeks
- Wairakei Ring outages
- Operational update
- Consultations, publications, and events
- Questions / Pātai

Key Messages

- National hydro storage remains well above average, contributing to lower thermal unit commitment.
- Demand continues to increase as Winter temperatures drop, resulting in lower residual generation.
- Capacity risks from July to August will require a combination of unit commitment, plant availability, and flexibility. Please keep POCP updated.

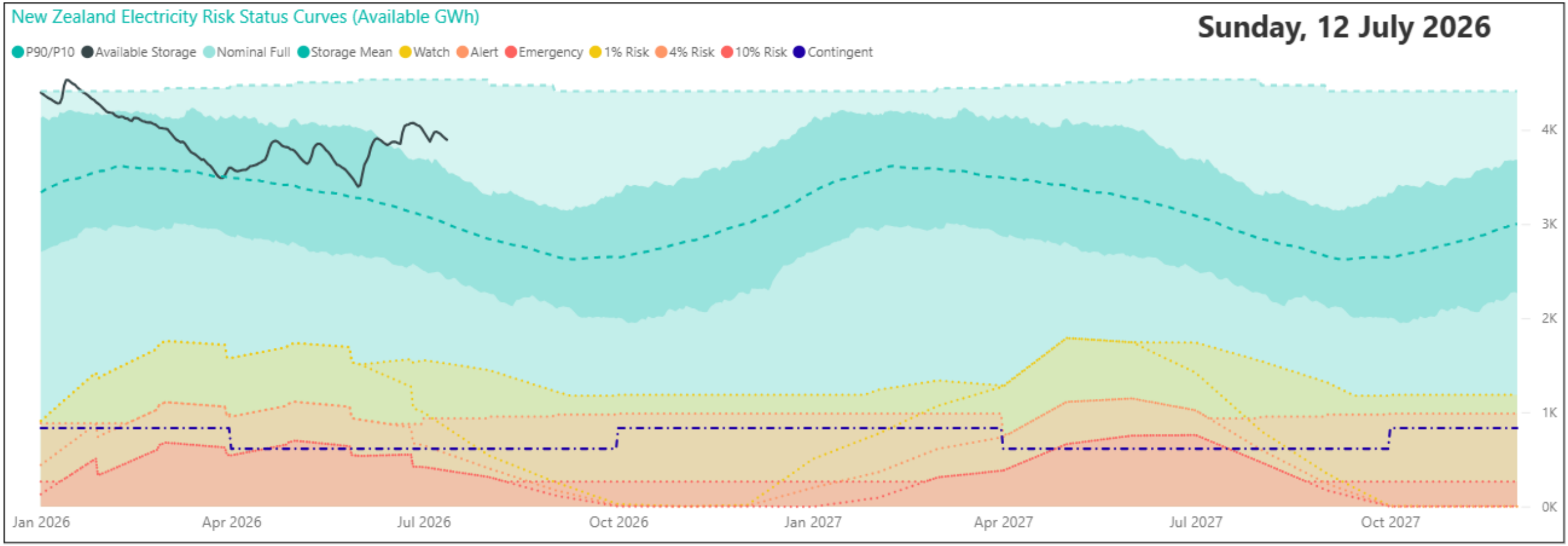
Market update

Energy: National hydro storage

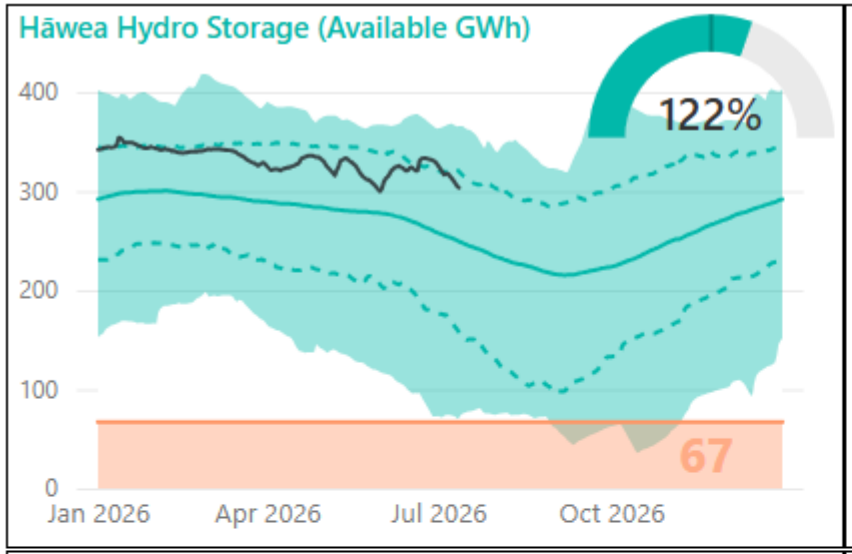
No significant changes in the last fortnight.
National hydro storage levels remain healthy.

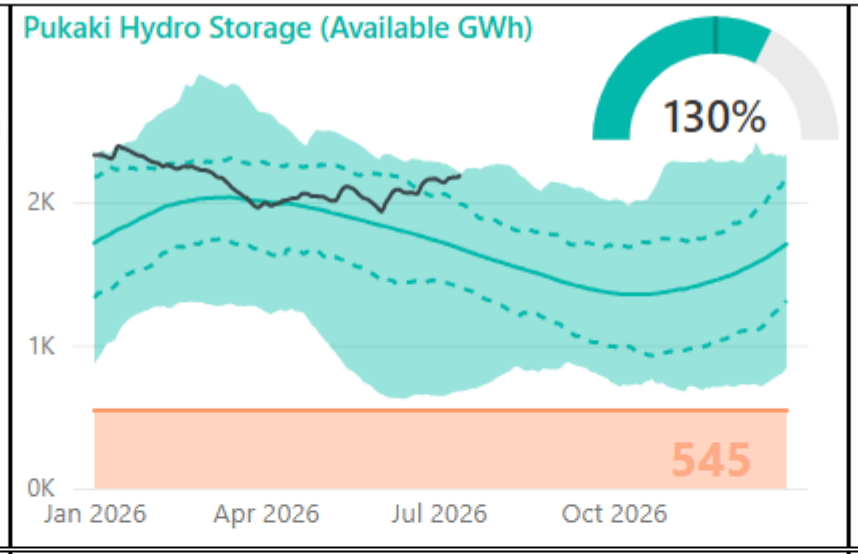
	Hydro storage level (% of mean ▲/▼)		
	New Zealand	South Island	North Island
Last forum	130%	128%	155%
Now	130%	130% ▲	123% ▼

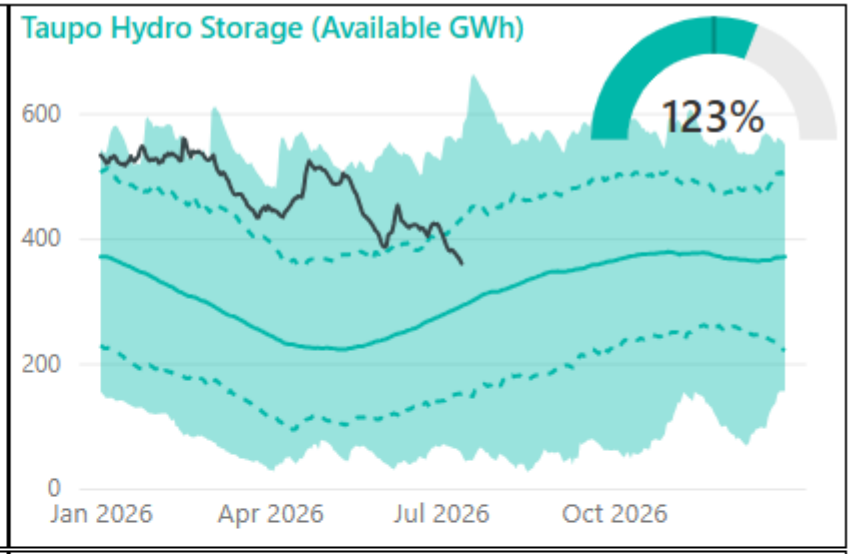
Note: these numbers include contingent storage, so they differ from those reported by NZX

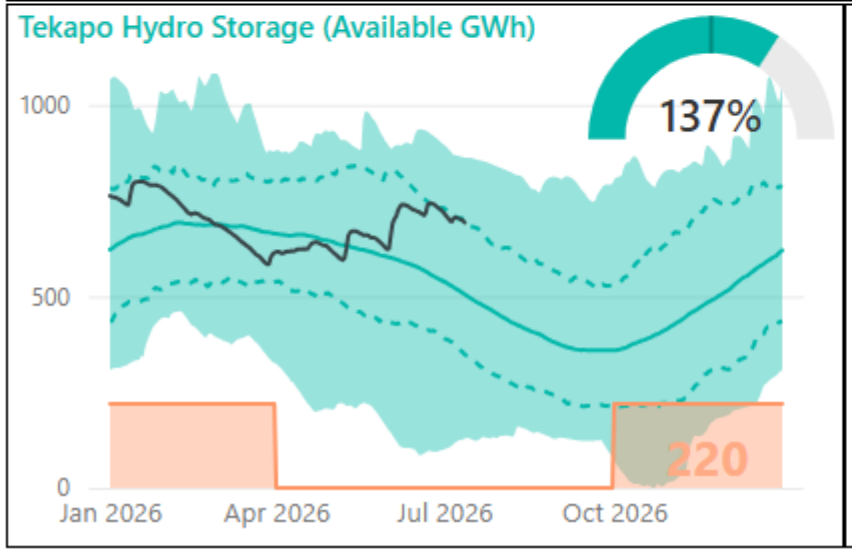


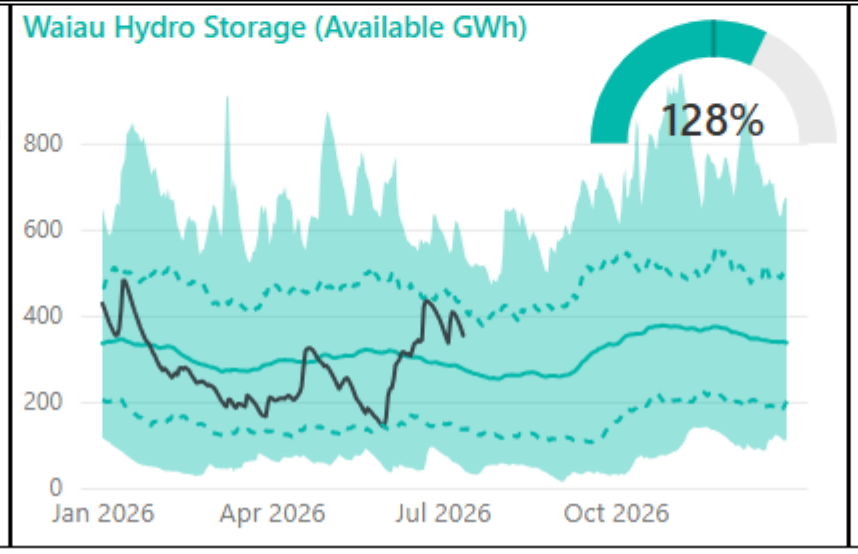
Hydro storage by catchment





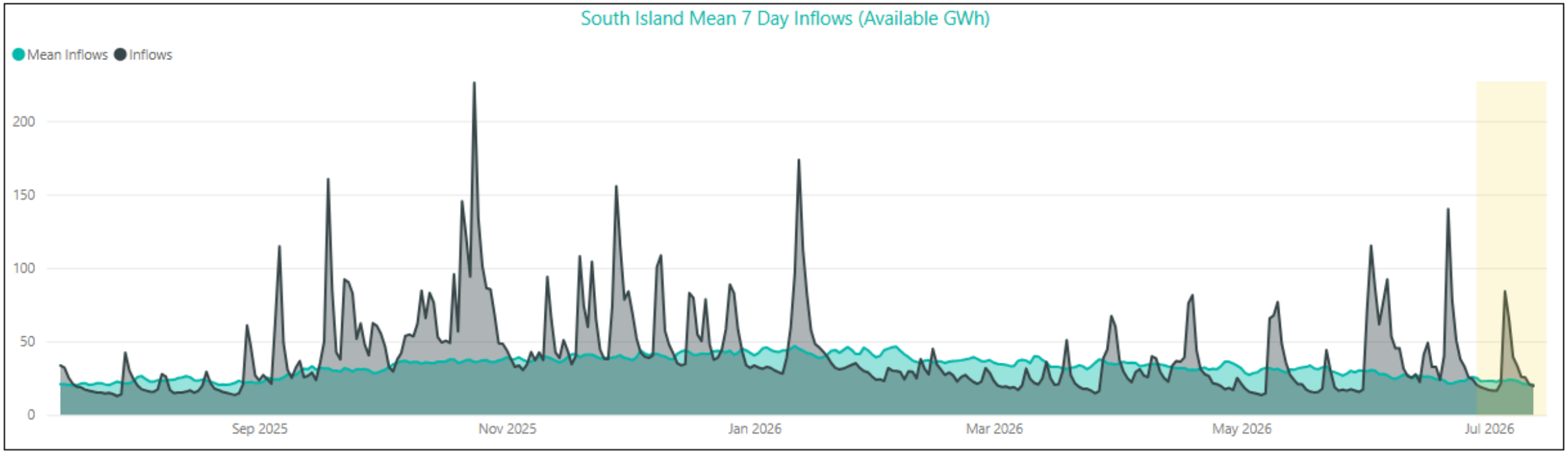


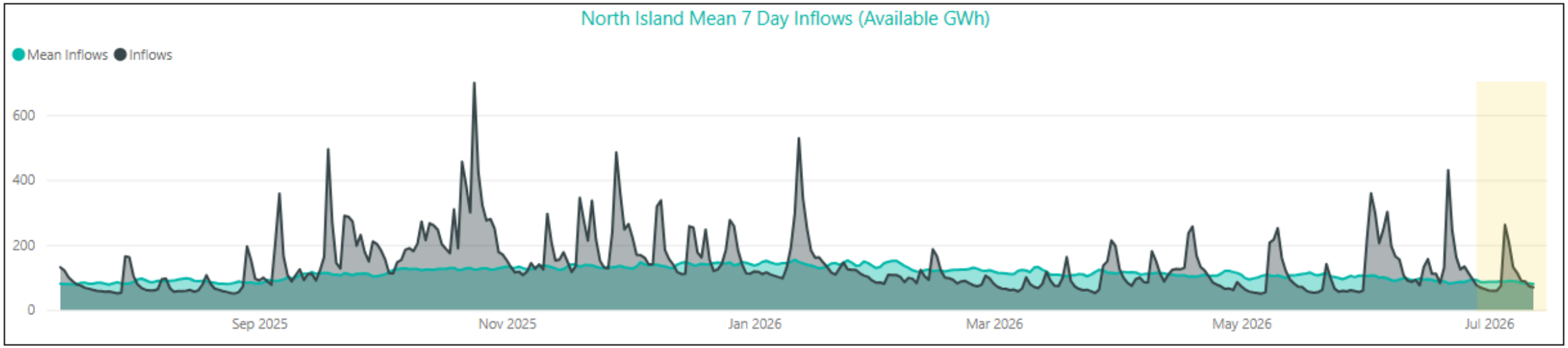




Lake	Percent	GWh	Mean
Hāwea	122%	303	249
Manapōuri	121%	117	97
New Zealand	130%	3894	3001
Pūkaki	130%	2184	1678
South Island	130%	3534	2708
Taupō	123%	360	292
Te Anau	133%	236	178
Tekapo	137%	693	506

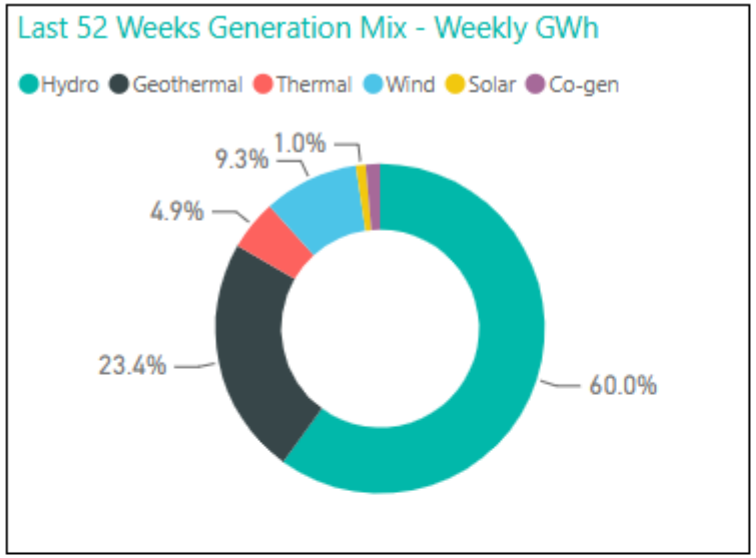
Hydro inflows

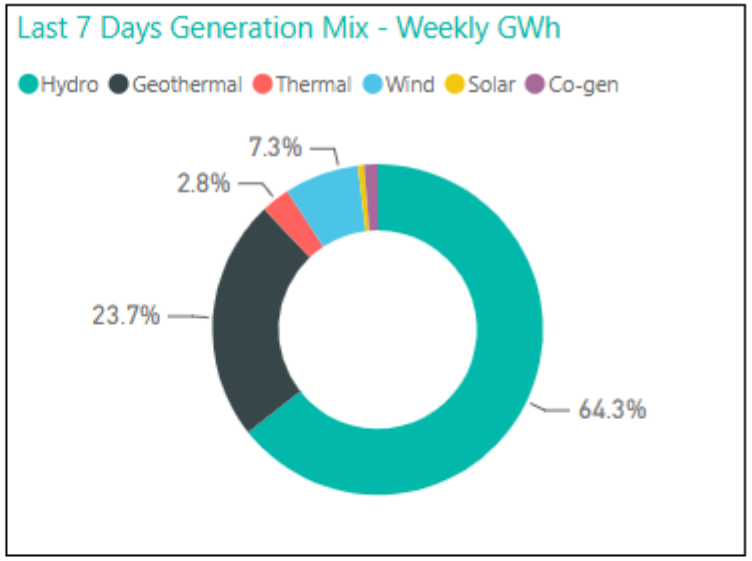


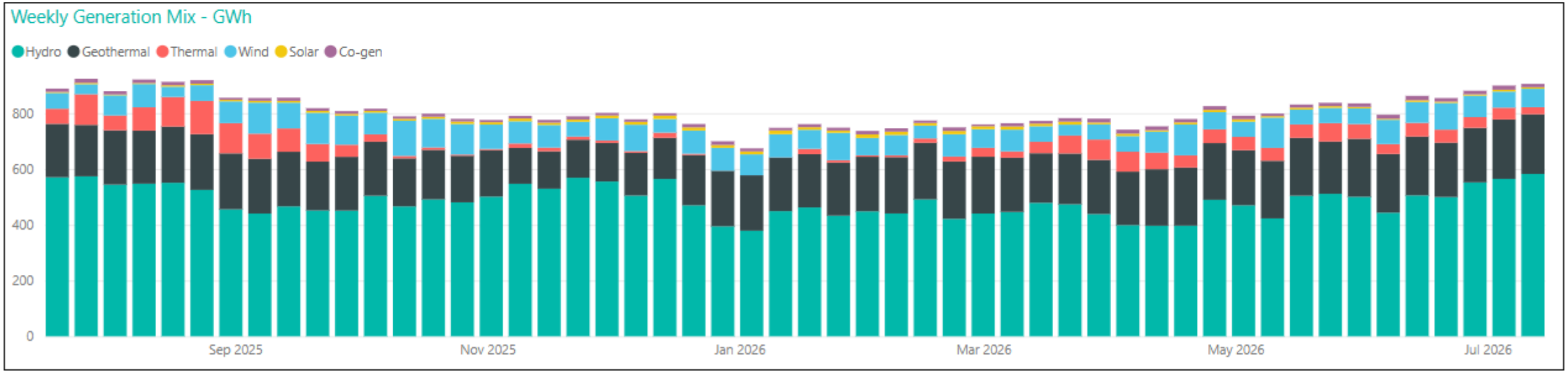


Generation mix

- Hydro generation at 64% of the mix – above yearly average
- Below average wind generation at 7%
- Thermal generation below its yearly average at 3%
- Geothermal slightly above average at 24%

