

Security of Supply Forecasting and Information Policy

Effective Date: 1 August 2019

1. Background

- 1.1 This Policy sets out the **system operator's** policy on information and forecasting for New Zealand and South Island security of supply. Security of supply in the context of this Policy is the New Zealand power system's present and future ability to meet electricity demand at a South Island and national level.
- 1.2 The **system operator's** principal objective under this Policy is to ensure, to the extent possible, the provision of high quality security of supply related information to all interested parties.
- 1.3 Other parts of the **Code** contain details about how the **system operator** will respond to emergencies and other security of supply situations. These include the **emergency management policy**, the **policy statement**, Part 9 of the **Code**, the **system operator rolling outage plan** and the clauses of the **Code** relating to **grid emergencies**.

2. Glossary

- 2.1 In this Policy, unless the context otherwise requires—

available hydro storage means hydro storage, including **contingent hydro storage** whether currently available or not, that, in the **system operator's** reasonable opinion, is controllable and available for generation of electricity from—

- (a) Lakes Tekapo, Pukaki, Te Anau, Hawea and Manapouri for the South Island; and
- (b) Lakes Taupo, Tekapo, Pukaki, Te Anau, Hawea and Manapouri for New Zealand; and
- (c) any other lakes the **system operator** decides to include under clause 5.1A of this Policy

Code means the Electricity Industry Participation Code 2010

contingent hydro storage means the additional hydro storage that becomes available for generation at a **contingent storage release boundary**

contingent storage release boundary means an **electricity risk curve** representing a level of risk of future shortage at which a resource consent grants the consent holder access to additional hydro storage

contingent storage release information means information about the **contingent hydro storage** currently available for generation

electricity risk curve means the New Zealand or South Island hydro storage level over a calendar year that represents a specific, quantified level of risk of future shortage determined by factoring in all **available hydro storage**, which may include a floor under clause 6.1A

rate of decline methodology is the methodology developed by the **system operator** under clause 7A.1

SOSA means the annual security of supply assessment referred to in clause 7.3(1)(a)(i) of the **Code**.

2.2 References in this Policy to “energy”, “supply”, “demand”, “generation”, “capacity” and “shortage” are references to electrical energy, the supply of electricity, the demand for electricity, the generation of electricity, the capacity to generate electricity and the shortage of electricity.

2.3 *Revoked*

2.3A Each requirement in this Policy relating to **available hydro storage**, **electricity risk curves**, electricity risk meter status and hydro storage projections applies separately to New Zealand and the South Island.

2.4 An obligation of the **system operator** under this Policy to make information publicly available may be satisfied by the **system operator** publishing the information on the **system operator** section of the **Transpower** website.

2.5 Any term in bold that is defined in the **Code** and used but not defined in this Policy has the same meaning as in the **Code**.

3. Confidential information and forecasts

3.1 Nothing in this Policy requires the **system operator** to make available (publicly or otherwise) any information that is confidential to any person. However, the **system operator** may make confidential information available under this Policy in such a way that the subject of the confidential information cannot reasonably be ascertained.

3.2 In order to perform its obligations under this Policy the **system operator** is likely to be required to make projections about the future based on information that is historical, incomplete or not reasonably verifiable by the **system operator**. In making such projections the **system operator** is not obliged to do more than act as a reasonable and prudent system operator in accordance with clause 7.1A of the **Code**.

4. *Revoked*

5. **Determining hydro storage**

5.1 The **system operator** must determine **available hydro storage** and **contingent hydro storage** using reasonably reliable information about **available hydro storage** and **contingent hydro storage** that is known to the **system operator**.

5.1A The **system operator** may include any other lake in its determination of **available hydro storage** and **contingent hydro storage** for the South Island or New Zealand, in addition to those lakes named in paragraphs (a) and (b) of the definition of **available hydro storage**, if material and reasonably reliable information about the controllable and available hydro storage from that lake becomes known to the **system operator**. The **system operator** must make publicly available any decision it makes to include a lake under this clause.

5.2 *Revoked*

5.3 The **system operator** must make publicly available the inputs and assumptions it has used to determine **available hydro storage** and **contingent hydro storage**.

