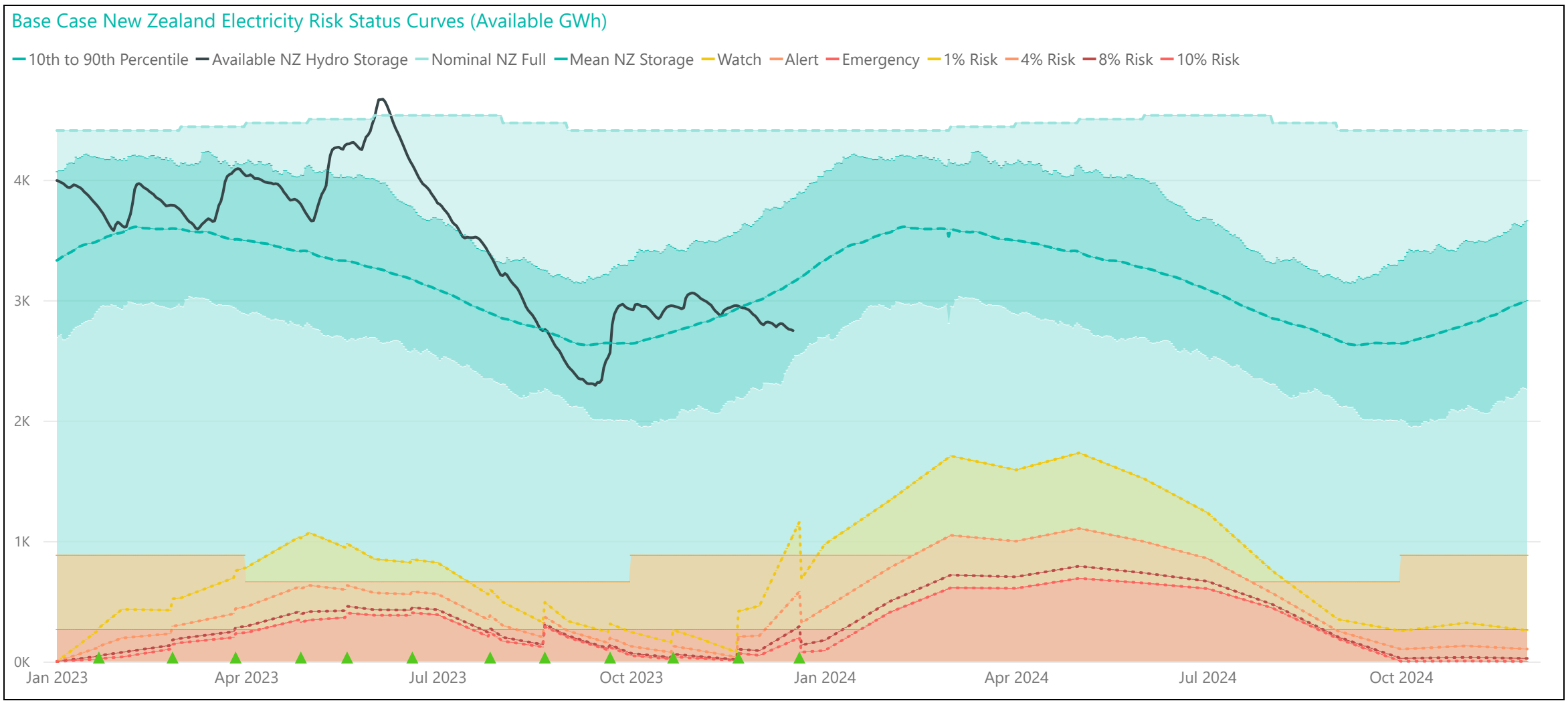
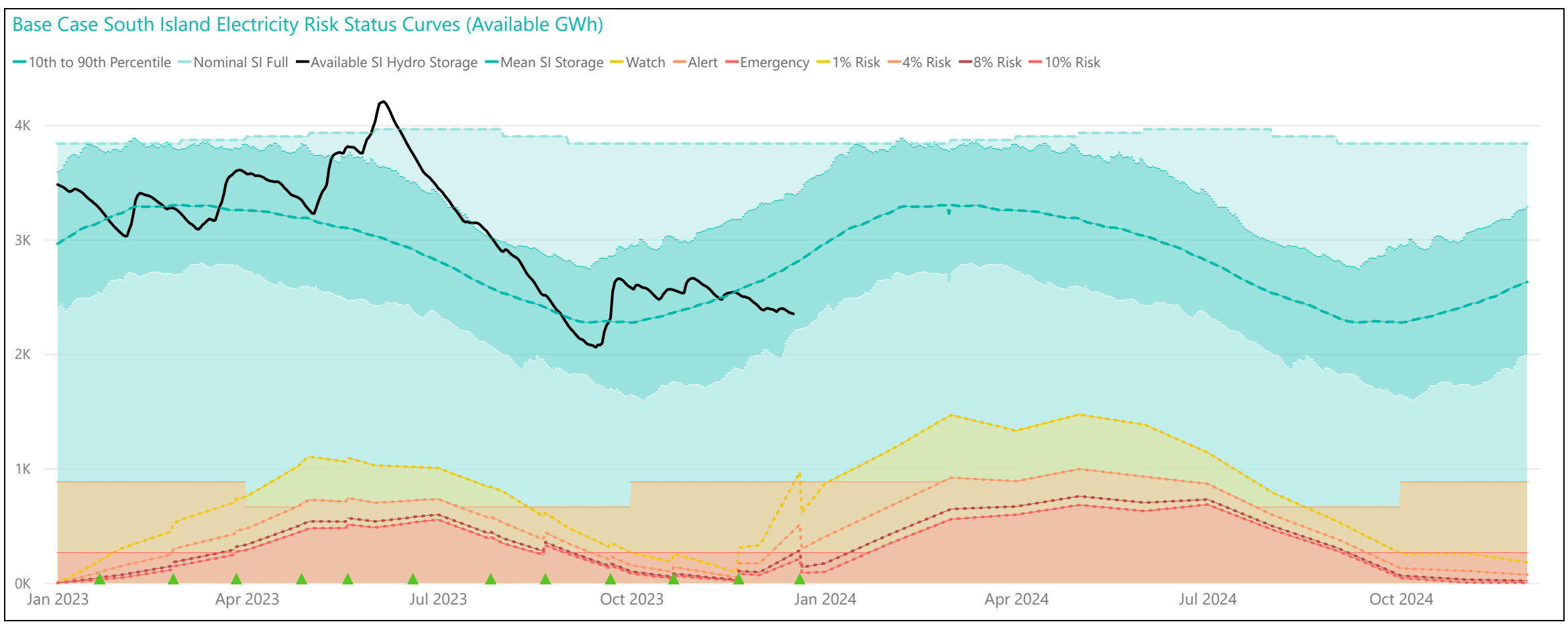
Base Case - Electricity Risk Curves ERCs

