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Australian Energy Market Commission (AEMC),  
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NSW 2001  
Via - <https://www.aemc.gov.au/contact-us/lodge-submission>

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Dear Commissioner

***Australian Aluminium Council Response to Enhancing Operational Resilience in Relation to Indistinct Events***

The Australian Aluminium Council (the Council) represents Australia's bauxite mining, alumina refining, aluminium smelting and downstream processing industries. The aluminium industry has been operating in Australia since 1955, and over the decades has been a significant contributor to the nation's economy. It includes five large (>10 Mt per annum) bauxite mines plus several smaller mines which collectively produce over 100 Mt per annum making Australia the world's largest producer of bauxite. Australia is the world's largest exporter of alumina with six alumina refineries producing around 20 Mt per annum of alumina. Australia is the sixth largest producer of aluminium, with four aluminium smelters and additional downstream processing industries including more than 20 extrusion presses. Aluminium is Australia's highest earning manufacturing export. The industry directly employs more than 17,000 people, including 4,000 full time equivalent contractors. It also indirectly supports around 60,000 families predominantly in regional Australia.

The Council welcomes the opportunity to provide feedback to the AEMC on the Enhancing Operational Resilience in Relation to Indistinct Events. Indistinct events are events that can impact multiple generators or transmission lines in an unpredictable and uncertain manner and may include major storms, bushfires and cyber-attacks, which may trigger unpredictable responses in an increasingly complex power system. These indistinct events are a threat to maintaining a secure supply of electricity to customers. This follows a recommendation made by the AEMC to enhance resilience in the power system, following the review of the South Australian black system event.

**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 which use 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. For the aluminium industry, it is the delivered cost (including transmission) of electricity which drives international competitiveness.

The electricity supply requirements of the aluminium industry, can be summarised as follows:

- least cost, and an internationally competitive electricity cost, as a minimum;
- consistent uninterrupted electricity supply;
- an ability to secure electricity supply under long-term contractual arrangements; and
- an ability to be compensated adequately for system services which smelters and refineries provide for the network and its stakeholders.

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

### **Role of Smelters in the NEM during Resilience Events**

The Council has also noted the increased risk to system resilience, but also the important role aluminium smelters play during these events. For example, on 25 August 2018<sup>1</sup> when there were two separation events – initially between Queensland and New South Wales and then also South Australia and Victoria. Portland Aluminium (Alcoa) in Victoria, Tomago Aluminium in NSW and Bell Bay Smelter in Tasmania automatically tripped, removing a combined more than 1000MW from the system instantly; minimising the impacts on other consumers.

The Council believes that enhancement of system resilience is one of the most important roles that smelters provide in the market. The real option value of this role remains largely unrecognised, 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. The system cost would be extremely high to maintain secure and resilient operation of the grid to address low probability, high impact occurrences through targeted investment in assets, only required for these “resilience” events. However, aluminium smelters provide jobs, export revenue and stabilise minimum demand 24 hours a day, 365 days a year, as well as providing systemic support when required. Without aluminium smelters, the challenge to manage Australia's east coast electricity network along with reliably supplying the twenty-two million Australians connected to it, would be even harder.

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 range of services varies by smelter technology and other external factors. For example, a recent report to the ESB on Demand Response<sup>2</sup> 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 influenced by the recency and frequency of interruptions; 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 more challenging.

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<sup>1</sup> [https://www.aemo.com.au/-/media/Files/Electricity/NEM/Market\\_Notices\\_and\\_Events/Power\\_System\\_Incident\\_Reports/2018/Qld--SA-Separation-25-August-2018-Incident-Report.pdf](https://www.aemo.com.au/-/media/Files/Electricity/NEM/Market_Notices_and_Events/Power_System_Incident_Reports/2018/Qld--SA-Separation-25-August-2018-Incident-Report.pdf)

<sup>2</sup> <https://esb-post2025-market-design.aemc.gov.au/32572/1608712640-energy-synapse-demand-response-in-the-nem-final-report-14-dec-2020.pdf>

Very large electricity users play a number of roles in the market, which are currently not compensated, or where the mechanism to value them is poorly aligned with operational practices. These resources are provided by existing smelter resources, 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);
- 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.

#### **Rule Change**

The Council supports the amended definition of contingency events to include:

- broadening the definition to include ‘plant’ rather than just generating units and/or transmission elements; and
- including sudden and unplanned changes to loading alongside failure or removal from service; allowing AEMO to manage indistinct events within the existing, established frameworks, a more efficient outcome than introducing a new parallel framework just for indistinct events. The Council supports the need for consultation the reclassification criteria for when AEMO considers a non-credible contingency event has become reasonably possible and the actions AEMO will take to manage reclassified events.

#### **Conclusion**

The Council seeks a national climate and energy policy framework which is transparent, stable and predictable, while maintaining the economic health of the nation including vital import and export competing industries. The ongoing electricity industry reforms, including recognition of the changing resilience of the system and the role of major electricity users, such as smelters is of critical importance to the Council and its members. The Council is happy to provide further information on any of the issues raised in this submission.

Kind regards,



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