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Department of Industry, Science, Resources (DISR)
Via - <https://consult.industry.gov.au/future-gas-strategy>

10 November 2023

Dear Minister

Re: Future Gas Strategy 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. Today's aluminium industry contributes around \$15.4ⁱ a year to the economy in export value. More than \$14B of this comes from the alumina and aluminium industries, as value adding mineral processing sectors.

The industry includes six large 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 21 Mt per annum of alumina. Australia is the seventh largest producer of aluminium, with four aluminium smelters and additional downstream processing industries including more than 20 extrusion presses. Aluminiumⁱⁱ is one of the commodities most widely used in the global transition to a clean energy future. It is also recognised for its importance to both economic development and low emissions transition. Aluminium is Australia's top manufacturing export. The industry directly employs more than 19,000 people, including 6,600 full time equivalent contractors. It also indirectly supports around 60,000 families predominantly in regional Australia.

Aluminium is one of the commodities most widely used in the global transition to a clean energy futureⁱⁱⁱ. It is also recognised for its importance to both economic development and low emissions transition. Aluminium use is highly correlated with GDP, so as countries urbanise, per capita use of aluminium increases. It is expected that by 2050, global demand for aluminium is expected to nearly double^{iv}. While an increasing proportion will be met through recycled aluminium, there will still be a need for increased production of primary aluminium requiring a comparable increase in global bauxite mining and alumina refining rates.

The single biggest factor in determining the location of future refining, smelting and manufacturing locations is reliable, internationally competitive, low emissions energy. Without the option of large-scale hydropower assets available to alumina, aluminium and downstream manufacturing industries in countries like Brazil and Canada, Australian assets are currently highly dependent on gas for their operations and viability; directly using more than 166^v PJ of gas per annum as well as indirect consumption via the electricity market. The major operators and joint venture participants in Australia's aluminium industry have the common ambition of net zero by 2050, supported by interim goals (Table 1).

Table 1. Summary of Corporate Ambitions^{vi}

Company	Interim Goal (s)	Net Zero Ambition
Alcoa	30% reduction in scope 1 & 2 emission intensity by 2025 50% reduction in scope 1 & 2 emissions emission intensity by 2030 from 2015 baseline	Net zero by 2050
Rio Tinto	15% reduction in scope 1 & 2 emissions by 2025 50% reduction in scope 1 & 2 emissions by 2030 From a 2018 baseline (equity basis)	Net zero by 2050
South32	50% reduction in operational carbon emissions (Scope 1 & 2) by 2035 from FY21 baseline	Net zero by 2050
Alumina Ltd ^{vii}	45% reduction in scope 1 and 2 emissions by 2030 (from a 2010 baseline)	Net zero by 2050
Hydro ^{viii}	Reduction of 30% by 2030	Net zero by 2050

About half the industry's 2022 emissions, are covered Scope 1 emissions from Safeguard facilities (16.6 Mt CO₂-e). A further 17.1 Mt CO₂-e are Scope 2 emissions from purchased electricity. Energy typically accounts for around 30-40% of the industry's cost base, and therefore it is a key determinant of their international competitiveness. 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. The alumina industry also consumes around 220 PJ of energy, currently as gas and coal in the refineries.

This may convert to electricity requirements of 3-5GW^{ix} firm in the NEM and the South West Interconnected System (SWIS), depending on the technology applied in digestion and calcination. For industry, it is the delivered cost (including transmission) of energy which drives international competitiveness. The delivered energy supply requirements of the industry, can be summarised as follows:

- least cost, and at an internationally competitive level, as a minimum;
- consistent uninterrupted (firm) energy supply;
- an ability to secure sufficient energy 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.

Under current market-based delivery mechanisms for renewables, firming and transmission, electricity and gas costs are not internationally competitive and do not support a sustainable aluminium industry. New large scale renewable energy, firming and transmission assets to meet the needs of a decarbonising aluminium industry must be developed in a timely fashion to enable emissions associated with the industry to be reduced at scale.