Wednesday, 20 December 2023

The December 2023 ERC update was published on 19 December with the following updates:

- Updated commissioning details for new generators.
- Updated planned generation outages.
- Based on information from Genesis, we have modified our assumptions for Huntly to remove a limit on the number of baseload units that are able to run simultaneously. This is similar to the Additional Rankine scenario that we published in November, and it causes a drop in the ERCs.





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

Triggers and actions of Watch/Alert/Emergency status are set only by the official base case curves (not scenario curves).

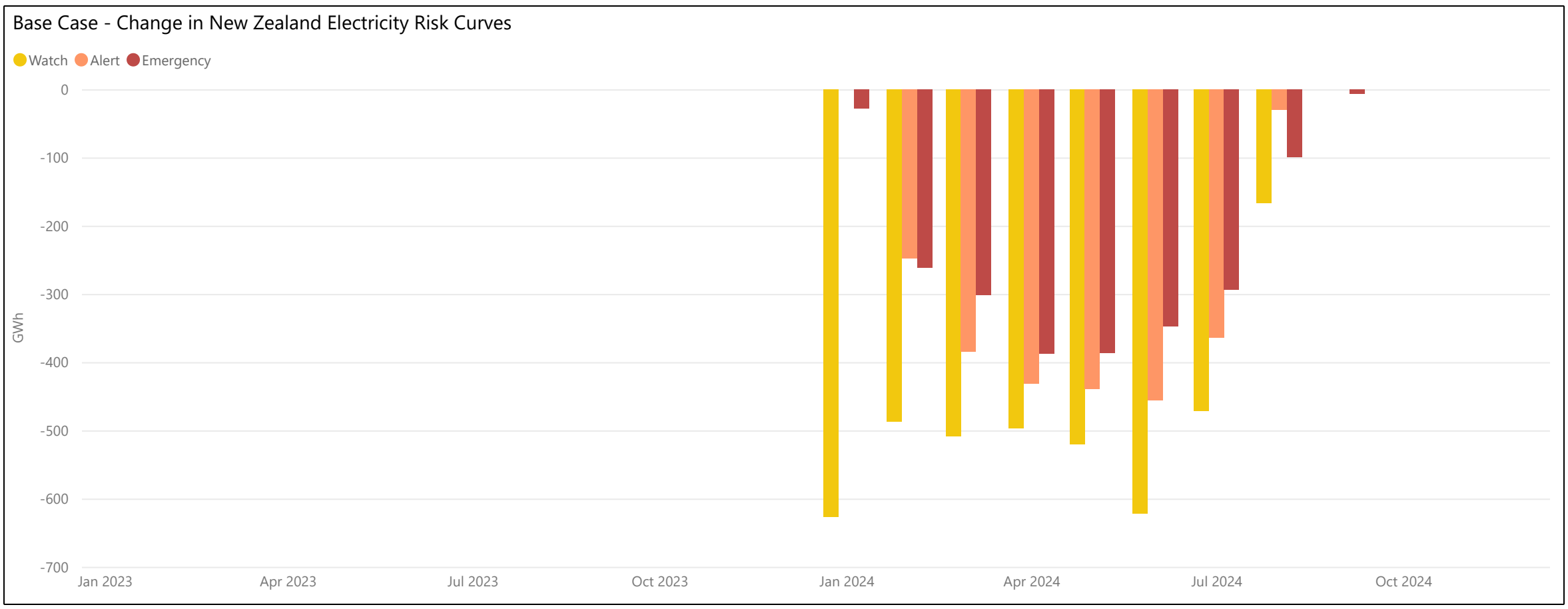
Note: The floor is equal to the amount of contingent hydro storage that is linked to the specific electricity risk curve, plus the amount of contingent hydro storage linked to electricity risk curves representing higher levels of risk of future shortage, if any. The buffer is 50 GWh.