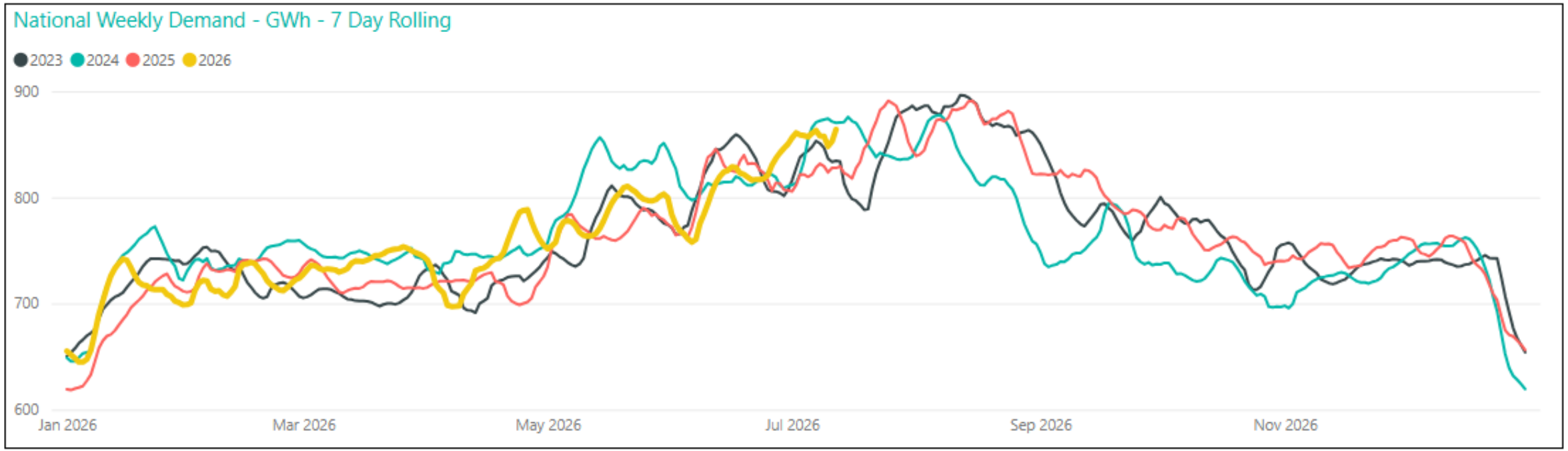






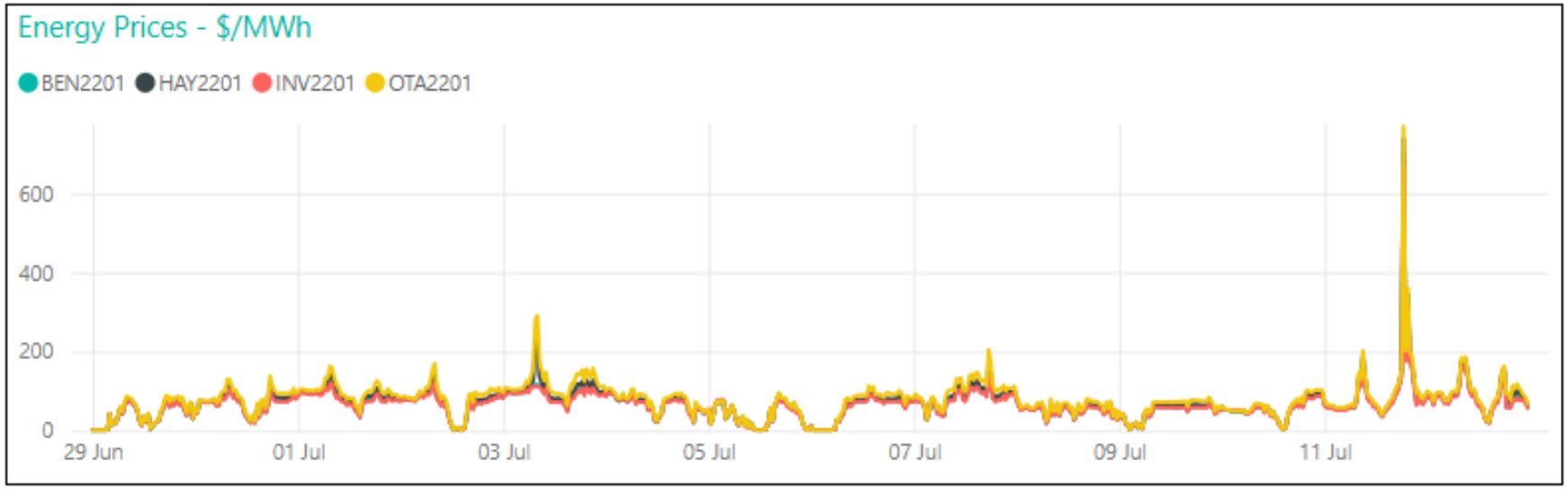
Demand

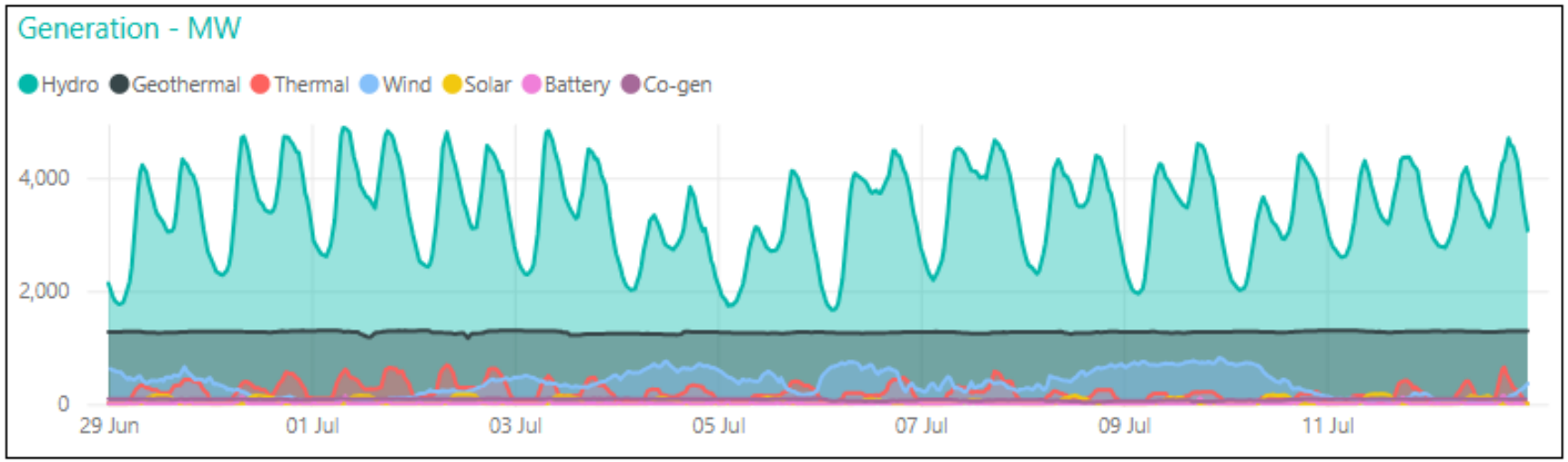
- Demand continues to increase with colder temperatures and in line with previous years
- We are seeing tightening residual capacity periods due to demand increase, low wind and lower thermal commitment



Pricing

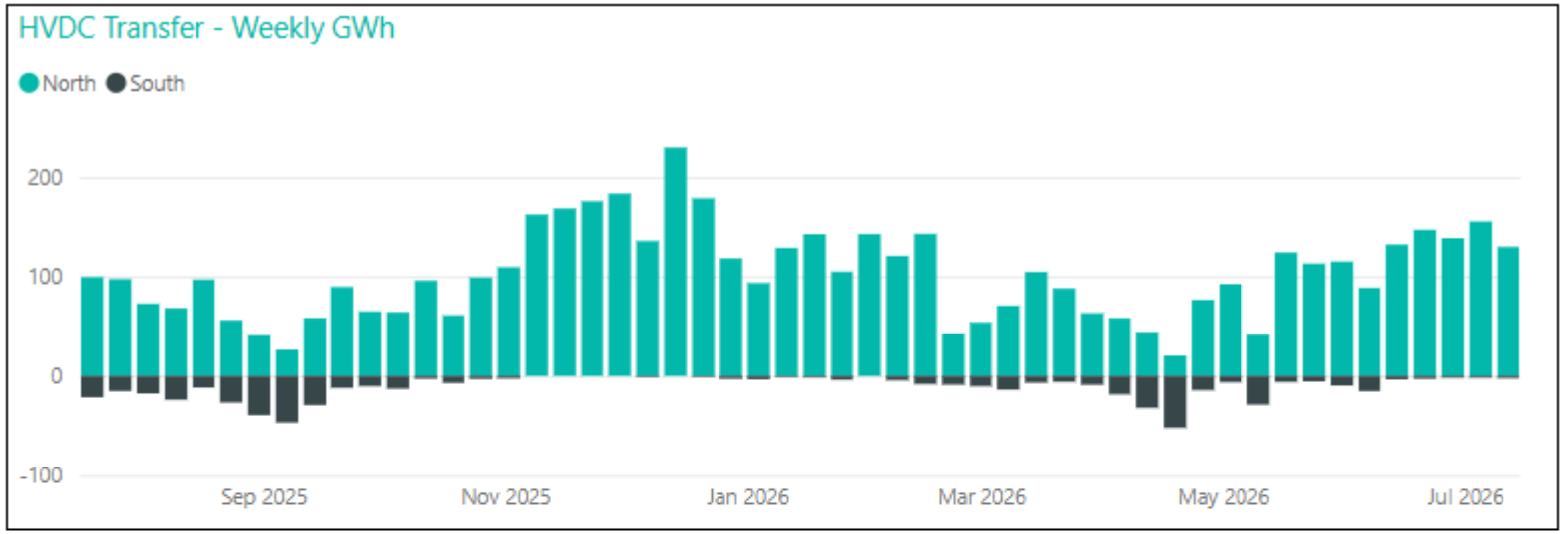
- Average price last week at Ōtāhuhu has remained at $78/MWh for the last two weeks
- Peak of $770/MWh at Ōtāhuhu on 6:30 pm 11 July due to a tight offer stack and low wind with thermal peakers setting price
- We begin to see consistent high demand periods (as expected in winter) resulting in thermal units being switched on

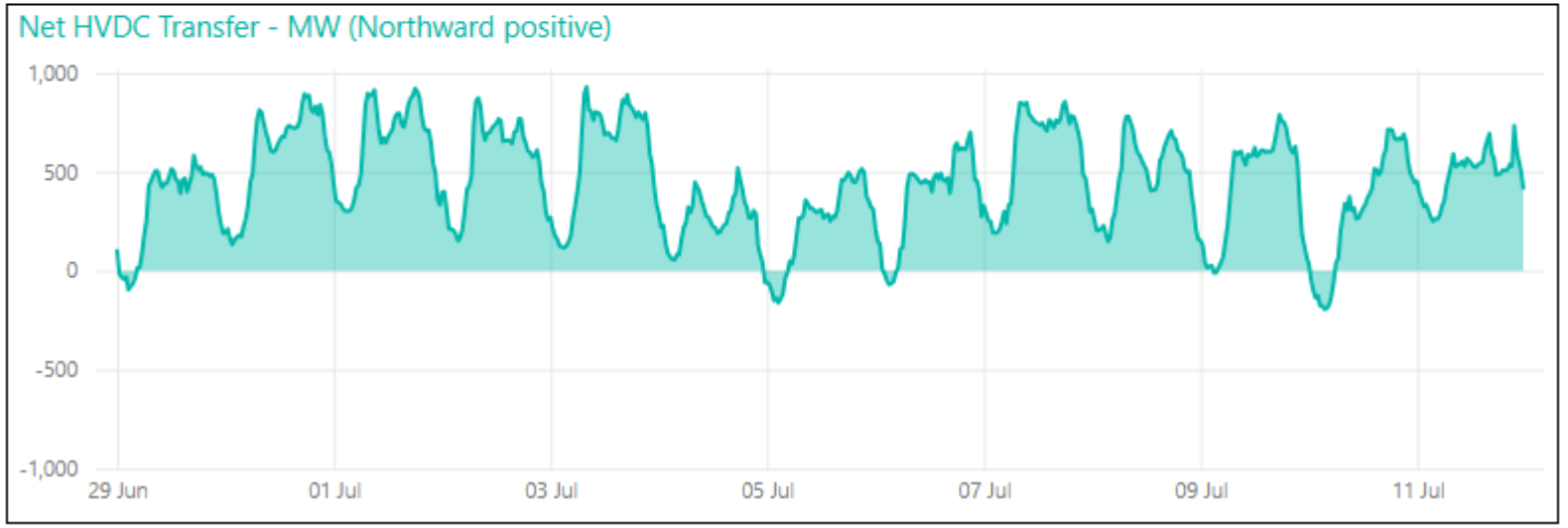




HVDC transfer

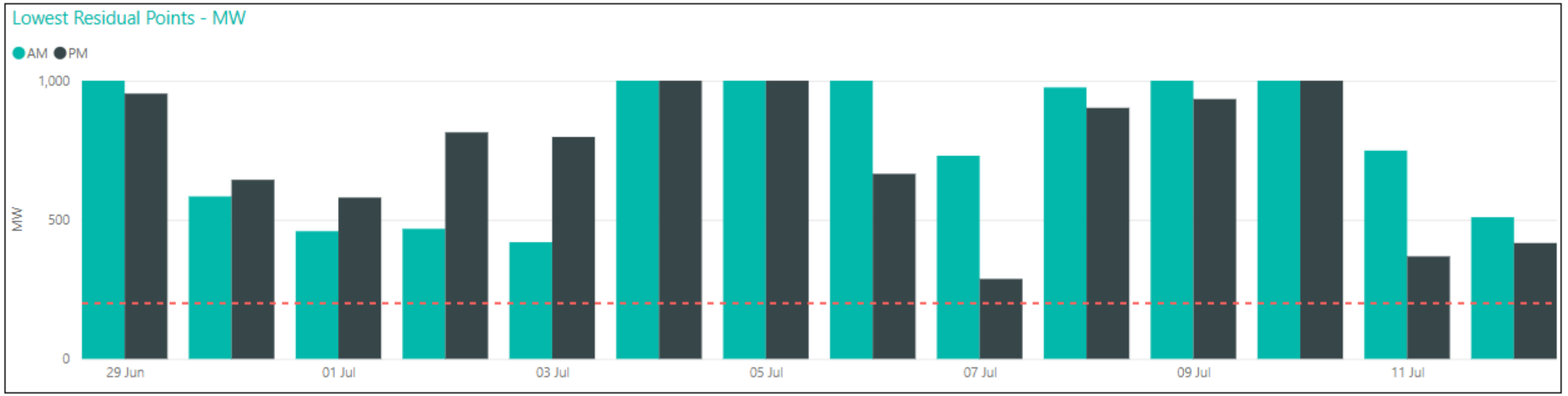
- HVDC transfer continues to be majority northward over the last two weeks
- In line with increasing demand periods and high hydro generation sending generation northwards





Capacity residual margins

- Continued lower residual periods due to increasing demand, low wind generation periods and low thermal commitment. Lowest residual was 287 MW during the evening peak on 7 July.
- We continue to monitor residual capacity as we progress through winter.



