

Security and Reliability Council

Annual Security Assessment Scenarios

8 November 2012

Note: This paper has been prepared for the purpose of SRC discussion. Content should not be interpreted as representing the views or policy of the Electricity Authority.

1 The annual security assessment identifies whether the security of supply standards will be met

- 1.1 The system operator is required to prepare and publish at least annually a security of supply assessment looking out at least five years, to assist parties to assess whether the security of supply standards are likely to be met (this assessment is typically referred to as the Annual Security Assessment, or ASA). The Code requires the ASA to be published with the necessary supporting information and assumptions. The system operator is required to consult with the industry on the content of the ASA before it is published, and is in the process of developing the ASA for 2013 for consultation.
- 1.2 The 2013 ASA will reference the revised winter energy and capacity margins that were discussed at the SRC meeting on 29 August 2012.
- 1.3 At that meeting the SRC discussed¹ the high level of uncertainty that currently exists in the market as a result of factors such as the flat load growth of the last five years, the future of some of the large industrial consumers and some of the older generation plant, the limited capital available for new generation investment, the rebalancing of retail positions due to changes in asset ownership and the influence of political factors such as the potential move to mixed ownership of the SOEs and the establishment of water rights under the Treaty of Waitangi. Given this uncertainty, it is important the 2013 ASA uses feasible and realistic scenarios that enable the full range of potential security of supply outcomes to be tested.
- 1.4 The summary results of the 2012 ASA are provided in section 3 of this paper (see next page) as a reference.

2 Requested Action

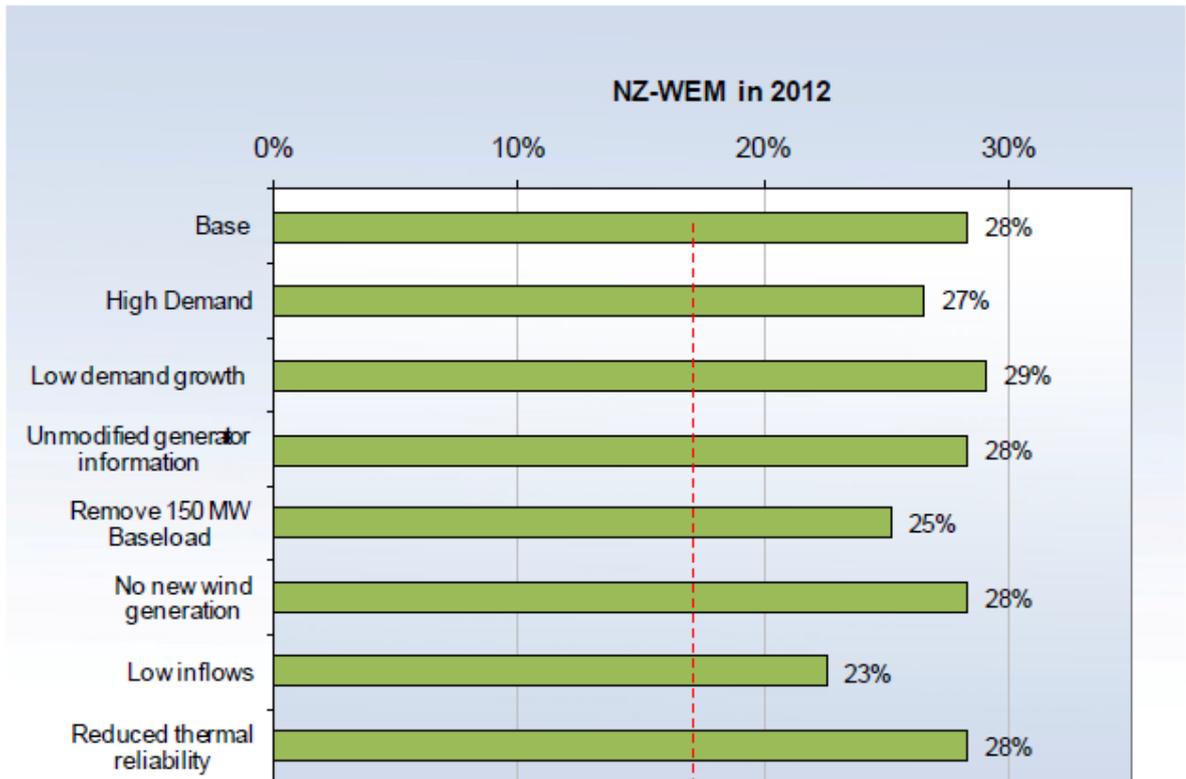
- 2.1 Do the scenarios outlined in the attached system operator presentation represent a feasible and realistic range of ASA scenarios? If not, what changes are required?

