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Mr John Pierce
Chairman
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Online submission

Dear Mr Pierce

National Electricity Amendment (Compliance with dispatch instructions) Rule 2015

Thank you for the opportunity to comment on National Electricity Amendment (Compliance with dispatch instructions) Rule 2015.

AEMO considers the AEMC's proposed framework for assessing the rule change request appropriate. We also acknowledge that many of our concerns have been canvassed in the Consultation Paper.

AEMO's key concerns with the proposed rule are:

- The size of the problem is not so great as to require the proposed rule.
- The proposed rule will give rise to greater uncertainty and cost.
- AEMO expects there to be greater non-compliance with dispatch instructions than at present if the proposed rule is made.
- AEMO's non-conformance procedure was not designed to address the problem as suggested by the rule change proponent. To use it in its current form for the purpose suggested would reduce productive efficiency and increase the risks to power system security.

These and other issues are discussed in greater detail in the attachment.

If you have any questions on this submission, please contact Michael Sanders on (02) 9239 9115 or at michael.sanders@aemo.com.au.

Yours sincerely



Peter Geers
Executive General Manager Markets

Attachment: AEMO submission to National Electricity Amendment (Compliance with dispatch instructions) Rule 2015

AEMO submission to National Electricity Amendment (Compliance with dispatch instructions) Rule 2015

In its Consultation Paper, the AEMC asks whether there is a problem with the current arrangements. AEMO submits that the Consultation Paper itself provides the answer on page 5: since 2006, the AER has issued three infringement notices and instituted one legal proceeding for a breach of clause 4.9.8(a). This would suggest that there might not be a problem with the current arrangements, either with the meaning of clause 4.9.8(a) or with the manner in which the AER exercises its discretion to take enforcement action, at least not a problem of the size suggested by the rule change proponent.

AEMO has responded below to as many of the AEMC's questions as is appropriate in its role as power system and spot market operator in the NEM.

Question 1

(a) Is the standard of compliance with dispatch instructions under the current arrangements, taking into account the AER's approach to enforcing it, important for the efficient and safe operation of the NEM?

Compliance with dispatch instructions by Registered Participants is critical to the efficient and safe operation of the NEM.

Dispatch instructions are AEMO's primary mechanism for controlling the flow (or volume) of electricity along transmission lines.

AEMO's use of dispatch instructions that specify levels of active power is central to each of its two core operational roles in the NEM: power system operator and spot market operator.

- As **power system operator**, AEMO uses dispatch instructions as the principal mechanism by which it seeks to have electricity supply in each region match electricity demand (using both local generation and imports from another region, where available).

If, for example, Scheduled Generators supply a different level of active power from that instructed, electricity demand will not match electricity supply in real time. Where demand differs from supply, frequency is affected. The effect on frequency of there being an imbalance in supply and demand could also have a consequential effect on voltage.

Dispatch instructions are also used by AEMO to address fluctuations in frequency and voltage that are adverse to the maintenance of a satisfactory operating state. In terms of frequency fluctuations, AEMO issues dispatch instructions seeking frequency control ancillary services (FCAS), while for voltage fluctuations AEMO issues dispatch instructions seeking the supply of more reactive power. If AEMO could not rely on Registered Participants' compliance with these types of dispatch instructions, one consequence would be damage to the electricity supply system and consequent inability to supply the electricity demanded by consumers.

Assessed in the context of the full range of dispatch instructions, the potential cumulative impact of non-compliance would be to substantially impair AEMO's capacity to maintain power system security in a way that promotes the national electricity objective (NEO).

- As **spot market operator**, AEMO uses dispatch bids and dispatch offers to supply active power as a key input to the central dispatch process. AEMO uses dispatch instructions as the principal mechanism by which it seeks (subject to power system security requirements and constraints) to have electricity supplied in a way that has demand being met on a least-cost basis.

The supply of more or less active power than instructed has the potential to impact adversely on the efficient operation of the spot market. Scheduled Generators could supply (or not supply) a level of active power that, assessed from an efficiency perspective, they would not otherwise have been instructed to supply. Relatively inefficient market operations mean relatively more expensive market operations.

In particular, if high priced Scheduled Generators fail to comply with dispatch instructions and supply too much active power, lower priced Scheduled Generators will be instructed to supply at a lower level than would otherwise have been the case (see also AEMO's response to Question 6(a)). On the other hand, if lower priced Scheduled Generators fail to comply with dispatch instructions and supply too little active power, higher priced Scheduled Generators are likely to be asked to supply at a higher level than would otherwise have been the case.

This would substantially impair AEMO's ability to administer the spot market in a way that promotes the NEO.

(b) Under the current rules, how may a participant's non-compliance with dispatch instructions affect other participants in the NEM?

