
Reliability Forecasting Methodology Issues Paper Addendum

May 2019

Clarification on the methodology proposed for
calculating the reliability gap period and likely
trading intervals

1. Purpose

In the April 24 Forecasting Reference Group (FRG) meeting, a number of stakeholders requested further details on the reasoning behind the settings and methodology proposed in AEMO's Issues Paper¹ for identifying the reliability gap period and the likely trading intervals. This document outlines some of the reasoning AEMO has considered in its proposed settings. The document is intended to provide additional detail to facilitate discussion about the reasonableness of the proposed approach in the Reliability Forecasting Methodology workshop on 9 May 2019.

2. Background

A key component of the Retailer Reliability Obligation (RRO) is the determination and specification of the reliability gap. A reliability gap is determined to exist in a given financial year if the expected level of unserved energy (USE) exceeds the reliability standard.

When a reliability gap is determined to exist, AEMO's reliability instrument request must outline:

- The first and last days of the forecast reliability gap period; and
- The trading intervals, during the forecasting reliability gap period, for which liable entities may be required to hold net contract positions that are sufficient to meet their share of the one-in-two year peak demand forecast for the reliability gap period.

AEMO proposes to outline the first and last days of the reliability gap period by identifying months where USE is likely to occur. Within this period, AEMO is proposing to identify the likely trading intervals by specifying a time-of-day range and whether this applies to weekends within any of these months. This document outlines AEMO's reasoning behind the choice of measure and thresholds.

3. Discussion

In developing the approach to calculate the reliability gap period and the likely trading intervals, AEMO has applied some key principles:

- Stable – outcomes should be stable, so if recalculated with new random samples of generator availability the results would remain broadly similar.
- Consistent – the criteria should be able to be applied consistently across NEM regions.
- Explainable – the criteria should be easy to explain and easy for stakeholders to verify to ensure transparency of the process.
- Reasonable – the approach should balance the inclusion of all periods where USE might occur in the reliability gap period against the cost of having contract cover across these periods.

Stable

Modelled USE outcomes are uncertain, due to the impact of generator forced outages. Many samples are needed to give stable annual USE outcomes.

At the annual level, observed USE is stable given the number of simulations conducted in the ESOO. However, when considering smaller periods (such as a particular time-of-day), the impact of outliers increases and more samples would be required to increase the stability of observed USE quantities.

AEMO has observed that the LOLP measure is much more stable, because it is not impacted by large outliers. AEMO therefore proposes to use the LOLP measure to minimise the risk of disjointed periods of USE (for

¹ See <http://aemo.com.au/Stakeholder-Consultation/Consultations/Reliability-Forecasting-Methodology-Issues-Paper>.

example, where an outlier trading interval such as 11.00 am is above the USE threshold due to coincident outages in a small number of samples).

Consistent and explainable

The LOLP measure is also able to be consistently applied to all regions, independent of their size. Other measures, such as the quantity of USE in MWh, would need to be adjusted for the relative size of each region.

A percentage USE measure would also be able to be consistently applied, but in addition to the stability issues identified above, would also be difficult to explain.

For example, for a given time-of-day, the percentage USE would need to be a very small value (if annual USE was 0.002%, the USE in a given hour might only be 0.00025% of annual demand). The thresholds applied to months, weekends, and time-of-day would appear to be very different, given the relative size of the periods.

A USE percentage measure would also change based on the modelling resolution. The resolution is currently hourly but could move to half-hourly or even 5-minute as computational capabilities increase over time.

