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Ms Collyer,

Clarifying Mandatory PFR Obligations for Bidirectional Plant Consultation paper (ERC0364)

ENGIE Australia & New Zealand (ENGIE) appreciates the opportunity to respond to the Australian Energy Market Commission ("the Commission") in response to the Consultation Paper on Clarifying Mandatory Primary Frequency Response (PFR) Obligations for Bidirectional Plant ("the Consultation").

The ENGIE Group is a global energy operator in the businesses of electricity, natural gas, and energy services. In Australia, ENGIE has interests in generation, renewable energy development, and energy services. ENGIE also owns Simply Energy which provides electricity and gas to retail customers across Victoria, South Australia, New South Wales, Queensland, and Western Australia.

The rule change proposal goes beyond the minimum necessary to correct drafting errors

The rule change proposal is presented by the proponent, the Australian Energy Market Operator (AEMO), as necessary to correct an inadvertent error arising from the combination of the drafting of the Mandatory PFR rule and the drafting of the Integrating Energy Storage rule. This would be the case if AEMO was seeking only to require bi-directional plant (BDUs) to provide mandatory PFR while charging. If this were the case the rule change could be run as an expedited process.

Instead, AEMO has taken the opportunity to seek new obligations on BDUs by proposing a rule change that also requires BDUs to provide mandatory PFR while charging and also while enabled for FCAS. ENGIE commends the AEMC for considering each of these cases separately in the Consultation Paper, allowing for the possibility of a more preferable rule that may lead to mandatory PFR for BDUs only in certain cases. AEMO's proposal to extend mandatory PFR to a wider range of circumstances is considerably more onerous than the status quo.

Providing mandatory PFR is not costless

AEMO's proposal asserts that the new rule would "not require any additional costs for the investment or operation of the services to provide PFR"[1]; however, there are costs to a BDU operator in having to make small changes to a charging or discharging profile in order to comply with PFR obligations. This could lead to charging at sub-optimal prices, not being able to maximise revenue from discharging, not being able to access the full range of state of charge, and long-term degradation at a faster rate than may otherwise occur.

The materiality of these costs will be revealed by the implementation of frequency performance incentives. If the costs are relatively immaterial, then BDUs can be expected to maximise their performance against the incentives. However, if this is the outcome, then they will be performing optimally from a system frequency perspective, and it is not clear what additional system benefit would arise from mandatory PFR. Conversely, if optimal frequency performance is expensive, then BDU operators may choose to bear some cost/not maximise their incentive revenue opportunities instead. In this case, AEMO's assertion that provision of mandatory PFR is costless is evidently not correct.

At the margins, costly obligations would result in lower levels of BDU deployment. This would potentially undermine the goals of the rule change.

"Certainty" for investors is not a rationale for making this rule change

ENGIE agrees that there is value in improving investor certainty. This in principle can lower the required cost of capital, allowing projects to proceed at lower cost. For a capital-intensive sector such as electricity this has real value. However, certainty would equally well be achieved by *not* making the rule (or by making a more preferable rule that only required mandatory PFR to be provided while discharging) provided the Commission made it clear that it saw no reason to re-open the issue in the foreseeable future.

The logic that investors should welcome new obligations, because at least then they know that they have them assumes that there is always a latent risk that such obligations will be introduced at a later date. Taken to its extreme, this would mean that any obligation that was mooted should proceed directly to being implemented in order to provide "certainty".

Accordingly, ENGIE considers the investor certainty argument should not carry weight in this instance.

The urgency of the rule change is overstated

AEMO's proposal cites their *Engineering Framework to 100% Renewables*[2] document, which outlines the need for adequate frequency response at times of very high renewable penetration. According to the document (and also quoted on p44 of the Consultation Paper), "there will be enough renewable resource potential to reach 100 per cent of grid demand, for a small number of dispatch periods, as early as 2025". This is illustrated in both the Engineering Framework and the Consultation paper with a chart that purports to show "Instantaneous renewable penetration" having reached 88 per cent in November 2022. The trend

[1] Consultation Paper, p19

[2] AEMO, Engineering Roadmap to 100% Renewables, December 2022

line for this metric is shown hitting 100 per cent in 2025. Another metric displayed is “instantaneous renewable penetration” which hit a maximum of 69 per cent in October 2022.

These metrics are not further explained or defined. ENGIE infers that the difference is that instantaneous renewable potential includes the theoretical output of renewable generation that is congested, is voluntarily curtailed due to price signals, or is otherwise limited for system security reasons. However, some congestion and price-driven curtailment is to be expected in a high-renewables system and is consistent with efficient outcomes. Accordingly, these are not problems to be solved and the relevance of the potential metric is unclear.

Conversely, actual renewable penetration is a real metric. But the target is to be able to manage the system when this hits 100 per cent of grid demand. It is clear from the datasets published in AEMO’s Quarterly Energy Dynamics (QED) that the 69 per cent record is for a metric that includes both distributed PV – which is not a component of *grid* demand/supply – and hydropower, which is a conventional synchronous technology that already provides mandatory PFR. The true figure for maximum penetration of variable, inverter-connected renewables in grid demand is thus somewhat lower. ENGIE estimates it to be 48 per cent. In this light, there is no reason to expect that 100 per cent will be reached as early as 2025. Noting that renewables deployment may slow for a few years as new transmission is built out, a realistic deadline is more like 2030.

The issue could equally well be approached the other way – 100 per cent instantaneous variable renewables can only occur at a time when no coal plant in the NEM is dispatching. Assuming Callide C returns to service, there are still 15 coal plants operating in the NEM, of which one (Eraring) may exit the market in 2025. It appears improbable that the other 14 would all be decommitted at the same time in the near to medium term and if they were, there would be reliability and security concerns about how to bring enough of this capacity back online in time for sundown.

ENGIE acknowledges that the longer-term goal remains to be able to operate the system securely at 100 per cent instantaneous variable renewable penetration. However, this doesn’t mean that all the steps identified by AEMO to support this outcome need to be completed within the next 18-24 months.

More evidence of the costs and benefits will become available in due course

Rather than impose mandatory PFR on BDUs at this time, a preferable way forward would be to monitor outcomes following implementation of double-sided frequency performance payments as required by the PFR incentive arrangements rule. This would allow AEMO and the Commission to better understand the impact of this reform on frequency management, and by observing BDU behaviour under this incentive, better understand the costs and benefits of imposing mandatory PFR on BDUs.

Should you have any queries in relation to this submission please do not hesitate to contact me on, telephone, 0477 299 827.

Yours sincerely,

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