INDEPENDENT
MARKET
OPERATOR

Final Report:
2014 Relevant Level Methodology Review

12 December 2014

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1. Background

Under clause 4.11.3C of the Wholesale Electricity Market (WEM) Rules (Market Rules), the IMO must conduct a review of the Relevant Level Methodology (methodology) every three years. The methodology, which is specified in Appendix 9 of the Market Rules, is used by the IMO to determine the quantity of Certified Reserve Capacity for a Facility, where the Market Participant has applied for certification of the Facility (usually an Intermittent Generator) under clause 4.11.2(b).

The first review, for the three year period commencing on 1 January 2015, is required to be completed by 1 April 2015. Clause 4.11.3C requires the IMO in conducting a review to:

- examine the effectiveness of the methodology in meeting the Wholesale Market Objectives; and
- determine the values of the parameters K and U in step 17 of the methodology to be applied for each of the next three Reserve Capacity Cycles.

Clause 4.11.3D of the Market Rules requires the IMO to publish a Draft Report for each review and invite submissions from Rule Participants and any other stakeholders the IMO considers should be consulted. At the conclusion of a review the IMO must, under clause 4.11.3E, publish a Final Report containing:

- details of the IMO's review of the methodology;
- a summary of the submissions received during the consultation period;
- the IMO's response to any issues raised in those submissions;
- the values of the parameters K and U determined under clause 4.11.3C; and
- any recommended amendments to the methodology which the IMO intends to progress as a Rule Change Proposal.

The IMO engaged Sapere Research Group (Sapere) to assist it with the first review (2014 Review), which commenced in August 2014. This 2014 Review is now complete. The Final Report required under clause 4.11.3E comprises this report and Sapere's Final Report.

Copies of Sapere's Draft Report and Final Report, along with a copy of the one submission received by the IMO during the public consultation period, are available on the Market Web Site at www.imowa.com.au/2014_RL_Methodology_Review.

2. Sapere's Draft Report

In its Draft Report, Sapere noted that the lack of Intermittent Generator performance data for high temperature days continues to be a problem, making assessment of the methodology challenging and dependent on some degree of judgement. However, Sapere concluded that overall the methodology appears to provide a reasonable estimate of the capacity value provided by Intermittent Generators.

Sapere assessed the effectiveness of the methodology in meeting the Wholesale Market Objectives by considering its accuracy, robustness, volatility and practicality, concluding that the methodology has performed reasonably against all four criteria.

Sapere reviewed various aspects of the methodology, including:

- the overall method, including the use of Load for Scheduled Generation (LSG) to select peak Trading Intervals;
- the K-factor adjustment;
- the U-factor adjustment and the issue of Intermittent Generator output being correlated with demand at extreme peaks; and
- other matters relating to the selection of Trading Intervals.

Significant effort was devoted to assessing whether a viable alternative to the current U-factor adjustment was possible. Two options were examined in detail. The first option, to select Trading Intervals from extreme temperature days only, was rejected due to a lack of suitable Trading Intervals. The second option, which involved using a regression approach to forecast Intermittent Generator output on extreme peak days based on maximum daily temperature, was also rejected as the results were found to be volatile and not significantly superior to the current method.

Sapere recommended that the current U-factor adjustment be retained, given that no valid alternative could be found. Further, based on its assessment of the historical data Sapere found no justification for a change to the current value of the parameter (0.635).

Sapere concluded that the other components of the methodology remained appropriate and recommended no changes.

To revise the K parameter value, which was originally based on international benchmarks, Sapere used information on the distribution of the forecast for peak demand and the probability theory to estimate a K parameter value specific to the WEM. In determining the final value to be applied Sapere also took into consideration how the Intermittent Generator output is calculated. The results from the two steps offset each other, leading Sapere to recommend a revised K parameter value of zero.

In summary, Sapere made the following recommendations in its Draft Report:

- no changes to the Market Rules;
- a reduction in the K parameter value from 0.003 to 0.000; and
- retention of the current U parameter value of 0.635.

3. Public consultation process

On 22 October 2014 the IMO published Sapere's Draft Report and an invitation to Rule Participants and any other interested stakeholders to provide submissions on the report (Invitation to Provide Submissions) on the Market Web Site. A notice inviting submissions was also issued to all recipients of the IMO's weekly RulesWatch publication on this day. The consultation period was four weeks in length and closed on 19 November 2014.

3.1 Public workshop

The IMO also invited interested parties to participate in a public workshop on the Draft Report. The workshop was held in the IMO's office on 5 November 2014. Attendees of the workshop were:

- Allan Dawson (IMO, Chair);
- Richard Tooth (Sapere, presenter);
- Anders Sangkuhl (Alinta Energy);
- Shane Cremin (APA Group);
- Steve Gould (Community Electricity);
- Mia Threnoworth (Synergy); and
- Jenny Laidlaw, Tim Middlehurst and Greg Ruthven (IMO).