Security of Supply update

Energy Security Outlook

Fuel Capability Case (Physical Fuel Case)

Changes in June'26:

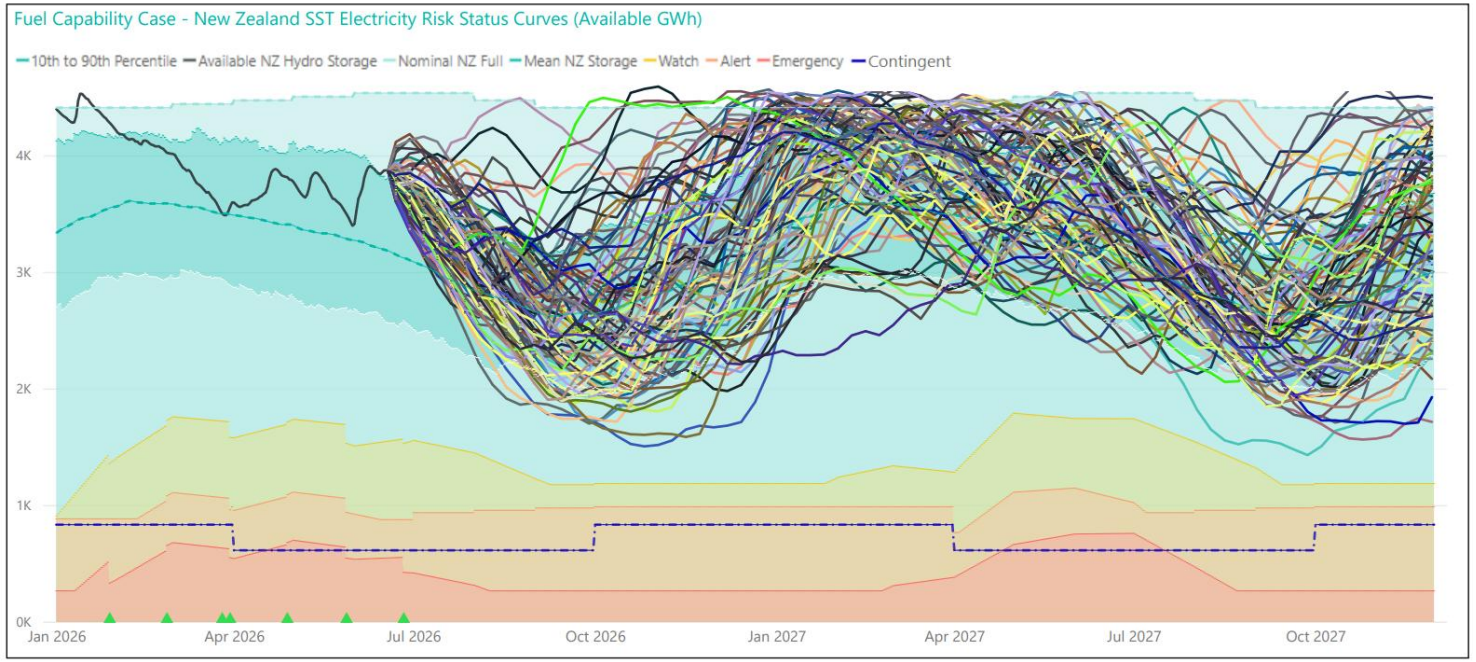
- Decreased gas production forecast (unrelated to global fuel shortage issue)
- Gas storage and coal stockpile slightly higher
- Delayed commissioning of new generation
- Modelling change in available gas volume assumption

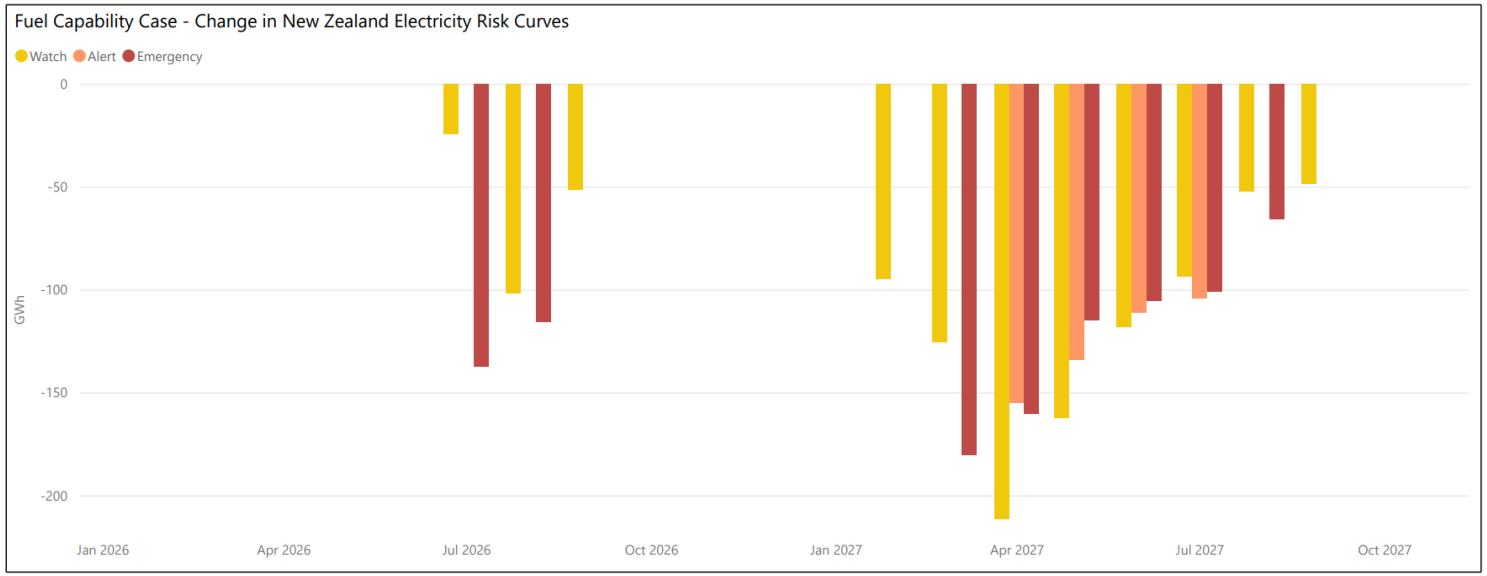
Decreases of up to:

- 137 GWh Emergency (2026)
- 211 GWh Watch (2027)

SSTs (Simulated Storage Trajectories) crossing NZ:

	Watch	Alert	Emergency
2026	0	0	0
2027	0	0	0





Energy Security Outlook

Contracted Fuel Case

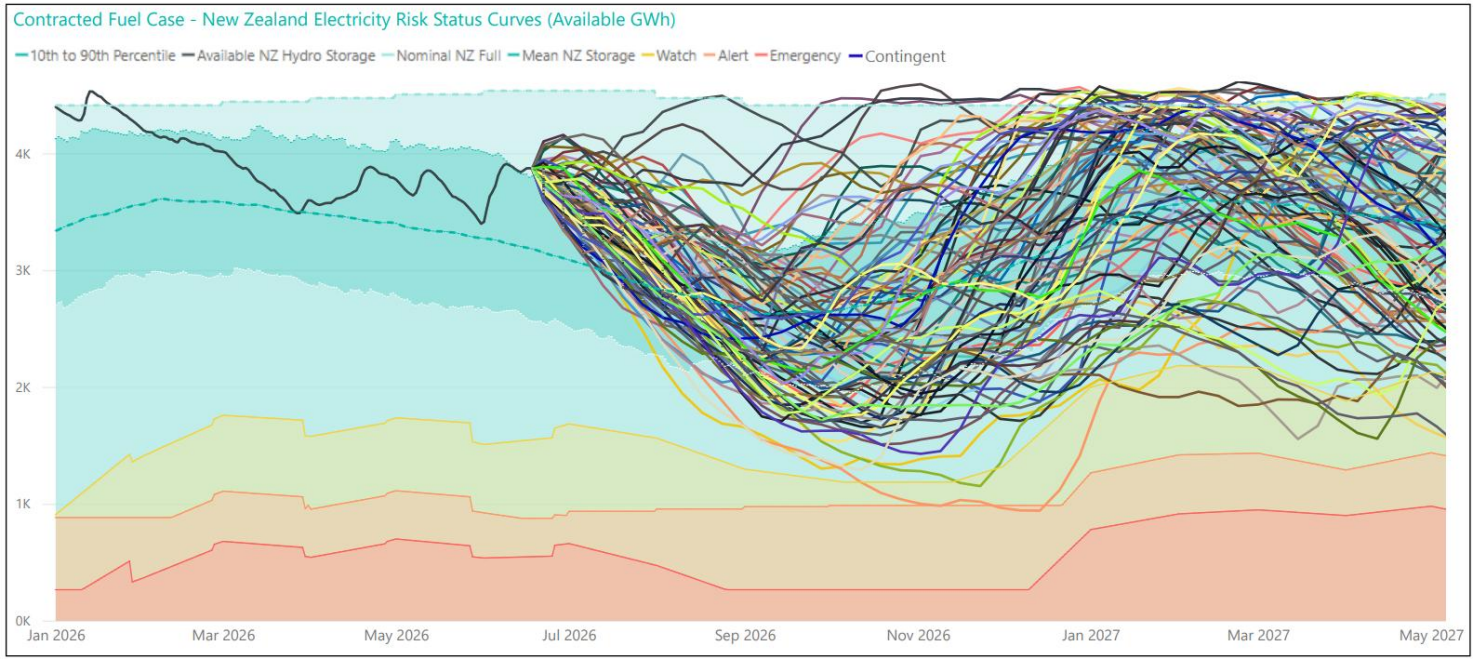
Available thermal energy strictly restricted to currently secured (firm) contracts by generators

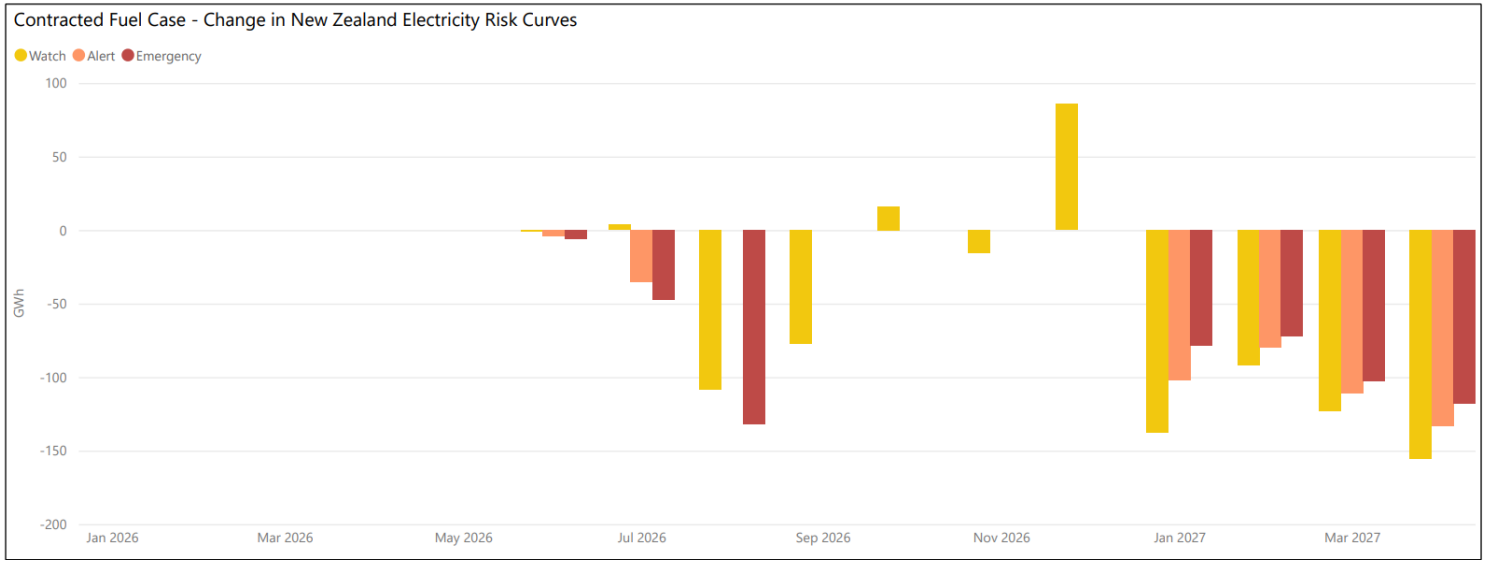
Decreases of up to:

- 132 GWh Emergency (2026)
- 155 GWh Watch (2027)

SSTs (Simulated Storage Trajectories) crossing NZ:

	Watch	Alert	Emergency
2026	2	1	0
2027	14	1	0





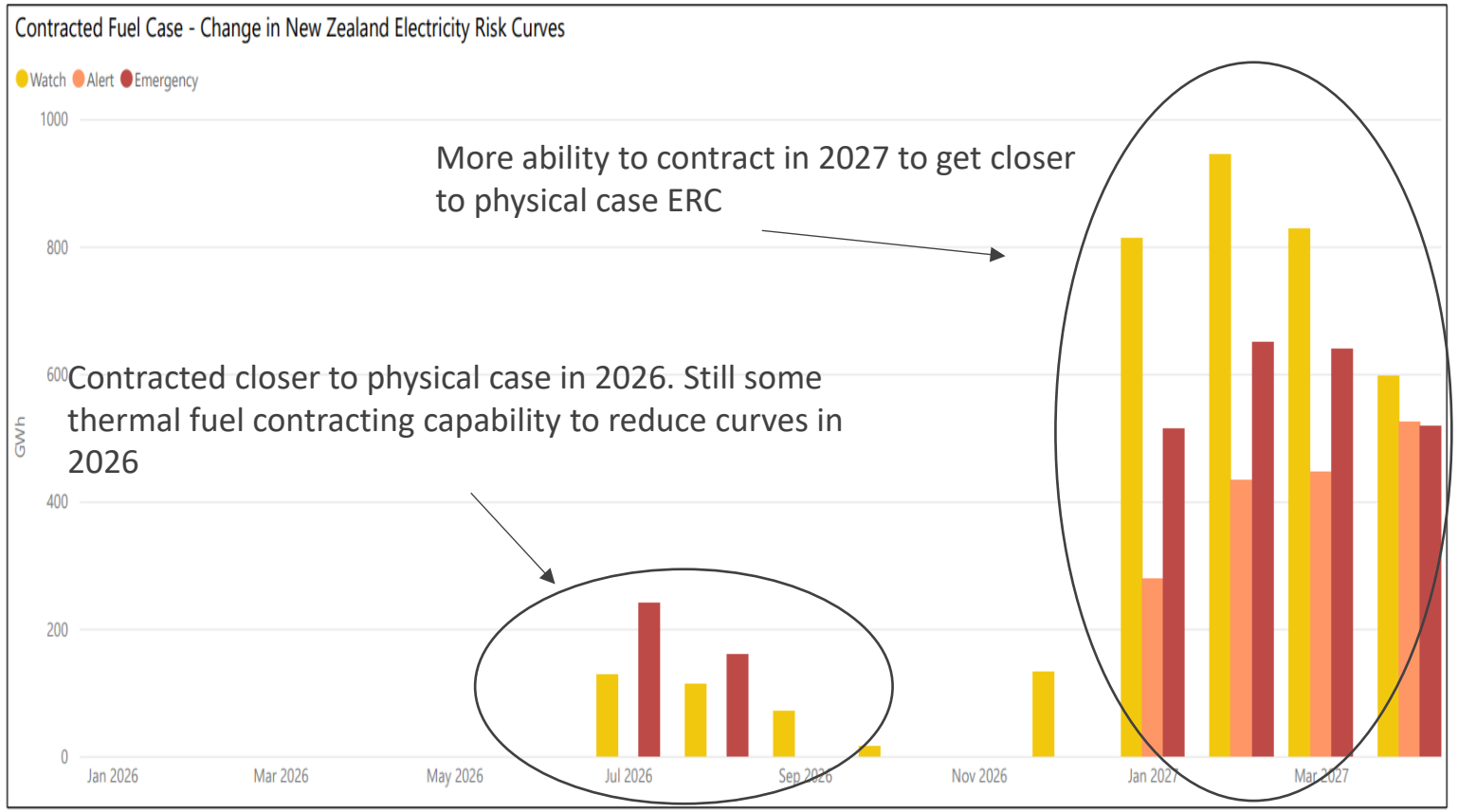
Energy Security Outlook

Fuel Capability vs Contracted Fuel Case

- Most of the system's thermal generation capability is currently deliverable in 2026
- The gap becomes more pronounced in 2027, reflecting the market's tendency to contract fuel closer to need

Differences of up to:

- 240 GWh Emergency (2026)
- 945 GWh Watch (2027)



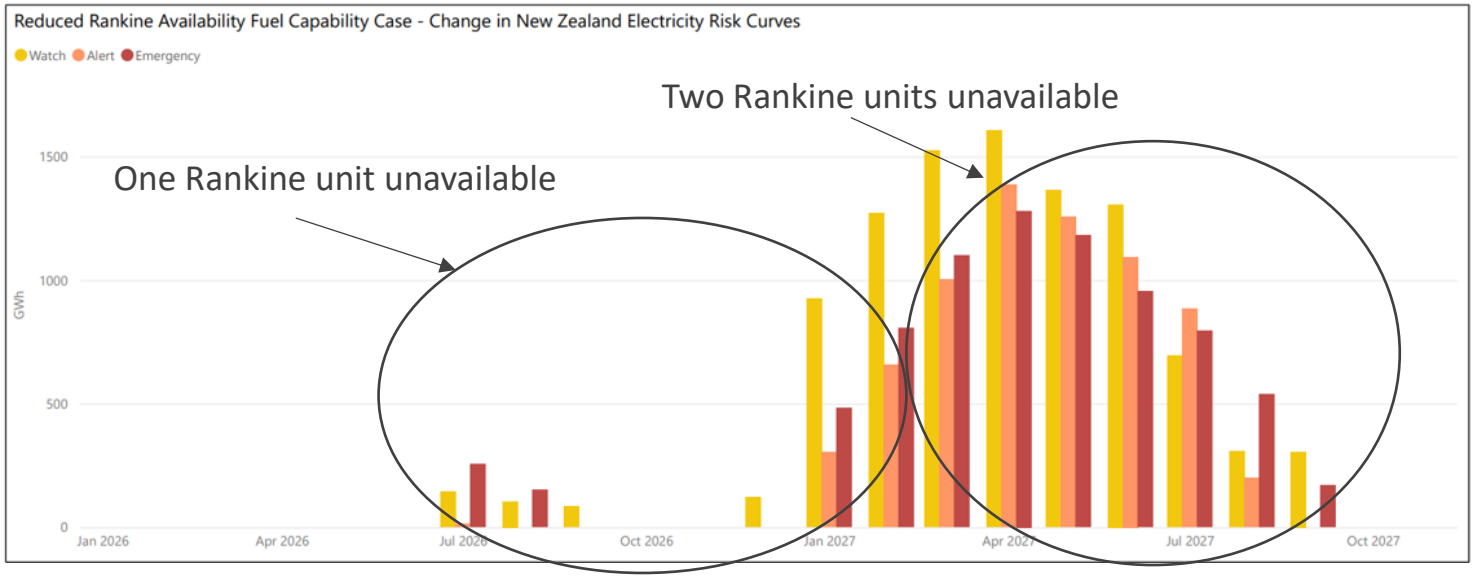
Energy Security Outlook

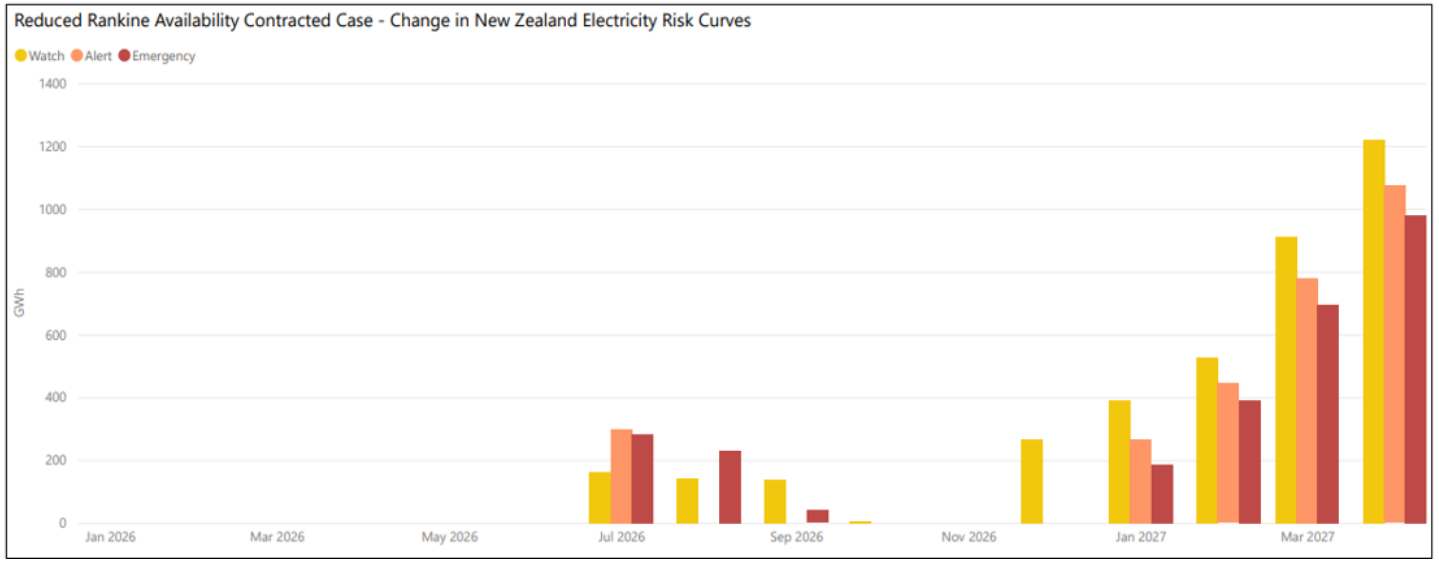
Reduced Rankine Availability Case

- This scenario assumes one Huntly Rankine unit is unavailable from winter 2026 and two units from winter 2027.
- The risk curves increase with modest impacts in 2026 and higher curves in 2027.
- The gap between the contracted and fuel capability cases remains stable because existing coal stockpiles are sufficient to support the lower Rankine capacity, meaning differences are driven by gas availability rather than coal imports.