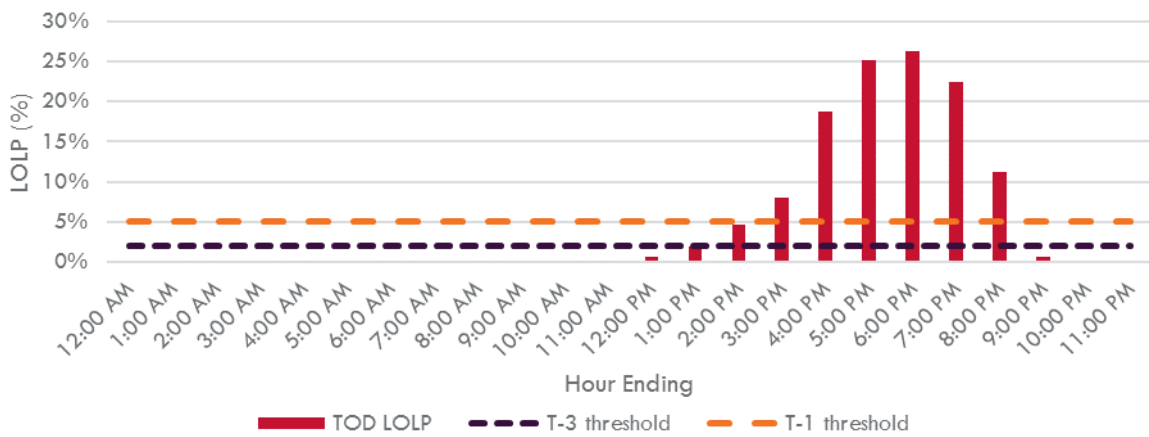
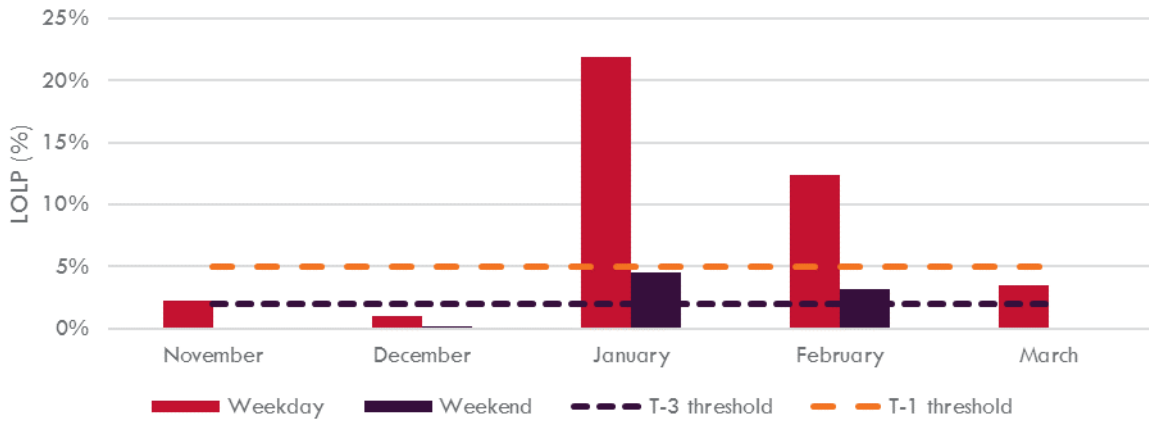
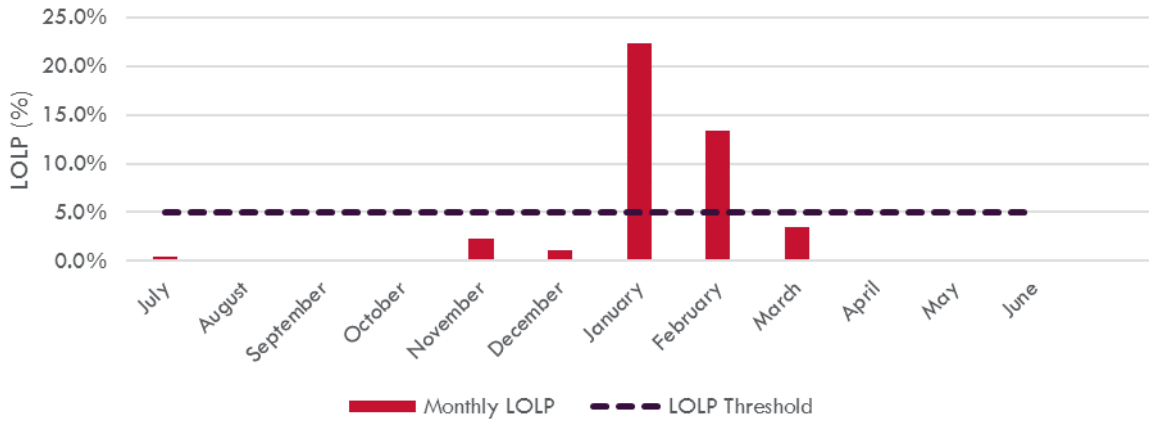
Reasonable

Monte Carlo simulations can result in unlikely outcomes which are at the bounds of what is statistically possible, but are highly unlikely. AEMO's criteria should exclude such outliers to ensure contract obligations do not cover periods where USE is very unlikely. The larger the reliability gap period is, the higher the cost will be for contracting, with diminishing impacts on regional reliability outcomes.