In the absence of timely investment in large-scale storage capacity for renewables, the Council recognises the important role of gas in supporting firming in the electricity market. The Grid Reliability Scenario (Figure 6) in the Interim National Gas Infrastructure Plan 2021 showed 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 and the extreme energy market volatility of May/June 2022 have confirmed this. In the medium term, as Australia's energy system transitions to firmed renewables, ensuring adequate gas supply and competitive prices for gas will help to maintain electricity reliability at least cost to consumers.

Decarbonisation of the aluminium sector will rely heavily on the availability of large-scale, competitive, firmed, renewable energy. A significant investment will be required in low carbon firming. While the Council

supports measures to fast-track investment and delivery, significantly more capacity will be needed in the long term.

The Council welcomes the release of the Future Gas Strategy Consultation Paper (the Paper). As each operation has unique energy arrangements, the Council will limit its comments on the Paper to a high level.

Gas Demand

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 a necessary bridging role in lowering carbon emissions from refineries in the medium term, while low emissions alternatives are further developed and rolled out in the future.

1. Do you use any international and/or domestic forecasts to inform your outlook of the gas market? We want your views on which scenarios best reflect the demand outlook. Are there any limitations or additional factors impacting the demand outlook you would like to note?

Members of the Council may use forecasts to inform their views on the outlook for gas market.

The Australian Energy Market Operator (AEMO)'s Gas Statements of Opportunities (GSOO) for each market are commonly consulted and valued by Members. However, it is recognised there are limitations:

- The GSOO relies on self-reporting. AEMO does not have the same additional insights or role as the relevant regulators to be able to verify the information – particularly in relation to how production will change over time;
- The annual process means the GSOO can become quickly obsolete as the energy market remains volatile in the short term.

Members will tend to supplement the GSOO with various public and paid forecasts. Further reference should be made to submissions made by individual companies.

2. What role do you see gas-fired generators playing in supporting Australia's 82% renewable energy targets and beyond?

Competitively priced, firming, renewable energy supply is critically important to the decarbonisation of the alumina and aluminium industry. Gas-fired generators will have a significant interim role with its inherent capability to respond quickly to manage periods of high demand as renewable energy generation, transmission and storage is developed at scale and traditional coal fired generation is retired. The cost of firming renewable energy supply is likely to be the largest differentiator of Australia's future competitiveness for electricity-intensive industries and competitively priced gas can help deliver this essential service at least cost.

While there may be opportunities to firm these new generation technologies in some periods, there is not sufficient existing gas generation capacity available to completely offset the planned coal retirements. A further factor to consider is that commercial and social licence complexities for new transmission build will challenge the ability of additional renewables generation to align with planned retirements at the necessary scale. It will be a challenge to meet future demand requirements without needing to invest in new gas generation, ensuring there is more gas available domestically, and potentially increasing the price of electricity for market customers.

3. How will the expected trends in demand from gas-fired generators impact other gas users?

The Council supports government measures to drive Australia's transition to renewable electricity supply. Where possible, government should support gas users to transition to alternative low-emissions substitutes. Noting demand pressures on existing natural gas supply, government should evaluate its priority applications for natural gas (i.e., firming of renewable energy supply, and hard-to-abate industries) and consider a strategic national approach to reserve sufficient gas supply for these.

Increased volatility in gas-fired generation in response to variable renewable energy supply could impact other gas users in a number of ways including potential shortage of capacity when the demands of gas-fired generators are high; pipelines being constrained during periods of high electricity demand potentially curtailing gas supply to other gas users; and increased requirements for gas transport capacity to deliver during peak periods, lifting the total cost of gas transport for all users.

4. What should government do to consider managing these impacts and to mitigate energy peaks caused by regional or seasonal variations?

In the medium-term, the Council supports prioritisation of natural gas for applications with no alternative energy source e.g., peaking for electricity supply and industrial applications.

Additionally, support which encourages the adoption of energy storage (battery, pumped hydro, etc) and ensuring gas storage is available to be utilised by gas fired generators will help mitigate these impacts. Gas fired generators should pay for any increased utilisation of gas transport and this cost should not be passed on to all gas users via the gas tariff calculations in covered pipelines.

