



17 June 2022

Submitted electronically

RE: ERC0263 – Primary Frequency Response Incentive Arrangements Directions Paper

Shell Energy welcomes the opportunity to provide the following submission on the Primary Frequency Response Incentive Arrangements Directions Paper.

About Shell Energy in Australia

Shell Energy is Shell's renewables and energy solutions business in Australia, helping its customers to decarbonise and reduce their environmental footprint.

Shell Energy delivers business energy solutions and innovation across a portfolio of electricity, gas, environmental products and energy productivity for commercial and industrial customers, while our residential energy retailing business Powershop, acquired in 2022, serves more than 185,000 households and small business customers in Australia.

As the second largest electricity provider to commercial and industrial businesses in Australia¹, Shell Energy offers integrated solutions and market-leading² customer satisfaction, built on industry expertise and personalised relationships. The company's generation assets include 662 megawatts of gas-fired peaking power stations in Western Australia and Queensland, supporting the transition to renewables, and the 120 megawatt Gangarri solar energy development in Queensland.

Shell Energy Australia Pty Ltd and its subsidiaries trade as Shell Energy, while Powershop Australia Pty Ltd trades as Powershop. Further information about Shell Energy and our operations can be found on our website [here](#).

General Comments

Shell Energy acknowledges the large amount of work undertaken to date by the AEMC to design a mechanism to provide a potential framework that can incentivise the ongoing provision of narrow band primary frequency response (NBPF). We remain concerned that the development of a true market-based framework, which would correctly value the provision of NBPF, is hindered by the ongoing application of the mandatory narrow band primary frequency response requirement framework on all scheduled and most semi-scheduled generating units. We note that data presented to date by the AEMC highlights that effective frequency control was achieved with only a subset of generating units providing NBPF. This strongly suggests that mandatory NBPF supply by all units is not required.

Shell Energy's view is that mandatory NBPF is distorting the market for frequency control ancillary services (FCAS) which will undermine the ongoing investment incentives for the provision of NBPF. As existing large capacity synchronous generating units exit the NEM and the market transitions to higher proportions of intermittent renewable generation this service will increasingly be required from new sources as the current service providers retire and remove the oversupply of NBPF services from the NEM. Incentivising investment appropriately is therefore crucial to the ongoing security of the electricity supply system.

Recent events provide useful data to support these views. The period from 13 to 18 June 2022 was a period of lower coal and gas fired generation availability, the primary suppliers of mandatory NBPF service. Shell Energy noted the following particularly poor frequency performance periods during this period.

- 15 June 06:00 to 07:00 and 15:00 to 16:30 Frequency outcomes deteriorated potentially due to a combination of sudden drops from intermittent semi-scheduled generation and a relatively large and sustained demand increase.
- 16 June 06:20 to 07:00 – Potentially due to demand increasing simultaneous with decreasing wind farm output.
- 17 June 17:00 to 17:30 – Potentially due to demand increasing simultaneous with decreasing solar farm output.
- 18 June 06:00 to 06:50 and at 15:20 to 16:00 – Potentially due to demand increasing simultaneous with decreasing hydro generation output.

¹By load, based on Shell Energy analysis of publicly available data.

² Utility Market Intelligence (UMI) survey of large commercial and industrial electricity customers of major electricity retailers, including ERM Power (now known as Shell Energy) by independent research company NTF Group in 2011-2021.

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It should be noted that throughout the period 71 separate events were observed where frequency deviated outside the frequency normal operating band. Two events exceeded the previous market ancillary service specification response trigger values of 0.2Hz whilst having no obvious defined cause. These outcomes serve to highlight a potential NEM future where there is a lower level of synchronous generating unit operation and the remaining synchronous generator are operating with minimal headroom. With appropriate market-based incentives Shell Energy believes sufficient investment will be provided to ensure adequate replacement services and ensure that these circumstances do not become the “normal”.

Shell Energy supports the notable improvements the AEMC has made to the objectives for the incentive mechanism, including to:

- value active power deviations based on the price for the regulation raise or regulation lower service;
- scale payments by the aggregate system requirement for corrective response that is equivalent to the enablement volume for a market ancillary service; and
- calculate a frequency deviation contribution factor for each eligible unit of generation and load.

However, we remain concerned regarding the ongoing distortion of the FCAS markets via the continuation of MNBPF framework. Shell Energy recommends the AEMC consider the observed system frequency outcomes during the period 13 to 18 June 2022 in detail and reconsider if the draft determination decision to remove the existing sunset provision for the MNBPF framework should proceed. Alternatively, it may be appropriate that the sunset provision be extended by a further 2 years to 2025. This would be done with a view to further development of an enduring market-only incentive scheme for the supply of NBPF. Accordingly, the currently proposed mechanism could be implemented with a similar sunset timing to facilitate further review and refinement of market based NBPF.

Shell Energy is supportive of the use of the regulation FCAS enablement prices as a reasonable interim step towards the longer term goal of developing an enduring market based framework for the provision of NBPF. Whilst the proposal achieves a “set” price outcome on which interim NBPF payments can be based, in our view it fails to provide an efficient market based price outcome. Over the longer term we believe this will fail to provide an effective price signal for the investment that will be required in NBPF provision.