6. Determining the electricity risk curves

6.0 The **system operator** must determine and make publicly available the **electricity risk curves** for the next calendar year on or before 30 April of the current calendar year.

6.1 The **electricity risk curves** must—

(a) assume full availability of installed transmission and generation **assets**, unless reasonably reliable information is known to the **system operator** that indicates otherwise; and

(aa) assume generation **assets** are not subject to constraints on the availability of thermal fuel, including delivery constraints, unless reasonably reliable information is known to the **system operator** that indicates otherwise; and

(b) assume short-term market behaviour that seeks to minimise use of hydro storage; and

(c) model the uncertainty of future inflows to hydro catchments using reasonably available historical records of those inflows; and

(d) show the 1%, 4%, and 10% risks of future shortage; and

(da) show the level of storage at which an official conservation campaign would be commenced under clause 9.23 of the Code; and

(db) show the level of storage at which an official conservation campaign would be ended under clause 9.23A of the Code; and

(e) show any other risk of future shortage that triggers the availability of **contingent hydro storage**.

6.1A If an **electricity risk curve** is a **contingent storage release boundary** then the **electricity risk curve** must include a floor equal to:

(a) the amount of **contingent hydro storage** linked to the **electricity risk curve**; plus

- (b) the amount of **contingent hydro storage** linked to **electricity risk curves** representing higher levels of risk of future shortage (if any); plus
 - (c) a buffer of 50 GWh unless the system operator determines a different buffer and makes it publicly available.
- 6.1B The buffer referred to in clauses 9.23(1)(ab)(ii) and 9.23(2)(ab)(ii) of the **Code** is 50 GWh unless the **system operator** determines one or more different buffers and makes them publicly available.
- 6.1C A **contingent storage release boundary** that uses a risk of future shortage of 4% is termed the Alert Release Boundary and is the subsequent equivalent regulatory arrangement to the use of Alert status for the triggering of access to **contingent hydro storage**.
- 6.2 The **system operator** must make publicly available the inputs and assumptions it has used to determine the **electricity risk curves**.
- 6.3 The **system operator** must review, and if necessary update, the inputs and assumptions it has used to determine the **electricity risk curves**—
- (a) when—
 - (i) the **system operator** becomes aware of new reasonably reliable information that the **system operator** considers may yield a material change to the **electricity risk**; or
 - (ii) *revoked*
 - (iii) *revoked*
 - (iv) the **system operator** considers that a change to an electricity risk meter status from Alert to Emergency is imminent; and
 - (b) in any event, at least once per calendar month.
- 6.4 The **system operator** must change the **electricity risk curves** to reflect any update to the inputs and assumptions, if necessary. However, the **system operator** is not required to change the **electricity risk curves** for any months preceding the update to the inputs and assumptions.
- 6.5 Any change the **system operator** makes to the **electricity risk curves** applies from the date the change is made.
- 6.6 The **system operator** must consult with **participants** on its determination of the **electricity risk curves**, and, where reasonably practical, on each update to the **electricity risk curves** before making them publicly available.
- 6.7 The **system operator** must make publicly available any change to the **contingent storage release information** as soon as reasonably practicable.

7. **Revoked**

7A. Determining the electricity risk meter status

- 7A.1 The **system operator** must develop and make publicly available a methodology for forecasting the time to an **official conservation campaign** based on the rate of decline in **available hydro storage**.
- 7A.2 The **system operator** must determine the electricity risk meter status as follows for both the South Island and New Zealand—
- (a) Normal: the **rate of decline methodology** indicates an **official conservation campaign** would not be commenced under clause 9.23 of the **Code** within 8 weeks
 - (b) Watch: the **rate of decline methodology** indicates an **official conservation campaign** would be commenced under clause 9.23 of the **Code** within 8 weeks and not within 3 weeks
 - (c) Alert: the **rate of decline methodology** indicates an **official conservation campaign** would be commenced under clause 9.23 of the **Code** within 3 weeks
 - (d) Emergency: the **system operator** has commenced an **official conservation campaign** under clause 9.23 of the Code and has not ended it under clause 9.23A of the Code
- 7A.3 If the electricity risk meter status for New Zealand is the same as for the South Island, a single energy risk meter status for New Zealand and the South Island only is required 7A.4 The **system operator** must make publicly available any change to the electricity risk meter status.