5. How feasible, and at what scale, are alternatives to natural gas for the electricity sector? You may wish to consider renewable gas alternatives for peaking generation, for example, biomethane and low-emissions hydrogen and other forms of grid-firming technologies like batteries and pumped hydroelectricity. What barriers exist to using these alternatives?

Government measures to drive Australia's energy transition should continue and incentivise the development of both emissions reduction technologies and a range of potential alternatives to natural gas. This should include new low carbon firming technologies that may have key roles in the supply of competitively priced energy 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.

6. How much longer will you continue using gas as a fuel source or feedstock for your business? Do you think your consumption of gas will decline over time, and if yes, at what rate?

When considering the gas needs of the aluminium industry it is important to consider the time scale for change. The Australian aluminium and alumina industries are investing significant resources to identify, develop and commercialise complex new technologies that will enable fossil fuels, including natural gas, to be phased out of operations as soon as commercially possible. The timeline for reduction in gas consumption depends on time taken to successfully identify, develop and commercialise these processes, and to integrate into existing facilities accordingly. The right government incentive structure and well resourced partnering models can provide an additional push for industry to move faster.

The Paper outlines that manufacturing gas demand is expected to remain steady until 2028, before gradually declining over the next few decades. For the alumina industry, the Council believes the more substantial changes in gas use will be beyond 2030. As articulated in the Australian Renewable Energy Agency (ARENA) Roadmap for Decarbonising Australian Alumina^x, even the Innovator Abatement Pathway does not show substantial abatement potential until close to 2030 (Figure 1Figure 2).

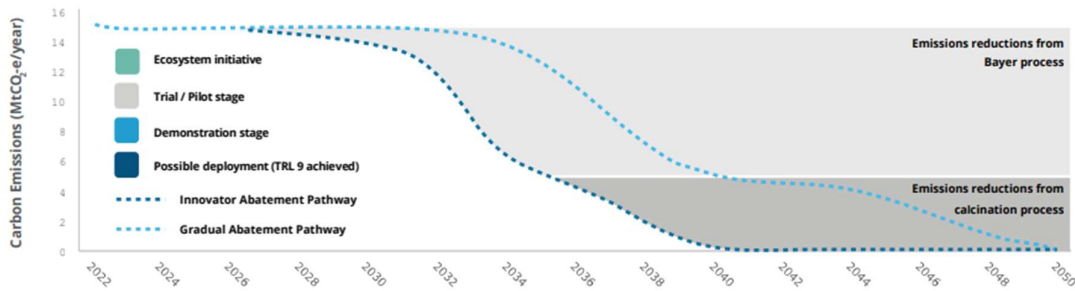


Figure 1. Alumina decarbonisation roadmap until 2050 with staging for key on-site and off-site ecosystem initiatives to achieve an ‘Innovator Abatement Pathway (ARENA Roadmap)’

The Council’s Members and their customers are increasingly seeking lower carbon products so there is an additional commercial imperative to phase out natural gas use.

7. Are there alternatives that your business can use instead of gas (for example electrification, hydrogen, biomethane or circular economy inputs)? What barriers exist to using these alternatives? How can the substitution of gas be accelerated?

The biggest single opportunity to decarbonise the vertically integrated domestic aluminium industry is via decarbonisation of the electricity supply, which assists with both direct electrification and other potential pathways, such as hydrogen. Decarbonising the electricity supply needs to be combined with technology availability for the facilities to enable transformation. Both are long-term, complex endeavours, which need to move together. However, in some cases it is the supply and availability of competitively priced zero emissions electricity which may be the rate limiting step. For example, the SWIS does not have the generation nor transmission capacity to electrify one alumina refinery, let alone four.

