Wholesale Electricity Market Proposal to Change Rule Change Priority

RC_2017_02
Implementation of 30-Minute Balancing Gate Closure

Submitted by

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Background

On 4 April 2017 Perth Energy submitted a Rule Change Proposal (RC_2017_02) proposing that the Balancing Gate Closure period be reduced from the current two hours to 30 minutes. The proposal was discussed at the MAC meeting on 1 May 2017 at which Perth Energy provided a presentation. The rule change proposal was subsequently rated as being of medium urgency and the nominated date to provide a draft Rule Change report was moved in steps from May 2017 to December 2017 and, finally, December 2018.

There have been a number of significant events since the urgency rating was set at medium and Perth Energy considers that these have substantially strengthened the case to shorten the gate closure period. Perth Energy seeks a change of the urgency rating of the proposed rule change to high so that it can be followed through.

Perth Energy acknowledges that moving to 30 minute gate closure will provide some challenges and is most likely contingent on Synergy moving to facility dispatch from the

current portfolio dispatch. Synergy has indicated elsewhere its desire to move to facility bidding and Perth Energy strongly supports this and supports all units operating with the same gate closure period. However, if the preconditions for 30 minute gate closure cannot be achieved we would, reluctantly, support the rule change proposal being modified to achieve 60 minute gate closure. We stress, however, that this would deliver less benefits to AEMO, generators and customers and should be considered as an interim move.

Original proposal and justification

The current Balancing Gate Closure arrangement means that information used by market participants to finalise balancing submissions is 2½ hours old. While this was appropriate when the balancing market was established some five years ago, the increased percentage of non-scheduled generation, and especially export from behind-the-meter solar systems, means that load has the ability to change significantly within this time frame.

In the rule change proposal Perth Energy advised that it assessed a 60 day period in early 2017 and that this had shown substantial load and price forecast errors including:

- Maximum load forecast errors of +294 MW and -428 MW;
- Where the load forecast increased after balancing gate closure the increase was 56 MW on average and was over 100 MW for 8% of trading intervals;
- Where the load forecast decreased after balancing gate closure the decrease was 74 MW on average and was over 100 MW for 12% of the trading intervals;
- The maximum price forecast error was approximately +$147 and -$107 per MWh;
- Where the forecast price increased the increase was 29% on average; and
- Where the forecast price decreased the fall averaged around -19%.

Inaccurate price signals flow through to inefficient market outcomes. Perth Energy estimated that the inability of generators to respond to correct price signals for the 60 days in early 2017 resulted in a loss to customers of almost nine million dollars. Extrapolating this across a full year indicates additional customer costs of around $50 million.

Subsequent Market Events

Changes to the Generator Interim Access (GIA) arrangement

The GIA was proposed by Western Power to Market Participants on 5th April 2017 in a presentation from Sean McGoldrick to the WA Generator Forum. In that presentation the following key points were made:

1. The GIA would be in service by Q3 2018;
2. The GIA was an interim solution to connect generators in 2018/19;
3. It was not scalable; and
4. It was a short term solution to be replaced by AEMO's market tools in mid-2019

Verbal indications at the time were that the solution would be for 400MW of capacity to be connected.

At the recently held Generator Forum[1], Western Power advised that the GIA arrangement will now cover up to eight new generators with a maximum capacity of 900 MW. Further, the arrangement will remain in place for at least four years because the new access arrangements will not be in place until October 2022 at the earliest.

Western Power explicitly stated that their modelling of the arrangement has indicated that it will cause increased inaccuracy for the forecast balancing price. So, contrary to the project scope provided 13 months ago, the GIA will now:

- accentuate the inaccuracies in the load and balancing price forecasts;
- be substantially larger than was originally intended; and
- have a much longer duration than originally planned.

Perth Energy raised the issue that the GIA contravened market objectives, specifically that of economically efficient supply in 2017. Based on Western Power's admissions at the Generator Forum, this has now been proven to be correct. The increase in load and price inaccuracy that the GIA will bring to the market for the next 4 years is unacceptable for WA's energy consumers, who pay the price for these levels of inaccuracy and for inefficient dispatch.

