

NEW ZEALAND GENERATION BALANCE

OCTOBER REPORT

EXECUTIVE SUMMARY

This month's New Zealand Generation Balance Report forecasts no N-1-G generation shortfalls for the next six months. Applying low gas, no wind assumptions to the base scenario, a single N-1-G shortfall is forecast on 28 October.

Several changes were made to the NZGB Model during September. This was to reflect the revised grid configuration and capacities following two projects (Judgeford Tee and CUWLP), as well as to correct some errors identified in the model calculations related to the HVDC transfer limit. These changes will have resulted in small differences to generation balances across the entire six month reporting window.

The system operator has adjusted NZGB so that it uses 2019 load data for all forecasts in the 2021 calendar year (instead of 2020 load data). This is to remove the impact of COVID-19 from the load profile. The system operator has also changed the load growth factor applied to NZGB for the period 01 September 2021 to 31 August 2022 from 2% to 4% to reflect potential changes to load management practices once RCPD incentives are removed. Further information on the system operator assessment of RCPD changes is available [here](#).

The October NZGB report has been based on data taken from POCP on 05 October 2021.

WHAT IS NZGB?

NZGB is a tool operated by the System Operator to predict, up to six months in advance, whether New Zealand will have enough generation capacity to meet its daily peaks. The tool provides Asset Owners guidance for their outage scheduling.

There are two generation balance figures given: N-1 and N-1-G. The N-1 balance is the system's capacity to cover, over the peak, the loss of the largest risk-setter (a large generator or a HVDC pole). Likewise, the N-1-G balance is the system's capacity to cover, over the peak, the loss of the largest risk-setter if the next largest risk setter were also to become unavailable.

The analysis considers two different scenarios; a 'base scenario' where load is determined based upon load from the same period last year and a 'winter scenario', where the highest recorded winter loads from the last three years are applied across all winter months. Under each scenario, three different generation assumptions are made; a base assumption of generator outages as per POCP; a low gas assumption where North Island gas generation is decreased (a 542MW reduction in capacity); but the standard assumptions about wind are applied; and a low gas assumption where all wind generation is assumed to be at zero output.

The System Operator will issue a CAN highlighting potential shortfalls for instances where the base scenario with base load assumptions indicates an N-1-G shortfall.

For more information, please refer to the [website](#) or the [user guide](#).

BASE SCENARIO RESULTS

There are no N-1 generation balance shortfalls forecast for the base scenario irrespective of generation assumptions (Figure 1). There are no forecast N-1-G generation shortfalls for the base assumption, but a single N-1-G shortfall is forecast for the low gas, no wind assumption on 28 October (Figure 2). The 28 October shortfall has appeared following a small decrease in available generation capacity on the South Island (in addition to existing outages).

The corrections made to the HVDC transfer limit calculation have resulted in reductions in HVDC transfer limits of approximately 50MW across the following six months. Some larger impacts (exceeding



100MW) will be visible during a planned outage of a Haywards Interconnecting Transformer. The reduction in HVDC transfer limit does not necessarily correlate to a reduction in generation balance.

There are four significant grid owner outages during the six-month period this report covers:

1. [CUWLP NSY ROX 1 Duplexing Works](#) (4 October 2021 – 13 November 2021)
2. [CUWLP LIV NSY 1 Duplexing Works](#) (26 November 2021 – 13 December 2021)
3. [CUWLP LIV NSY 1 Duplexing Works](#) (18 January 2022 – 29 April 2022)
4. HVDC Outages (17 February 2022 – 22 February 2022)

There are no generation shortfalls (under any scenarios) forecast during any of these outages (except for the shortfalls discussed above). The system operator will continue to monitor NZGB during the period of these outages and will highlight any shortfalls. These outages have a negligible impact on NZGB.

