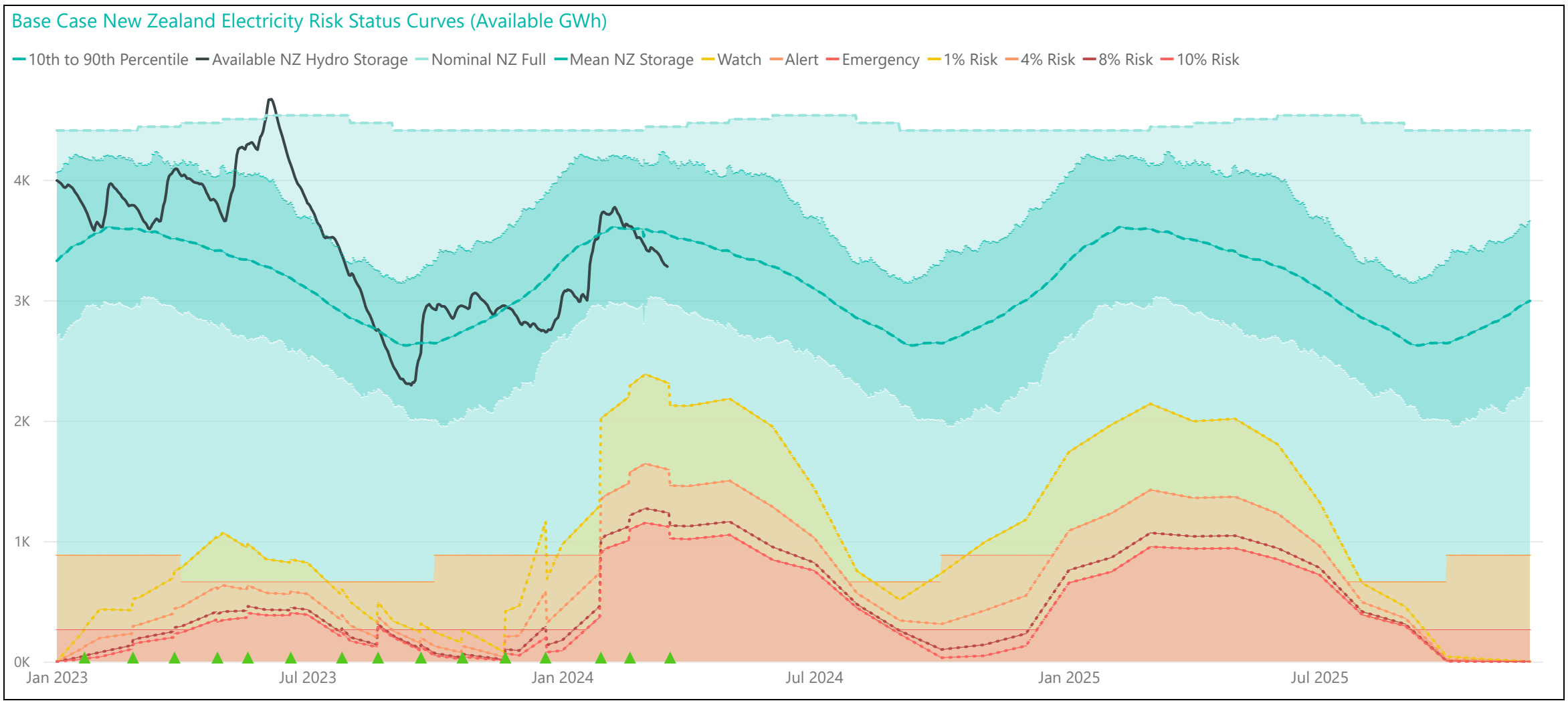
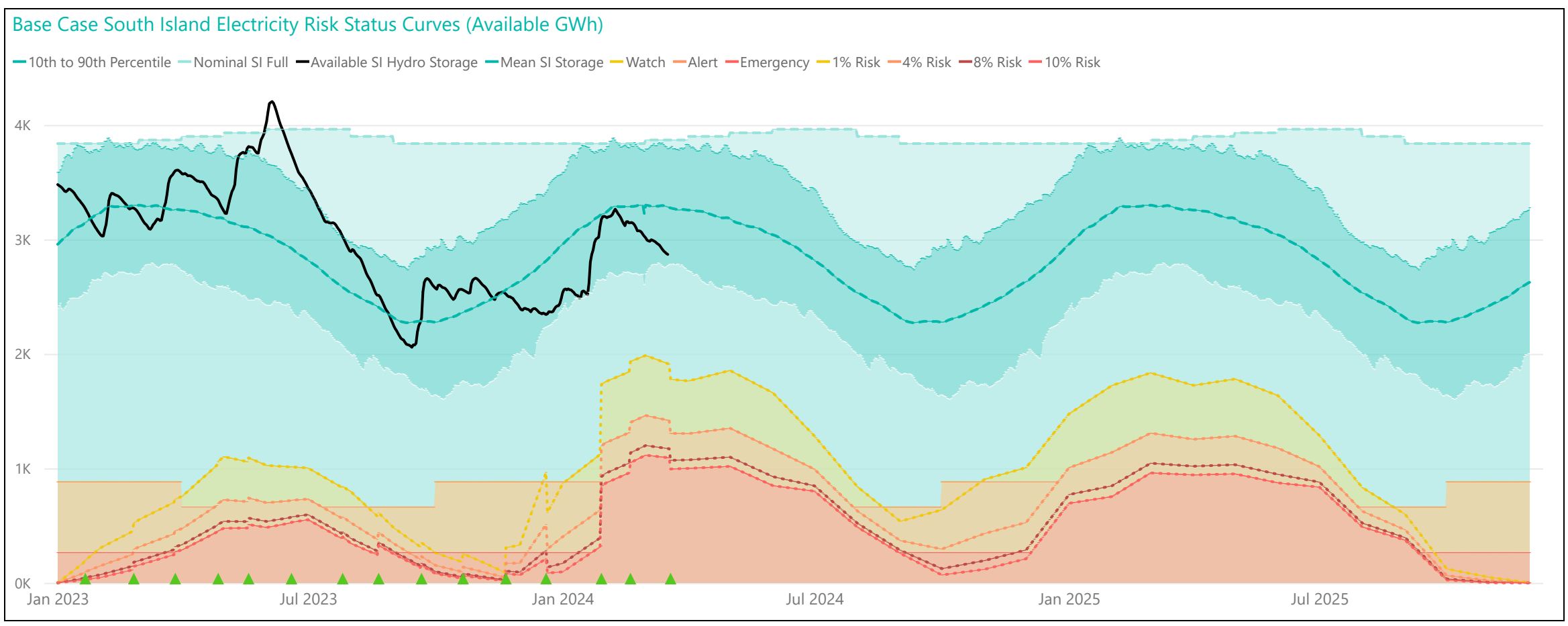
Base Case - Electricity Risk Curves ERCs