¹ The discussion was in relation to reliability of supply issues – see paragraph 33 of the minutes of meeting for more information.

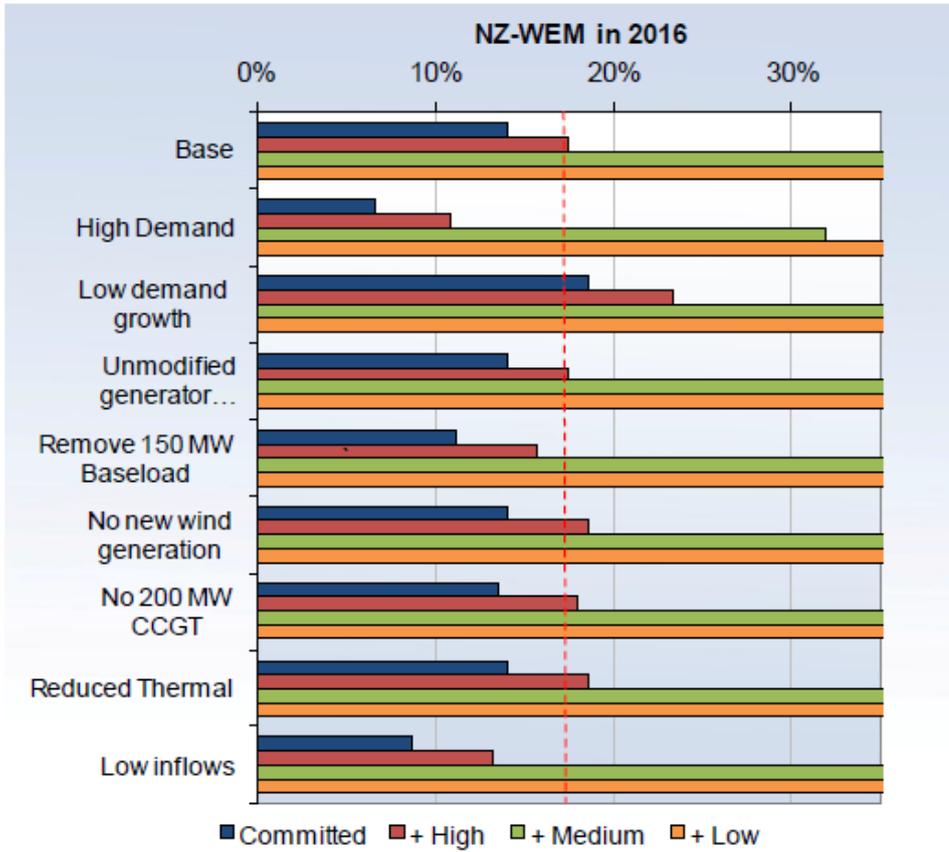
3 Results of the 2012 ASA

3.1 The 2012 ASA is available from the system operator's website at http://www.systemoperator.co.nz/f4571,65939993/ASA_2012_FINAL_Formatted_-_PUBLISH_Rev_3.pdf.