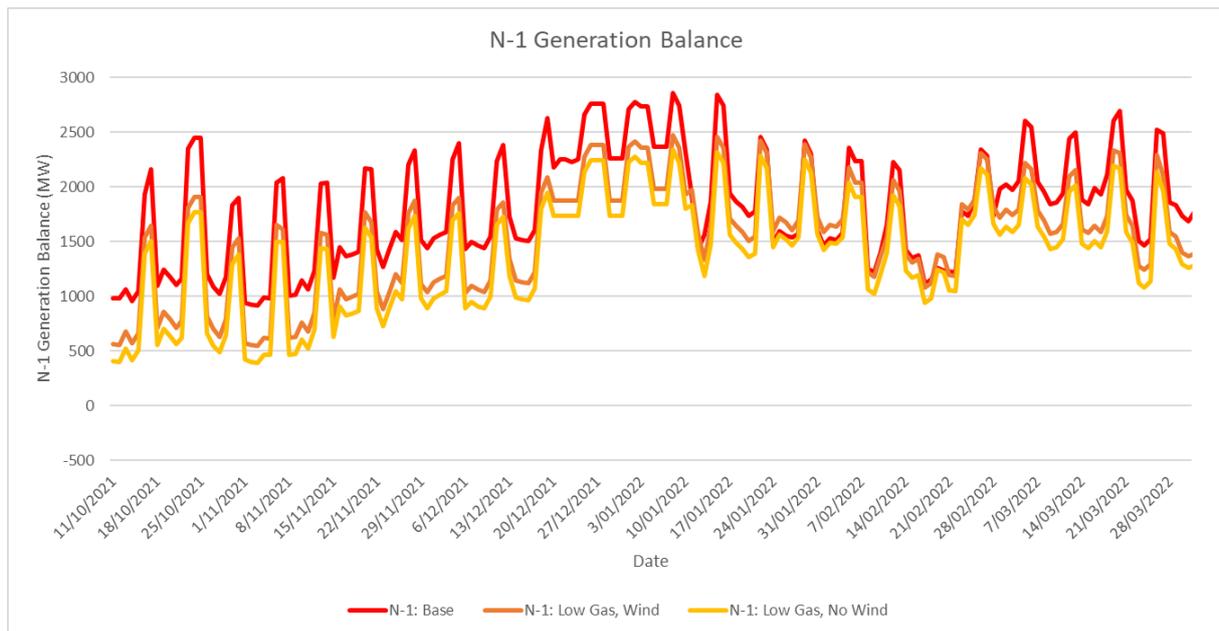


Figure 1: NZGB N-1 Balance – Base Scenario

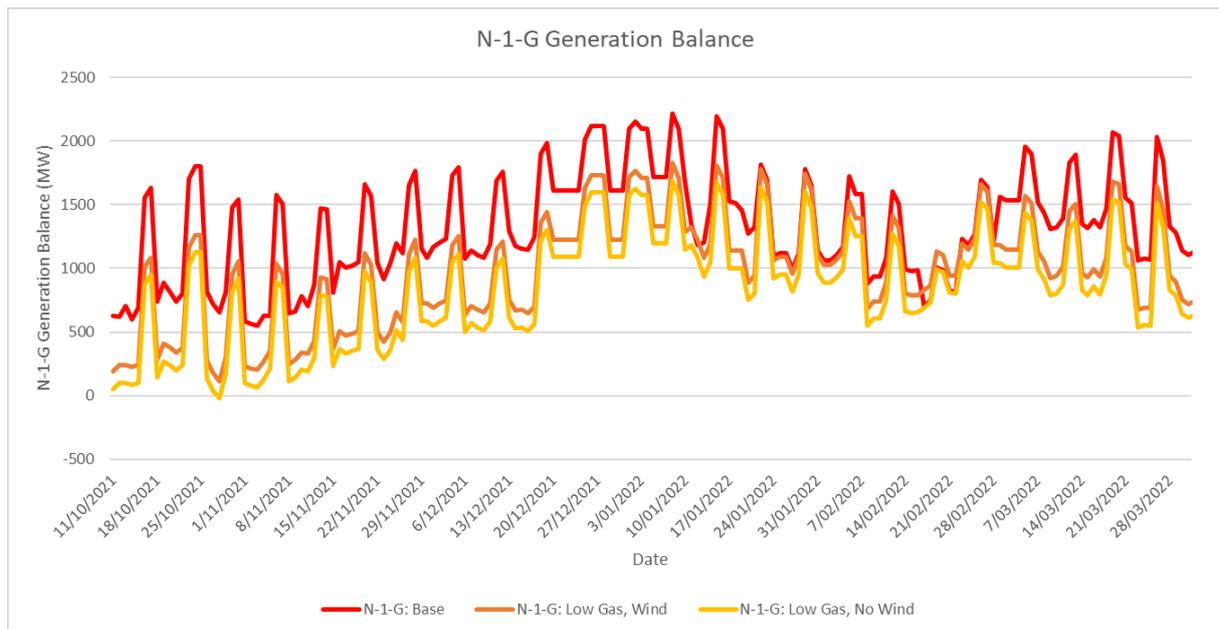


Figure 2: NZGB N-1-G Balance – Base Scenario



Further details of the predicted shortfalls are shown below in Table 1.

