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Australian Energy Market Commission
Via www.aemc.gov.au

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Dear Commissioner

Re – Response to Directions Paper on Reserve Services in the National Electricity Market

The Australian Aluminium Council (the Council) represents Australia's bauxite mining, alumina refining, aluminium smelting and aluminium extrusion industries. The Australian aluminium industry has been operating in Australia since 1955, and over the decades has been a significant contributor to the Australian economy. Alongside many decades of economic contribution, the industry is globally comparatively young and well maintained. The industry includes five bauxite mines (>10 Mt per annum), six alumina refineries and four aluminium smelters. Australia is the world's largest producer of bauxite and the world's largest exporter of alumina, and the sixth largest producer of aluminium. The industry directly employs more than 15,000 people, including 4,000 full time equivalent contractors. The industry also indirectly supports around 40,000 families in regional Australia.

Aluminium industry and the National Electricity Market

Within the National Electricity Market (NEM) the Australian aluminium industry has four aluminium smelters and two alumina refineries and uses more than 10% of the electricity consumed in the NEM. Accordingly, the Australian aluminium industry has a strong interest in electricity policy. Electricity typically accounts for around 30-40% of aluminium smelters' cost base, and therefore it is a key determinant of their international competitiveness. Alumina refineries, while not as electricity intensive as smelters, are also significantly exposed to electricity policy. The electricity supply requirements of the aluminium industry, can be summarised as follows:

- least cost, and an internationally competitive delivered electricity cost, as a minimum;
- consistent uninterrupted electricity supply; and
- an ability to secure electricity supply under long-term contractual arrangements.

These outcomes need to be delivered within the framework of Australia's Paris Agreement emission targets.

Reserve Services in the National Electricity Market

The Council welcomes the opportunity to provide feedback to the January 2021 Australian Energy Market Commission (AEMC) directions paper "Reserve Services in the National Electricity Market" (the Paper). The Council has considered how the Paper contributes towards meeting the needs of the aluminium industry and the content has been tested against the Council's view of design principles for an electricity system (See *Attachment 1*).

As each smelter, refinery and extruder has unique electricity arrangements, the Council will reserve its comments on the Paper to a high level. Aluminium smelters in particular, generally have long-term electricity contacts. However, the expiry of these contracts for Australian smelters varies from mid-2021 to 2029 (with Portland Aluminium in Victoria the first to expire). Further, significant structural changes in the NEM within the term of these contracts may have material effects on their operation, requiring careful consideration on

the part of policy makers as to how they will be treated in any change to prevent disadvantage to all market participants who are willing to invest and contract for the long term.

The Paper notes that arrangements are likely to provide sufficient in-market reserves to address expected events but may not be sufficient to address increasing variability and uncertainty as the power system transitions with significant retirement of legacy synchronous generation and the substantial increase in penetration of variable renewables. The current situation is leading to concerns around system security.

The Paper proposes four options to explicitly value the provision of reserves to address the risk of insufficient reserves. This would separate the provision of these services from energy and FCAS markets, where in-market reserves are currently valued implicitly. The Council does not have an explicit view on the options as presented but supports the recognition as to the value of these services and believes that the final design should incorporate the ability for the demand side to participate on a voluntary basis offering the greatest range of liquidity within the market and utilising existing infrastructure. The Council, however, does not in-principle support any rule changes to value ramping services (ERC0207).

Low probability high impact events are best served by existing infrastructure, such as smelters, rather than on the generation side where the investment required to meet infrequent events is expected to be extremely high. While none of the options in the Paper currently explicitly address this, the concept of demand side (and in particular smelters) providing an operating reserve for low probability resilience events, where the only alternative would be load shedding, in exchange for an availability payment in addition to payment on activation, would optimise the use of this existing infrastructure.

Aluminium smelters already offer a range of services and functions which support the network over varying weather, network demand and operating conditions, including Reliability and Emergency Reserve Trader (RERT) and Frequency Control Ancillary Services (FCAS). Smelters' large and fast-acting interruptibility helps secure and restore stability to the network before and after contingencies occur. The industry has increasingly been called upon to support grid stability and reliability, as the challenges in managing the grid increase.

The range of services varies by smelter technology and a number of other external factors. For example, the recent Energy Synapse report to the ESB on Demand Response[1] noted that while Tomago Aluminium preferred a one-hour notice period, in order to prepare for an event and take precautions, such as modifying the chemistry in the pots to minimise the recovery time should an interruption be called, that in an emergency situation, it is possible for Tomago to take approximately 600 MW off the grid (two potlines simultaneously) in less than a minute. Tomago has also undertaken modelling to investigate how a very short-duration full potline shutdown could be achieved in an emergency. Tomago also noted that their ability to provide a response is also influenced by the recency and frequency of interruptions. For example, if Tomago has not experienced any interruptions in the previous two weeks, then it is generally not considered problematic to turn off a potline. However, consecutive interruptions within a short time frame are considered more challenging.