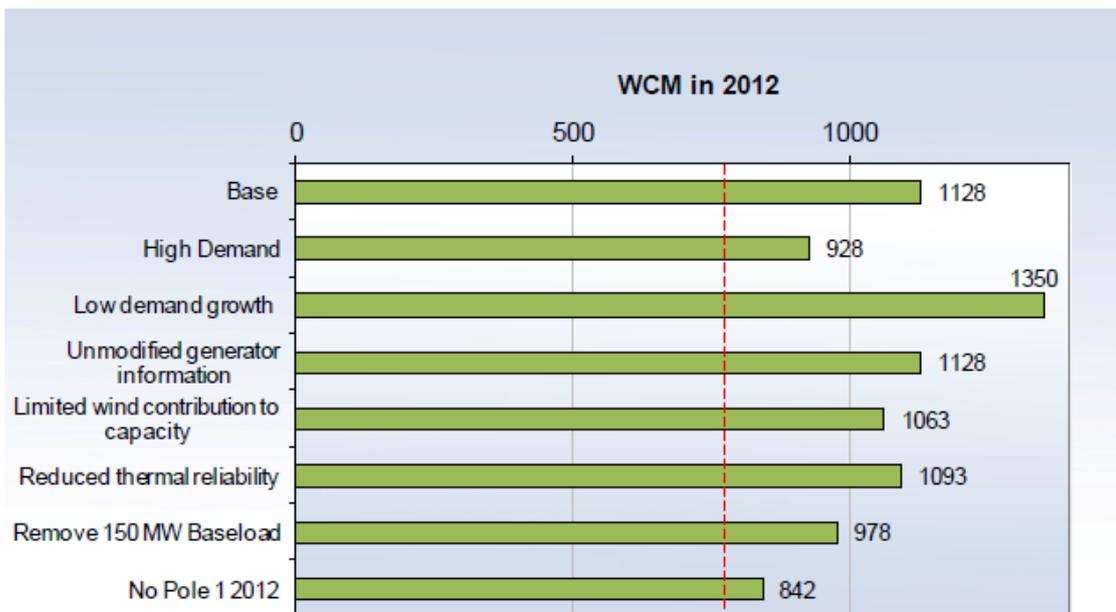
3.2 Sensitivity analysis for the New Zealand winter energy margin (NZ-WEM) in 2012:



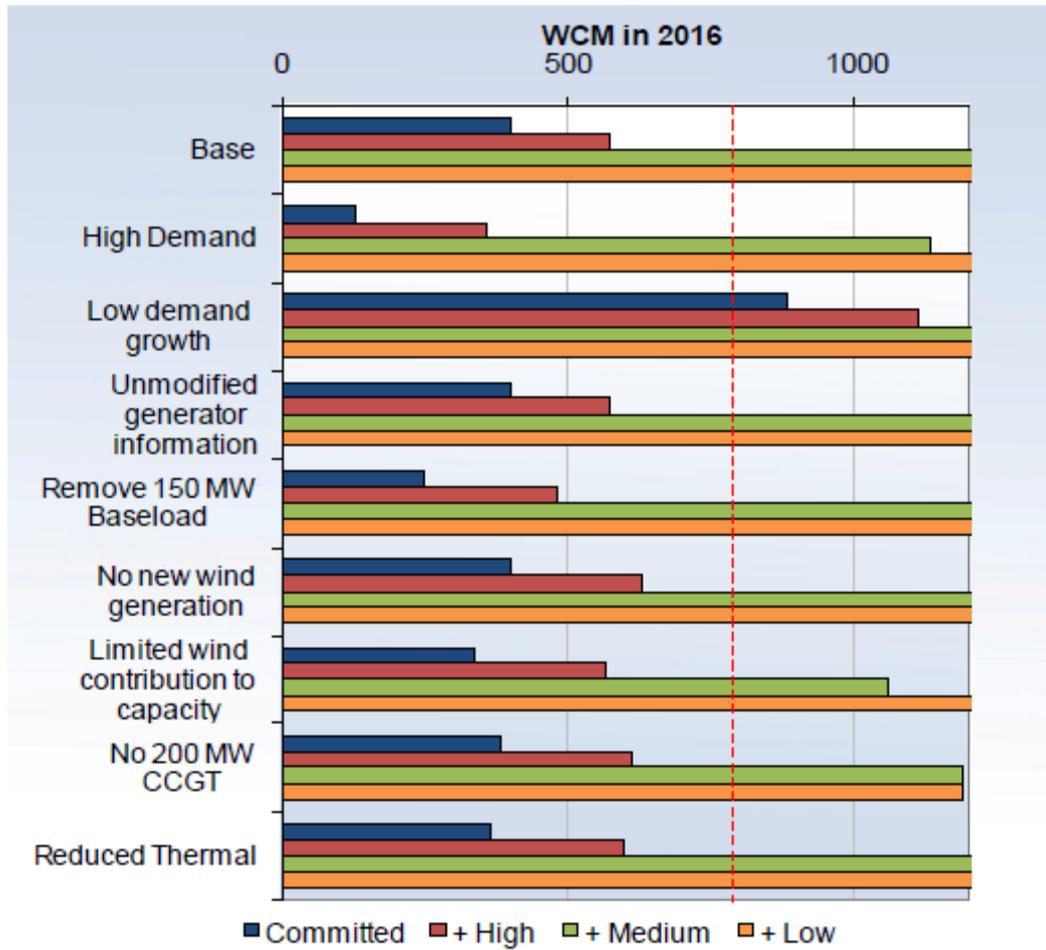
3.3 Sensitivity analysis for NZ-WEM in 2016 (where “committed”, “high”, etc. refer to the certainty of investment in identified new generation projects):