As noted in AEMO's response to Question 6(a), actions on the part of non-conforming Scheduled Generators inevitably affect the dispatch order of generation, resulting in inefficient outcomes.

Actions on the part of non-conforming Scheduled Generators could also affect Network Service Providers. Constraint equations are used in central dispatch and reflected in dispatch instructions to mitigate the risk to power system security if relevant transmission line current flow limits are exceeded. Exceeding these limits could potentially damage a transmission line or, at least, prevent it from being able to carry additional flows should another line become constrained. In a worst case, the line could be unable to supply electricity to meet demand.

Question 3

(a) Does the discretion the AER has in deciding whether to take enforcement action and the nature of that action mean there is uncertainty about the extent to which compliance with clause 4.9.8(a) is required?

The extent to which compliance with clause 4.9.8(a) is required is not a function of whether the AER will exercise its discretion to take enforcement action. The clause itself does not cause any uncertainty. It requires strict compliance that, in light of the reality of the market, needs to be construed as being subject to some sort of tolerance, including an allowance for metering error.

The AER's discretion is a separate issue to do with the willingness of Registered Participants to comply with the Rules based on the potential consequences of non-compliance. It is not uncommon for law enforcement agencies and regulators to have such a discretion. To conclude that it gives rise to uncertainty about the extent to which compliance is required would be to undermine the provision itself.

Regulators can and do issue guidelines on how they will address enforcement. If the AER's current guidelines need further refinement to assist Registered Participants in meeting their compliance obligation, AEMO suggests that this would be a more appropriate course of action than seeking to amend clause 4.9.8(a).

(b) What are the consequences of any such uncertainty?

AEMO does not consider there to be any uncertainty arising from the AER's discretion to take enforcement action.

Even if there were uncertainty, this could be addressed by amendment to the AER's guidelines.

Any dilution of the AER's discretion to take enforcement action is likely to encourage a regime where strict compliance with a dispatch instruction, be it absolutely, or within a tolerance specified by 'reasonable endeavours', is unlikely to be achieved. It would create greater uncertainty and risk from AEMO's perspective as a market and system operator for the reasons detailed elsewhere in this submission.

Question 4

(a) Are market participants able to simultaneously comply with dispatch instructions for energy and FCAS? If so, how do market participants manage to do this?

Market Participants can simultaneously comply with dispatch instructions to deliver active power and provide FCAS. In fact, NEMDE – the algorithm that controls central dispatch – co-optimises energy and FCAS dispatch taking into account the physical limitations of the relevant generating plant to ensure that both can be delivered in the quantities instructed. For example, NEMDE ensures that a Generator cannot be asked to increase its active power output and provide regulation raise FCAS in amounts that would exceed its overall ramp-up rate.

Ancillary services generating units may be dispatched to provide one of two broad types of services. These are frequency regulation services and contingency services¹.

- A unit providing a regulation service is directly controlled by AEMO to achieve both the energy dispatch instruction and the ancillary services instruction.
- A unit providing a contingency service is expected to have independent monitoring a power system frequency and will automatically react to frequency deviations.

These instructions are not mutually exclusive with energy but may be additive – that is, the unit's actual output at the end of the dispatch interval can be as large as the sum of the energy target and its FCAS raise amount, or conversely as low as the energy target minus its FCAS lower amount. In either case, AEMO would still consider the unit to be complying with its dispatch instructions.

AEMO's automated compliance monitor, which is used to flag units as non-responsive and is a pre-condition to units being declared non-conforming, adjusts the energy dispatch instructions by the FCAS dispatch instructions.

¹ There are two regulation services – raise regulation and lower regulation. There are six contingency services – 6 second, 60 second and 5 minute raise, and 6 second, 60 second and 5 minute lower services.

Question 5

(a) What is the likely impact on the behaviour of market participants having a reasonable endeavours obligation?

The likely impact on the behaviour of Market Participants' having a 'reasonable endeavours' obligation to comply with dispatch instructions will vary depending on the particular dispatch instruction and surrounding circumstances.

Insofar as dispatch instructions concern the levels of active power required to be dispatched, the likely result of a 'reasonable endeavours' obligation is that Scheduled Generators will more often than is currently the case not comply with their dispatch instructions, supplying either more (or less) active power than instructed, depending on the prevailing and projected spot price.

As noted in AEMO's response to Question 5(c), unless the rules were to specify exactly what measures 'reasonable endeavours' entails in this context, there will be greater uncertainty, necessitating legal proceedings before any party - be it AEMO, the AER, or a Registered Participant accused of not having exercised 'reasonable endeavours' - would know exactly what was required in any particular set of circumstances.

(b) How is a reasonable endeavours obligation likely to impact uncertainty and compliance costs?

