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Energy Security Board
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Dear Chair

Australian Aluminium Council Response to P2025 Market Design Consultation Paper

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.

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. 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.

While the short-term contract price for wholesale of electricity has in recent times reduced, this has not necessarily translated to the delivered cost of energy, including transmission and ancillary costs. The cost of delivering generation is set to continue to increase; and efficient delivery of electricity will be key to the restoration of international competitiveness. Australia's world class energy resources can be translated into internationally competitive, low emissions, reliable energy which will ensure industrial production, emissions and jobs are not exported to other countries. Efficient and least cost delivery of electricity should support

the transition of economically important industrial sectors such as alumina and aluminium, enabling a greater manufacturing sector in the future.

P2025 Market Design Consultation Paper

The Council welcomes the opportunity to provide feedback to the April 2021 Energy Security Board (ESB) discussion paper "P2025 Market Design Consultation Paper" (the Paper). The Council has considered how options presented contribute 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.

The Council welcomes the recognition in the Paper that a NEM-wide, national approach to electricity market reform could better facilitate consumer outcomes. The Council notes the ESB's increased focus on an energy transition at least cost and notes that as investments are made, they need to be used in an efficient manner.

The Council agrees with the ESB that a key question remains as to is *whether* the current market design can deliver the necessary investment signals to drive both entry of and contracting for new dispatchable resources, and efficient decisions around the closure of large-scale generation. A related set of questions is whether the market design efficiently supports the availability and dispatch of essential system services in operational timeframes. However, throughout the Paper the default assumption seems to be that *it cannot*. This leads to the Paper proposing a range of possible solutions to problems which have not yet been fully articulated, let alone quantified in a consistent and transparent manner.

The options presented in this paper are developed to differing degrees of refinement. Many are still highly conceptual with limited evidence of the problem being addressed, a lack of structured analysis of the pros and cons of the options in overcoming the problem and limited if any assessment of how they are expected to interact to create a holistically efficient marketplace for electricity. In some cases, highly conceptualised options and generalised pathways, that confirm the options are yet to be properly developed, make it difficult for the Council to make sensible comparisons between options and identify preferences.

The Council supports an iterative approach where only required additional interventions which demonstrably complement and work with the existing market arrangements are implemented. The current methodology, as presented in the paper, favours solving issues as they arise or where an option can be refined; yet the overall long-term direction is not fully articulated. 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.

The Council agrees that security is the most concerning and urgent issue in the NEM due to the increased penetration of variable renewables in the grid and that resilience of the grid has become increasingly difficult to manage. At the moment, there are not the arrangements in place to provide a clear value signal to the market of every service potentially needed to maintain grid security and resilience. The challenge is to determine the most efficient and effective set of mechanisms for valuing, procuring, and dispatching an appropriate mix of these Essential System Services (ESS), while recognising that creating a new market or procurement approach for every possible service will add complexity and reduce transparency of the price setting process, adding risk for long-term contracting and investment, which is contrary to the ESB's aims.

The Council supports the recognition of ESS value, which can be provided by customers as well as new technology. The Council in principle supports the delivery of missing services via a market, 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. In developing mechanisms to provide services through a market, the Council's preference is that this should

be by adapting the current wholesale market, rather than developing a plethora of co-optimised new markets for each service. The Council's rationale for this is:

- The product being sold is quality electricity, and the services are all components which make up the production of electricity of the right *quality*.
- A single market price is more likely to support a liquid hedge market and provide consumers with greater ability to hedge. Currently, there are a limited number of price nodes across the NEM and a reasonably functioning hedge market. Because it's an energy only market, many of the services discussed in Paper are priced into the hedge. The introduction of additional non hedgeable markets leaves customers exposed to a greater proportion of electricity costs that are not contractable and could be volatile.
- These charges may end up being an add-on not covered by existing spot price hedge contracts, so customers with long-term contracts could end up paying extra charges on top of their agreed electricity charge.
- The more markets there are, the more difficult it will be to understand the interaction between them, and the less likely that each of these markets will be competitive and liquid, increasing financial risk in the contract market.
- The alternative of non-market procurement mechanisms for separate services is more likely to result in costs and inefficiencies falling largely on consumers through "smeared" cost recovery mechanisms offering no opportunity or incentives for mitigation.