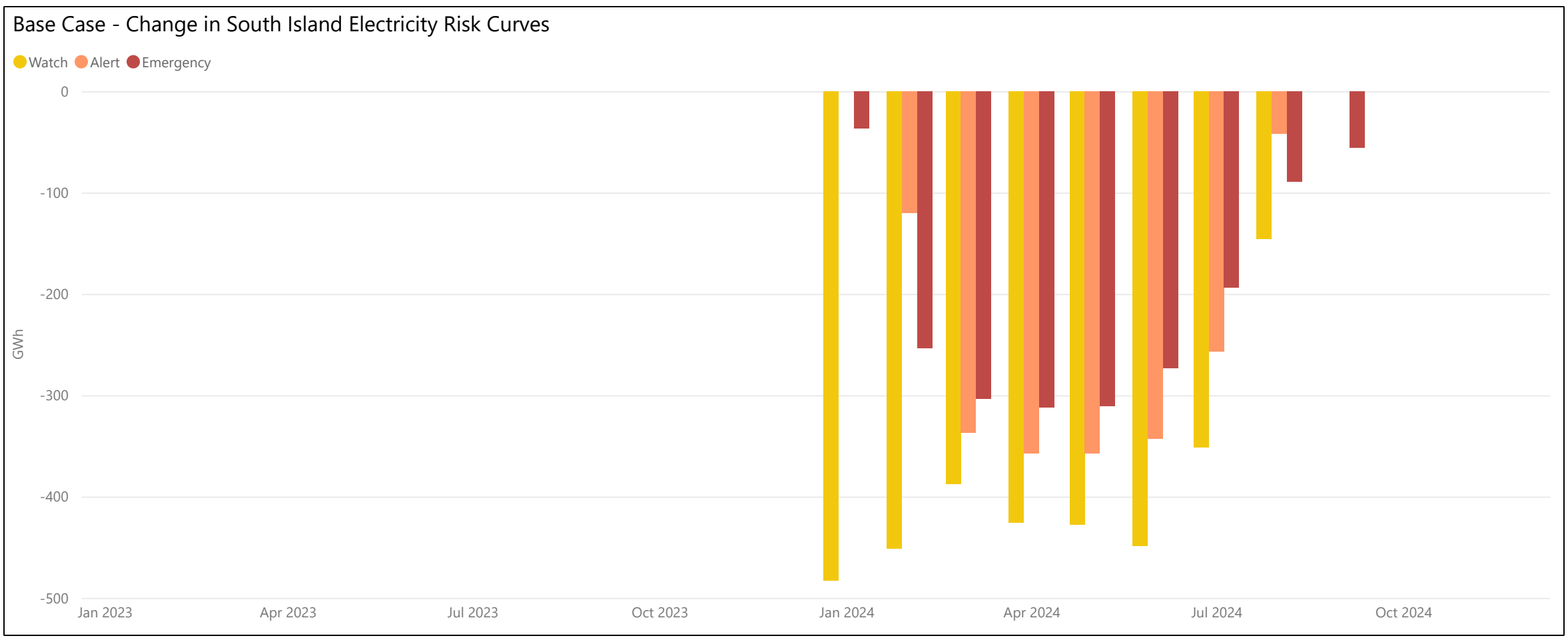
Base Case - Changes in the Electricity Risk Curves From Previous Month

Wednesday, 20 December 2023

The changes to the Watch/Alert/Emergency curves compared to last month are shown below.

There is a decrease in the curves this month due to the change in our modelling assumptions for Huntly from two Rankine units available to three. This allows greater generation until the coal stockpile is depleted, which means more hydro storage can be conserved and reduces the risk of electricity shortage.