Increases of up to:

- 256 GWh Emergency (2026)
- 1606 GWh Watch (2027)

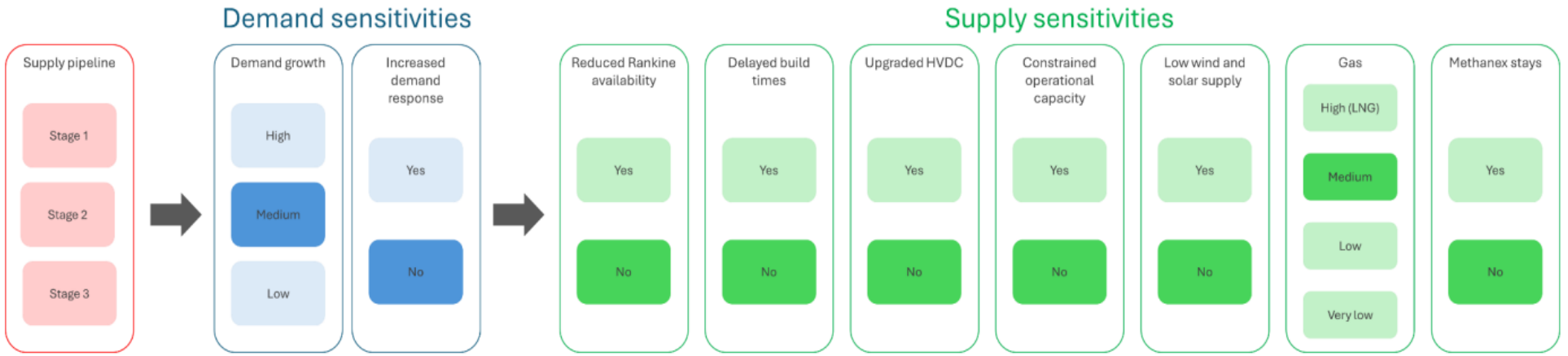




Final Security of Supply Assessment (SOSA) 2026

- SOSA evaluates whether Aotearoa's electricity system is expected to have an efficient level of reliability over the next decade through dry winters and cold winter peaks.
- It assesses three security margins set by Electricity Authority: NZ Winter Energy Margin (NZ-WEM), SI Winter Energy Margin (SI-WEM), NI Winter Capacity Margin (NI-WCM).
- A margin below the lower standard does not imply a forecast shortfall. It signals that additional investment will result in an efficient increase in reliability.
- SOSA 2026 assesses margins across three planning horizons:
  - Short term (2026-2028): issues needing immediate industry attention.
  - Medium term (2029-2031): the market has more time to respond.
  - Long-term (2032-2035): time remains to plan, consent and develop new projects.
- SOSA 2026 has **Expected Future case** to representing the Reference case plus sensitivities that, at publication, reflect the most likely outcome for the next decade.

Reference case



Final Security of Supply Assessment (SOSA) 2026

R Reference case

E Expected Future case

S Sensitivities

New Zealand Winter Energy Margin (NZ-WEM)	
R E S Short-term (2026-2028)	**Adequate but risk-sensitive:** Dry year energy margins above standards if projects are delivered on-time but fall below the lower standard if gas supply is lower than expected. Project delays, low thermal support, high demand, or weak renewable output increase risks of margins falling below standards. Deliver projects on time and add flexible supply to reduce risks. Margins for Expected Future case drops below the standards by 2028.
R E S Mid-term (2029-2031)	**Emerging energy gap in 2030s:** Dry year margins dip below the standard by 2031 with consented projects, with lower gas bringing this forward. Risks from delays, reduced thermal support, high demand and weak renewables increase exposure, requiring additional project delivery, ensuring thermal generation availability and developing a more diverse supply pipeline. Additional gas from LNG in the Expected Future case can help keep margins above standards.
R E S Long-term (2032-2035)	**Pipeline-dependent adequacy:** Dry-year margins stay above the standard only if future pipeline delivered, but strong demand growth and weaker thermal, gas, or renewables can still drive shortfalls by ~2035. Reducing dry year risk requires expanding and diversifying the future pipeline, with less reliance on weather-dependent generation.

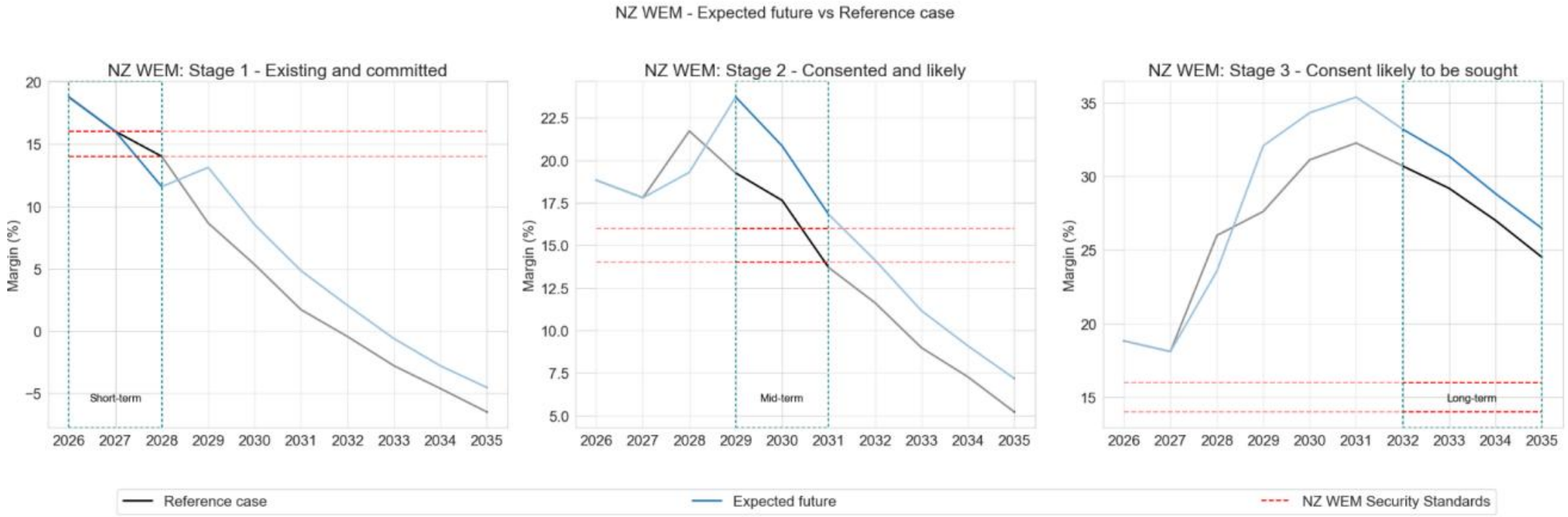
South Island Winter Energy Margin (SI-WEM)	
R E S Short-term (2026-2028)	**Strong but adequacy sensitive to risks:** Dry year energy margins remain above the standard under expected conditions with committed project delivery. Delays, reduced thermal support, higher demand, or very low gas can drive margins to fall below the standards by 2027–2028, so timely delivery and firm backup are critical.
R E S Mid-term (2029-2031)	**Adequate but exposed to risks:** Dry year energy margins remain above the standard if committed and consented projects proceed on-time but can still fall below the lower standard if gas supply is lower than expected. If new supply projects are delayed or if demand is higher and gas, thermal, or renewables underperform then shortfalls emerge. Expanding and diversifying supply is key.
R E S Long-term (2032-2035)	**Robust but demand-sensitive adequacy:** Dry year energy margins remain above the standard if committed, consented and unconsented projects are delivered. Strong demand growth with weaker gas, thermal, or renewables can still erode margins, so expanding the future project pipeline is key to manage this risk.

North Island Winter Capacity Margin (NI-WCM)	
R E S Short-term (2026-2028)	**Adequate but capacity risks exist:** Capacity margins remain above the standard in the short term with committed projects. Peak risks from low wind and limited thermal support and delayed project delivery.
R E S Mid-term (2029-2031)	**Build-dependent capacity margins:** Capacity margins improving if committed and consented projects proceed but fall below by ~2029 if they don't. Weaker gas supplies, and operational coordination issues can increase risks. Timely delivery of flexible peak capacity is needed with additional flexibility reducing risks
R E S Long-term (2032-2035)	**Enduring peak capacity risk:** Capacity margins remain above the standards if committed, consented and unconsented projects are delivered. Operational in managing intermittent generation with inflexible generation mean peak risks persist, so expanding flexible, fast-response resources is critical.

Final Security of Supply Assessment (SOSA) 2026

The Expected Future case varies from the Reference case by:

- using the low gas supply forecast instead of the medium gas supply forecast. At this stage, we think this forecast best reflects ongoing trends in gas supply relative to forecasts.
- including LNG imports from winter 2029, based on the government's recent announcement that it expects to identify a preferred provider later this year, and the import facility could be operational by 2028.

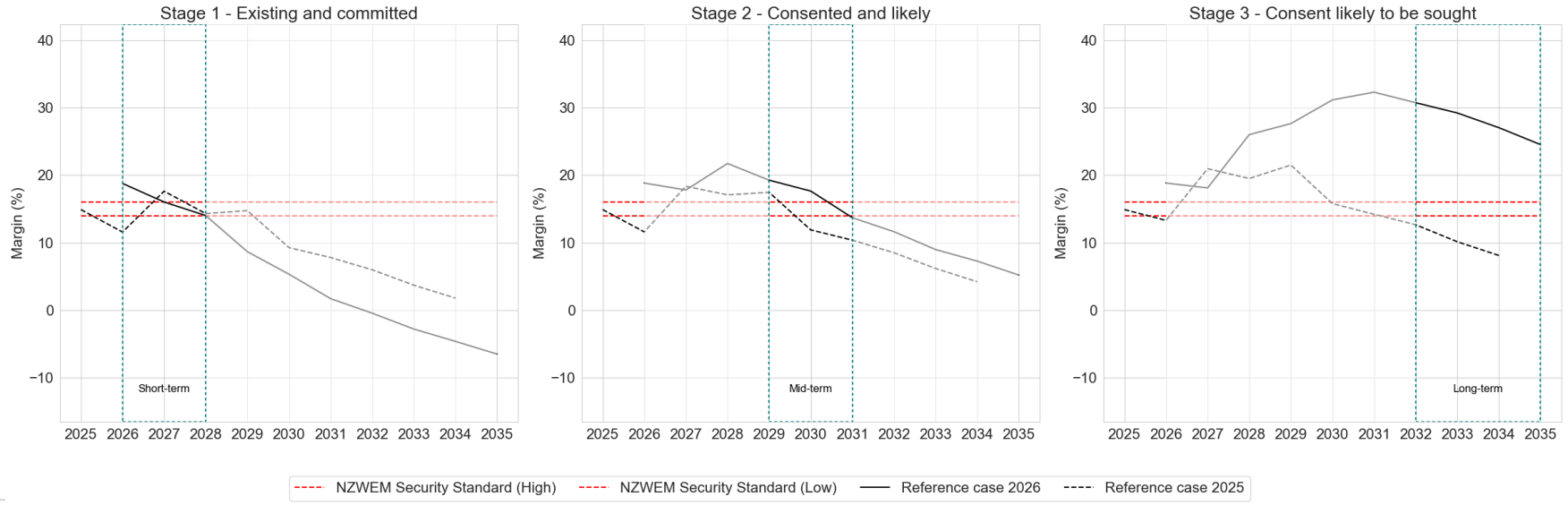


Final Security of Supply Assessment (SOSA) 2026

Comparison with final SOSA 2025

- NZ-WEM: Improved versus SOSA 2025, crossing the lower standard later, mainly due to lower demand and higher gas reallocation/supply, with Stage 2–3 projects further lifting margins.
- SI-WEM: Weaker under Stage 1, crossing one year earlier due to higher SI demand, but Stage 2 and especially Stage 3 projects lift margins above SOSA 2025.
- NI-WCM: Improved versus SOSA 2025, crossing one year later under Stage 1, with Stage 2–3 margins pushed out further by additional capacity projects, including batteries.

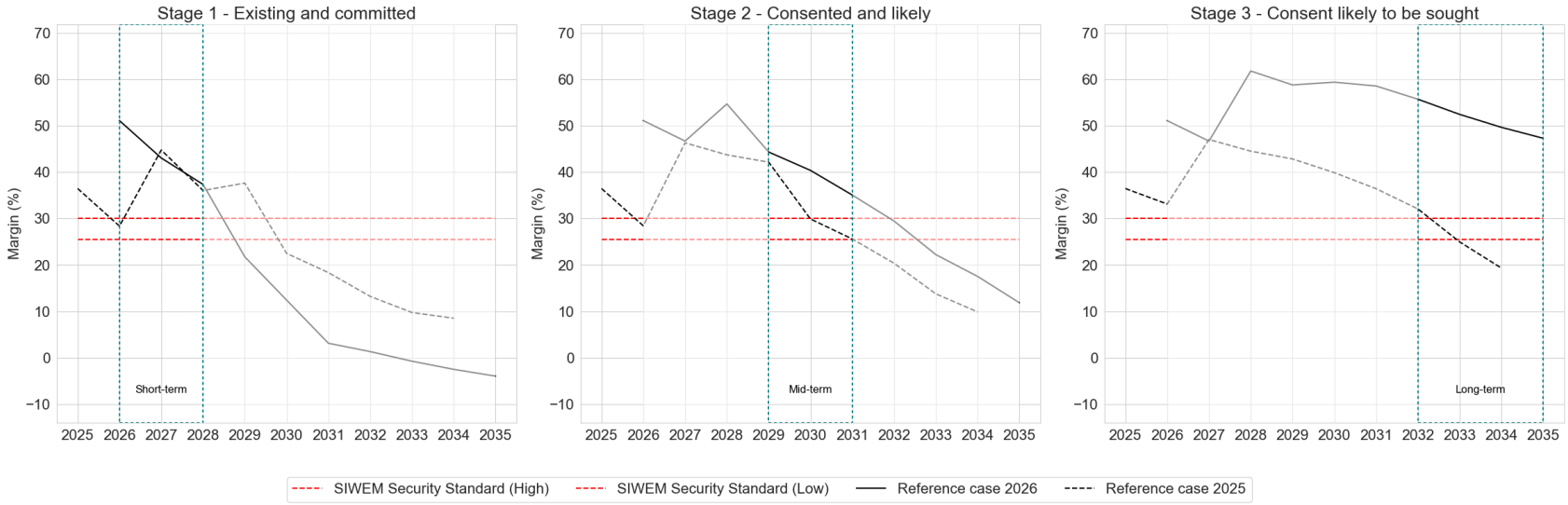
NZ-WEM



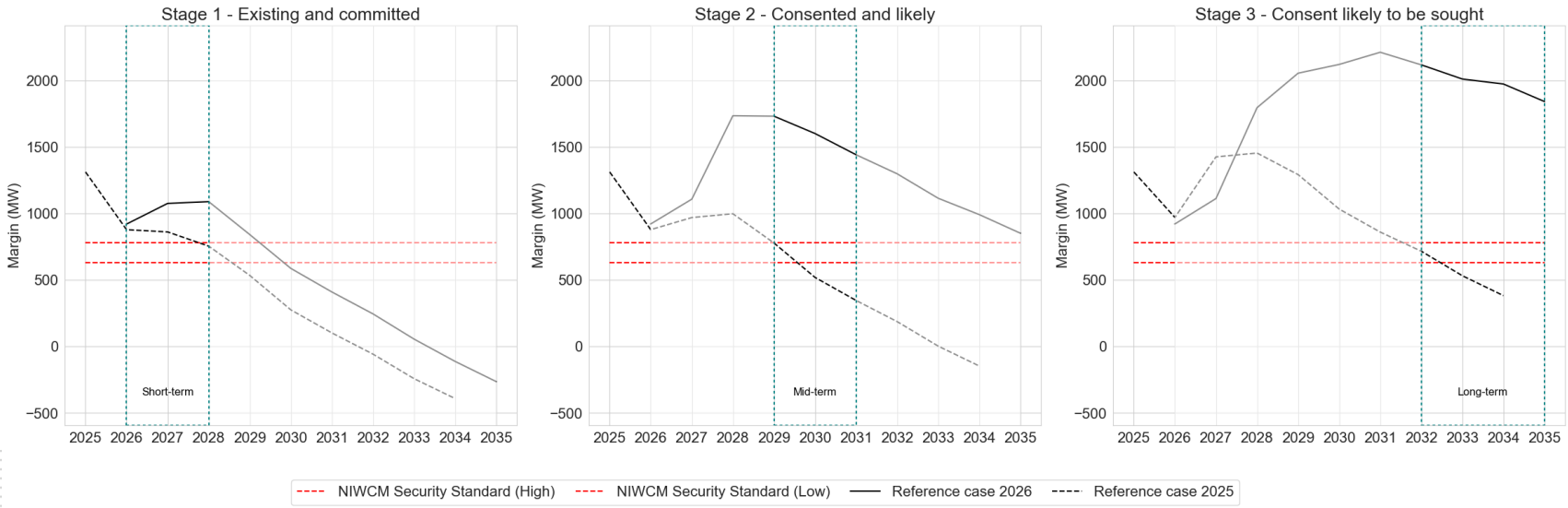
Final Security of Supply Assessment (SOSA) 2026

