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Mr Peter Adams
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By online submission

Dear Mr Adams

AEMO submission on proposed semi scheduled generator rule changes

Thank you for the opportunity to provide a response to the AER's issues paper in relation to the proposed rule change(s) on semi scheduled generators. AEMO shares the AER's concerns about the impact of the behaviours identified in the paper and the associated power system security risks, and appreciates the work undertaken by the AER to develop options to remedy the issue.

AEMO's comments in respect of the Paper are set out in the attachment.

Should you have any questions, please contact Kevin Ly, Group Manager, Regulation, Strategy and Markets on (02) 9239 9160.

Yours sincerely



Peter Geers
Chief Strategy and Markets Officer

Attachment: AEMO's response to the AER on the semi-scheduled generator rule change

This submission provides AEMO's feedback on some of the questions posed in the AER's semi scheduled generator rule change(s) issues paper (the Paper). It also provides a view on the causer pays implications of each option canvassed in the Paper. AEMO has not commented specifically on the Paper's discussion of quality of information at this stage, as the scope of this second rule change proposal will be determined by the first.

Is a rule change required to address the issues described in the Paper?

The Paper comprehensively summarises the evolution of the participation of intermittent generation in the NEM since the semi-scheduled generation framework was introduced into the National Electricity Rules (Rules) in 2008¹. There is no doubt that the semi-scheduled framework, at that time, was designed with a very different set of technological, network and market conditions in mind from those we see in the NEM today and into the future.

In 2008, the semi-scheduled generator category was created to facilitate the secure integration of increasing amounts of wind generation into the NEM. The economics of wind farms were such that they were expected to generate whenever and however much the resource allowed, hence the focus of the rule change was on the need to both predict and restrict its output when necessary. It was never contemplated that intermittent generators would want to reduce their output once dispatched, so the rule did not address that possibility.

The increasing incidence of semi-scheduled generators rapidly reducing output in response to negative prices greatly increases the potential for very large aggregate supply shortfalls in a dispatch interval. Further growth in adoption of sophisticated automated bidding software will exacerbate these impacts, even at current intermittent generation levels and before the introduction of five-minute settlement.

If dispatch targets for semi-scheduled generators are essentially regarded as optional, except as an output cap in semi-dispatch intervals, it will become progressively harder for AEMO to operate the power system securely without much larger operating margins to cater for high uncertainty levels. In the present and future power system, this would require very expensive intervention, and under some conditions would simply be infeasible. Reducing the inefficiencies of operating with increased margins was a key objective of the 2008 rule.

The Rules must facilitate the secure, reliable and efficient operation of the NEM power system. The existing provisions for the dispatch of semi-scheduled generation do not achieve these outcomes and are no longer fit for purpose. Given the continued rapid pace of intermittent generation installation and innovation, a rule change is needed now.

Are there other impacts not considered from the difference in the requirements for scheduled and semi scheduled generators to follow dispatch instructions?

The ability to withdraw generation for economic reasons without first rebidding confers a competitive advantage on semi-scheduled generators over their scheduled counterparts. To the extent possible, material advantages should not be conferred on participants by virtue of their registration category as this can distort market outcomes. This is particularly relevant given the increasingly blurred distinctions presented by non-conventional hybrid facilities.

¹ *National Electricity Amendment (Central Dispatch and Integration of Wind and Other Intermittent Generation) Rule 2008 No. 2*. Available at: <https://www.aemc.gov.au/rule-changes/central-dispatch-and-integration-of-wind-and-other>

The current rules are a barrier to increased participation of renewable generation in the market. If this issue is not resolved, it is likely to necessitate AEMO applying constraints in dispatch in order to maintain a workable level of reliable generation.

The withdrawal of semi-scheduled generation below the dispatch instruction (target) is leading to inefficient pricing equilibria in dispatch. Ideally, if a unit wants to reduce load rapidly in response to low prices, it should maintain its offer price, say at \$0, increase its ramp rate, set the RRP at \$0 and follow its target. To set the offer at lower than \$0, say -\$1,000/MWh and reduce generation below the target, artificially clears the market at a lower price than it should - see the figure below for frequency of market floor price setting by type of generation in South Australia.



Figure – Pricing Setting at Market Floor Price

Has the semi-scheduled category done its job?

A regulatory framework introduced to address a developing sector or emerging phenomenon will rarely, if ever, remain appropriate indefinitely. In terms of dispatch target obligations, AEMO considers the differences that currently apply to the semi-scheduled category² are now largely unnecessary to achieve the original objectives of the regulatory framework, as framed in 2008³.

The semi-scheduled framework was designed for the market and system conditions for the nascent wind power sector at the time. Wind farms of increasingly large capacity could not remain non-scheduled as they were starting to materially impact network congestion and power system security. On the other hand, it was understood that in practice they could not comply with some of the requirements applicable to scheduled generators; in particular, following a dispatch target. The AEMC also reduced other

² See for example rule 4.9.2(a)(3) and rule 3.8.23.