The increased uncertainty over the meaning of 'reasonable endeavours' will necessitate clarification by way of legal proceedings. The parties that will be involved in these proceedings (the Registered Participant accused of non-compliance, the AER and AEMO) are likely to be subject to significant expense before any contentious issues are resolved. Furthermore, because of the infinite variety of circumstances each situation in the market will give rise to, each allegation of non-compliance is likely to lead to fresh legal proceedings.

It is also likely that the market would be unable to determine how best to demonstrate compliance as the interpretation of reasonable endeavours would turn on individual circumstances in each case.

In the meantime, both AEMO and the AER would be hampered in their ability to fulfil their functions under the National Electricity Law and Rules, a situation that AEMO considers to be untenable.

This greater uncertainty has the potential to increase the costs of compliance for everyone involved in the NEM, costs that will inevitably be passed through to consumers.

(c) What would amount to reasonable endeavours in complying with a dispatch instruction?

While it is acknowledged that 'reasonable endeavours' is considered to be an objective standard against which performance can be assessed, in this context, it is likely to be problematic. In the case of a Scheduled Generator, each generation technology employed in the NEM and each type of Scheduled Generator faces a unique set of circumstances that, coupled with the infinite array of circumstances outside of their control, make for a very complex assessment of what action would/would not constitute 'reasonable endeavours'.

One can foresee the meaning of 'reasonable endeavours' extending to a Scheduled Generator's economic circumstances, such as when it is financially stressed and needs the additional revenue arising from the non-conformance to sustain its business.

Far from clarifying the extent of each affected type of Registered Participant's current obligation to comply with clause 4.9.8(a), the proposal would seem to make it significantly more uncertain.

Question 6

(a) Is AEMO's non-conformance process appropriate for the purpose proposed in the rule change? Is it likely to impact on market efficiency or power system security if used in this way?

AEMO's non-conformance procedure is not appropriate for the use proposed in the rule change, as it is designed to apply when certain thresholds are not met and to specify the consequences of that action for the non-conforming Scheduled Generator in the spot market, only. It should not be seen, or used, as a legal compliance management tool.

By declaring a Scheduled Generator non-conforming, AEMO removes the prices bid by that Scheduled Generator from the price-setting part of the central dispatch process and performs certain other actions as specified by clause 3.8.23, being the rule requiring those actions. AEMO has documented how it implements clause 3.8.23 in its Dispatch Procedure SO_OP3705.²

Neither the rule, nor the procedure attempt to address the other consequence of the central dispatch process, namely the reduction of generation to be dispatched by other Scheduled Generators to maintain reliability (because the dispatch of the non-conforming generation is not affected by the declaration of non-conformance under clause 3.8.23).

This procedure is not a mechanism for regulating power system security, either.

Trying to link compliance with clause 4.9.8(a) with AEMO's non-conformance procedure for the purpose suggested would:

- discourage productive efficiency; and
- degrade power system security.

The discussion that follows concerns the example of a non-conforming Scheduled Generator.

Productive Efficiency

Productive efficiency is reduced if Scheduled Generators do not follow their dispatch instructions. The central dispatch process meets demand at the lowest available cost, where that cost is based on the bids and offers provided by Market Participants. The resulting dispatch instructions represent the most productively efficient outcome available to the market.

Relying on AEMO's non-conformance procedure as a prerequisite for non-compliance with clause 4.9.8(a) would allow Scheduled Generators to deviate from their dispatch instructions:

- briefly, but substantially; or

² Available on AEMO's website.

- consistently, but below the non-conformance thresholds.³

Productive efficiency would be reduced in both cases because Scheduled Generators would no longer be following their dispatch instructions. For example, a Scheduled Generator could ignore its dispatch instructions and generate at any level it chooses for several dispatch intervals before being declared non-conforming by AEMO. Under the proposed rule change, it would not be breaching clause 4.9.8(a).

Alternatively, a Scheduled Generator could fail to meet its dispatch instructions indefinitely by less than the “small” non-conformance threshold without being declared non-conforming. This threshold is typically 3% of availability. In other words, a 700 MW generating unit could deviate from its dispatch target by 20 MW without ever being declared non-conforming. Under the proposed rule change, it would also not be breaching clause 4.9.8(a).

Power System Security

Power system security relies implicitly on Scheduled Generators following dispatch instructions. As noted in the AEMC’s Consultation Paper, AEMO maintains power system security by invoking network constraint equations in central dispatch, enabling FCAS, and – as a last resort – issuing directions.

Network constraint equations and FCAS are tools that AEMO uses to maintain power system security following irregular, uncoordinated events, such as individual Scheduled Generators failing to follow dispatch instructions, however, these tools would be insufficient to cope with a failure to follow dispatch instructions by many Scheduled Generators.