If Australia is to maintain a sustainable alumina and aluminium industry through the transition and deliver decarbonisation goals, the industry must be globally competitive. The fundamental pillar of global competitiveness is low-cost renewable energy, firming and transmission. The scale of the investment by the Government at this stage does not match the scale of investment of Australia’s competitors, such as in the US. The Mission Possible Partnership^{xi} highlighted that a global investment of approximately US\$1 trillion will be required for the aluminium sector transition. Considering the size of the Australian aluminium industry (~3% of the global industry), an investment of US\$30bn would be necessary to deliver the same outcome. Australia must be able to compete to attract the necessary capital and investment to undertake the transition.

Non-financial means of support – particularly the streamlining of regulatory approvals – are also critical to lowering barriers.

8. What factor/s influence your willingness to adopt electric appliances or processes? How could governments support small businesses to decrease gas consumption?

While the Council’s members have a willingness to adopt electrification processes, this does not overcome the issues raised around technology availability for the facilities to enable transformation and the supply and availability of competitively priced zero emissions electricity. Australia’s industry must also be able to attract the capital, to be able to make this transition while remaining competitive.

Equally, there is no transition without transmission and while states in the NEM continue to progress future state transmissions networks, these networks need to be in place to support the large volume of renewable

energy required to offset not only existing coal fired generation but also increased demand for facilities to electrify once this technology becomes viable.

Supply

39. *What are the risks to Australia's domestic gas security in the medium (to 2035) to long term (to 2050) for your industry and how can these be addressed?*

Industry has called for gas market reforms for more than a decade. The Council and its members have sought an efficient, effective and deep Australian domestic gas market. The inherent systemic failures in the existing east coast gas market currently do not support the delivery of adequate supply at reasonable prices. While the Western Australian market has had a 15% domestic reservation policy in place for almost 20 years, that too has come under pressure in light of forecast shortages in the late 2020s, and again in the 2030s.

The Council recognises that gas policy needs to consider Australia's role in regional energy security, however, this needs to be better balanced with the significant wider benefits of reliable, affordable supply to domestic consumers. Industrial consumers often use domestic energy supply to produce export goods. In the case of aluminium, this production also has a regional security implication given the criticality of aluminium in many technology and defence applications.

In 2022, Council members which sought to recontract for gas saw prices increase by up to 300% compared to prices in 2021. This is not sustainable noting that energy typically accounts for 30-40% of the industry's cost base and therefore is a key determinant of their competitiveness. Without changes to gas policy to alleviate price pressure on domestic consumers, unsustainable will become unviable.

In December 2022, the Prime Minister announced a suite of measures aimed at mitigating the impacts of predicted energy price spikes caused by Russia's illegal invasion of Ukraine and the consequent pressure on global energy markets. Since the intervention of December 2022, members of the Council have continued to be challenged in accessing gas contracts due to perceived uncertainty in the market.

40. *What do you see as the biggest risk to the ongoing affordability of Australia's domestic gas supply? For example, what are risks to affordability in the wholesale or retail market?*

In addition to previous responses, the Council is concerned about a lack of investment in and availability of low emissions alternatives to natural gas. While supporting the transition to renewables and lower emissions to natural gas, this must be done on a commercially viable and technically achievable timeline. The Australian domestic gas market needs additional diversity of supply to meet current and future needs until at least 2050. See also response to Q42.

Council Members also report challenges in concluding gas supply agreements even if price is agreed, due to a requirement to bear a disproportionate share of risks, for example:

- restricting the ability for gas buyers to manage their portfolio through gas sales or swaps to other gas consumers, thereby reducing the volume of transactions in the active secondary gas markets;
- requiring liability caps that are substantially in favour of the seller and uncapped liability from gas buyers;
- requiring credit support well above what could be considered reasonable, often requiring up to 1 year's support despite payment terms of 30 days or less;
- taking little or no liability for the quality of the gas they produce that is outside of the gas specification; and
- passing through carbon costs to gas buyers that do not allow these costs to be reliably forecast, calculated or audited.