The NEM Post 2025 process offers the ability to map out a coherent long-term reform path, rather than consider incremental changes on an individual basis, thereby supporting a cohesive system solution and avoiding unintended consequences. However, as the Council raised in its submission of October 2020, this process continues to face a number of key challenges:

1. Changes are still continuing in the current NEM, both by design and by necessity. Therefore, even with collaboration the reform process has an uncertain baseline.
2. State and Federal Governments are continuing to take actions which may be inconsistent with the reform directions proposed by the ESB or simply not being considered in the P2025 market design, adding to policy and regulatory uncertainty and increasing the risk that material changes in P2025 market design may lead to significant unintended consequences for consumers.
3. As rule changes continue to be implemented in parallel; the current work by the ESB has in some areas instead of being able to deliver a guide for the overarching framework become the fringe process to synthesise existing ongoing regulatory consultation by the Australian Energy Market Commission (AEMC); with the ESB only able to look for gaps.

Even for large, sophisticated industrial users, the procurement of electricity is primarily an input into production; rather than being the core process for the business itself. Accordingly, services that industrial users could provide – such as demand management, stability, ancillary services, and emergency response – should be provided on a voluntary basis, must be designed with the physical and economic realities of users' businesses fully understood, and need to be adequately compensated.

Understanding the role of Aluminium Smelters

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. 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.

Only some of the current services are explicitly remunerated, nor is their overall "real option" value recognised – namely the flexibility that retention of these large loads provides in future choices of physical and economic mechanisms to stabilise 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 cost to all consumers. The Council is concerned that the Paper does not explicitly discuss concerns about resilience or address options to enhance it.

Resource Adequacy Mechanisms

Agreed national principles for contract design

The Council supports development of agreed national frameworks for contract design to ensure power purchase agreements (PPAs) or other mechanisms forming part of jurisdictional investment schemes share the risk more equitably between generator and consumer, and seek to preserve market signals for efficient dispatch and investment across the NEM, similar to the model adopted in the NSW Electricity Infrastructure Roadmap through the Long-Term Energy Services Agreements which *"encourage projects to meet the physical firming needs of the system".*

Enhanced Exit Arrangements

The Council supports proposals for enhanced transparency of information on temporary or seasonal withdrawals of capacity from the market, as this supports more informed decisions on risk management. However, the possibility of information disclosure requirements leading to instigation of new obligations and additional regulatory burden around operation of facilities could yield unintended consequences and perverse incentives which require careful consideration.

These concerns are further amplified by discussion of (potentially frequent) "System and Market Impact Assessments" and "Orderly Exit Management Contracts" (OEMCs) in relation to withdrawal of specific thermal generators. While the intentions underlying these proposals are understandable, such mechanisms risk prompting actions by governments and generation owners which undercut the role of markets and market signals. The Council would also be concerned that in addition to these efficiency risks, the direct cost of mechanisms like OEMCs would almost inevitably fall on consumers.

Modifying the Retailer Reliability Obligation (RRO)

As articulated in the Paper, two options for modifying the RRO are being developed:

- removing the T-3 trigger from the existing financial RRO; and
- changing the definition of qualifying contracts to newly created physical certificates that provides a more direct link to physical resources could encourage more timely and earlier contracting.

It is not clear in the current Paper if it is the intent of the ESB to pursue both options in parallel, however there is also overlap with Operating Reserve.

The Council is concerned that the ESB has not provided a compelling case for pursuing either of these options given that:

- the RRO itself has only recently been introduced (and even more recently modified with introduction of the interim reliability measure) and it is therefore too early to be certain of its impacts on contracting and investment incentives and outcomes; and
- AEMO's reliability outlooks are not indicating material near term issues (as opposed to system security and resilience risks, which are not addressed through these mechanisms).

With regard to modifications to the financial RRO, the Council notes that AEMO forecasts have not indicated there will be breaches of the current reliability standard (0.002% USE) until 2029 although there is forecast to be a breach of the interim reliability measure (0.0006% USE) for NSW in 2023 when the Liddell power station is expected to retire. In recent years reliability has been challenged by less predictable events, such as bushfires and storms, which led to transmission outages and islanding of regions. The Council therefore is unclear on the value the proposed modifications to the financial RRO would bring to consumers.

With regard to a physical RRO; the Paper notes that this would impose additional compliance, enforcement and implementation costs -which will ultimately be borne by consumers. The Council does recognise that the physical RRO aims to ensure that adequate physical capacity resources are available. The Council welcomes the recognition that this physical capacity may include demand response from large consumers such as smelters, and that any physical certificate must also not disadvantage demand response resources if they can confidently provide capacity during at risk periods.