Very large electricity users play a number of roles in the market, which are currently unpriced, or where the mechanism to value them is poorly aligned with operational practices. These are resources which already exist, although they could be further enhanced with improved investment signals. Amongst the roles played by very large and continuous smelter loads are:

- Buffering the erosion of minimum scheduled demand;
- Support for the continued economic commitment and operation of large-scale synchronous generation (noting that de-commitment of synchronous units due to inadequate base demand levels can regularly remove large blocks of inertia and system strength from the system);

[1] https://esb-post2025-market-design.aemc.gov.au/32572/1608712640-energy-synapse-demand-response-in-the-nem-final-report-14-dec-2020.pdf

- Supply of certain essential system services, such as contingency FCAS;
- Potential participation in "backstop" reliability schemes such as RERT or Interim Reliability Reserve (IRR); and
- Enhancing system resilience through rapid unscheduled interruptibility in the case of extreme high impact events, which like more extreme weather conditions are occurring increasingly frequently in the NEM and are increasingly complex to match with dispatch in real time.

Only some of the current services are explicitly remunerated, nor is their overall "real option" value recognised – namely the flexibility that retention of these loads provides in future choices of physical and economic mechanisms to stabilize the system and market. In the absence of these loads the measures required to maintain secure and resilient operation of the grid are likely to require significant additional investment and costs. An efficient operating reserve market would provide some recognition of this; however it would not present a complete market solution as it does not recognise the full value of smelters in the system

The Council in principle supports the delivery of resource service via a market, as proposed in the Paper, where this will deliver the most efficient outcome. However, this will only be true for services where there will be sufficient buyers and sellers at all times, to ensure a competitive marketplace, to deliver these services at lowest cost, noting that it is consumers which will ultimately bear this cost. However, an operating reserve market may be the most economically efficient way to deliver this.

The Council is happy to provide further information on any of the issues raised in this letter and look forward to continuing to work further with the Australian Energy Market Commission on these matters to improve the commercial arrangements supporting a competitive, reliable and secure NEM.

Kind regards,

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Attachment 1

Australian Aluminium Council - Electricity System Design Principles

Engender Australian advantage

Support a future where Australia's world class energy resources are translated into internationally competitive, low emissions, reliable energy to ensure industrial production, emissions and jobs are not exported to other countries. As Australia transitions away from a thermal fleet and towards increasingly variable and distributed generation, industrial load provides a physical and commercial "ballast" to the grid. The value of this load as both ballast and interruptible supply needs to be recognised in the development of competitive frameworks.

Avoid shocks to all market participants, including consumers

The approach to transition should be consistent with a rapid evolution, rather than revolution, in electricity reform processes. Transition should seek to avoid shocks and discontinuities where possible and rule makers should work to ensure the preservation of existing commercial contracts (grandfathering) to prevent disadvantage to all market participants who are willing to invest and contract for the long term.

Deliver improvements throughout the transition, not just in the long term

The short term versus long term balance in interpreting the National Electricity Objective is skewed in favour of the long term, which can lead to short term disadvantage. There needs to be a more risk-based approach to changes which reflects the certainty around short term costs and the uncertainty of long-term benefits. The staging of the transition must be recognised, as well as the final outcome, looking for benefits along the pathway. In considering the most beneficial end point, the benefits and costs of the transition, should also be considered.

Recognise the starting point and state-by-state variation in any design

The current energy-only market has not been able to deliver perfect competition, some regions are more balanced than others and many regions have relied on major Government investment to provide supply and manage the transition. Future market reforms need to recognise that the playing field within the market does not start from a basis of levelized competition, regulations will be required which encourage competition in the services which are needed to balance the current imperfections and in jurisdictions where the current market competition levels are unable to drive efficient outcomes. In designing new structures that recognise the reality of the starting point an important principle of design is that the cost of regulation should not exceed the private benefits.

User participation should be voluntary and recognise the complexity of participation

Even for large, sophisticated industrial users, the procurement of electricity is primarily seen as an input into production; rather than being the core process for the business itself. As the emphasis in market design switches to more demand side participation, assumptions need to be continually tested regarding the complexity of requirements to participate. It is important to recognise that demand site participation will impact on both operational processes and safety; and has the potential to distract from the core business processes of end users. It requires complex technical considerations within the businesses of industrial users that interact with the market. Outsourcing participation to an intermediary does not remove the need for the business to manage its physical interface with the market. Accordingly, services that industrial users could provide – such as demand management, stability, ancillary services, and emergency response – should be provided on a voluntary basis and need to be adequately compensated for.