Comparison with final SOSA 2025

SI-WEM



NI-WCM



Final Security of Supply Assessment (SOSA) 2026

Key industry actions

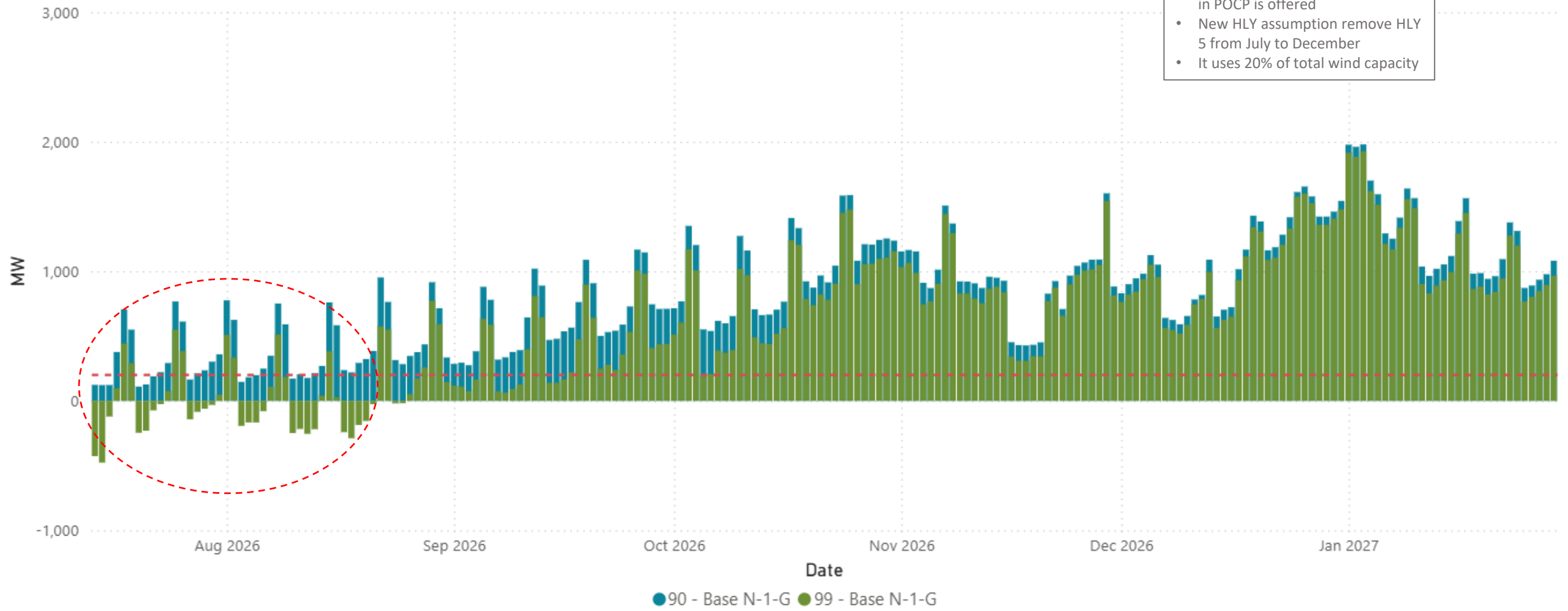
Margin	Short-term (2026-2028)	Mid-term (2029-2031)	Long-term (2032-2035)
NZ-WEM	Deliver Stage 1 projects on time and maintain thermal and flexible generation availability.	Bring forward diverse, consent-ready Stage 2 projects to reduce gas and weather-correlated risk.	Expand diverse Stage 3 pipeline to support sustained national demand growth.
SI-WEM	Deliver committed projects on time and ensure sufficient gas and coal generation backup.	Develop additional projects with a balanced generation mix to reduce weather-correlated risk.	Grow future Stage 3 pipeline to support sustained demand growth.
NI-WCM	Deliver projects on time and ensure thermal commitment for winter peaks.	Develop additional consent-ready flexible, peak capacity resources to strengthen the Stage 2 pipeline against downside risks.	Expand the pool of future projects and prioritise flexible, fast-response resources (generation and demand-side) to mitigate downside risks.

https://www.transpower.co.nz/system-operator/planning-future/security-supply-assessment

NZGB update

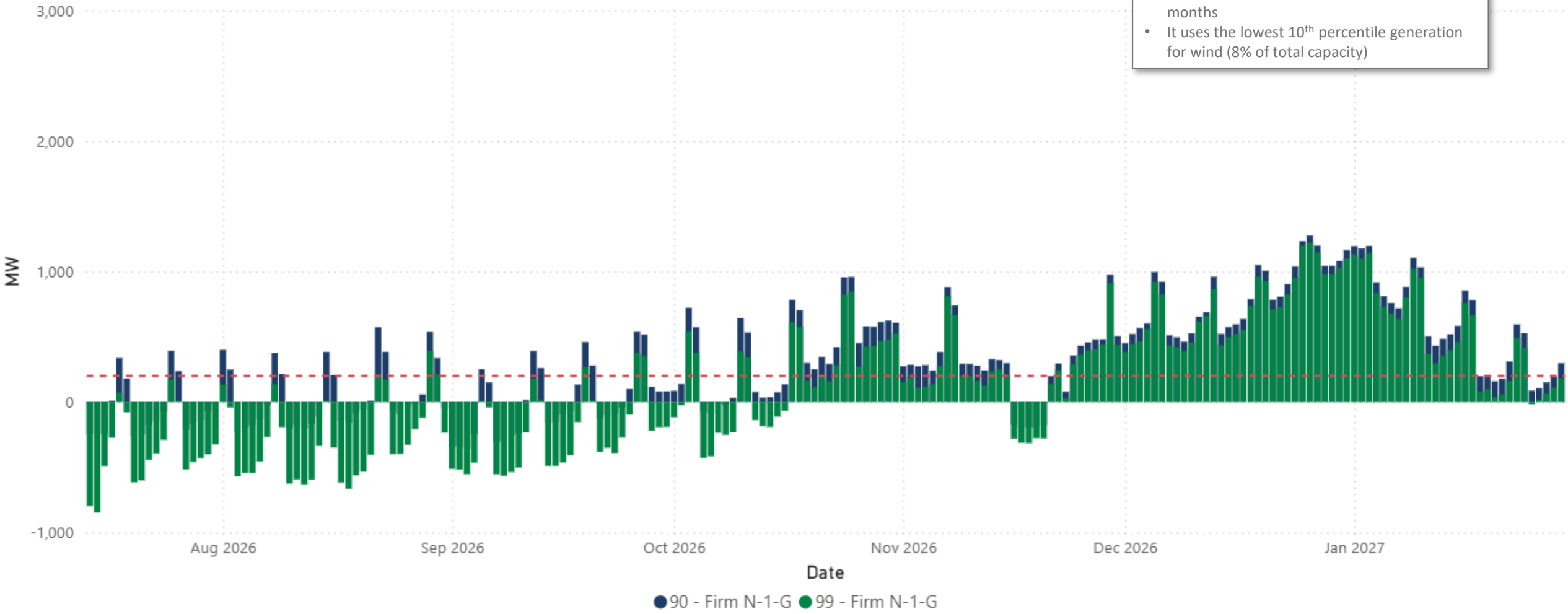
NZGB update: base capacity N-1-G

Base case capacity at 90%
- ***This triggers the CAN process***
- Assumes all generation available in POCP is offered
- New HLY assumption remove HLY 5 from July to December
- It uses 20% of total wind capacity

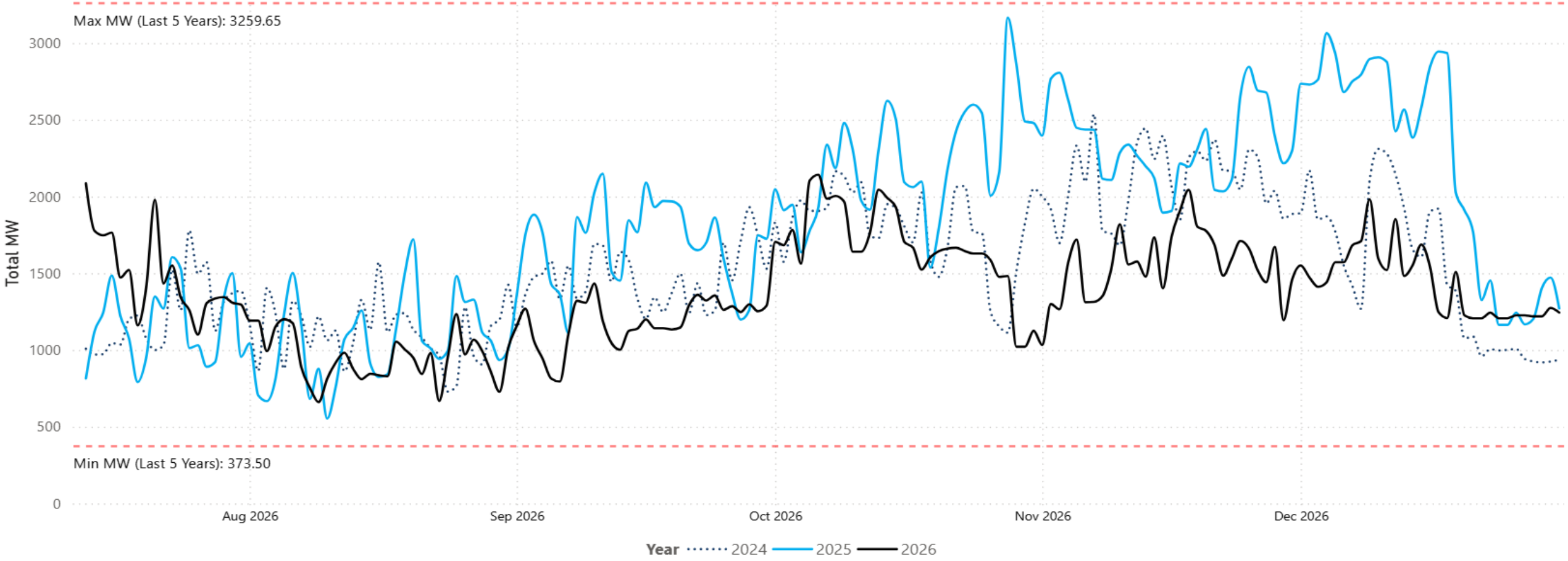


NZGB update: firm capacity only N-1-G

Firm capacity removes
- 1 HLY Rankine over winter, 2 x Rankines over shoulder and 3 x Rankines over the summer months
- It uses the lowest 10th percentile generation for wind (8% of total capacity)



POCP Generation Outages



Mean Difference (2025/2026)

-447.75 MW

Mean % Difference (2025/2026)

-17.21%

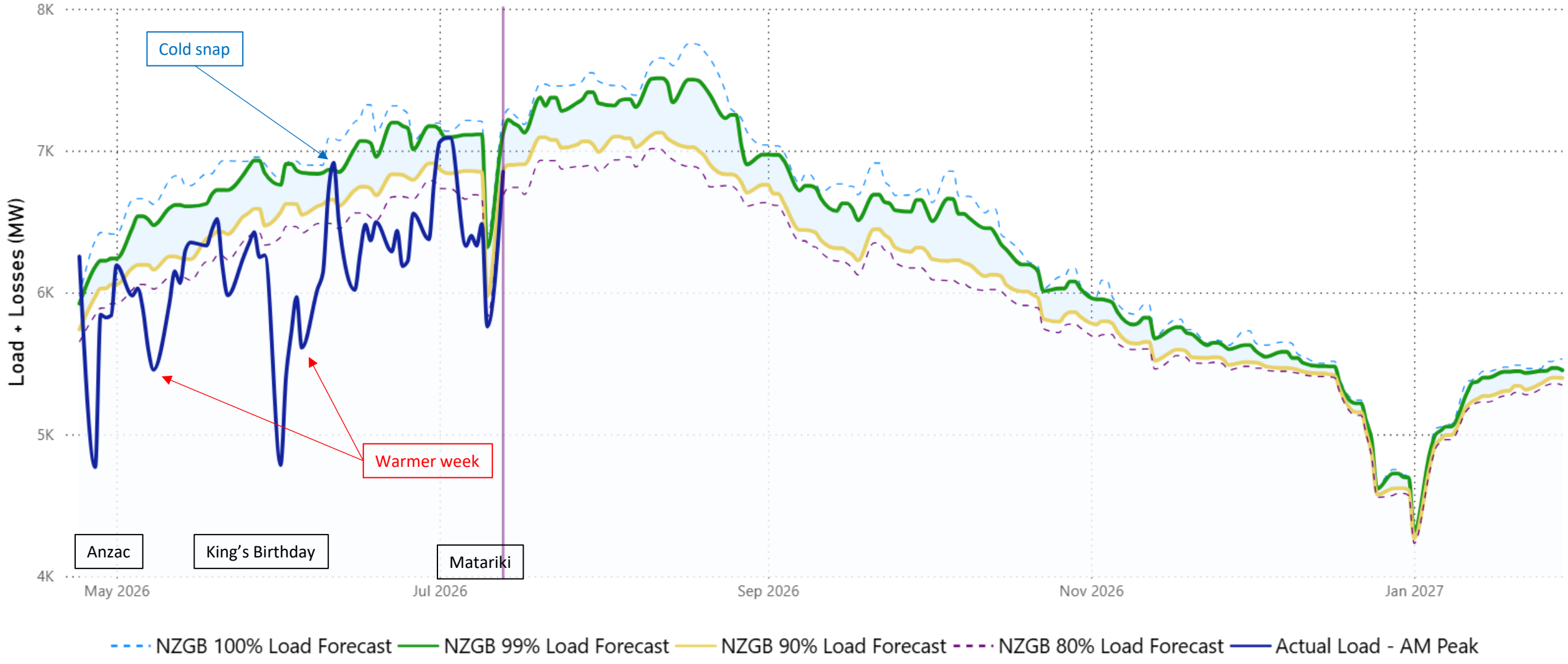
Date

13/07/2026 31/12/2026

Year

- 2024
- 2025
- 2026

Peak Load vs Forecast



Outages next 4 weeks

Outages

NNI outages

SNI outages

SI outages

Asset owners:

- Check in POCP for detailed dates
- Consider the impact on your own outages

NNI Outages

Week of 20 July

- EDG_T5
- HEP_ROS_2
- HOB_WRD_1
- OHW_OTA_1

Week of 27 July

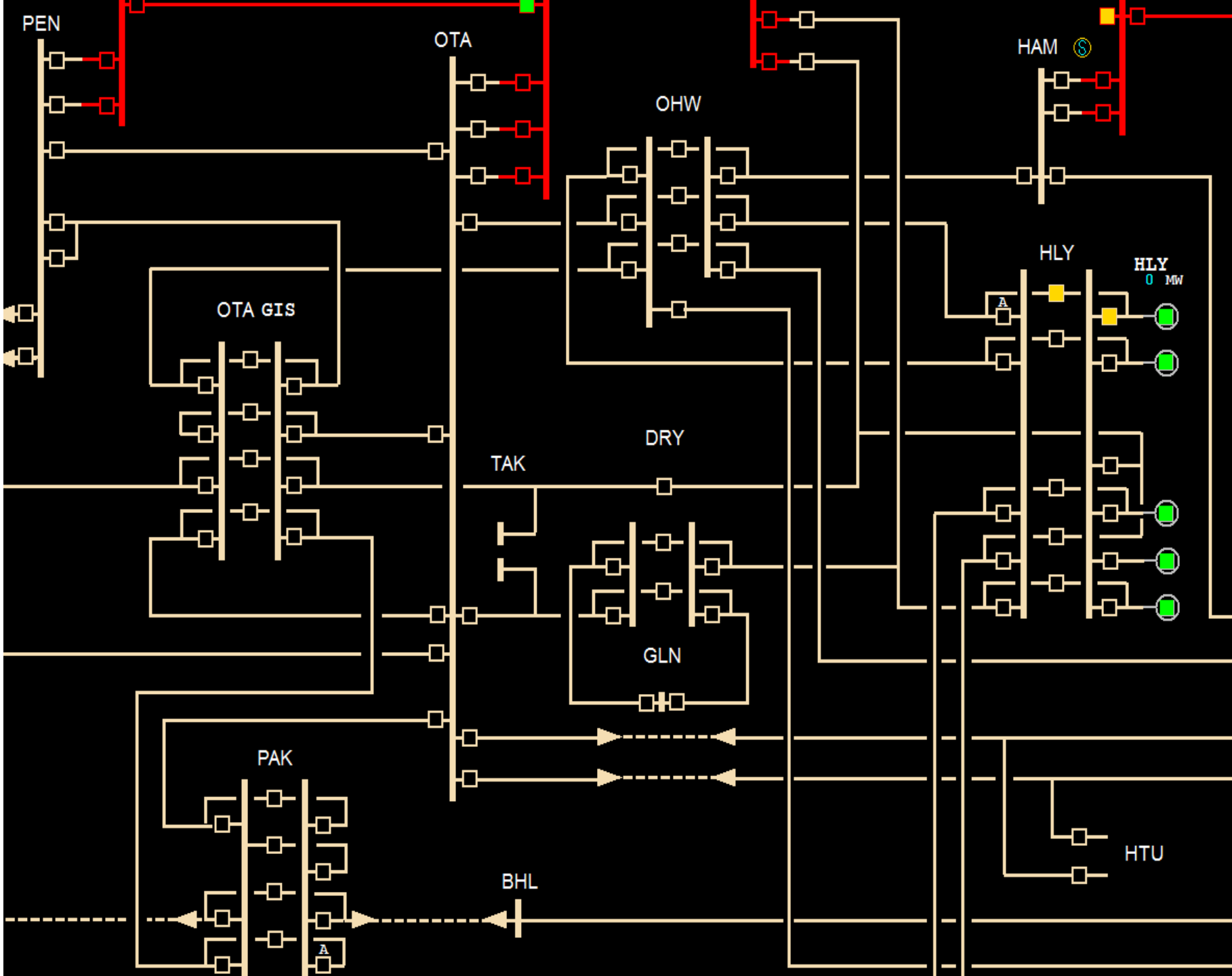
- EDG_T5
- HEP_ROS_2
- HOB_WRD_1
- OHW_OTA_2

