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Department of Industry, Science, Energy and Resources (DISER)
Via DISER Consultation Hub
<https://consult.industry.gov.au/energy/gas-fired-recovery-plan/>

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Dear Minister

Australian Aluminium Council Feedback on Gas Fired Recovery Infrastructure and Investment

The Australian Aluminium Council (the Council) represents Australia's bauxite mining, alumina refining, aluminium smelting and downstream processing industries. Background on the industry and its gas use, provided to the Department as part of consultation on the Gas Fired Recovery, is included in *Attachment 1*.

The Council welcomes the opportunity to provide feedback to the July 2021 "Gas Fired Recovery: Infrastructure and Investment" Consultation Note. As each operation has unique energy arrangements, the Council will limit its feedback in this consultation to a high level. Over the last decade Australian gas prices have increased and despite numerous inquiries and policy agendas, little has changed on the ground. The Australian domestic gas market is currently neither efficient nor deep. The Council recognises that the Gas Fired Recovery Plan, is a step to address the current market challenges, and to go further than previous inquiries, in particular finalisation of the National Gas Infrastructure Plan (NGIP) and Future Gas Infrastructure Investment Framework.

National Gas Infrastructure Plan

As identified in the Interim NGIP released in May 2021, short to medium term solutions generally focus on investments related to existing infrastructure and sourcing of gas from current fields. The final NGIP will need to consider broader gas supply and infrastructure needs out to 2040. The Grid Reliability Scenario (Figure 6) in the Interim NGIP shows the modelled gas supply vs demand outcomes are very sensitive to the changes in the electricity sector, due to the use of gas firming to maintain system reliability. Recent outages of major generators, particularly in Queensland and Victoria, have confirmed this. Ensuring adequate gas supply and competitive prices for gas; will be essential to ensuring electricity reliability is maintained at least cost to consumers.

When considering the gas needs of the aluminium industry, in the East Coast gas market over the next twenty years, it is important to consider the time scale for change. While the Australian aluminium and alumina industries are developing and commercialising new technologies, the time, cost and complexity of developing viable, large-scale alternatives to the use of gas should not be underestimated.

While the industry consumes gas in its aluminium smelters and extrusion operations, the largest use is in alumina refineries, located in both the east and west coast gas markets. The Council believes that gas will have an important and necessary bridging role in lowering carbon emissions, as it is technically and economically

viable today; while zero emissions alternatives are more fully developed in the future. The evolving gas needs of an electricity system with higher levels of renewable generation and new technologies like hydrogen, also need to be considered. This will be particularly important in ensuring all options for industry transition, including fuel switching and electrification are not only technically but also commercially viable.

The industry is currently investigating options which include the use of renewable hydrogen in its processes, particularly in the production of alumina. Australian Renewable Energy Agency¹ (ARENA) recently announced funding to support a Rio Tinto feasibility study investigating the potential to partially decarbonise its alumina refining operations using renewable hydrogen. Conventional alumina refining combusts natural gas to achieve the high temperatures necessary in the calcination process. Rio Tinto will investigate the technical implications of displacing natural gas with renewable hydrogen at its Yarwun alumina refinery in Gladstone. The study would inform the viability of a potential demonstration project to validate the findings. The study will see an improved understanding of the potential for renewable hydrogen to be used in the alumina refining process and the scope of development works required to implement hydrogen fuelled calcination technology at an existing alumina refinery. Importantly, the findings of this study may have applications in other high temperature Australian manufacturing processes, beyond alumina and even beyond the mineral processing sector. Additionally, if successful, the technical and commercial lessons could lead to the implementation of hydrogen calcination technology, not only in Australia, but also internationally.

Additionally, if there was to be an increased supply of competitively priced low or zero emissions electricity, and subject to technological advances, there is the potential to materially increase the electrification of alumina refineries in both the NEM and SWIS electricity markets. ARENA² recently announced \$11.3 million in funding to Alcoa of Australia Limited (Alcoa) to demonstrate technology that can electrify the production of steam in its alumina refining process using renewable energy. Approximately 70 per cent of the total fossil fuels consumed in alumina refining relates to the production of steam in boilers. Mechanical Vapour Recompression (MVR) is a potential alternative to displace steam using renewable electricity.

The design of the NGIP needs to consider how the potential for alternative processes; particularly electrification of major industries; could result in substantially lower demand on the gas network in the future. Changes in gas demand could result in stranded asset risk for new infrastructure, if appropriate consideration is not given to a range of likely short, medium and long term use scenarios, resulting in excess costs being passed onto gas consumers. Investments need to be delivered efficiently and at lowest possible cost, to ensure all gas users have access to affordable, reliable gas supplies.

Future Gas Infrastructure Investment Framework

The Framework is intended to set a clear process and provide certainty for industry on potential future project support; criteria Government investment in or support for a gas infrastructure project and set guidelines for establishing the types of support that would be available and the delivery of that support. In considering, the factors which will help develop these criteria and guidelines, the Council has considered its Electricity System Design Principles (*Attachment 2*). While there are clear differences between the electricity and gas networks and markets, the Council believes many of these principles are of relevance to both and encourages the Department to consider these in the Framework design.

