Energy Security Board
Forecasting Technical Working Group

Defining and calculating the reliability gap

Issues Paper

Introduction

The purpose of this paper is to facilitate discussions with Jurisdictions and the Technical Working Group (TWG) on the detailed design element of the calculation of the reliability gap. Following the SCO Reference Group and TWG meetings, a more detailed technical working paper will be developed. The technical working papers and draft final design document will be available for public consultation in mid-June.

High level design

The Guarantee is intended to contribute to system reliability by incentivising and facilitating adequate investment in dispatchable generation. Partly, this will be achieved through best practice forecasting of the demand-supply balance, with system participants incentivised to close any forecast 'supply gap' deemed inconsistent with the reliability standard.

In addition to being underpinned by best-practice forecasts, it is important that the methodology for defining and calculating the reliability gap is fit for purpose – as it may affect system reliability, system costs and the distribution of those costs.

The ESB has agreed the following design elements relating to forecast methodology and accountability:

- Using the Electricity Statement of Opportunities (ESOO), AEMO will forecast whether the reliability standard is likely to be met (or not) in any NEM region over a 10-year outlook period. If the reliability standard is unlikely to be met, AEMO will identify the size of any reliability gap in supply/demand response.

- If, three years from the period in question, a material reliability gap continues to exist or a new material reliability gap emerges, as a result of a generator giving notice that it intends to close, then the process to trigger the retailer reliability obligation will occur, and retailers may be expected to demonstrate future compliance.

Detailed design elements for TWG input

1. How should the reliability gap be determined?

2. What are the possible approaches to translate the current reliability standard (calculated using a probabilistic approach) into a target that expresses the required investment?

3. What assessment criteria / guidelines (quantitative versus qualitative) could be established to assess whether a reliability gap is material?

4. How should the forecast reliability gap be communicated to participants? Especially in the lead up to the time the reliability obligation would be triggered (3 years ahead), and the time in respect of which liable entities will have covered their share of the reliability gap (1 year ahead)?

5. Should participants be given notice (say 3 months) of the forecasts in advance of these?

6. How can liable entities be informed of changes in the reliability outlook in between ESOO forecasts?

1. How should the reliability gap be determined?

Currently AEMO, through the Electricity Statement of Opportunities (ESOO), provides information to market participants on the outlook for supply and demand and the likelihood of breaching the reliability standard in each region over the next 10 years.

Going forward to support the Guarantee, the ESOO will publish a forecast of reliability and any reliability gap in reliability in each region for each year over the next 10 years. These forecasts will detail the pipeline of potential generation projects over the forecast period along with the progress of their development. Subject to the AEMC's consideration of a rule change to require 3 years notice of major power stations' closure, they will also incorporate more certain information around the timing of retirements and an assessment of what they mean for reliability in relevant regions.

There are a number of considerations which will need to be taken into account in translating ESOO forecasts into a reliability gap. For example:

- The degree of uncertainty in the forecasts 3 years ahead of a gap i.e. the point in which a 'materiality' assessment is made under the Guarantee.

- How predictable biases in the forecasts are taken into account. For example, information not yet available around build or retirement.

Questions:

- What possible approaches can be used to translate the current forecast of reliability (calculated using a probabilistic approach) into a reliability gap in reliability that represents any required investment?

- What data and information sources should be used to support the calculation of the reliability gap?

- How should uncertainty in forecasting input data be managed?

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2. What assessment criteria / guidelines could be established to assess whether the reliability gap is 'material'?

Once a reliability gap has been identified, a set of assessment criteria / guidelines will need to be developed to decide whether the reliability gap is material. Criteria could include an assessment of the costs and benefits of triggering the reliability obligation, the degree of uncertainty in forecasting information, and the quantum and expected duration of the gap.

It will be important that the basis for determining whether a gap is sufficiently 'material' to warrant obligations is clearly defined, and transparently communicated, to support retailers and other liable entities to predict their potential liability under the Guarantee and the market to close the gap (for example by building/bringing on new capacity or delaying retirement decisions) as effectively as possible.

For example, materiality could be determined as a percentage value - the scale of forecast capacity shortfall as a percentage of maximum demand - persisting in a region for a given period of time.

Questions:

- What measures could be used to assess the extent of the reliability gap and whether it is material?

- Could the assessment criteria consist of quantitative/qualitative measures or a mixture of both types of measures? If so, what factors (for example, scale, duration etc) would be better managed through a quantitative versus qualitative approach?

- In determining assessment criteria, how should predictability (i.e. a clear basis for liable entities to be able to predict in advance whether the reliability guarantee will be triggered) be balanced with flexibility to accommodate changing market circumstances? How should the likely costs of triggering the obligation be factored into the assessment?

3. How should retailers be informed of changes in the reliability outlook in between ESOO forecasts?

Currently, AEMO publishes regional reliability forecasts over a 10-year outlook in the ESOO and Medium Term Projected Assessment of System Adequacy (MT PASA) on a weekly basis to a daily resolution, covering a 2-year period. MT PASA provides a weekly assessment of system reliability, including provision of information on demand, supply and network conditions for the purpose of helping participants plan outages. Consequently, the MT PASA tends to change as participants put placeholders for outages in the outlook and then firm these up nearer the time, taking account of their own plans and the overall position.

Under the Guarantee the reliability obligation would be triggered by an ESOO forecast but liable entities may want to monitor changes to the outlook in between ESOO forecasts. In particular, liable entities will want to be able to predict, with some confidence, whether the Procurer of Last Resort Function is likely to be triggered 1 year out from a forecast gap to minimise the risk of being deemed non-compliant and potentially incurring significant costs should AEMO's procurement of resources be recovered from liable entities based on the degree to which they have complied with their contracting obligations.

Questions:

- Would any changes to MT PASA help provide information on how the ESOO outlook is likely to change?

- Is there a need for more frequent updates to forecasts (for example, between 3 years and 2 years out from a forecast gap) to facilitate an efficient market response?

Interdependencies with other elements of the Guarantee

- Forecasting – methodology and accountability

- Forecasting – independent trigger

- Contracts - Procurer of Last Resort