Dr Richard Tooth gave a presentation on how Sapere had conducted the review and reached the conclusions documented in the Draft Report. The following points were discussed.

- There was some discussion about the inherent difficulties in forecasting outcomes for what is, by definition, a very rare event.
- In response to a query from Mr Shane Cremin, Dr Tooth reiterated the reasons for using LSG to select the peak Trading Intervals, as outlined in Sapere's Draft Report.
- Mr Cremin suggested that there may be some inconsistencies between the methodology and other calculations that are included in, or are proposed to be included in the Market Rules. For example, Mr Cremin noted that the proposed calculation of available spare capacity in the Rule Change Proposal: Changes to the Reserve Capacity Price and the Dynamic Reserve Capacity Refunds Regime (RC_2013_20)[1] took Outages into consideration and queried whether the methodology could be failing to select days in shoulder periods when available capacity was very low. Both the Chair and Dr Tooth considered that this would indicate a problem to be addressed with the Outage planning process rather than the methodology.
- Mr Cremin questioned whether it was appropriate to consider a 43.8 degree day in the analysis or whether this temperature was too extreme. The Chair noted that in recent years this temperature had been reached both in the South West interconnected system (SWIS) and other Australian states.

No other issues with the methodology or suggestions for alternative approaches were raised by attendees. A copy of Dr Tooth's presentation is available on the Market Web Site at www.imowa.com.au/2014_RL_Methodology_Review.

3.2 Submissions received

The IMO received one submission, from Community Electricity, during the public consultation period.

[1] See www.imowa.com.au/RC_2013_20.

Community Electricity supported the Draft Report on the grounds that it pragmatically recommends business-as-usual in the face of complexity and insufficient data. In particular, Community Electricity considered that there is a hidden variable impacting the assessment via the contribution to LSG of rooftop solar generation, the uptake of which is still occurring at high levels.

Community Electricity expressed a preference for a simpler methodology to be applied for new Facilities, in order to reduce the costs of expert report provision.

Community Electricity also noted the use of LSG in the methodology and considered that there may be merit in integrating aspects of this approach with the proposed dynamic capacity refund mechanism proposed in RC_2013_20. The integration of LSG concepts into the selection of Trading Intervals for Individual Reserve Capacity Requirement (IRCR) and Relevant Demand (RD) calculations was also suggested, given that current demand measures already include some 'LSG' element due to the hidden impact of rooftop solar generation.

3.3 The IMO's response to Community Electricity's submission

The IMO agrees that assessment of the methodology is complicated by uncertainty around rooftop solar penetration in the SWIS, which increases the difficulty of predicting the timing and shape of future peak demand events.

The IMO also agrees that there may be merit in exploring cheaper options for very small new Intermittent Generators, for whom the cost of expert reports may be (relatively) very high. However, the development and assessment of these options would not be a trivial task. The IMO proposes to add Community Electricity's suggestion to its Rule Change Issues Log for future consideration and prioritisation but does not recommend any amendments to the Market Rules at this time.

For larger generators the IMO considers that the current expert report obligations are appropriate and consistent with what a Market Participant would be expected to require for its own due diligence.

The IMO notes Community Electricity's comments regarding the selection of Trading Intervals for IRCR and RD calculations. As a general rule, the IMO agrees that if Trading Intervals are being selected for a similar purpose then there are benefits in aligning the selection methodologies as far as practicable. It is important though to consider the purpose of each calculation and the specific behaviours each is seeking to incentivise. For example, the use of LSG encourages the positioning of new wind farms where the correlation of their output with that of other wind farms will be low. LSG however may not be as useful in IRCR calculations, which are designed to encourage Loads to contribute to an overall reduction in peak system demand.

4. Summary of changes in Sapere's Final Report

Sapere's Final Report contains no substantive changes from its Draft Report; in particular there are no changes to the recommendations made in the Draft Report.

5. Conclusions

In accordance with clause 4.11.3C of the Market Rules, the IMO has determined the following values for the parameters K and U in step 17 of the Relevant Level Methodology for the 2015, 2016 and 2017 Reserve Capacity Cycles:

Table 5.1: K and U parameter values for the 2015, 2016 and 2017 Reserve Capacity Cycles

Reserve Capacity Cycle	Capacity Year	K value	U value
2015	2017/18	0.000	0.635
2016	2018/19	0.000	0.635
2017	2019/20	0.000	0.635

These parameter values are also available on the Market Web Site at www.imowa.com.au/2014_RL_Methodology_Review.

The IMO does not recommend any amendments to the Relevant Level Methodology in the Market Rules at this time.