The Council and its members are seeking an efficient, effective and deep Australian domestic gas market – a market which is comprised of many buyers and sellers who are able to negotiate contracts where both sides can obtain a fair return and where, for example, shortages in supply lead to higher prices, which in turn bring on additional supply to satisfy this demand. The Council acknowledges that the current infrastructure network is insufficient to support the needs of consumers over the next twenty years. However, the Council's focus is ensuring the additional infrastructure is delivered at least cost and risk, through co-ordinated investments. In

¹ <https://arena.gov.au/news/renewable-hydrogen-could-reduce-emissions-in-alumina-refining/>

² <https://arena.gov.au/news/alcoa-to-investigate-low-emissions-alumina/>

developing the Framework, the Council supports a “causer-pays” approach to ensure additional infrastructure is only built when there is a long-term business case all market participants; which does not result in stranded assets, which are left for consumers to fund. Agreement needs to be reached, ahead of investment; on how the costs of any projects are to be recovered.

A key outcome from this Framework should be predictability so industry can confidently invest and plan for the future. “Investibility” is not solely a concern for the supply side of the market. At a time when manufacturers are facing serious challenges, energy is one of the few potential advantages Australia has to offer and which Government can help to deliver. Australia should adopt a strategic national approach to gas and its manufacturing sector, as many of its competitors have. Once the Framework is set, the inclination of Governments for interventions should be resisted, as the electricity market has clearly demonstrated that these interventions undermine market confidence and reduce commercial investments.

Conclusion

The Council seeks a national energy policy framework which is transparent, stable and predictable, while maintaining the economic health of the nation including vital import and export competing industries. Access to gas is a crucial aspect of this for the alumina and aluminium industries. To achieve this, ultimately the market needs an increased diversity of sellers, new sources of gas that meet/exceed current domestic requirements and current LNG export capacity, and removal of physical congestion, in order to deliver internationally competitive outcomes for consumers. A market with inadequate gas supply will continue to track volatile international LNG pricing (less netback) and is unlikely to achieve the Government’s policy aims.

Given the importance of a functioning gas market to the 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 with the Government on the development of this policy.

Kind regards,



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Attachment 1 – Australian Aluminium Industry Background and Gas Use

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 large (>10 Mt per annum) bauxite mines plus several smaller producers which collectively produce over 100 Mt per annum making Australia the world's largest producer of bauxite (Figure 1). The six alumina refineries produce around 20 Mt per annum of alumina and Australia is the world's largest exporter of alumina. There are four aluminium smelters; in addition to downstream processing including more than 20 extrusion presses and Australia is the sixth largest producer of aluminium. Aluminium is Australia's highest earning manufacturing export. The industry directly employs more than 17,000 people, including 4,000 full time equivalent contractors. The industry also indirectly supports around 60,000 families in regional Australia.

The Australian alumina and aluminium industries are highly dependent on gas for their operations and viability; directly using more than 166³ PJ of gas per annum as well as indirect consumption via the electricity market. Energy typically accounts for 30-40% of the industries cost base, and therefore it is a key determinant of their international competitiveness. The industries gas usage can be summarised as follows:

- Gas usage by alumina refineries (WA Gas Market) ~125 PJ, which is 33 % of WA's domestic gas market;
- Gas usage by alumina refineries and aluminium smelters (East Coast Gas Market) ~40 PJ, which is 7% of the East Coast domestic gas market; and
- Indirect consumption via the National Electricity Market (NEM) the industry has four aluminium smelters, two alumina refineries and a number of extruders; and uses more than 10% of the electricity consumed in the NEM.

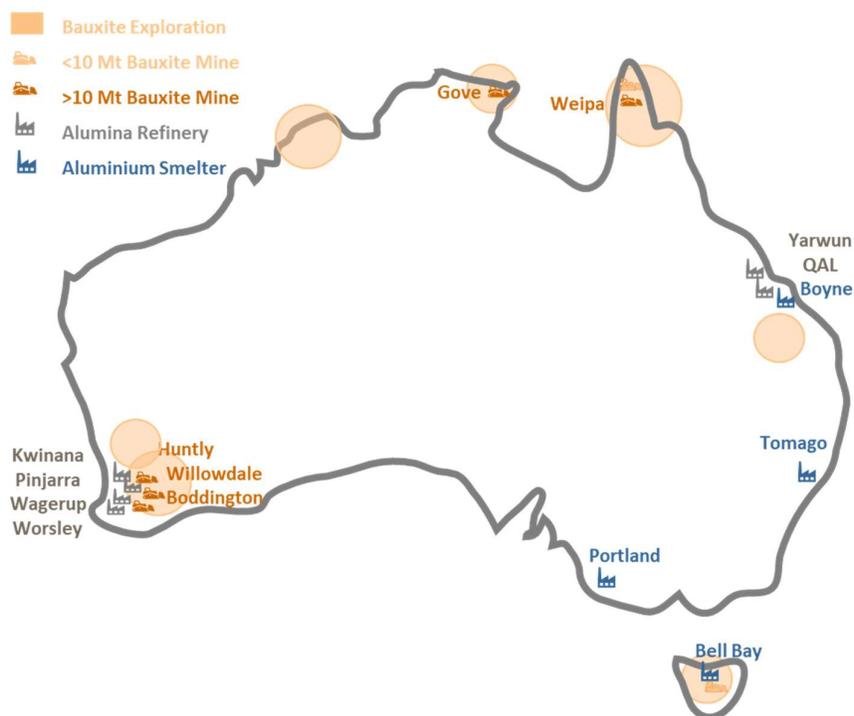


Figure 1. Bauxite mining, alumina refining and aluminium smelting operations

³ This gas consumption includes gas used in cogeneration for export electricity, as this activity is directly linked to the alumina refineries; and produces low emissions electricity for the National Electricity Market and South West Interconnected System. Data provided is for 2019 calendar year.

Attachment 2 - 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.