41. *What reforms can be made at a Commonwealth, state, territory, or industry level to allow gas supply to be more responsive to domestic demand signals?*

The industry has experience operating under the Western Australian Domestic Gas Reservation Policy for almost 15 years. This policy has helped provide domestic market security to the alumina industry^{xii} in Western

Australia and demonstrates the mutual value which can be created between the mineral processing industry and its energy suppliers with supportive policy settings. Australia should adopt a strategic national approach to supplying gas to its manufacturing sector, as many of its competitors have. Noting the Western Australian arrangements are being reviewed with a Parliamentary Inquiry due to report in November, the underlying policy position of domestic reservation (with timely and transparent reporting and compliance mechanisms) is sound. Under a new strategy, it would be appropriate in the east coast market to transition from the ADGSM to a prospective gas reservation policy, as one part of the Government's strategy.

The Council recognises that the construction of the three LNG export facilities in Gladstone as well as moratoria on gas exploration in some states, has fundamentally changed the gas market with the east coast increasingly reliant on Queensland gas. In addition to measures to reduce demand, a range of reforms could address supply concerns including increased diversity of sellers, reserving adequate gas to meet strategic domestic requirements (which may need incremental sources of gas), and the removal of physical congestion, on domestic pipelines, 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. State and Federal collaboration is needed to resolve concerns around diversity of supply. The proposed differentiated approach for small producers in the Mandatory Code of Conduct should help bring increased competition and diversity to the domestic market.

42. What actions are available to lower gas costs, including substitution and new supply, to provide certainty to consumers? How would these actions further the Australian Government's decarbonisation goals?

The new Mandatory Code of conduct includes a \$12/ GJ price cap which the Council notes is consistent with advice from the Australian Competition and Consumer Commission (ACCC) reflecting the cost of provision for Australian gas from Australian producers to Australian users, rather than reflecting the international price and the production cost estimates developed for AEMO's GSOO for new supply. This price should incentivise new investment to ensure the Australian gas market remains well-supplied and supports affordable market prices in the medium to long term.

While noting that the price cap only applies to contracts in the wholesale market, a cap of \$12/GJ is a welcome ceiling given the volatility in the market since mid-2021. However, for high volume users such as the aluminium industry, \$12/GJ is not a long term sustainable price. These users require a price closer to the cost of production to promote long term sustainable operation. Using the ACCC LNG netback as a reference to an export parity price, \$12/GJ is materially higher than the average price prior to recent volatility (Figure 2).

The price of gas becomes more important to industry in the future as it moves away from, coal based processes to reduce carbon emissions. \$12/GJ may be suitable to halt high prices in the short to medium terms but is challenging for long term decision making. In the long term, gas should be priced in a reasonable manner considering the cost of production and not to default commercial arrangements at \$12/GJ.