The current “target-to-target” proposal for determining the reference trajectory is, in Shell Energy’s view, flawed. It fails to replicate how the NEMDE dispatches generation in the NEM and in particular will incorrectly calculate contributions to frequency control in periods where power system frequency crosses the 50 Hz reference frequency during a trading interval. In our view, the reference trajectory must be based on the AGC set point target received from AEMO. For generating units or energy storage systems, which are not dispatched via AGC, the reference trajectory should be based on the initial MW at the start of the trading interval and the target MW at the end of the trading interval. Whilst we note this will result in a level of discontinuity between trading interval targets it is these values upon which NEMDE dispatch is based and not the target-to-target values proposed. Incentives must be based around the NEMDE dispatch process to avoid distortions between the energy, FCAS and NBPF markets.

Shell Energy remains concerned about the lack of clarity provided by the current wording of Rule 4.4.2(c1). This clause regards the provision of mandatory NBPF by an energy storage system (ESS) when in receipt of a dispatch instruction to not generate energy output greater than 0 MW. The definition of *dispatch instruction* as set out in Chapter 10 contains reference to both energy and FCAS dispatch. A *dispatch instruction* for FCAS is for the enablement of headroom or foot room and not the direct provision of energy output. In particular, the wording of the rule is unclear regarding the issue of an AGC instruction to an ESS to increase output above 0 MW for the provision of Raise Reg FCAS. Shell Energy’s view is that the ESS in this case, which has been issued an enablement instruction under 4.9.3A, has not received a greater than zero dispatch instruction under clause 4.4.2(c1). For this reason we do not consider that the ESS should be required to provide mandatory NBPF when only enabled for FCAS and with an energy target less than or equal to zero.

If the intent of the Rule is that the greater than zero dispatch instruction applies to energy market dispatch, then may we suggest the following change to 4.4.2(c1);



subject to clause 4.4.2A(c), each *Scheduled Generator* and *Semi-Scheduled Generator* that has received a *dispatch instruction* [in accordance with clause 4.9.2](#) to generate a volume greater than zero MW must operate its generating system in accordance with the Primary Frequency Response Requirements as applicable to that generating system;

If the intent of the Rule is that it applies when the output from an ESS enabled for raise regulation FCAS is altered above an active energy output of zero MW by an AGC output adjustment, this must be made clear in the Rules to ensure that what an ESS is required to comply with is clear and unambiguous. However, we highlight that an ESS enabled for raise regulation FCAS active energy output response can vary across a trading interval, based on power system frequency outcomes and the vagaries of AEMO's AGC system, which may seek to move an ESS dispatch in the opposite direction required at that time by real time power system frequency outcomes, the later outcome indicated above could result in an unmanageable compliance burden as to where and what response was required at any second in time. Therefore, Shell Energy strongly recommend the Rules make it clear that the provision of MNBPFR only apply to an ESS when a clause 4.9.2 dispatch instruction applies.

We also ask that clarity be provided in the rules with regards to generating unit maximum and minimum capability for mandatory NBPFPR when providing contingency FCAS. There is a gap in the wording of the Rules that is leading to a significant compliance issue with regards to the interaction of mandatory NBPFPR and provision of contingency FCAS. Under the current wording in the Rules a unit enabled for contingency FCAS could deplete its contingency response resources (headroom or foot room or stored energy) prior to a contingency because of the mandatory NBPFPR requirement. This circumstance could occur when a unit responds to a sustained change in frequency as required under mandatory NBPFPR. If a contingency event follows the sustained frequency change, the actual level of reserves available to respond to the contingency event could be less than that which have been enabled. The unit would then incur the high risk of being declared non-compliant for contingency FCAS response by the AER.

From a compliance perspective, a participant has no knowledge how much mandatory NBPFPR will occur on a generating unit at any time. As such, generating units run the risk that a unit enabled for contingency FCAS could have its output adjusted by mandatory NBPFPR action to the limit of its technical capability, appropriating reserves enabled for the provision of contingency FCAS. There is also a risk that reserves for contingency FCAS may have been depleted by mandatory NBPFPR at a time when the reserves are required for contingency response, reducing the resilience of the system to respond to such an event.

Shell Energy argues that if the true intention of the Rules is that headroom, foot room or stored energy is not required to be maintained for the provision of MNBPFR, then we suggest that the Rules be clarified. In this case the rules should clarify that the headroom, foot room or stored energy maintained on a generating unit for the provision of contingency FCAS response does not form part of a unit's capability for the provision of mandatory NBPFPR. This would ensure that reserves procured for responding to a contingency event remain available when required.

Shell Energy suggest the addition of a new Rule 4.4.2(c2) similar to the following:

[A generating unit in complying with subclause 4.4.2\(c1\) is not required to increase or decrease energy output above or below a MW output level that would prevent the unit complying with a dispatch instruction issued in accordance with clause 4.9.3A.](#)

For any question regarding this submission please contact Peter Wormald (peter.wormald@shellenergy.com.au).

Yours sincerely

[signed]

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