3.4 Sensitivity analysis for winter capacity margin (WCM) in 2012:



3.5 Sensitivity analysis for WCM in 2016 (with “committed”, etc. as per paragraph 3.3 above):



Annual Security Assessment Scenarios

Presentation to the SRC

8th November 2012



SYSTEM OPERATOR

Background

- The Annual Security of Supply Assessment (ASA) is yearly analysis of security margins
- It assesses the balance between demand and supply during the time of greatest stress on the system (Winter)
- In the ASA we deliver three main metrics:
 - Winter energy margin for New Zealand (NZ WEM)
 - Winter energy margin for the South Island (SI WEM)
 - Winter capacity margin for the North Island (NI WCM)
- There is a list of standards in the Code that sets limits for these metrics (17%, 30%, and 780 MW respectively*)

* Note that the EA have proposed changed to these limits – see appendix for details



Scenario Analysis

- In order to analyse the unavoidable uncertainty in forecasting the future the ASA takes a scenario based approach
- This approach is designed to test the limits of feasible future outcomes and their impact on security margins
- The scenarios are put together in a way such that they incorporate feasible and realistic future situations; while limiting scope to issues or scenarios that are relevant to security margins



Scenario Details

- **Demand growth:** Two scenarios looking at the impact of higher than expected (2.5% growth p.a.) and lower than expected demand growth (0.5% growth p.a.)
- **Unfavourable build conditions:** A scenario or collection of scenarios that look at the impact of generators being less likely to build new generation, or more likely to delay existing projects (the rationale for such actions are out of the scope of this work)
 - Sub-scenarios include looking at what if no new wind is built? What if only wind/geothermal is built (no new CCGT)? etc.
- **Low inflows:** A scenario to look at the impact of lower than average inflows into major catchments



Scenario Details, cont'd

- **Wind contribution to capacity:** A scenario to answer the regularly asked question of “What if wind doesn’t contribute anything to capacity?” – Baseline assumption is 20% contribution, this scenario tests the impact of 0%
- **Decommissioning of thermal plant:** A scenario to test the impact of further decommissioning of thermal plant (over and above two units at Huntly) – this scenario essentially covers the potential for very high fuels costs thus reducing thermal generation (therefore a separate scenario is not required)
- **Reduced thermal plant reliability:** A scenario to assess the impact of aging thermal (and other types as appropriate) generation plant being unable to supply the capacity and energy we expect



Scenario Details, cont'd

- **HVDC Scenarios:**
 - **No Pole 3 for Winter 2013:** Simple scenario to test the impact of pole 3 not being available in Winter 2013
 - **Limited SI transfer in dry years:** What are the impacts if we continue to observe significant constraint issues preventing full use of the HVDC in dry years
- **Tiwai Exit:** One or two scenarios to assess the impact of the Tiwai smelter shutting down (or a reduction in electricity requirements)



Appendix: Proposed changes to section 7.3 of the Code

- A consultation paper was released by the EA in July 2012 regarding changes to all the Security of Supply standards
- Consultation closed 7th August 2012
- The proposed changes are to modify the three standards such that, instead of a limit, ranges are used
- The objective of these changes is to provide better information on the efficiency of generation investment in a security of supply context
- Specific details:
 - Changing the NZ WEM from 17% to a range between 14-17%
 - Changing the SI WEM from 30% to a range between 26-30%
 - Changing the NI WCM from 780 MW to a range between 650-750 MW



Questions