However, the Council believes the challenges of defining measuring and accrediting certificates or other measures of such physical capacity – an issue common to any form of capacity market or mechanism – have not been adequately recognised nor addressed in the limited detail provided by the ESB. Nor has the general impact that this mechanism might have on energy market price signals and its interaction with the market's Reliability Settings been evaluated. It is therefore extremely hard to assess the relative cost versus benefits to consumers. The Council further notes that there are currently increasingly detailed rule changes for Operating Reserves being considered by the AEMC; and that there is sufficient overlap in the resources required for a Physical RRO and an Operating Reserve, that it would quite possibly not be efficient to have both.

Operating Reserves

Note the Council's previous comments about whether an operating reserve has the potential to provide a positive externality, and whether it unnecessarily overlaps with a physical RRO. The Council welcomes the ESB's consideration on the extent to which the proposed mechanism is hedgeable (and in practice add to the buffer of resources held in reserve for unexpected events.)

Essential System Services, Scheduling and Ahead Mechanisms

The Council appreciates the intent underlying the ESB's identification of a SSM as a possible extension to TNSP-led procurement of services such as system strength and inertia in the investment timeframe. However, it seems premature to proceed with design and development of any such mechanism without further operational experience of the impacts of recent and proposed rule changes concerning system strength and inertia procurement, and the proposed Unit Commitment for Security Mechanism (UCSM).

Ramping / operating reserve

The Council supports the view in the Paper, that the most important principle upon which to determine *whether and when* a new reserve service should be implemented is that the *expected benefits to consumers of implementation should outweigh the expected costs, over the long term*. As such the Council supports the proposed approach which will define the circumstances in which a reserve service would be of value to consumers and consider the appropriate timing of implementation based upon an outlook of whether and when these circumstances are likely to arise in the NEM, and the risks of implementing or not implementing a reserve service.

The Council reiterates that there is likely to be considerable overlap between capacity supported by resource adequacy mechanisms such as a physical RRO and resources that would be explicitly remunerated under an Operating Reserve market.

Noting however, that the AEMC intends to invite further stakeholder comment through the publication of a draft determination on the *Operating reserve market* and *Introduction of ramping services* rule changes mid-

year 2021; this seems to imply that the AEMC is continuing to pursue this determination before the ESB has completed its analysis of whether and when it its required. The Council believes the ESB should complete and circulate its analysis, before the AEMC undertakes further consultation on a draft determination for a change which may not be required.

Integration of Distributed Energy Resources and Demand Side Participation (DSP)

The Paper recognises that across the NEM, there is value in developing enduring solutions for managing declining minimum demand that can be implemented in a nationally consistent framework. The Paper also recognises that, if not effectively managed, falling minimum demand will lead to issues with managing voltage, system strength, and inertia. This will drive up costs and risk through increases in directions by AEMO and interventions in economic dispatch, and additional provision of services for system restart, increased ramping capacity, voltage management and system strength and inertia services. The Council recognises that minimum demand as largely viewed as localised minimums associated with high penetration of residential solar PV. However, the Council believes there are opportunities to value the role that both current and new industrial loads play in helping at least prevent further decline, and potentially increase demand

Electricity market mechanisms to encourage large industrial customers to provide DSP services need to be attractive enough to compete with the other market opportunities that industrial customers face, to justify the investment and ongoing management required. Mechanisms like RERT, that provide an infrequent and unpredictable income stream that cannot be budgeted reliably, make the business case for participation harder to support when they compete with other business opportunities that provide more bankable benefits. This encourages more opportunistic participation in DSP, rather than investment and commitment to providing services on an ongoing basis. Caution needs to be taken in designing a market that promotes and creates dependence on opportunistic participation to support the reliability of the electricity system. Customers will arbitrage between electricity and the other commodities they are exposed to, which may leave the NEM short of services when other commodity prices are high and customers preference production over interruptions. Alternatively, if lack of supply in the electricity market forces customers to disrupt production (and sometimes employment) in order to maintain grid security or avoid excessively high electricity prices, this is often seen as market failure.

The Council believes the most effective way to integrate industrial DSP into the electricity market is through mechanisms that provide stable, predictable income and operations. This will underpin investment and commitment to providing the services over the longer term and will encourage greater and more reliable participation by industry.

Scheduled Lite

The Council notes that the intent of Scheduled Lite, which was only identified as a concept in the January 2021 Directions Paper, is a participation model which could be used to schedule additional resources into the market and facilitate participation in the market. The Council is deeply concerned that Scheduled Lite which has not even been defined in terms of potential operating mode or participation options is already moving from a “voluntary approach” to a potential “mandatory approach”. The Council believes in raising potentially mandatory participation, the ESB demonstrates an alarming lack of understanding of the complexity of participation in the demand side from industrial participants.