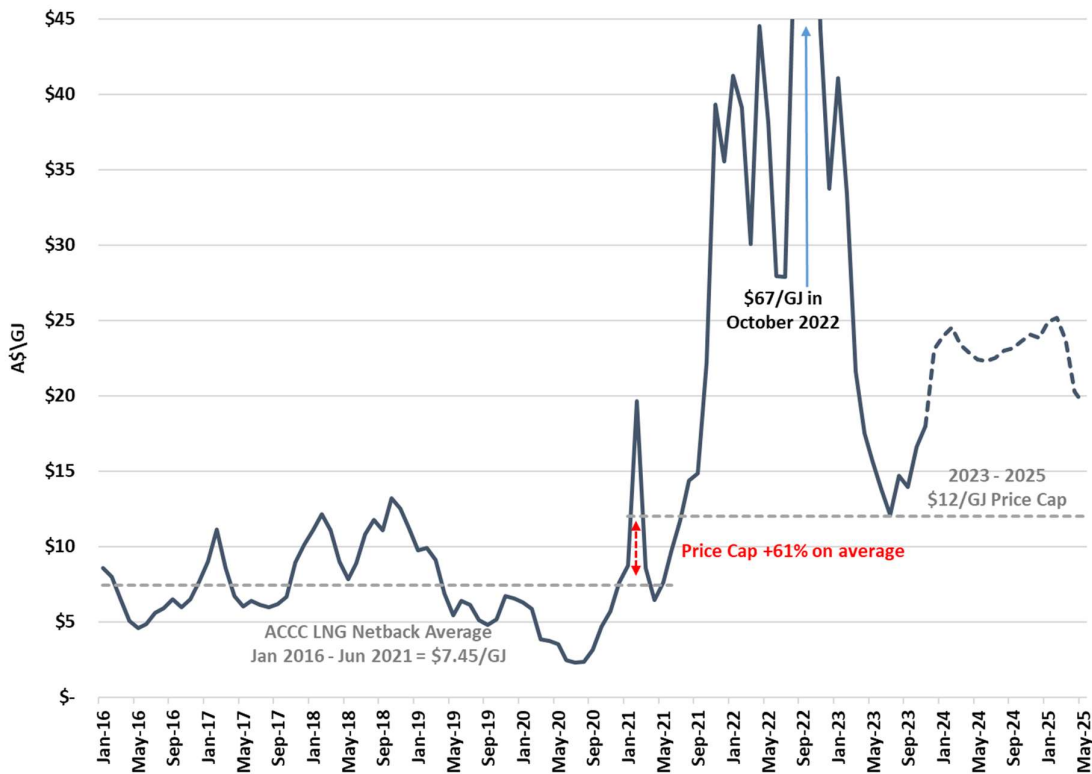


Figure 2. ACCC LNG Netback January 2016 to May 2025

44. Do you use any forecasts of gas supply to inform your outlook of the gas market? If so, what are they? You may also wish to consider whether these forecast scenarios consider the technical and commercial uncertainties associated with gas reserves and resources. Which scenarios do you consider best reflect the supply outlook?

Gas users use a range of forecasts and include companies such as Wood Mackenzie, Rystad, Energy Quest and a variety of smaller consulting firms. The market tends to rely on forecasts published by AEMO adjusted to determine what they believe to be more probable. The modelling of gas markets is very complex and so not easily replicated, especially when it comes to forecasts of gas use in electricity generation.

Conclusion

At a time when manufacturers are facing serious challenges, energy is one of the few advantages Australia has to offer and which Government can help to deliver. 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. 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 gas policy.

Kind regards,

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ⁱ <https://www.industry.gov.au/publications/resources-and-energy-quarterly-september-2023>

ⁱⁱ <https://www.worldbank.org/en/topic/extractiveindustries/brief/climate-smart-mining-minerals-for-climate-action>

ⁱⁱⁱ <https://www.worldbank.org/en/topic/extractiveindustries/brief/climate-smart-mining-minerals-for-climate-action>

^{iv} International Aluminium Institute High Substitution Scenario

^v The industries' gas usage can be summarised as follows:

- Gas usage by alumina refineries (WA Gas Market) ~125 PJ, which is 32 % 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 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.
- 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 SWIS. Data provided is for 2021 calendar year.

^{vi} Sources: <https://www.riotinto.com/en/sustainability/climate-change>;

<https://www.alcoa.com/global/en/stories/releases?id=2021/10/advancing-sustainably-alcoas-2050-net-zero-ambition>;

https://www.south32.net/docs/default-source/exchange-releases/2021-south32-sustainability-briefing.pdf?sfvrsn=d8a76a71_2; <https://www.hydro.com/en/media/news/2021/hydro-capital-markets-day-2021-sustainable-value-creation/>

^{vii} Alumina Ltd are a JV participant in Alcoa World Alumina and Chemicals, which operate two mines and three refineries in Western Australia and has equity in the Portland Aluminium Smelter.

^{viii} Hydro is a JV participant in Tomago Aluminium Company.

^{ix} The potential renewable capacity required to meet this demand is likely 3 to 5 times this amount.

<https://arena.gov.au/assets/2022/11/roadmap-for-decarbonising-australian-alumina-refining-report.pdf>

^x <https://arena.gov.au/assets/2022/11/roadmap-for-decarbonising-australian-alumina-refining-report.pdf>

^{xi} <https://missionpossiblepartnership.org/wp-content/uploads/2022/10/Making-1.5-Aligned-Aluminium-possible.pdf>