³ AEMC 2008, Central Dispatch and Integration of Wind and Other Intermittent Generation, Rule Determination, 01 May 2008, Sydney, page 17. Available at: <https://www.aemc.gov.au/sites/default/files/content/f5714de5-ecf9-46c8-9e85-4ad87ebc444a/Final-Rule-Determination.pdf>

obligations on semi-scheduled generators with the aim of reducing the set-up cost of facilities and ongoing compliance costs⁴.

The 2008 rule did not contemplate the current level of penetration of renewable generation in the NEM and the associated market and system transformation. It was not foreseen that the market would experience regular negative price periods incentivising semi-scheduled generators to precipitously withdraw generation before rebidding, or that they would have the technical capability to very closely control and optimise output with financial positions.

AEMO considers that, at present, it remains necessary to recognise that dispatch targets for semi-scheduled generators are forecast-based and resource variability may impact their ability to meet dispatch targets. Otherwise, the dispatch obligations of scheduled and semi-scheduled generators should be aligned.

Are the four options presented in the paper the most efficient way to achieve the desired outcomes?

AEMO agrees with the AER's analysis of the options presented and supports the implementation of the option described in section 6.3.1 of the Paper (Dispatch instructions to semi scheduled generators to be a megawatt target for the end of the 5-minute interval and a ramp rate) (the preferred option). While the option described in section 6.3.2 of the Paper (Dispatch instructions to semi scheduled generators to be an energy target to be achieved during the 5-minute interval) appears similar, it introduces additional complexity without a clear benefit over the preferred option.

AEMO also agrees with the AER's conclusion that neither the option to implement sharper causer pays factors nor to amend the registration requirements of semi-scheduled generators present a feasible solution to the issue. While removal of the semi-scheduled category might be a sensible long-term outcome, it represents a significant change likely to involve more complex implementation issues and a lengthy transition. AEMO therefore considers it is not achievable in the context of the interim system security measures contemplated by the Energy Council.

The preferred option is a targeted change that AEMO considers to be the least disruptive and most cost-effective option. AEMO does not anticipate it would incur material implementation costs for this option.

AEMO supports the drafting of the rule proposed as Option 1 in Appendix D of the Paper, with the following minor changes for the AER's consideration:

- Reflect in clause 4.9.2(a)(2) the concept expressed in the deleted definition of *dispatch level* and consistent with actual practice – that the dispatch instruction should nominate either the level of power to be supplied at the end of, or the schedule of power to be supplied over, the specified period.
- Delete clause 4.9.5(b) and in clause 4.9.2(a) instead refer directly to clause 3.8.21.
- For clarity in new clause 4.9.8(a2), expand the wording to refer to limitations in the availability of the energy resource for a generating unit.

For completeness, and as indicated in the Paper, amendments to AEMO's Dispatch Procedure would be needed for consistency with the objectives of the proposed rule. Specifically, the Dispatch Procedure would clarify that generators must, within the physical constraints of the facility and resource and subject to the provision of ancillary services, ramp in a linear fashion in absence of an explicit ramp rate

⁴ *ibid*, application of obligations in chapter 4.

instruction. Alternatively, it may be more appropriate that this requirement be placed specifically within the Rules.

To achieve the intended power system security and efficiency objectives, the proposed rule would need to apply to the existing semi-scheduled generation fleet. AEMO anticipates that the rule change process would incorporate consideration of any necessary transitional provisions for efficient and timely implementation.

What are the causer pays implications of each option?

The causer pays framework does not discriminate between semi-scheduled and scheduled generators. Accordingly, other than the option to 'sharpen causer pays factors', the options described in the Paper do not have any direct causer pays implications. All scheduled and semi scheduled generator performance is assessed in the same manner against their respective (and in the case of semi-scheduled generators, notional) dispatch targets.

With regard to the option to sharpen causer pays factors, AEMO notes that while poor performance against dispatch targets will generally lead to negative causer pays contribution factors (and therefore increase a participant's share of the cost of regulation FCAS), the causer pays process decouples performance and consequence with a four week lag. If changes were made 'to operate with a shorter averaging period or to be more proximal to the event' there would still not be any direct causal link between performance and consequence as the regulation FCAS market is determined ex ante. It should be noted that this is not a deficiency of the concept of causer pays per se, but a feature of the combination of causer pays recovery with the purchasing of regulation FCAS requirements.

When negative prices occur, flexible semi scheduled generators which have not yet rebid and are dispatched are faced with a decision between a guaranteed loss if they continue to meet their dispatch targets and an uncertain, but likely less costly⁵, future impact to their contribution factors. For the reasons outlined above, this reality will not change without a complete redesign of the causer pays framework and the associated FCAS market which would be expensive and introduce new risks for market participants.

In AEMO's view, it is also unlikely that the ongoing work around primary frequency response incentive arrangements⁶ will address the issue. That program is specifically focussed on addressing the lack of market-based incentive to provide primary frequency response; addressing the problem at hand is outside scope.

⁵ See the analysis provided in Table 2 of the Paper.

⁶ <https://www.aemc.gov.au/rule-changes/primary-frequency-response-incentive-arrangements>