Tuesday, 19 March 2024

The March 2024 ERC update was published on 21 March with updates to:

- Planned generation outages.
- Generator commissioning dates.
- Gas production forecasts for some major gas fields. There was a decrease in total gas production forecast over 2024 compared to the assumptions used last month.
- Forecast industrial gas consumption.





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).

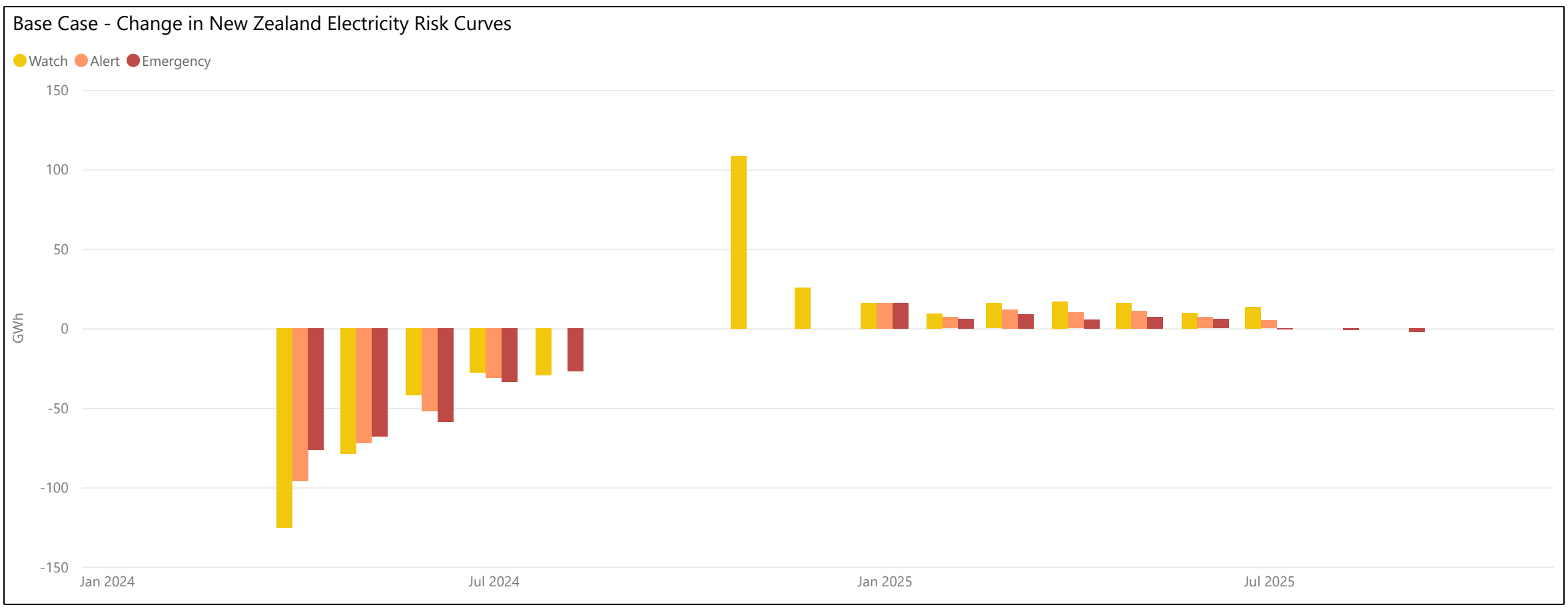
Note: The floor is equal to the amount of contingent hydro storage that is linked to the specific electricity risk curve, plus the amount of contingent hydro storage linked to electricity risk curves representing higher levels of risk of future shortage, if any. The buffer is 50 GWh.

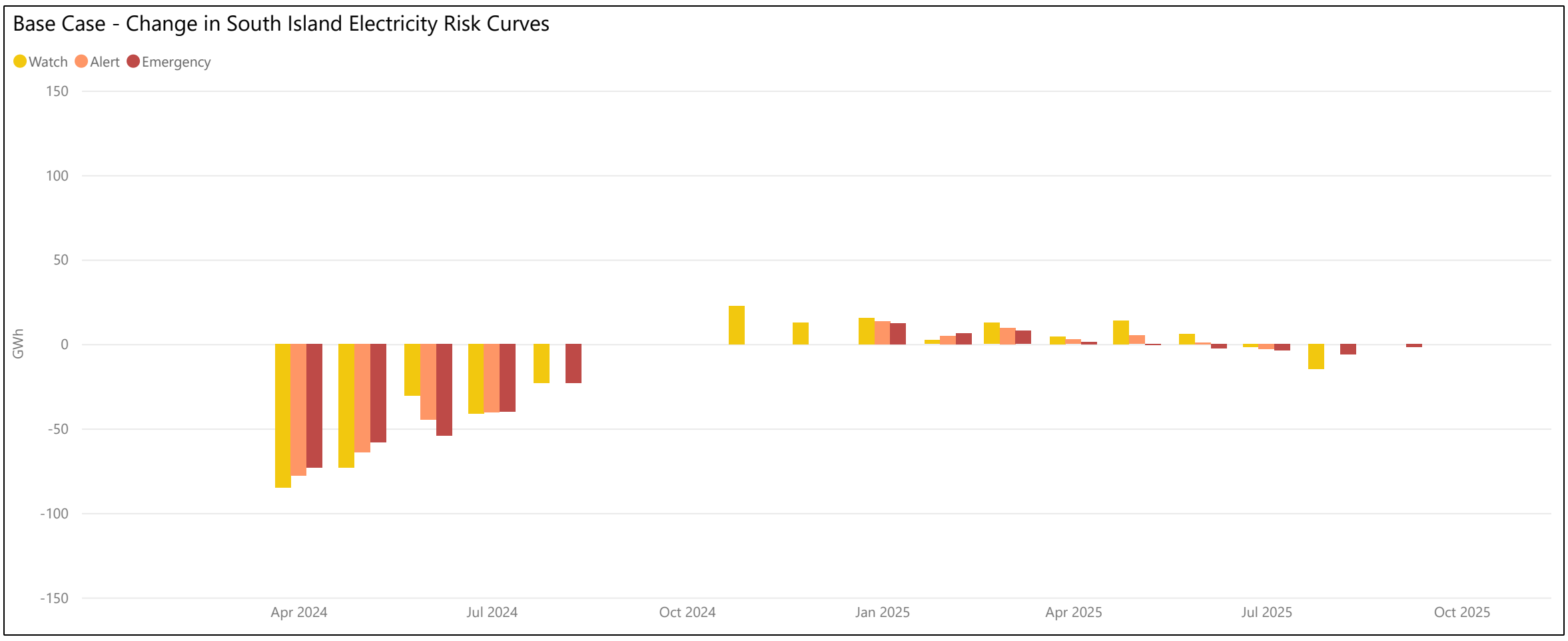
Base Case - Changes in the Electricity Risk Curves From Previous Month