Table 1: Forecast base scenario shortfalls for the next six months

	Base Scenario		Low Gas, Wind Scenario		Low Gas, No Wind Scenario		Outages				
	N-1 Margin	N-1-G Margin	N-1 Margin	N-1-G Margin	N-1 Margin	N-1-G Margin	Generation		Transmission		HVDC
							NI	SI	NI	SI	
Thu, 28/10/2021	1020	653	633	111	487	-20	600	450	100	0	50

To mitigate the risk of a shortfall on the dates with low or negative generation balance forecast, market participants should:

1. avoid scheduling additional outages which may remove or constrain generation; and
2. adjust demand and generation offers to minimise any risk of shortfall.

WINTER SCENARIO RESULTS

No Winter Scenario results are provided, as the October Report does not cover any Winter months (June – August).

CHANGES SINCE THE AUGUST 2021 REPORT

There have been several changes to the NZGB model since the September 2021 Report.

1. Changes to HVDC Calculations to account for the grid reconfiguration from Judgeford Tee Project.
2. Correction to HVDC Plant Outage Blocks (HAY ICTs and SCs) to make NZGB include these outages in HVDC Transfer Limit calculations
3. Updated Winter Scenario Loads based on 2021 peaks
4. Added code to allow CUWLP Works to increase transfer limits (simple transmission constraints) following the completion of this project in April 2022.

The system operator is aware of upcoming generator commissionings and will be working with the relevant asset owners to ensure these are correctly included in NZGB.

The system operator is currently calculating the transfer limits for the NZGB simple constraints that will apply to South Island generation after the CUWLP duplexing works are complete.

To provide feedback on the changes to either the NZGB modelling or monthly report, please contact Christian Jensen (christian.jensen@transpower.co.nz). For more details on the NZGB modelling, please refer to the [User Guide](#).



NOTABLE GENERATOR OUTAGES

The total MW loss of generator outages that impact the generation balance for the period studied are shown in Figure 3. Note that this does not capture the impact of transmission outages. For more information please visit [POCP](#).

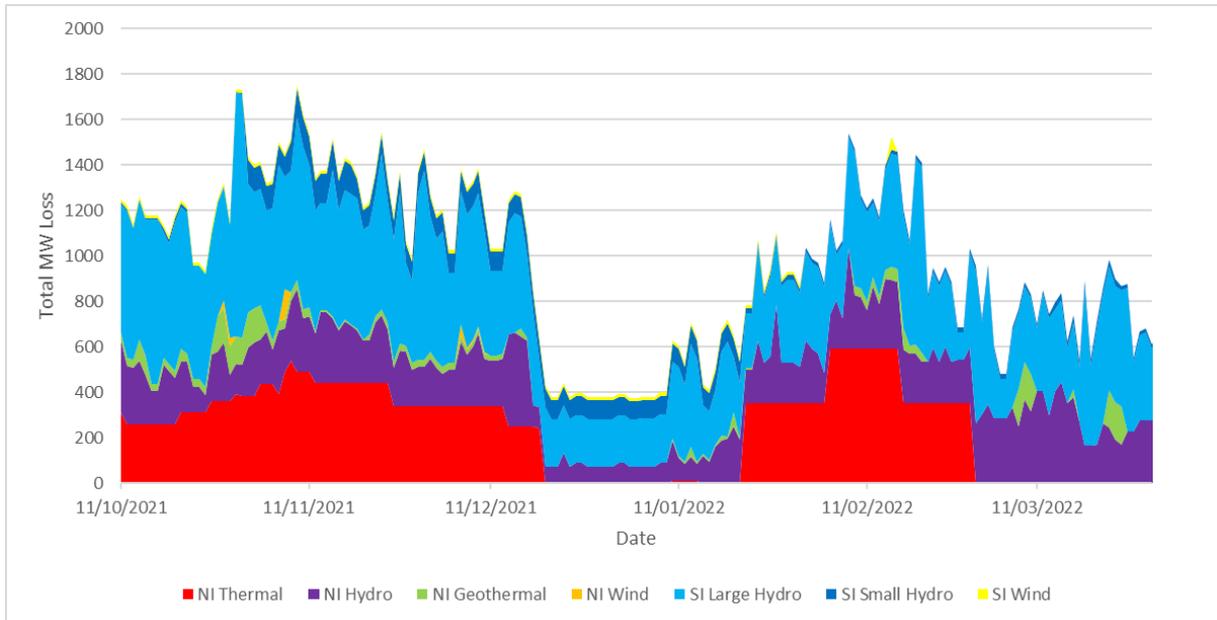


Figure 3: Total MW loss due to generation outages.