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 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 side 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. All services that industrial users could provide – including participating in scheduled lite – should

be provided on a voluntary basis and need to be adequately compensated for. The Council believes the ESB should withdraw all references to any potential mandatory participation in Scheduled Lite.

With regard to the preferred operating model for Scheduled Lite, the Paper proposes a Visibility Model and a Dispatchability Model. The Council's view is that:

- Non-scheduled resources could potentially provide self-forecasts of future behaviour or intentions;
- Non-scheduled resources are unlikely to be able to provide compliant energy market bids, noting the previous commentary about the complex relationship between energy use and production from the demand side; and
- There should be no financial consequences (civil penalties) for participants.

Therefore, the Council would favour the Visibility Model over the Dispatchability Model, as a voluntary participation model.

Approaching the work – the Maturity Plan

The Council is concerned that the 6 monthly releases of the Maturity Plan over next 3 years will in fact create not only more work but more uncertainty, as actions from previous period will not be completed let alone commence before next period. The Council believes updates should be no more than annual.

Transmission and Access

The Council notes that the current allocation methodology, which results in consumers paying increasing and unforecastable costs is unsustainable. The ESB has considered an alternative framework for funding of Renewable Energy Zones (REZs), however, the Council believes that more broadly a model which is transparent, predictable and allows balanced sharing across market participants must be implemented as soon as practicable.

Additionally, the focus of transmission reform seems to be on the integration of variable renewable energy (VRE), such as wind and solar, rather than optimised integration of what the system fundamentally needs; which includes new dispatchable generation or storage. While the increased penetration of VRE, through REZs is preferable to ad hoc development of VRE; the Council believes that this is an inferior solution to optimising the integration of dispatchable energy *and* VRE, wherever possible.

Actionable ISP rules

The Paper notes that ahead of its final recommendations mid-year the ESB will consider issues relevant to the role of the Regulatory Investment Test for Transmission (RIT-T), the nature of the test and issues regarding the allocation of costs between jurisdictions. The Council supports a focus on getting required network built at least cost to consumers. However, the Council is concerned that there is a perception that projects on the actionable Integrated System Plan (ISP) should not be subject to the full RIT-T. The Council supports processes where all projects, including those on the actionable ISP such as Marinus Link, only proceed after project costs and benefits are robustly quantified and agreement is reached on how the cost of the project will be recovered.

The Paper notes that in some cases, the Commonwealth and relevant State jurisdictions are underwriting and supporting the new network build. The Council believes that the use of Government balance sheets to underwrite these investments, as long as the network build is soundly justified, can be part of an effective way to minimise costs to consumers.

Interim REZ framework

The Council acknowledges that the current transmission network is insufficient to support the additional connection of large quantities of renewable generation which will occur over the next twenty years. However, the Council's focus is ensuring the additional supply is delivered at least cost and risk, through co-ordinated transmission, storage and generation investments. Accordingly, the Council supports a "causer-pays" approach to ensure transmission network expansions are only built only when to do so, is more cost

effective than building new storage or firming generation. This optimisation will not occur if consumers fund transmission costs for selected new generation projects. As the Paper states, VRE is already the lowest cost generation, so it should not require subsidisation by consumers in connecting to the transmission network

As articulated in the Council's submission to the ESB on Renewable Energy Zone (REZ) Frameworks in February 2021, the current regime, which requires the Australian Energy Market Operator (AEMO) and Transmission Network Service Providers (TNSPs) to connect new generators even if transmission capacity is limited, has resulted in passed increased cost to consumers. Under the current framework, if a transmission investment associated with a REZ is classified as an actionable Integrated System Plan (ISP) project and passes the Regulatory Investment Test for Transmission (RIT-T), it proceeds on a regulated basis funded by electricity consumers. Historically major transmission investments, arising from ad hoc developments, have resulted in these costs being passed to consumers through the Australian Energy Regulator (AER).

The Council supports a model where generators would contribute to the cost of the REZ's shared transmission infrastructure, through a REZ auction, as it should ensure that the group of projects which become part of a REZ is selected on the basis that aligns with the long-term interests of electricity consumers, therefore reducing the cost and risk ultimately borne by customers.

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 P2025 market design is a crucial aspect of this for the aluminium industry.

Given the importance of the P2025 market design for the aluminium industry, the Council is happy to provide further information on any of the issues raised in this submission and looks forward to continuing to work further with the Energy Security Board on this market design.

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 side 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.