SECURITY OF SUPPLY FORECASTING AND INFORMATION POLICY

Issued by the Electricity Commission on 30 September 2010

1.1 Interpretation

(1) In this Policy, unless the context otherwise requires,—

hydro risk curves means the profile of New Zealand or South Island hydro storage over a calendar year which represents levels of risk of future electricity shortages

normal demand response means the demand reduction that typically occurs in the electricity market in response to periods of high spot prices and excludes any demand response that arises from energy savings campaigns or the forced rationing of demand

security of supply alert means the energy security of supply level at which the risk of shortage is between 4% and 10%

security of supply emergency means the energy security of supply level at which the risk of shortage is at least 10%

security of supply normal means the energy security of supply level at which the risk of immediate shortage is small

security of supply watch means the energy security of supply level at which the risk of shortage is between 1% and 4%

winter capacity margin means the difference between a measure of the expected capacity and expected demand from 1 April to 31 October between 7am and 10pm, expressed as a MW margin over demand

winter energy margin means the difference between the expected amount of energy that can be supplied and expected demand during the period 1 April to 30 September, expressed as a percentage of expected demand

(2) Any term that is defined in the Code and used but not defined in this Policy has the same meaning as in the Code.

1.2 Annual security of supply assessment

(1) The **system operator** must prepare and **publish** at least annually a security of supply assessment that contains detailed supply and demand modelling that—

(a) forecasts at least 5 years (given consent and construction timelines for new capacity); and

(b) enables interested parties to assess whether the electricity market is expected to be capable of meeting the energy security of supply standard and the capacity security of supply standard set out in clause

7.3(2) of the Code.

(2) The **system operator** must **publish** the annual security of supply assessment by 31 January each year, starting 2011.

(3) The **system operator** must consult with persons that the **system operator** thinks are representative of the interests of persons likely to be substantially affected by the annual security of supply assessment before **publishing** such an assessment.

(4) The annual security of supply assessment must include—

(a) capacity and energy margin assessments including projections of the **winter capacity margin**, the New Zealand **winter energy margin**, and the South Island **winter energy margin** measures based on the methodology set out in clauses 1.4 and 1.5; and

(b) sufficient details of the modelling data, assumptions, and methodologies that the **system operator** has used to prepare that information as to allow interested parties to recreate that information: and

(c) information on:

(i) the assumptions about existing generation and transmission capabilities; and

(ii) any generation, transmission or distribution outages; and

(iii) generation or transmission plant being removed from service; and

(iv) the likely availability of primary fuels and in particular any thermal fuel constraints; and

(v) any significant new generation and transmission options that the **system operator** considers may be commissioned within the following 5 years under various scenarios; and

(vi) uncertainty of demand and likely demand response in response to extremely low inflow sequences, periods of low wind speed and other unexpected supply disruptions; and

(vii) any other factors (such as electricity market dynamics) which the **system operator** expects to materially increase the risk to consumer supply over the next 5 years; and

(d) information on how the **system operator** will monitor energy and capacity margins.

(5) Nothing in this clause requires the **system operator** to **publish** any information that is confidential to any **participant**.

1.3 Weekly security of supply report

(1) The **system operator** must prepare and **publish** a weekly security of supply report.

(2) The weekly security of supply report must include—

(a) a comparison of storage in the hydro lakes with the **hydro risk curves**; and

(b) a riskmeter that indicates the current security of supply situation, expressed as—
  (i) security normal; or
  (ii) security watch; or
  (iii) security alert; or
  (iv) security emergency; and
(c) if the security of supply situation is not the same in all regions of New Zealand, a separate riskmeter for each region that has a different level of risk of electricity shortage.

(3) The weekly security of supply report must also include the following information regarding the previous four weeks, in an aggregated form:
(a) hydro lake storage and inflows:
(b) generation at key thermal plants:
(c) aggregated electricity demand:
(d) inter-island transfers:
(e) other information that will assist interested parties' understanding of the current security of supply situation.