Continued strong solar generation growth

The growth in behind-the-meter solar PV installation continues with no indication that it will plateau in the near future. Housing developers are now including solar PV as a standard item on new homes, and there is considerable (untapped) potential for behind-the-meter solar to be installed on commercial buildings.

A number of centralised solar power stations are now actively being developed in the SWIS. While these can be asked to turn down, unlike behind-the-meter solar, they still contribute to the potential swings and forecast uncertainties that AEMO is currently facing.

The issue of "uncontrolled" PV and forecast accuracy was discussed by AEMO at a hearing at the Microgrid Inquiry currently being run by State Parliament. At that hearing the following statements were made

> *"Our (AEMO's forecasting) accuracy is probably the same as what it was 10 years ago, but with so much more uncertainty. We will continue to get better, but ultimately I am feeling that we are starting to stretch the friendship. We are working with CSIRO on a cloud forecasting system with cameras looking up at the sky to find out what is happening from a cloud perspective, so trials like that are underway, but that, again, is only going to help us to deal with some of that uncertainty that goes forward. … If I fall back again to history, we knew those control systems in the power system on the generation side; we knew what was in it. There were technical rules that define that. The technical rules on the demand side are not so great. Ultimately, we just do not have the visibility and we cannot know exactly what is happening across 200 000 or 300 000 homes, but we can get a better indication of it.*

[1] 16th May 2018

It is all about having predictability and then ultimately to support that is not just understanding what is out there but how they are likely to respond."

The issue of forecast inaccuracy in load and price is becoming acute.

Expenditure on ancillary services

One of the impacts of forecast uncertainty is the need to use more ancillary services. AEMO recently advised that the cost for ancillary services is running at around $8 million per month - ~$100 million per year.

There is also a question as to whether Synergy is actually receiving correct payment for the spinning reserve and load following services that it provides to the grid.

These costs, both actual and hidden, are directly influenced by the level of forecasting error so the changes to the GIA and continued strong solar growth can be expected to push them still higher.

Responses from MAC Members to original proposal

In general most of the submissions received in response to the rule change proposal were positive though AEMO advised that a reduction to a 60-minute Balancing Gate Closure would require some complementary changes to dispatch and settlement arrangements, while a further reduction to 30 minutes is infeasible in the absence of more fundamental reform of the WEM.

Synergy raised the objection that they would be disadvantaged if their plant continued to bid as a portfolio and remained on a much longer gate closure timeframe. Dispatch on a facility basis would address this and would place Synergy's plants on an equal footing with independently owned plant. This would also facilitate the correct identification and assignment of costs for ancillary services thereby helping to address another significant issue.

Summary

The substantial errors in both load and balancing price forecasts are by the admission of the network and system operators going to become significantly worse due to the continuing increase in behind-the-meter solar systems, substantial increases in centralised intermittent generating plants, and the implementation of a "pre-dispatch" tool that will operate during current gate closure that creates "firm" and "non-firm" pricing.

This will cause the cost of supply to customers to rise due to:

- Generators not being able to optimally bid into the Balancing Market;
- Generators pricing in the additional risks; and
- Excessive reliance on ancillary services.

The most effective way to minimise this problem without having to replace the dispatch engine earlier than the currently proposed 2022 is to reduce the timeframe over which the

forecasts are made thereby reducing the impact of the inevitable errors. Reducing gate closure to 30 minutes means that market participants are relying on a forecast that is made 60 minutes before gate closure rather than 150 minutes before.

These facts have always been known and there is a broad agreement that moving to shorter gate closure is desirable. Perth Energy considers that there is a new urgency to address this because of:

- The radical change to the Generator Interim Access arrangement;
- The continuing increase in solar PV both behind and in front of the meter; and
- The very high, but possibly understated, costs being incurred for ancillary services

The change to 30 minutes would also assist AEMO in other areas of dispatch such as commissioning tests.

Recommendation

It is recommended that the urgency level of RC_ 2017_02 be changed to high and that it be considered as a matter of urgency, preferentially in conjunction with the implementation if the GIA.

It is recommended that if the draft rule change report shows that 30 minute Balancing Gate Closure cannot be achieved within the coming two years, that Rule Change be progressed to achieve Balancing Gate Closure of 60 minutes