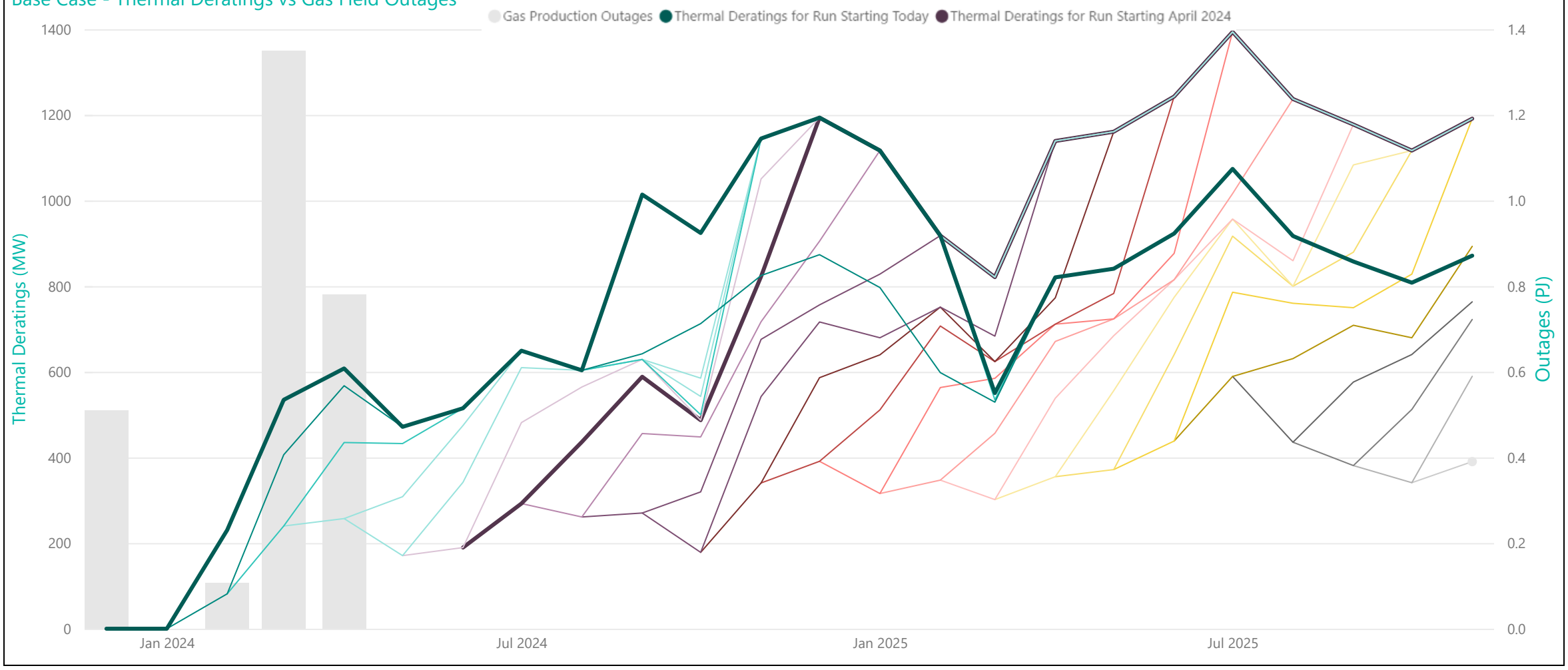
Base Case - Thermal Deratings

Wednesday, 20 December 2023

The thermal deratings and key considerations for the November 2023 ERC update are:

- There are now significant coal deratings towards the end of each run, increasing the overall thermal deratings. The availability of a third Rankine unit means that coal generation is constrained by coal supply after the coal stockpile has been depleted.
- Gas deratings remain high for 2024 and 2025. These deratings mean there would be limited response from gas generation in a prolonged dry sequence, even if the units are available. These deratings could change if gas production forecasts are increased or formal agreements around gas reallocation are made.
- Gas storage levels remain high enough to fuel TCC for ~3 months (ignoring draw down rates).
- There are gas production outages in March and April 2024.

Base Case - Thermal Deratings vs Gas Field Outages



Thermal Deratings (MW) by Run Month

Run Month	2023-12	2024-01	2024-02	2024-03	2024-04	2024-05	2024-06	2024-07	2024-08	2024-09	2024-10	2024-11	2024-12	2025-01	2025-02	2025-03	2025-04	2025-05	2025-06	2025-07	2025-08	2025-09	2025-10	2025-11
2023-12	0	0	231	535	608	472	515	649	604	1014	924	1145												
2024-01		0	81	406	567	472	515	649	604	642	713	825	874											
2024-02			81	240	435	432	515	649	604	629	500	1145	1194	1117										
2024-03				240	257	308	474	649	604	629	542	1145	1194	1117	918									
2024-04					257	171	342	610	604	629	585	1145	1194	1117	918	821								
2024-05						171	189	481	564	629	487	1051	1194	1117	918	821	1139							
2024-06							189	292	436	588	487	823	1194	1117	918	821	1139	1161						
2024-07								292	261	456	448	717	905	1117	918	821	1139	1161	1243					
2024-08									261	270	320	676	756	828	918	821	1139	1161	1243	1394				
2024-09										270	178	542	716	680	751	683	1139	1161	1243	1394	1237			
2024-10											178	340	586	640	751	624	773	1161	1243	1394	1237	1178		
2024-11												340	391	511	707	624	711	783	1243	1394	1237	1178	1117	
2024-12													391	316	563	585	711	724	877	1394	1237	1178	1117	1191
2025-01														316	347	456	671	724	815	1016	1237	1178	1117	1191
2025-02															347	302	538	684	815	957	859	1178	1117	1191
2025-03																302	355	556	774	957	800	1083	1117	1191
2025-04																	355	372	640	917	800	879	1117	1191
2025-05																		372	438	786	760	750	828	1191
2025-06																			438	589	631	709	680	893
2025-07																				589	436	576	640	763
2025-08																					436	381	512	722
2025-09																						381	341	590
2025-10																							341	390
2025-11																								390