The proposed rule change could degrade power system security by encouraging all Scheduled Generators to ignore their dispatch instructions whenever the spot price was unusually high because, as a rule, they have an incentive to generate more when spot prices are high.⁴ Under the proposed rule change, they could do this without breaching clause 4.9.8(a), provided AEMO has not declared them non-conforming.

If the AEMC were minded to enable AEMO to use the procedure to be more effective in this regard, clause 3.8.23 would need to be amended, which would then flow through to changes to procedure itself. At a minimum, AEMO would need to tighten both of the time and accuracy thresholds.

(b) It is appropriate for compliance with dispatch instructions to be partly determined by AEMO?

³ AEMO’s non-conformance procedure is designed to maintain consistency between central dispatch and pricing on the irregular occasions when Scheduled Generators are unable to follow their dispatch instructions. It does this by removing from the price-setting process any Scheduled Generators that are declared non-conforming. Scheduled Generators are declared non-conforming only after substantial and sustained deviations from their dispatch targets.

⁴ The spot price in a region is the average of six dispatch interval prices. Dispatch prices are published in real time, and occasionally reach the Market Price Cap, which is currently \$13,800/MWh. When that happens, Market Participants know immediately that the spot price – on which the market is settled – will be at least \$1,500/MWh, and probably over \$2,200/MWh. If the price spike occurs in the first dispatch interval of a trading interval, Generators have up to 30 minutes to react.

On the assumption that the AEMC were to make the requested rule change, this question can be answered both in the affirmative and the negative.

On the affirmative side, only AEMO has the operational experience and knowledge to determine how much 'stress' can be placed on the power system in real time and how that can be quantified in a procedure such as the non-conformance procedure, which would then be used to manage power system security and reliability more effectively.

On the negative side, from a Market Participant's perspective, granting AEMO this power increases their regulatory risk because, currently, AEMO is not required to consult on changes to its non-conformance procedure (which, in any event, does no more than quantify the 'tolerable time and accuracy' referred to in clause 3.8.23(a)). This is a risk, however, that can be mitigated by requiring a consultation every time AEMO proposes to amend it.

Question 7

(a) If the proposed rule is made, are the financial incentives provided by the FCAS cost recovery process and removal of the generator's offer from the basis of setting the wholesale spot price, sufficient for market participants to comply as precisely as possible, with dispatch instructions?

AEMO does not know what financial incentives are sufficient to change an individual Generator's behaviour. The value in the regulation FCAS markets is typically less than 0.1% of the value in the energy market, so there is every reason to conclude that any incentives of this kind are immaterial for the most part.⁵

Question 8

a) Is the proposed rule likely to change the behaviour of market participants in complying with other components of a dispatch instruction?

AEMO has addressed this issue in its response to Question 1(a).

Question 9

(a) If there is a problem with the current arrangements, is there an alternative solution which better addresses the problem?

If one accepts that the current arrangements are problematic in terms of how Scheduled Generators are incentivised to comply with their dispatch instructions, there are other ways to incentivise compliance. One is suggested below:

Rather than address the problem of compliance with clause 4.9.8(a) by changing the obligation itself, one could consider the use of financial incentives to ensure Scheduled Generators generate the quantity of electricity required by their dispatch instructions. At present, the only financial disincentive faced by non-conforming Scheduled Generators is that their dispatch bids cannot be used to determine spot prices after certain tolerances have been exceeded. Other financial incentives could be implemented by amending the non-conformance process in clause 3.8.23 by, for example:

- paying non-conforming Scheduled Generators any electricity generated in excess of that required by a dispatch instruction;

⁵ Regulation FCAS is the service deployed by AEMO to counteract for individual Scheduled Generators failing to follow their dispatch instructions.

- amending the existing FCAS causer-pays process to require non-conforming Scheduled Generators to pay a greater share of any ancillary services procured by AEMO to counteract the electricity generated in excess of that required by a dispatch instruction;
- requiring non-conforming Scheduled Generators to compensate other Scheduled Generators 'bumped' by NEMDE on account of the electricity generated by those non-conforming Scheduled Generators in excess of a dispatch instruction; and
- requiring non-conforming Scheduled Generators to compensate other Registered Participants affected by the non-conformance.

Any, all, or any combination of these is likely to provide better financial incentives for compliance with dispatch instructions than the present consequence, which still results in payment for electricity generated in excess of a dispatch instruction, albeit at a rate that is less than what the non-conforming Scheduled Generator had bid.

Adoption of such incentives would also necessitate amendments to the markets settlements processes in clause 3.15, and would give rise to over-recoveries by AEMO which, consistent with the NEO, should then be returned to consumers.

Consideration should also be given to making an allowance for metering errors.