8. *Revoked*

9. *Revoked*

10. Annual security of supply assessment

- 10.1 The **system operator** must prepare and make publicly available at least annually a security of supply assessment that contains detailed supply and demand modelling that—
- (a) forecasts at least 5 years; and
 - (b) enables interested parties to assess whether the energy security of supply standard and the capacity security of supply standard set out in clause 7.3(2) of the Code are likely to be met over that period.
- 10.2 The system operator must make publicly available the annual security of supply assessment by 30 April each calendar year.
- 10.3 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 **SOSA** before making it publicly available.

10.4 In addition to the information referred to in clauses 7.3(1)(a)(i) and 7.3(2C) of the **Code**, but subject to clause 7.3(2D) of the **Code**, the **SOSA** must include—

- (a) capacity and energy margin assessments including projections of the North Island **winter capacity margin**, the New Zealand **winter energy margin**, and the South Island **winter energy margin**; and
- (b) sufficient details of the inputs, assumptions, and methodologies that the **system operator** has used to prepare that information as to allow interested parties to recreate that information; and
- (c) without limiting subclause (b) of this clause, information, including the **system operator**'s assumptions, about—
 - (i) existing generation and transmission capabilities; and
 - (ii) expected generation and transmission outages; and
 - (iii) generation and transmission assets to be removed from service; and
 - (iv) the availability of primary fuels and in particular thermal fuel constraints; and
 - (v) significant new generation and transmission assets to be commissioned; and
 - (vi) **demand** and **demand** reduction that occurs in response to periods of high **wholesale market** spot prices, excluding any **demand** reduction from energy savings campaigns or the forced rationing of **demand** and
 - (vii) any other factors (such as electricity market dynamics) that the **system operator** expects to materially affect security of supply; and
- (d) information on how the **system operator** will monitor energy and capacity margins.

11. Weekly security of supply report

11.1 The **system operator** must prepare and make publicly available a weekly security of supply report.

11.2 The weekly security of supply report must include—

- (a) a comparison of **available hydro storage** with the **electricity risk curves**; and
- (b) *revoked*
- (c) the electricity risk meter status; and
- (d) the **contingent storage release information**.

11.3 The weekly security of supply report must also include the following information relating to the previous 4 weeks, in an aggregated form—

- (a) hydro storage and catchment inflows; and
- (b) generation at key thermal **generating stations**; and
- (c) **demand**; and
- (d) inter-island transfers; and
- (e) other information that will assist interested parties' understanding of the current security of supply situation.

11.4 *Revoked*

12. Hydro storage projection

12.0 The **system operator** must prepare and make publicly available a hydro storage projection for each calendar year by 31 January of that calendar year.

12.0A The **system operator** must review and, if necessary, update the hydro storage projection by 30 April of the calendar year to which it relates.

12.1 The hydro storage projection must project **available hydro storage** for the calendar year using the following inputs—

- (a) current **available hydro storage**; and
- (b) the historical range of inflows for hydro catchments; and
- (c) expected availability and use of transmission and generation **assets**; and
- (d) expected **demand**; and
- (e) the **electricity risk curves**; and
- (f) any other reasonably reliable information known to the **system operator** that the **system operator** considers to be relevant to the hydro storage projection.

12.2 *Revoked*

12.3 While the electricity risk meter status is Watch or Alert, the **system operator** must review and, if necessary, update the hydro storage projection at least once per calendar month.

12.4 While the electricity risk meter status is Emergency, the **system operator** must review and, if necessary, update the hydro storage projection at least once per calendar week.

12.5 *Revoked*

12.6 *Revoked*

13. Thermal Fuel Supply Disruptions

13.1 *Revoked*

- 13.2 The **system operator** must develop and make publicly available scenarios for potential thermal fuel supply disruptions.
- 13.3 These scenarios must consider the power system's ability during thermal fuel supply disruptions to meet the following—
- (a) peak **demand**; and
 - (b) ongoing energy consumption.
- 13.4 The **system operator** must review and, if necessary, update these scenarios from time to time to ensure they remain current.