Week of 3 August

- EDG_T5
- HEP_ROS_2
- HOB_WRD_1
- KAW_OHK_1
- OHW_OTA_1

Week of 10 August

- EDG_T5
- HEP_ROS_2
- HOB_WRD_1
- EDG_KAW_3
- DRY_TAK_OTA_1



SNI Outages

Week of 20 July

- BPE_MTN_WGN_2

Week of 27 July

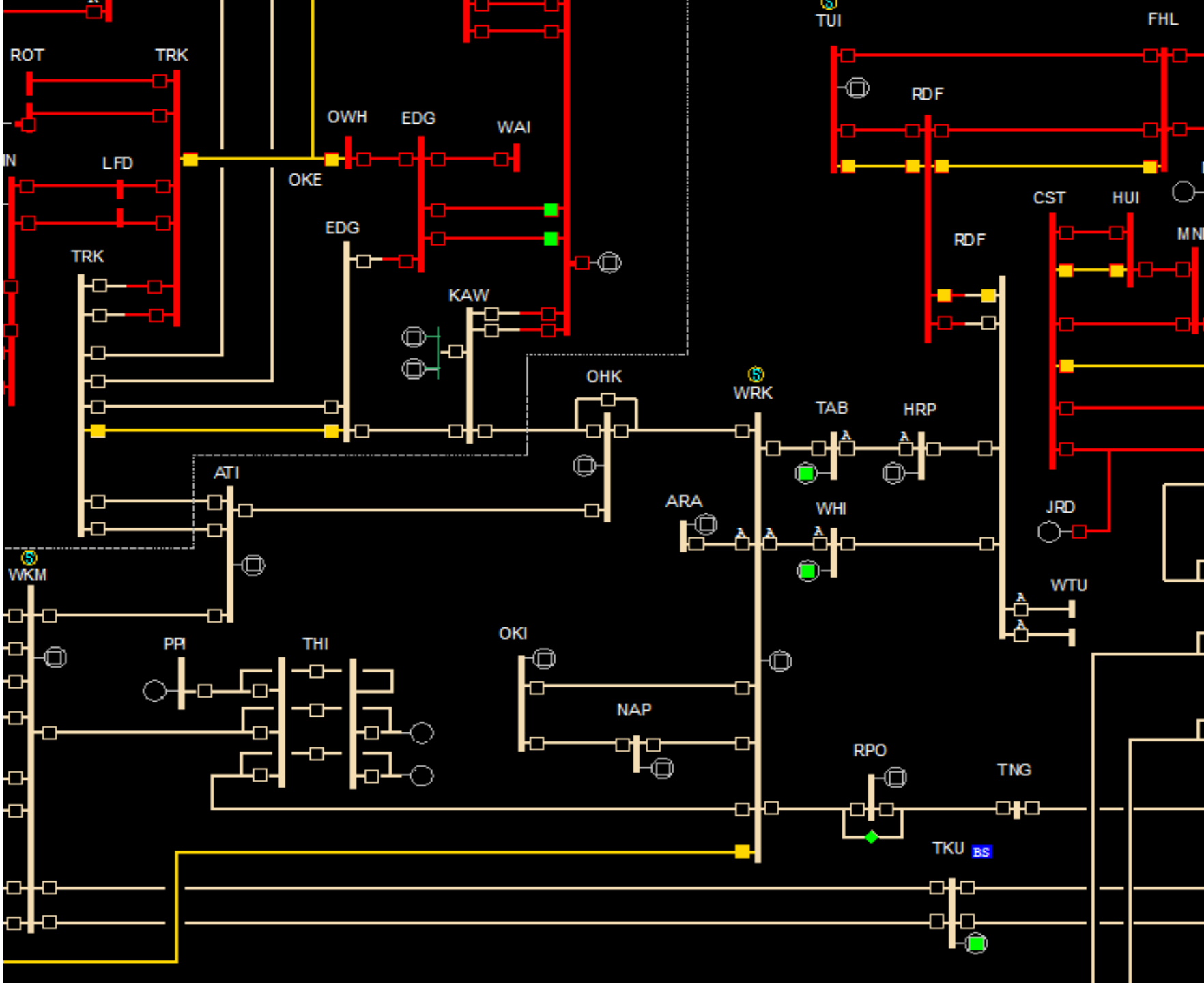
- BPE_MTN_WGN_2
- BRK_SFD_3

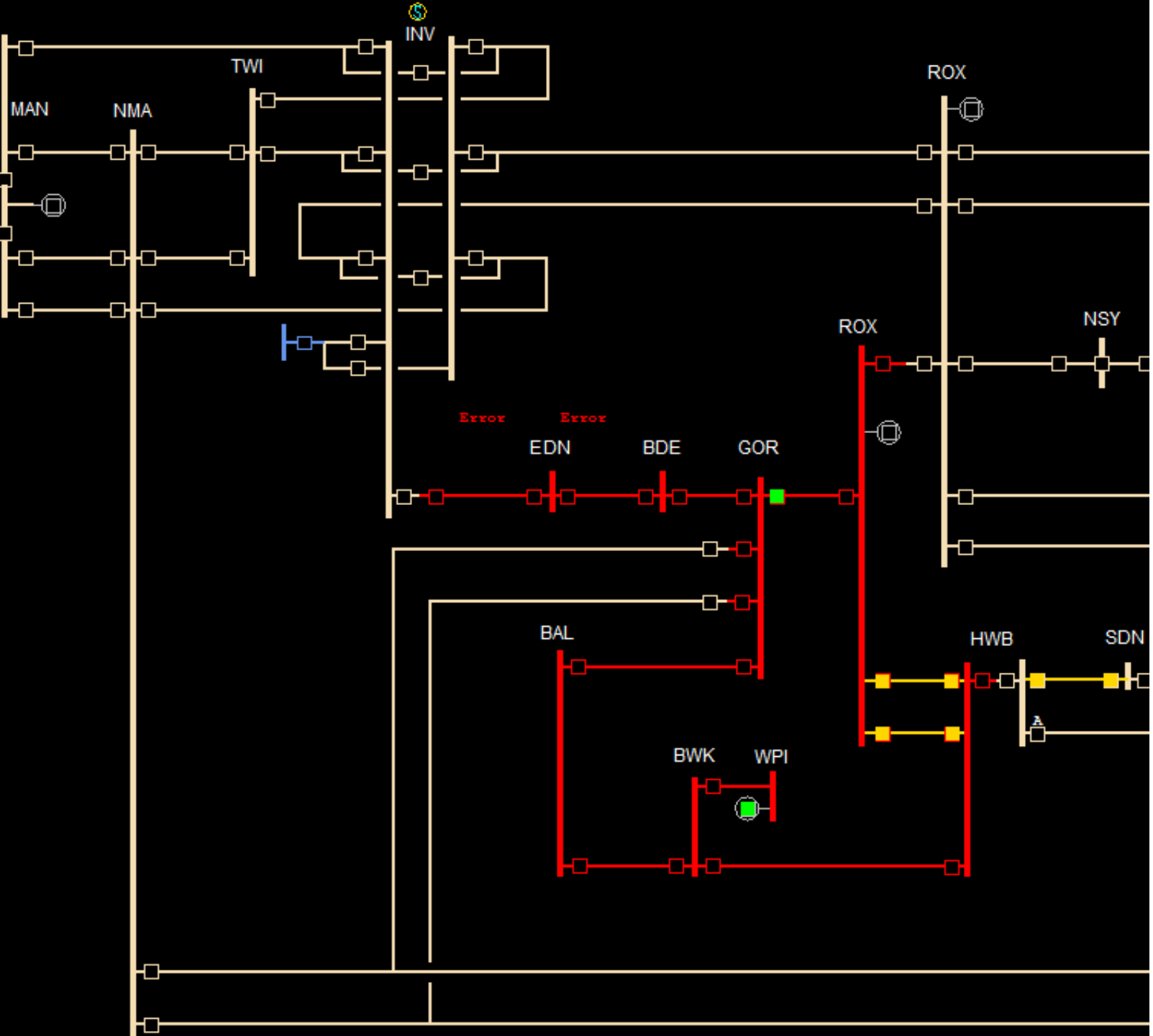
Week of 3 August

- BPE_MTN_WGN_2
- BRK_SFD_3

Week of 10 August

- BPE_MTN_WGN_2
- BRK_SFD_3





SI Outages

Week of 20 July

- EDN_INV_1
- DOB_GYM_1

Week of 27 July

- INV_NMA_1
- IGH_ROB_2

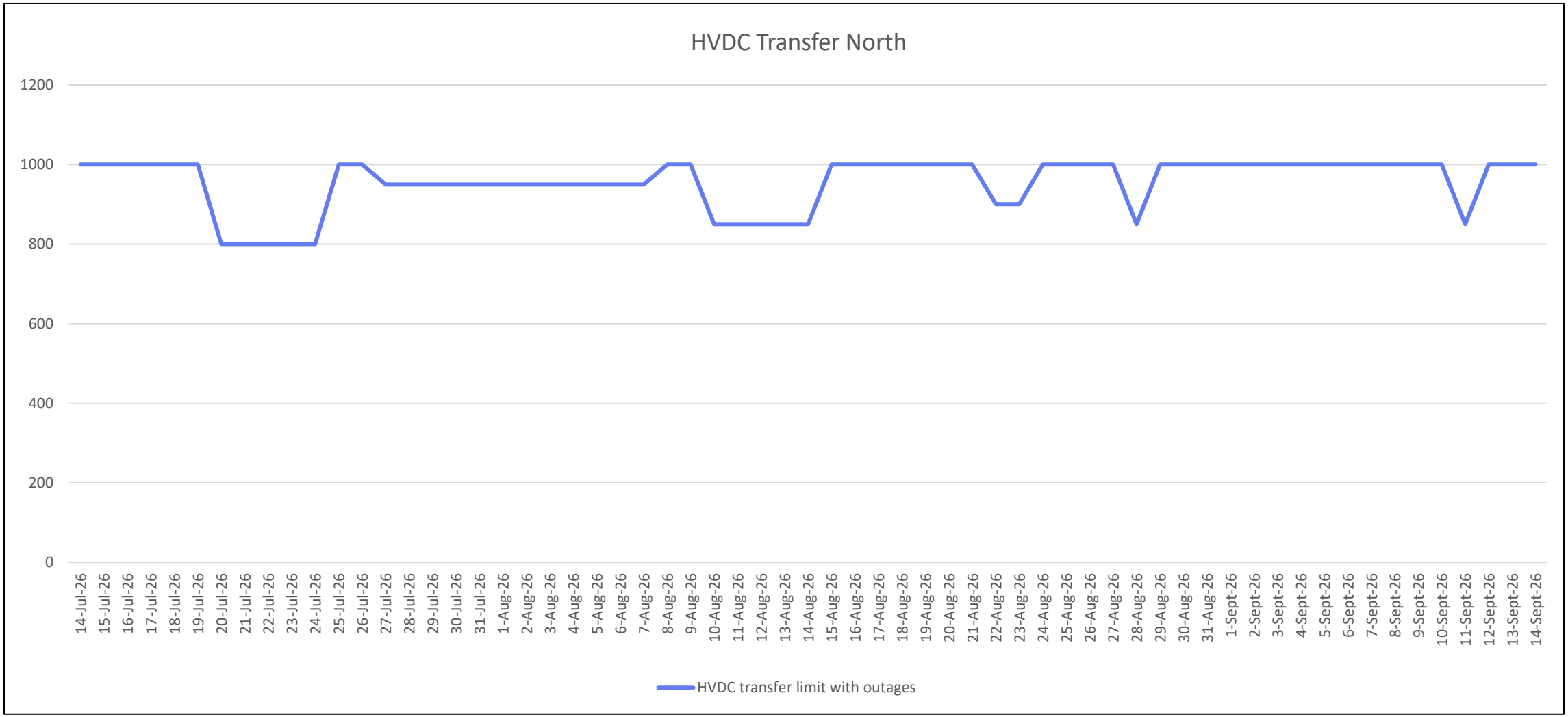
Week of 3 August

- INV_MAN_2
- HOR_KBY_ISL_2
- HKK_OTI_2
- KUM_OTI_1

Week of 10 August

- HKK_OTI_2
- KUM_OTI_1

HVDC North transfer limit



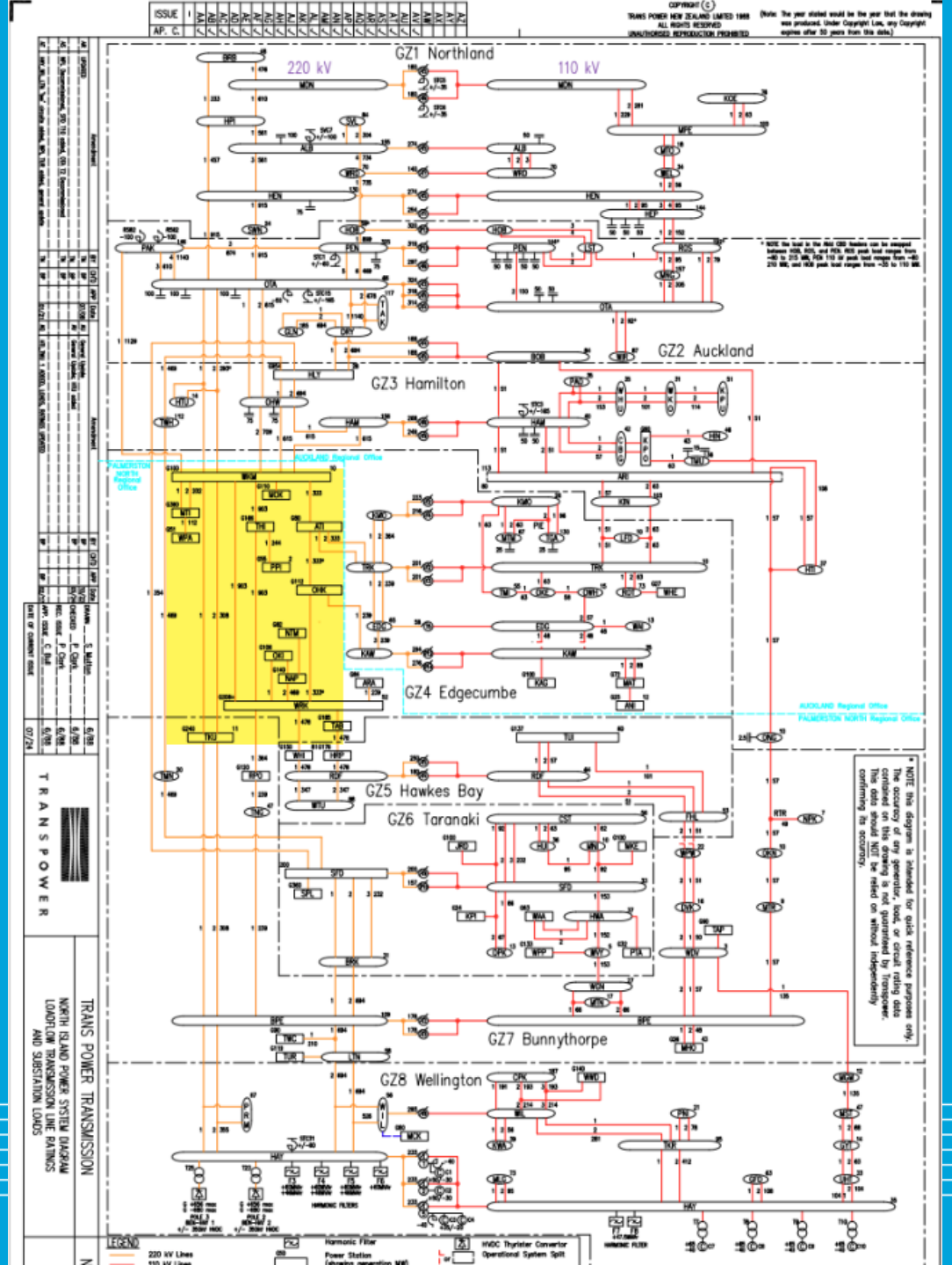
TRANSPOWER

2026 WRK (Wairakei) Ring Outages

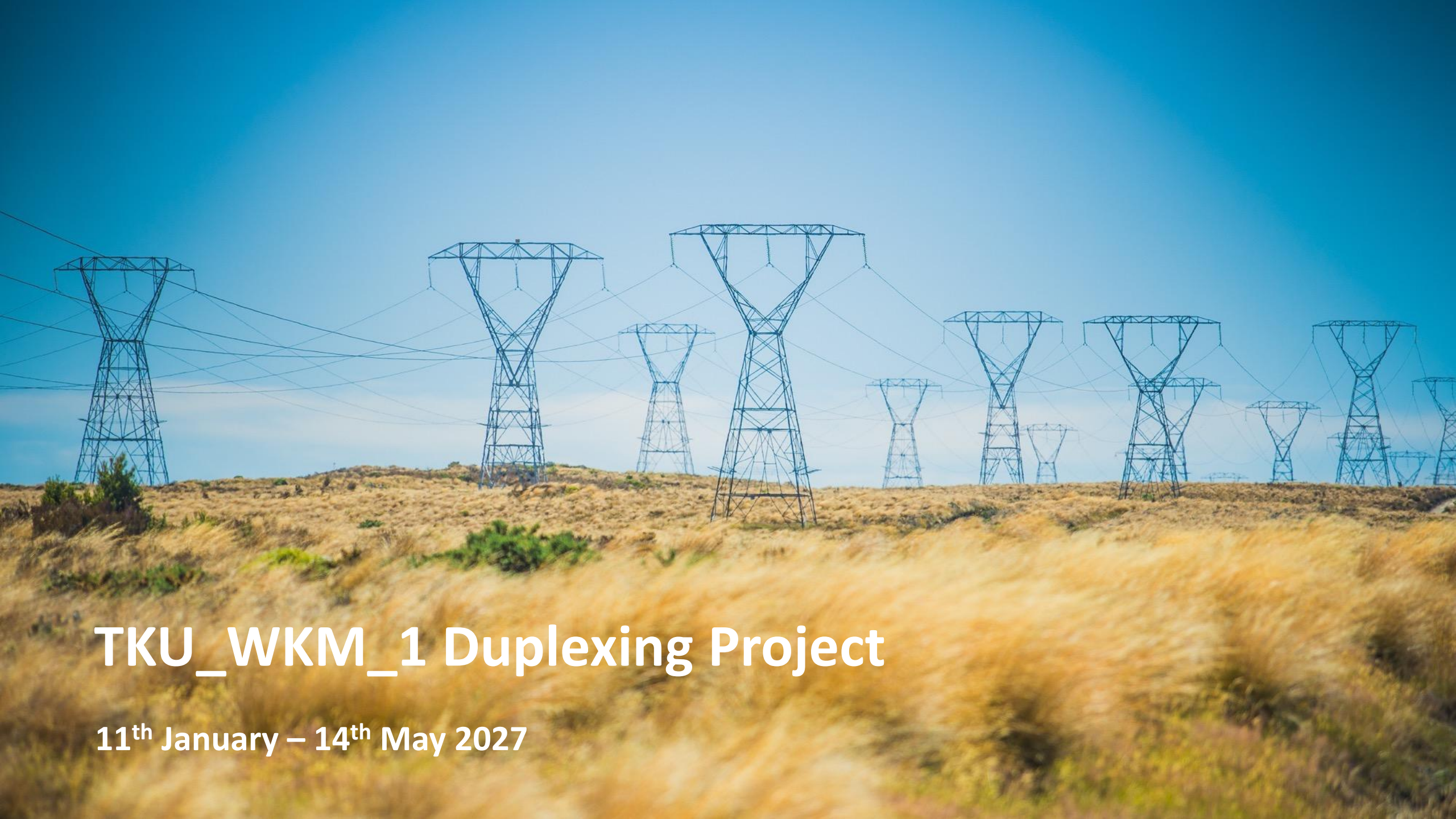
THI_WKM_1 | THI_WRK_1 | WKM_WRK_1

Callum Wadek

14/07/2026



North Island Power System

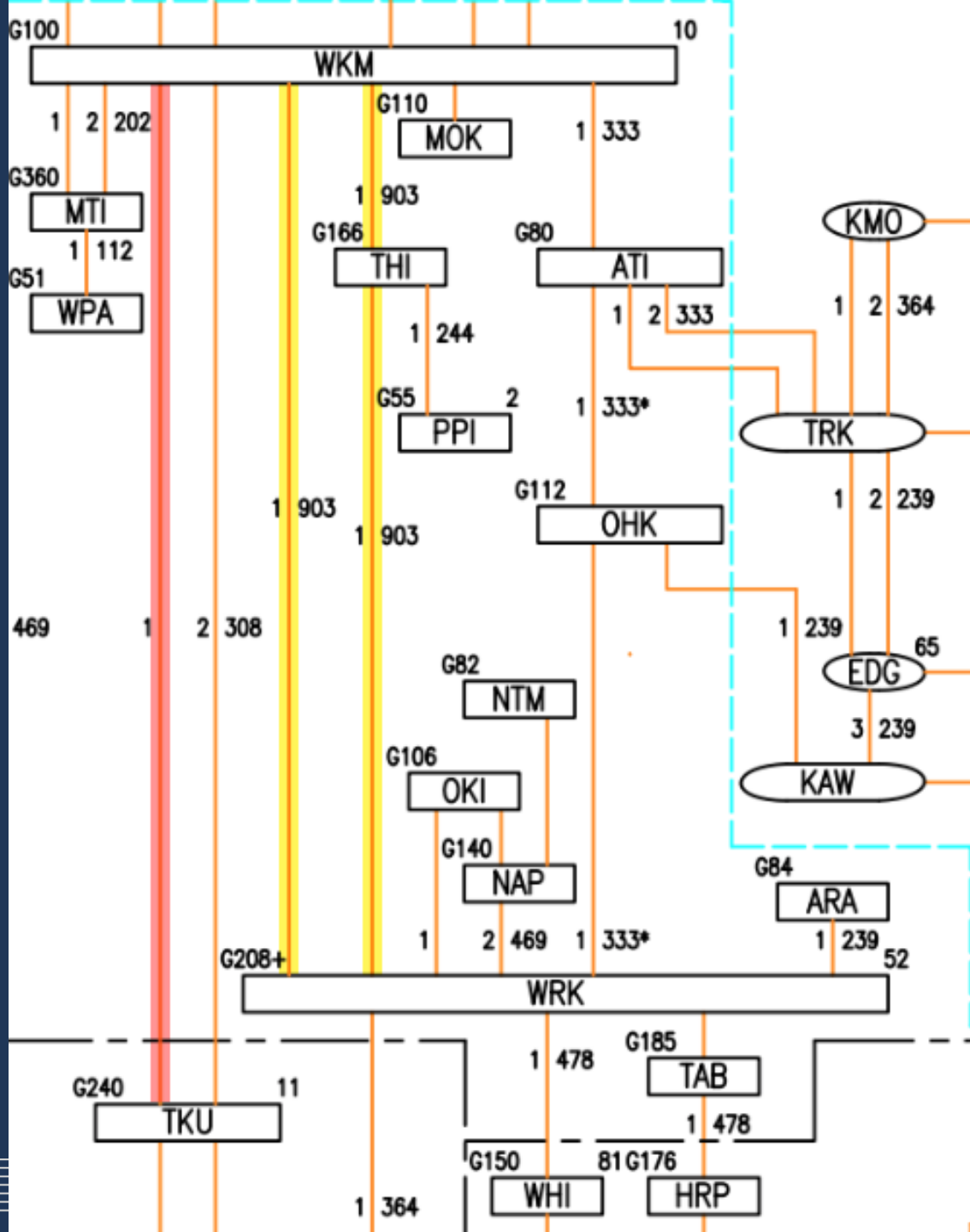


TKU_WKM_1 Duplexing Project

11th January – 14th May 2027

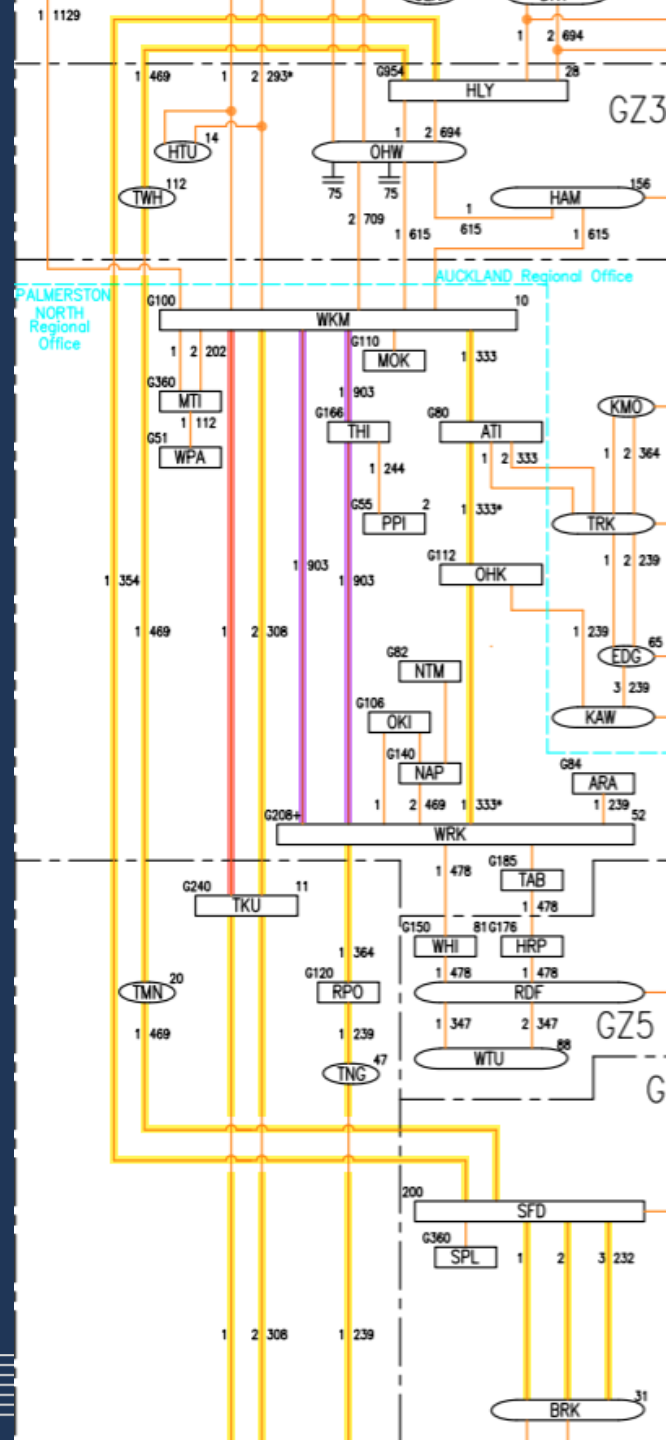
TKU_WKM_1 Duplexing Project

- TKU_WKM_1 RFS 11/01 – 14/05/2027.
- Duplexing of entire length of circuit conductors.
- Increases capacity - maximum operating temperature increased to 120°C.
- Part of NZGP (Net Zero Grid Pathways) MCP.



Central NI 220kV Concurrencies

- Central North Island 220kV circuits are considered a ‘clash’ if they run parallel to each other.
- Different circuits have different ratings and are in different locations, so the severity of concurrencies can differ.
- Look to keep outages on parallel 220kV circuits in this area separated, where possible.
- We also need to consider what would happen following an additional unplanned outage.
- TKU_WKM_1 is RFS for most of the second half of the 2026-27 financial year.
- Meaning most other 220kV circuits in the area have had their outages planned for late 2026.



WRK-C (Wairakei C line) Outages

THI_WKM_1 | THI_WRK_1 | WKM_WRK_1

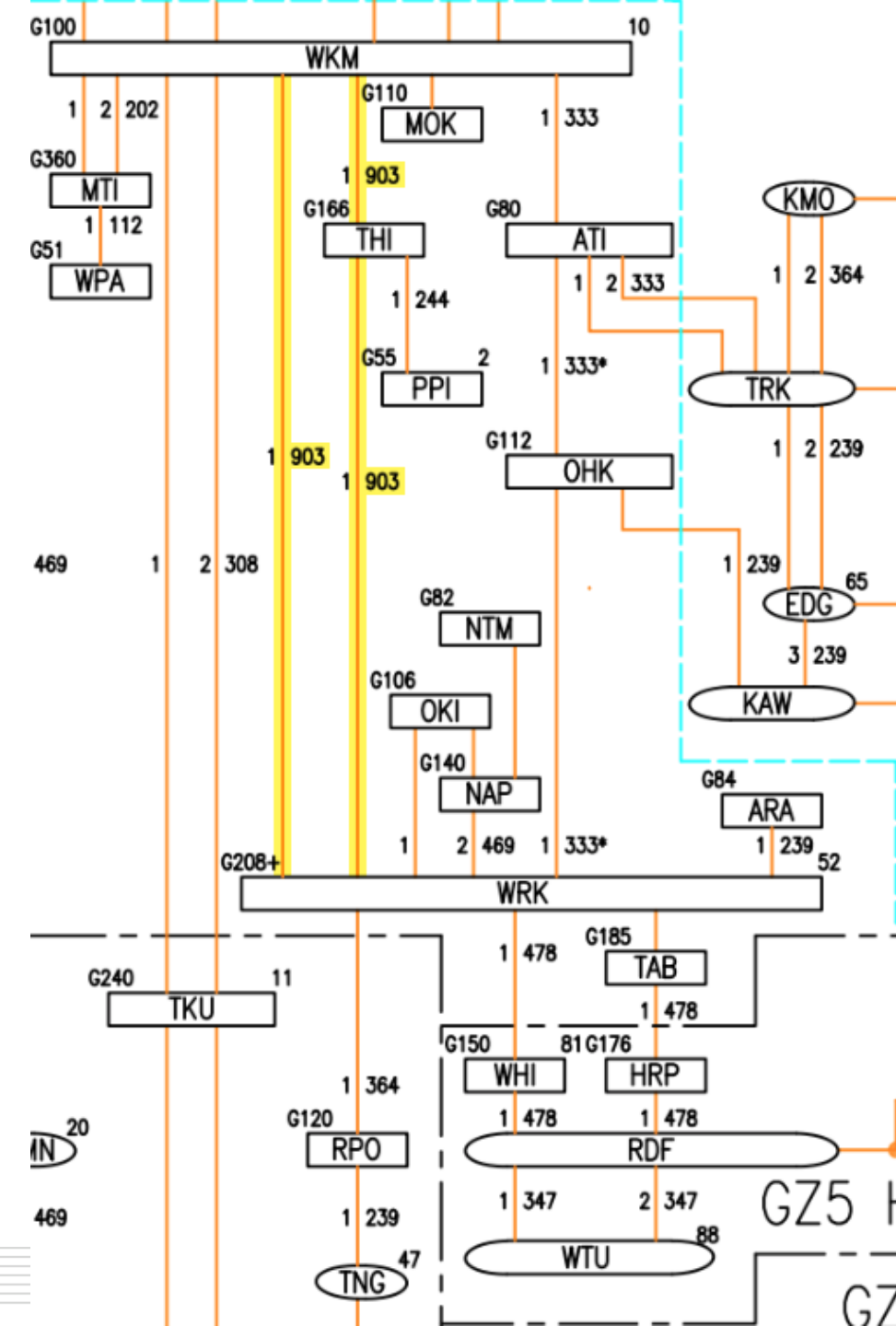
WRK-C Line Circuits

THI_WKM_1 (Te Mihi-Whakamaru)

THI_WRK_1 (Te Mihi-Wairakei)

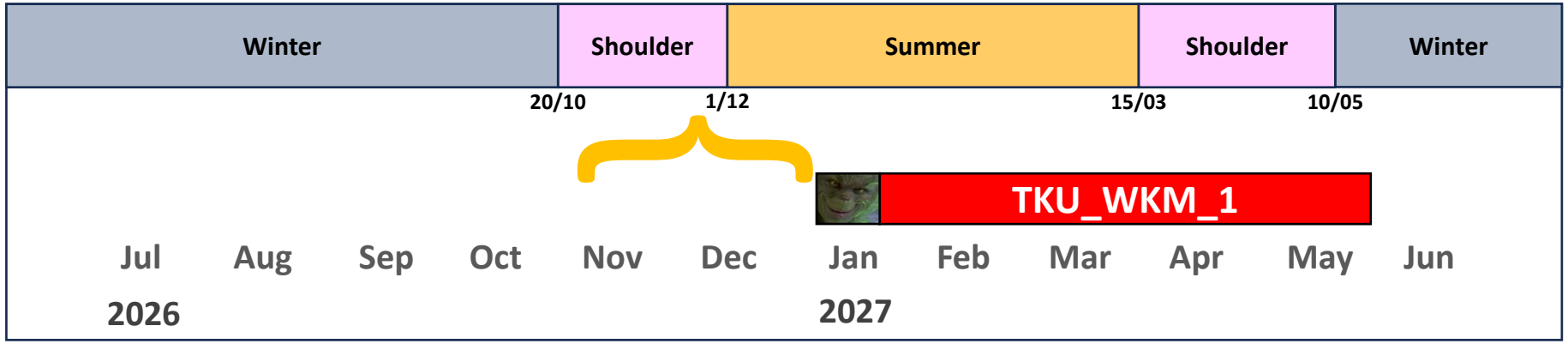
WKM_WRK_1 (Whakamaru-Wairakei)

- Highest-capacity circuits in the area (903MW).
- WRK-C outages largely reduce northward transmission capacity.
- WRK-C outages constrain generation south of the circuit that is RFS.
- Picking the correct time for an outage on these circuits is crucial.



2026-27 Annual Outage Plan

1st July 2026 – 30th June 2027



Option Chosen	THI_WKM_1	THI_WRK_1	WKM_WRK_1	Impact(s)
Option 1	8 days; 2nd – 9th December (Wed – Wed)	2 days; 20th – 21st November (Fri – Sat)	2 days, 16th – 17th November (Mon - Tue)	Moves **BPE_TKU_2** and **TMN_TWH_1.**
1.1		5 days; 12th – 16th December (Sat – Wed)	5 days; 16th – 20th November (Mon – Fri)	Moves **BPE_TKU_2** and **TMN_TWH_1.**