Tuesday, 19 March 2024

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

There was a slight decrease in the curves this month. The forecasted gas production has decreased but so has our forecast of industrial gas consumption (by the petrochemical sector), resulting in a net positive effect on gas available for electricity generation in 2024. Note the increase in the watch curve during November 2024 is the result of an input error in last month's ERCs, which affected the watch curve position in November 2024. This was identified and corrected during this months ERC run.





Base Case - Thermal Deratings

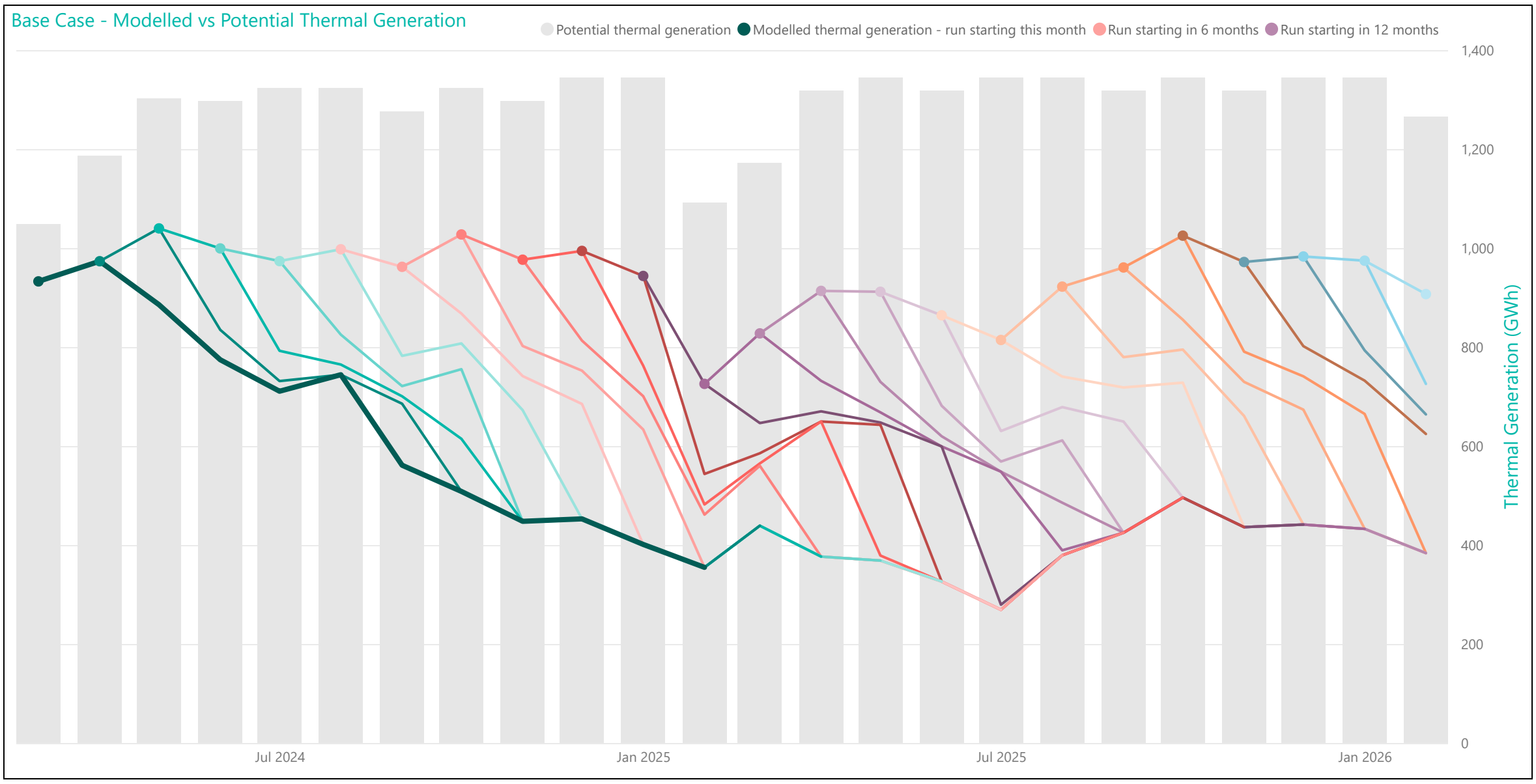
Tuesday, 19 March 2024

The thermal deratings and key considerations for the March 2024 ERC update are below:

- Thermal deratings remain high throughout 2024 and 2025. These deratings mean there would be limited response from thermal generation in a prolonged period of very low hydro inflows, even if the units are available. Note that these deratings could change if more coal or gas is made available for electricity generation.
- There are gas production outages in March, April, and December 2024.
- Gas storage levels remain high enough to fuel TCC for ~3 months (ignoring draw down rates).
- The coal stockpile remains high enough to fuel 3 rankines for ~3 months.

On the chart below, potential thermal generation is the total capacity of available units. Modelled thermal generation (shown by the lines) is what those units could generate using the gas and coal available for electricity generation. There is a separate model run starting each month, with the start of each run shown by a dot. In the table, each row corresponds to a separate run. Each run starts with a stockpile of stored coal and gas, and modelled generation tends to decline initially as this stockpile is consumed. Whirinaki is a diesel generator and is not included in the charts below, however it is still included in the model where it is limited to 60 GWh generation over a 6 month period.

Base Case - Modelled vs Potential Thermal Generation