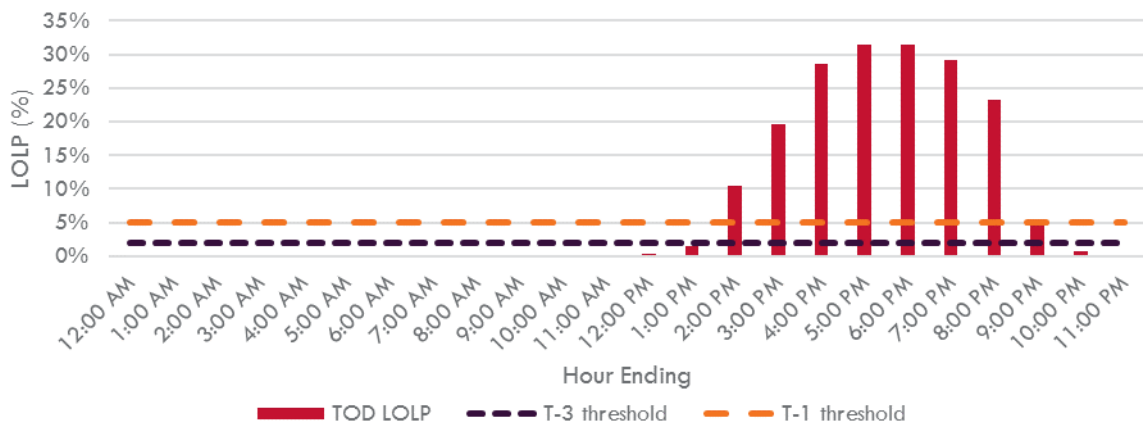
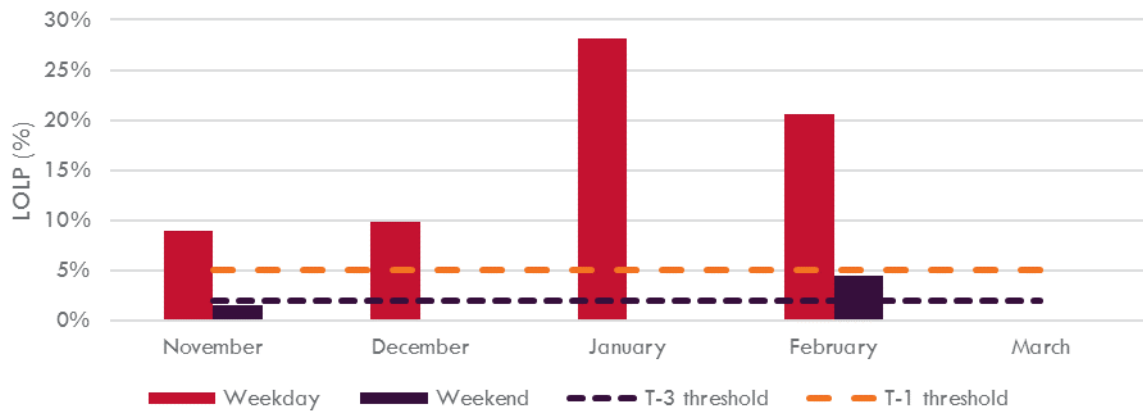
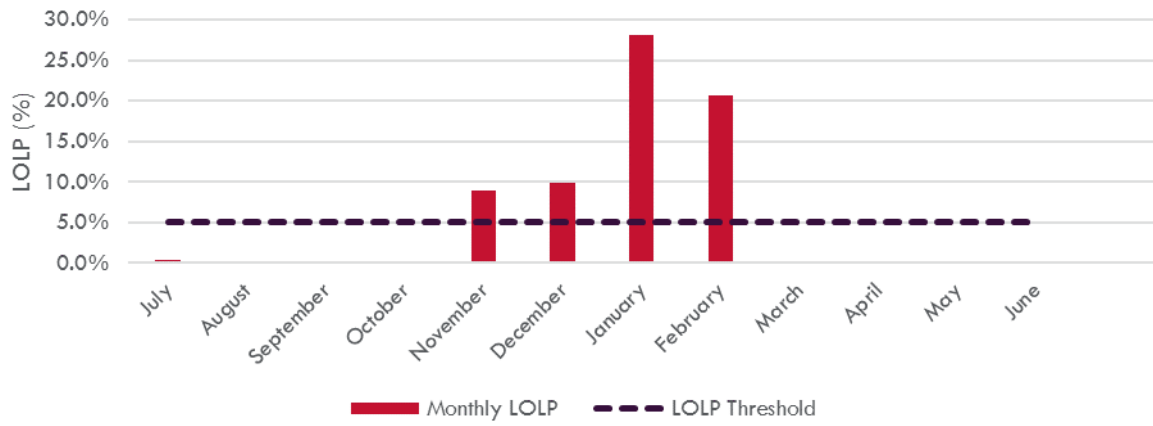
A number of examples are provided on the following pages which show USE outcomes from the 2018 ESOO against the proposed thresholds. These examples show years where the expected level of USE was at or just above the reliability standard.

AEMO considers that the thresholds proposed represent an appropriate balance between including the majority of likely periods but not extending to outliers.

Victoria 2018-19



New South Wales 2023-24



South Australia 2024-25