Option 2	8 days; 2nd – 9th December (Wed – Wed)	5 days; 16th – 20th November (Mon - Fri)	5 days; 2nd – 6th November (Mon - Fri)	Moves **BPE_TKU_2, SFD_TMN_1,** and **TMN_TWH_1.**
2.1			5 days; 2nd – 6th November (Mon - Fri)	Moves **BPE_TKU_2, SFD_TMN_1,** and **TMN_TWH_1.** Shortens **HLY_SFD_1** by 1 day.
Option 3	8 days; 2nd – 9th December (Wed – Wed)	2 days; 21st – 22nd November (Sat – Sun)	2 days; 11th – 12th December (Fri - Sat)	Moves **TMN_TWH_1.**
3.1		2 days; 20th – 21st November (Fri – Sat)		Moves **TMN_TWH_1,** bumps **BPE_TKU_1** by 1 day.
3.2		2 days; 18th – 19th December (Sat – Sun)		Moves **TMN_TWH_1.**
3.3	8 days; 2nd – 9th December (Wed – Wed)	5 days; 10th – 14th December (Thu – Mon)	5 days; 15th – 19th December (Tue – Sat)	Moves **TMN_TWH_1.**
Option 4	8 days; 14th – 21st November (Sat – Sat)	2 days; 22nd – 23rd November (Sun – Mon)	2 days; 11th – 12th December (Fri – Sat)	Moves **BPE_TKU_2.**
4.1	8 days; 14th – 21st November (Sat – Sat)	2 days; 18th – 19th December (Fri – Sat)		Moves **BPE_TKU_2.**
Option 5	8 days; 28th Oct – 4th Nov (Wed - Wed)	2 days; 6th – 7th November (Fri - Sat)	2 days; 21st – 22nd November (Sat - Sun)	Moves **SFD_TMN_1,** shortens **HLY_SFD_1** by 2 days.
Option 6	8 days; 2nd – 9th December (Wed – Wed)	5 days; 27th – 31st October (Tue - Sat)	5 days; 2nd – 6th November (Mon - Fri)	Moves **SFD_TMN_1** and **TMN_TWH_1.**

2026-27 Annual Outage Plan

- 1st July 2026 – 30th June 2027

2026 220kV CNI Outages

BRK_SFD_3 27 Jul – 21 Aug

BPE_TNG_1 28 Aug

BRK_SFD_3 7 Sept – 9 Oct

BPE_TNG_1 11 Sept

BPE_TNG_1 18 Sept

BPE_TNG_1 2 Oct

RPO_TNG_1 5 – 9 Oct

BPE_TKU_2 12 - 23 Oct

TKU_WKM_2 13 – 14 Oct

BPE_TNG_1 16 Oct

ATI_OHK_1 21 Oct

RPO_WRK_1 27 – 29 Oct

HLY_SFD_1 27 - 30 Oct

WKM_WRK_1 31 Oct – 1 Nov

HLY_SFD_1 2 – 4 Nov

HLY_TWH_1 5 – 7 Nov

SFD_TMN_1 8 – 13 Nov

ATI_WKM_1 12 – 13 Nov

THI_WKM_1 14 – 21 Nov

THI_WRK_1 22 – 23 Nov

BPE_TNG_1 24 Nov – 1 Dec

TKU_WKM_1 28 Nov

TMN_TWH_1 2 – 11 Dec

2027 220kV CNI Outages

TKU_WKM_1 11 Jan – 14 May

BPE_BRK_2 18 – 29 Jan

BPE_BRK_1 1 – 12 Feb

BRK_SFD_2 22 Feb – 5 Mar

BPE_TKU_1 1 Mar – 14 May

BRK_SFD_3 8 – 25 Mar

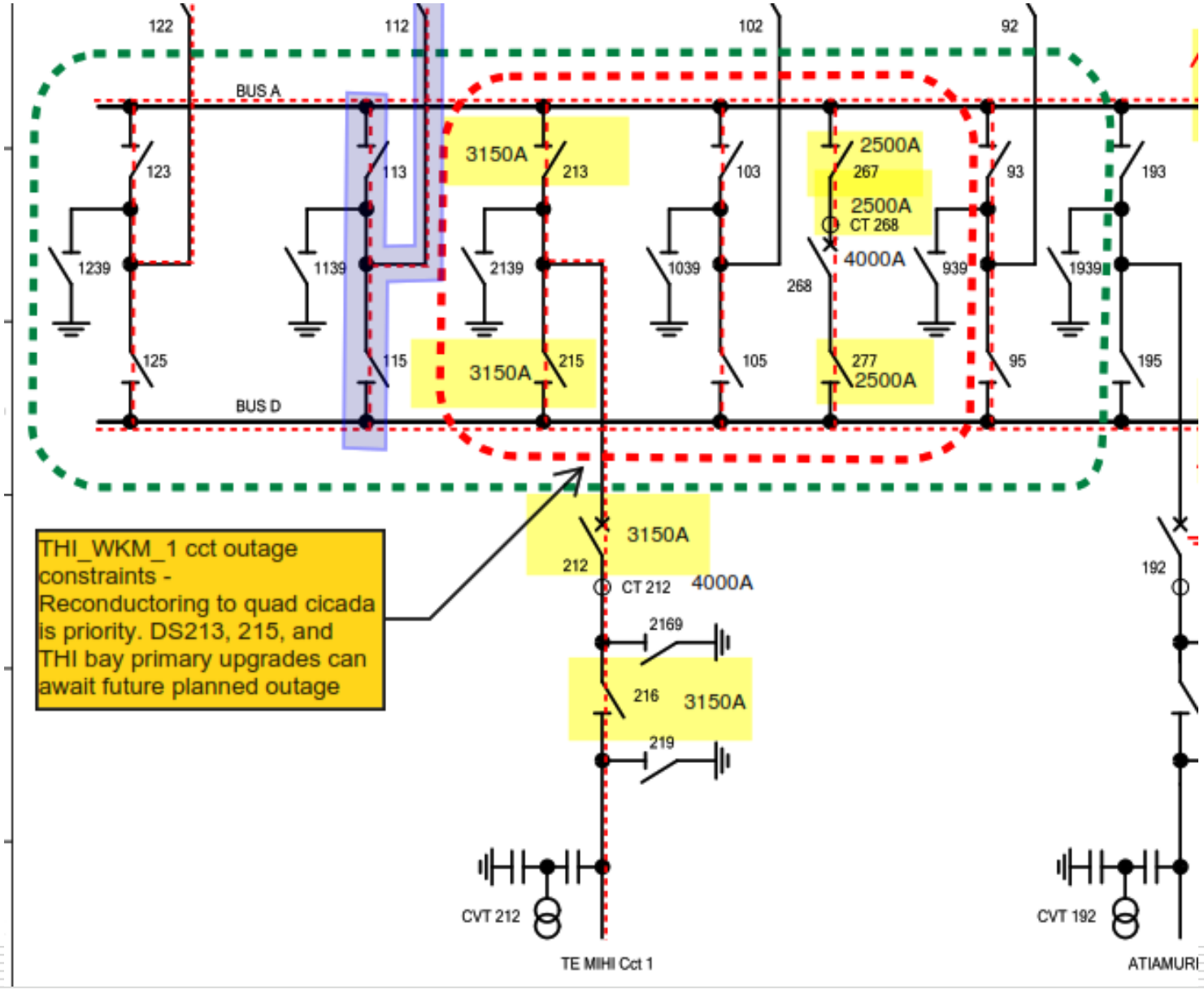
OHK_WRK_1 19 – 21 Apr

ATI_OHK_1 22 – 23 Apr

8-day THI_WKM_1 Outage

- **Scope:** Uprate the Te Mihi line bay at Whakamaru to align with NZGP line upgrades.
- **Durations Requirements:** An 8-day THI_WKM_1 outage is needed to replace duplex copper with quad cicada and replace underrated concrete posts and foundations.
- **Planned Dates:** 14th to 21st November 2026 (8-days continuous).
- **Scope Optimisation:** Replacement of CB 212, DS 216, DS 213 & DS 215 was initially scoped. These have been removed from scope due to the significant outage constraints and limited system benefits.
- **Outage Optimisation:** Pre-cast bus support foundations being used to optimise outage.
- **Duration Confidence:** High confidence in durations, have completed similar work at other sites. Low risk of extensions, will complete sooner if possible.