(4) The **system operator** must also provide on the **system operator's** website information on the outlook for security of supply in a way that is able to be readily understood by medium to large sized electricity consumers in the commercial and industrial sectors.

1.4 Determining the winter energy margin

(1) The **winter energy margin** must be determined by dividing expected supply for the whole of New Zealand (or the South Island) by expected demand for the whole of New Zealand (or the South Island) and subtracting one.

(2) The **system operator** must review expected supply and expected demand when preparing the annual security of supply assessment**.**

(3) Expected supply (ES) must be determined by the following formula (all units in GWh):

ES = T + W + B + H

where—

T	is the maximum expected thermal generation available to meet winter (1 April to 30 September) energy demand allowing for forced and scheduled outages, available fuel supply and transmission constraints
W	is the expected winter (1 April to 30 September) wind generation based on long-run average supply

B — is the expected winter (1 April to 30 September) generation available from geothermal and cogeneration plants based on long-run average supply

H — is the expected winter (1 April to 30 September) hydro generation based on mean inflows and including expected 1 April start storage of 2750 (2400) GWh for New Zealand (South Island).

(4) The calculation of the South Island margin must account for the effect of transmission and other factors limiting the contribution of all North Island supply to South Island demand.

(5) Expected demand must be determined by forecasting the demand for electricity generation during the period 1 April to 30 September, at the points on the national transmission system at which generation enters the **grid**, allowing for the **normal demand response** to electricity prices.

(6) The **normal demand response** must be determined by estimating the demand reduction that typically occurs in the electricity market in response to periods of high spot prices and excludes any demand response that arises from energy savings campaigns or the forced rationing of demand.

1.5 Determining the winter capacity margin

(1) The **winter capacity margin** must be determined by subtracting a measure of North Island expected demand from North Island expected capacity.

(2) The **system operator** must review expected capacity and expected demand when preparing the annual security of supply assessment**.**

(3) Expected capacity (EC) must be determined by the following formula (all units in MW):

EC = T + W + B + H + DRIL + SI

where—

T — is the installed capacity of North Island thermal generation sources allowing for forced and scheduled outages

W — is 20% of North Island wind capacity

B — is the expected winter daytime (1 April to 31 October between 7am and 10pm) generation available from North Island geothermal plant, the aggregate of all North

	Island cogeneration plants, and the aggregate of all North Island uncontrolled hydro schemes
H	is the installed capacity of North Island controllable hydro schemes allowing for forced and scheduled outages and derated to account for energy and other constraints which affect output during peak times
DRIL	Expected demand response and interruptible load over the highest 200 half hours of winter demand (1 April to 31 October between 7am and 10pm)
SI	The effective contribution of South Island capacity to North Island demand accounting for factors such as transmission limits and South Island demand (1 April to 31 October between 7am and 10pm).

(4) Expected demand must be determined as the average of the highest 200 half hours of forecast North Island winter daytime demand (1 April to 31 October between 7am and 10pm) at the points on the national transmission system at which generation enters the **grid** (with losses added). Unless noted otherwise, the relevant timeframe for these calculations is winter daytimes, which is defined as 1 April to 31 October between 7am and 10pm.

1.6 Determining the hydro risk curves

(1) The **hydro risk curves** produced for the purposes of clause 1.3 of this Policy must be determined for New Zealand as a whole and for the South Island.

(2) The **hydro risk curves** must—

(a) take into account the expected availability and use of thermal generation, transmission constraints, and other factors that may impact on security of supply; and

(b) reflect the risk of future electricity shortages taking into account the range of likely inflows to hydro catchments; and

(c) reflect estimates of 1%, 2%, 4%, 6%, 8% and 10% risk of electricity shortages taking into account the range of likely inflows to hydro catchments.

(3) The **hydro risk curves** must be updated whenever there is a change in supply, demand, or transmission that is likely to yield a material change to the curves.