Modelled Thermal Generation (GWh) by Run Month

Run Month	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	2025-12	2026-01	2026-02
2024-03	933	973	886	774	711	744	561	508	448	453	401	355												
2024-04		973	1040	835	731	744	686	508	448	453	401	355	439											
2024-05			1040	999	792	765	701	615	448	453	401	355	439	377										
2024-06				999	974	825	721	755	448	453	401	355	439	377	369									
2024-07					974	998	782	807	673	453	401	355	439	377	369	326								
2024-08						998	962	868	741	685	401	355	439	377	369	326	269							
2024-09							962	1028	802	752	633	355	439	377	369	326	269	379						
2024-10								1028	977	813	701	461	560	377	369	326	269	379	425					
2024-11									977	994	762	482	565	650	379	326	269	379	425	496				
2024-12										994	944	544	585	650	643	326	269	379	425	496	436			
2025-01											944	726	646	670	648	599	279	379	425	496	436	441		
2025-02												726	828	732	668	599	548	389	425	496	436	441	433	
2025-03													828	914	730	620	548	486	425	496	436	441	433	384
2025-04														914	912	681	569	611	425	496	436	441	433	384
2025-05															912	864	630	679	650	496	436	441	433	384
2025-06																864	814	740	718	728	436	441	433	384
2025-07																	814	922	780	795	661	441	433	384
2025-08																		922	961	855	730	674	433	384
2025-09																			961	1025	791	741	665	384
2025-10																				1025	972	802	732	624
2025-11																					972	983	793	664
2025-12																						983	975	726
2026-01																							975	907
2026-02																								907

Base Case - Simulated Storage Trajectories (SSTs)

Tuesday, 19 March 2024

The March SST update is shown below:

- Start storage is near average.
- Four of the 92 modelled SSTs cross the NZ watch status curve in 2024, and six cross the watch status curve in 2025.
- One SST crosses the NZ alert status curve in spring 2024.
- One SST crosses the South Island watch status curve in spring 2024, and five cross the watch status curve in 2025.
- One SST crosses the South Island alert status curve in spring 2024.