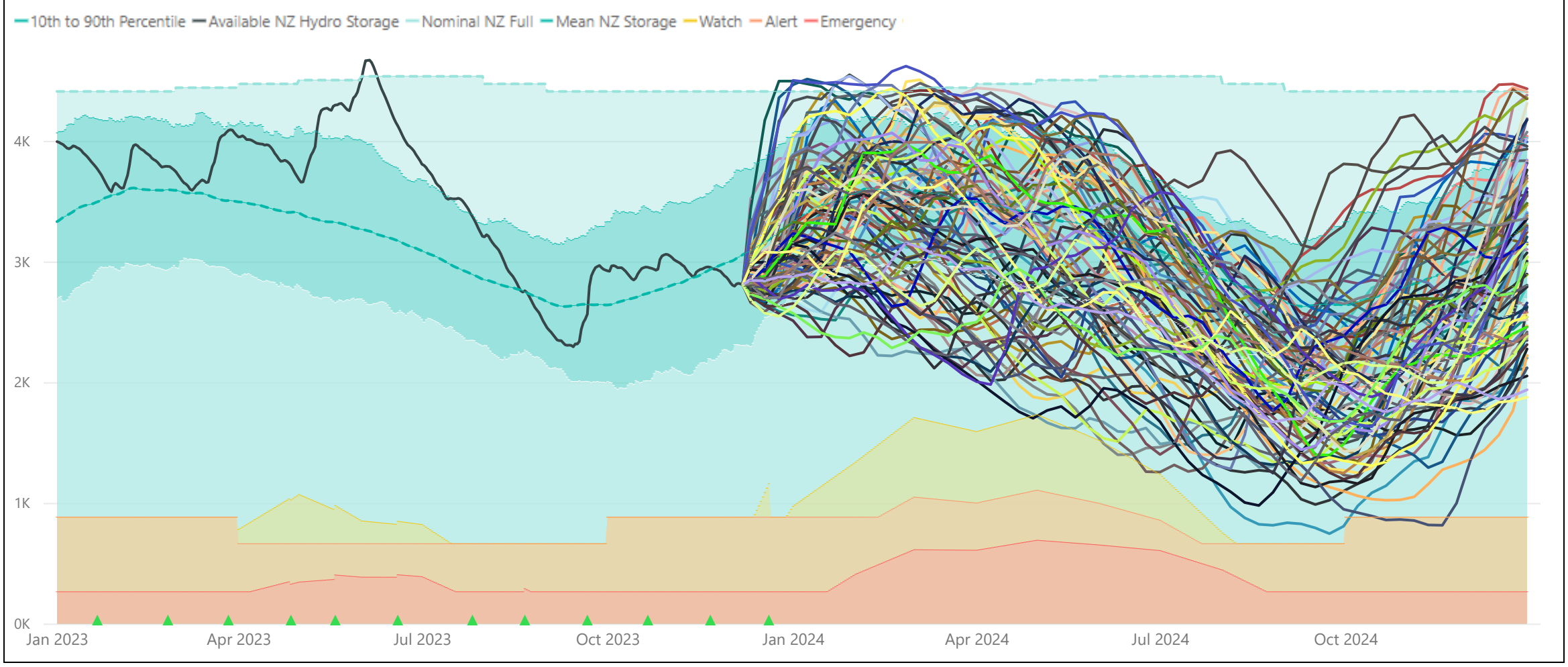
Base Case - Simulated Storage Trajectories (SSTs)

Wednesday, 20 December 2023

The November SST update is shown below:

- There is now a below average start storage value.
- Four of the SSTs cross into the New Zealand watch curve during winter 2024.
- Two of the SSTs cross into the New Zealand alert curve during spring 2024. At this time of year the alert curve level is set by the contingent storage release boundary floor and not by the calculated 4% risk curve.

Base Case - New Zealand SST Electricity Risk Status Curves (Available GWh)



Base Case - South Island SST Electricity Risk Status Curves (Available GWh)