NZGP Whakamaru Station Upgrade SLD



For Information - High Level Forward Outage Requirements

- Initial indications from System Operator are that either **April or the first half of October provide the best outage opportunities**. Preferred month still to be confirmed.
- As a baseline, **will be planning 2-day annual maintenance outages on each circuit.** From time to time, extended outages will be needed to support project works.
- Wairakei gantry painting requires **5 days on WKM_WRK_1 and THI_WRK_1 in 2027/28.**
- Proactive SF6 management (CB Pole swaps) required in 2027/28.
- Line protection schemes due for replacement from 2034 (10-12 days outages)
- Bus zone protection schemes due for replacement in 2032 (Wairakei) and 2034 (Whakamaru).
- Condition driven primary plant replacements not forecast until 2038.
- Possibly future Wairakei ring major capex investments.

	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41
WKM_WRK_1	2	5 – 8	2	2	2	2	3	2	2	2	12	2	2	2	2
THI_WKM_1	8	2	2	2	2	2	2	2	2	12	2	2	2	2	2
THI_WRK_1	2	5	2	2	2	2	3	2	2	2	2	12	2	2	2

**Numbers represent number of outage days. Red = Extended project driven outages.*

Operational update

TRANSPOWER

Managing WRK Ring planned outages

Date 12 March 2026

WRK Ring Outages - Generation Scan

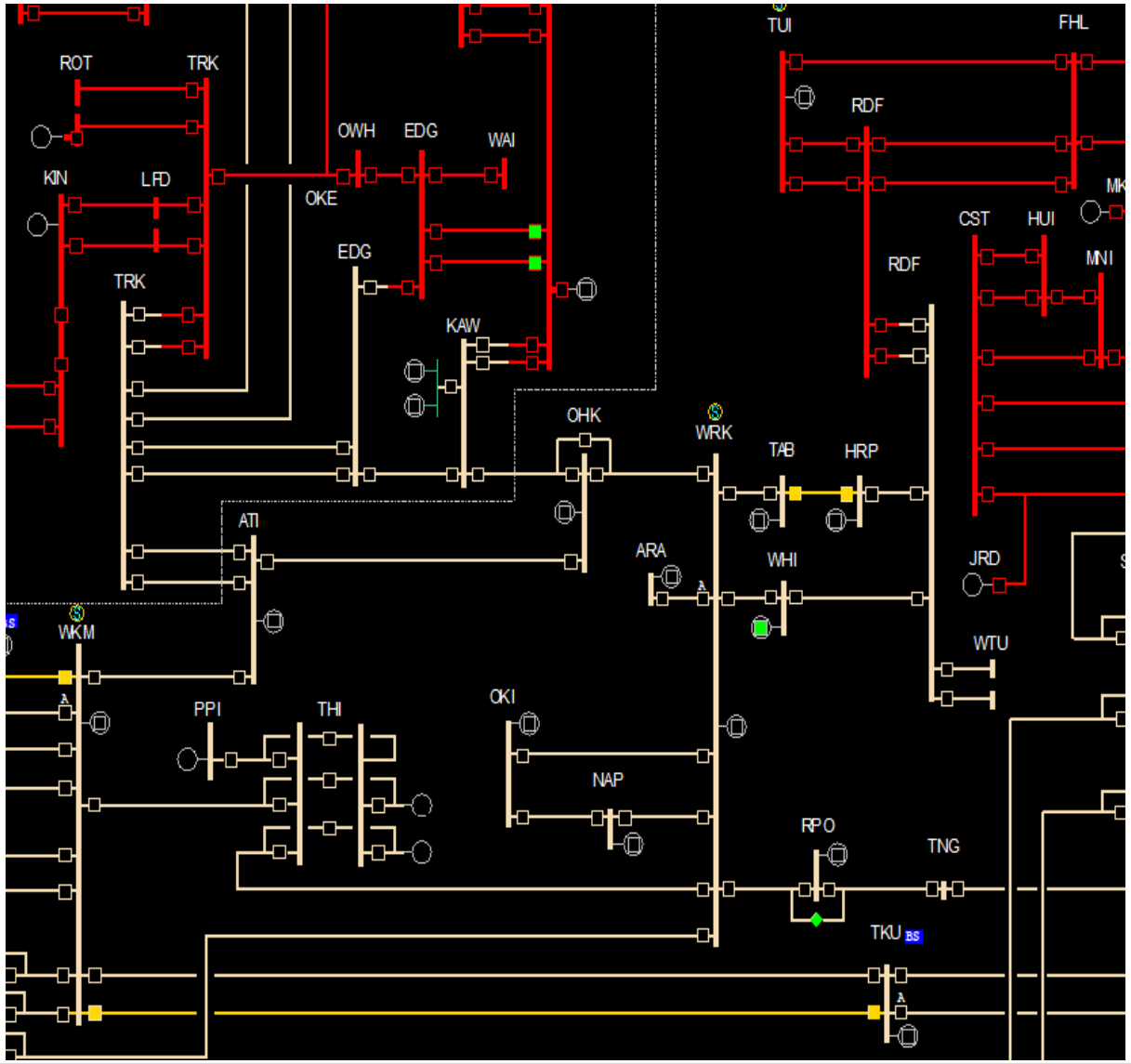
WRK ring generation capability (approx):

- Geothermal 1080 MW
- Other 540 MW
- Total 1620 MW within/entering ring
- Additional 680 MW in KAW/BOP

WRK ring demand: approx. 290 MW (includes Hawkes Bay)

Grid capacity (November):

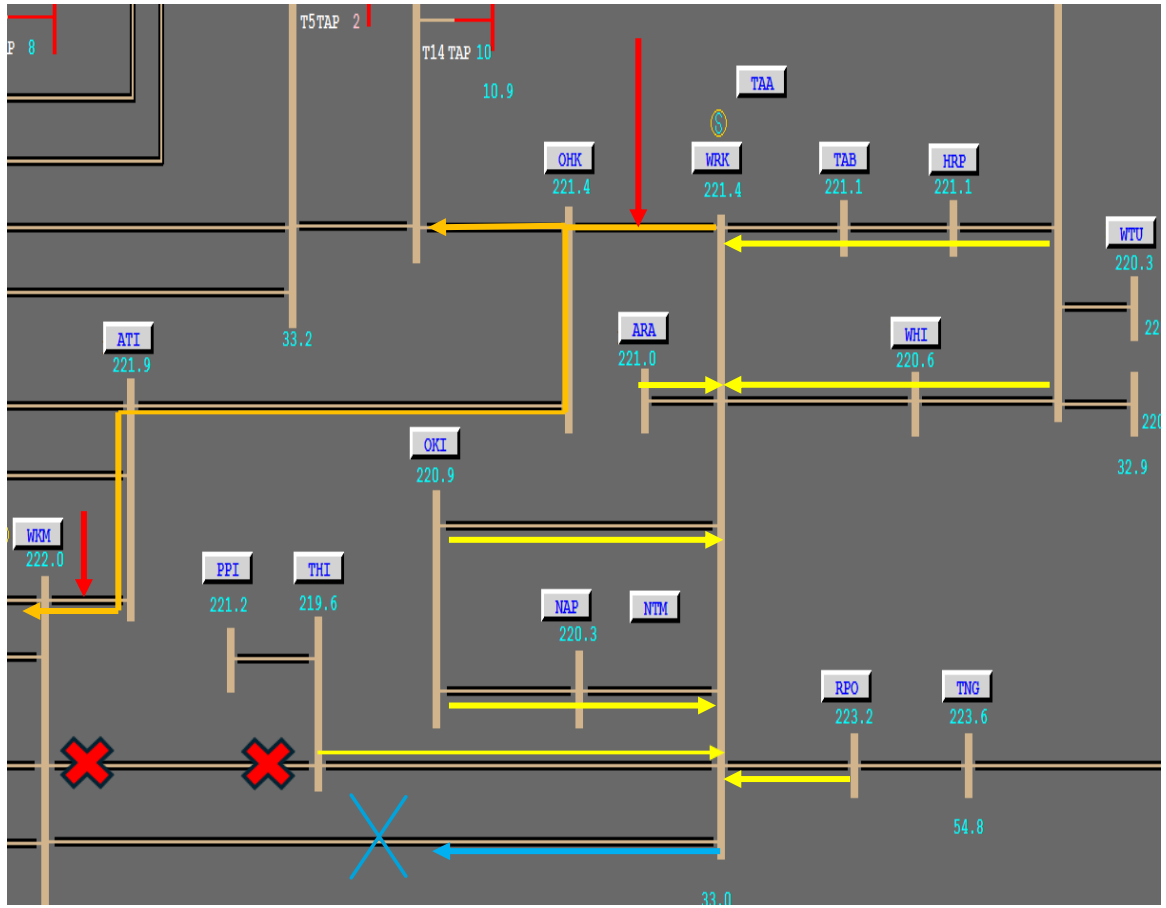
1. OHK WRK 1 and ATI WKM 1: 368-420 MW (iVLR)
2. THI WKM 1 and THI WRK 1: 991 MW
3. WKM WRK 1: 1098 MW
- RPO WRK 1: 363 MW



WRK Ring Contingency Management

Contingencies

- Managing for the loss of WKM WRK circuit during the THI WKM circuit outage, is the hardest to manage
- Flows are predominantly north into WRK via the RPO WRK and RDF circuits, and all outflow is on the OHK WRK and WKM WRK circuits
- Depending on conditions, managing flows on the ATI WKM circuit can become the priority when KWA/BOP generation impacts on ATI WKM circuit loading
- Pre-contingent flows on across both OHK WRK and WKM WRK paths will need to sit between 400-550 MW subject to conditions



Outage requirements

All WRK ring geothermal generation will need to be on their minimums or shutdown during the outages (approx. 460 MW)

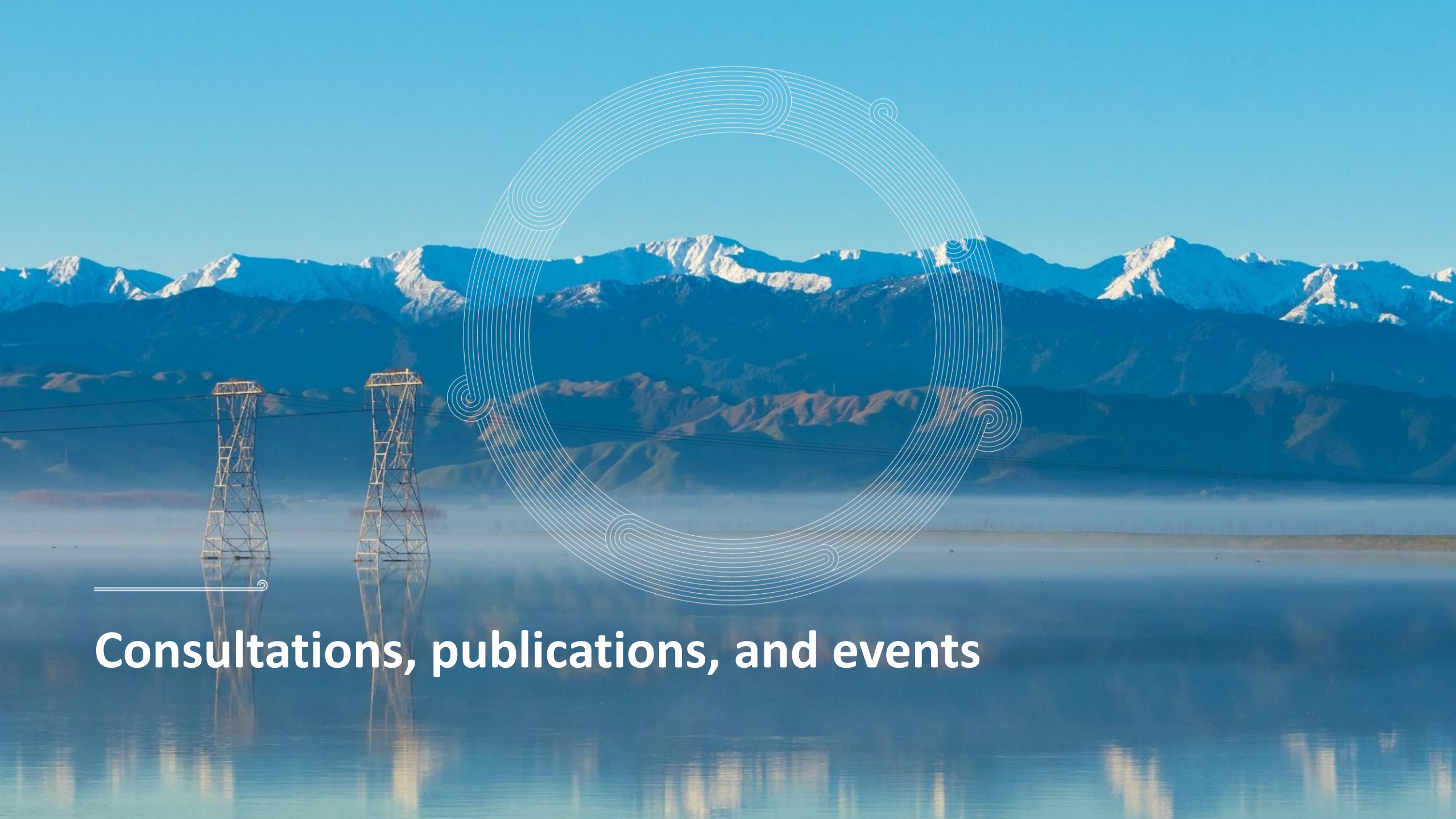
Flexible WRK generation constrained down as required or free to generate as per market outcomes

Optimise northern generation as required – includes use of battery's for charging/discharging.

Development of a post contingent plan including EDB controllable load if can be actioned fast enough

Conditional grid reconfigurations offered with the WRK outages

- RPO WRK circuit which can be beneficial subject to conditions
- ARI 48 closed or moving split to KIN TRK circuits

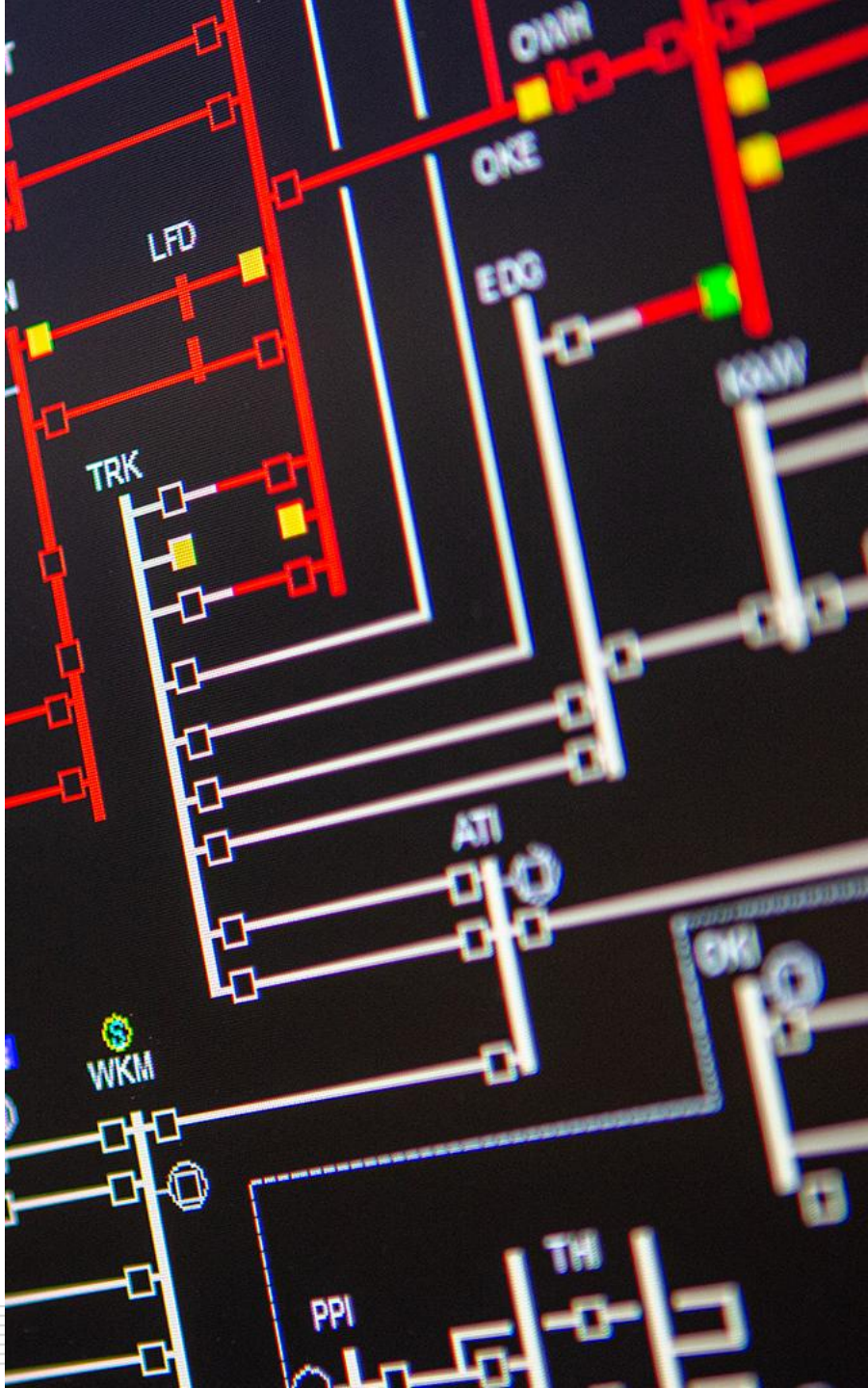


Consultations, publications, and events

Consultations, publications, and events

Our consultation on the new **System Operator Strategy** is still open and we seek your feedback by Friday 24 July.

CACTIS - Legacy clause provisions applications are open until 1 August 2026



Questions / Pātai

Please raise your hand

If you have feedback let us know via our **Feedback Form**

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