

Bioenergy Australia Submission: Proposed Greenhouse Gas Mitigation Guide for NSW Coal Mines

Bioenergy Australia (BA) is the national industry association committed to accelerating Australia's bio economy. Through targeted advocacy, campaigns, education, industry building and allied sector engagement, we're:

- Enabling decarbonisation of Australia's hard to abate sectors
- Enhancing energy security, supply and supporting the transition of Australia's energy system
- Growing Australia's economy and providing jobs and economic development including for regional Australia
- Enabling the development of Australia's circular economy

This submission from Bioenergy Australia is on behalf of the Renewable Gas Alliance (RGA) and The Low Carbon Fuels Alliance of Australia and New Zealand (LCFAANZ). These alliances were founded to accelerate the development and deployment of Low Carbon Liquid Fuels (LCLF) and Biomethane in Australia. Individual members of the alliances will be providing more detailed submissions specific to their business and expertise. This submission is a collective response and does not represent the views of any specific member

Australia's Bioenergy Roadmap (ARENA, November 2021) outlines how, by the start of the next decade, Australia's bioenergy sector could contribute to around \$10 billion in extra GDP per annum and 26,200 new jobs (predominately regional), reduce emissions by about 9 per cent, divert an extra 6 per cent of waste from landfill, and enhance fuel security. Now is the time to capitalise on these opportunities by supporting the development and adoption of low carbon fuels as part of the NSW EPA Climate Change Licensee Requirements, Climate Change Mitigation and Adaptation Plans: Mitigation Requirements, and the Greenhouse Gas Mitigation Guide for NSW Coal Mines.

We commend the NSW EPA's recognition that diesel combustion contributes around 30 per cent of total emissions from NSW coal mines demonstrates a clear, data-driven understanding that immediate, on-site abatement should look to proven, readily available technologies. We further commend the NSW EPA for recognising the important role of low-carbon fuel substitution in reducing greenhouse gas emissions from coal mining.

Low carbon fuels are low-emission alternatives to fossil-derived fuels. They can be produced from biogenic feedstocks such as agricultural residues, used fats, oils, greases, and waste as well as non-biomass resources like captured carbon dioxide and hydrogen. Low carbon liquid fuels can be used as drop-in or blended fuels, compatible with existing vehicles, machinery and infrastructure - allowing fuel-reliant sectors to reduce emissions without the cost, delay or disruption of overhauling their existing equipment and operations.

This means that underground and surface mining equipment, haul trucks, loaders, and other machinery can continue operating as usual—while reducing emissions. And the benefits go far beyond reducing emissions. Low-carbon liquid fuels can strengthen the mining sector’s energy resilience, reduce reliance on imported fuels, and create thousands of regional jobs—driving economic growth and sustaining resilient mining communities.

In the mining sector, we recommend the NSW EPA recognise the range of low carbon fuels that can support Greenhouse Gas Mitigation. This includes:

- **Biodiesel** produces less carbon dioxide emissions than oil-based fuels over the full lifecycle of production and use. Biodiesel use has been proven across various sectors, including marine, mining, electricity generation, road transport, and rail, both as a drop-in blended fuel and, in certain applications, as a 100% replacement fuel, compatible with existing refuelling equipment and assets. Biodiesel is already being produced in Australia and has the capacity to produce at least 100 million litres per annum of biodiesel from its three biodiesel refineries: Biodiesel Industries Australia in Newcastle, Just Biodiesel in Barnawartha, and Ecotech Biodiesel in Brisbane. Australia’s biodiesel producers all supply biodiesel that meets the Australian standard and can accommodate a range of blend specifications. Biodiesel can be used in all diesel engines up to a 5% blend without modification, and many engine manufacturers support blends up to 20% with manageable considerations such as increased minor servicing and monitoring.

The NSW coal mining sector has proven the technical viability of biodiesel, with several Hunter based mining operations having previously run biodiesel blends in their mining equipment. The three existing biodiesel production facilities are each well positioned to efficiently supply biodiesel to the key NSW coal mining regions in the Illawarra and the Hunter. Fuel blending can be conducted either inline at the mine site or by fuel distributors at their storage depots prior to delivery. The region already has established blending infrastructure that can be readily adapted to serve larger coal mining operations with minimal modification. Biodiesel is a realistic near-term abatement option, offering an immediately deployable substitute for fossil diesel within existing mining fleets and supply chains. Supporting this existing production capacity to unlock immediate decarbonisation opportunities.

We welcome the EPA’s inclusion of biodiesel in the *Greenhouse Gas Mitigation Guide for NSW Coal Mines* and commends the pragmatic, staged, evidence-based approach proposed for its implementation.

- **Renewable diesel** offers an excellent, tested and readily available alternative to mineral diesel for heavy trucks, with as much as a 75-95% reduction in life cycle emissions compared with mineral diesel.¹ It can be used as a 100% drop-in replacement for diesel-reliant technologies. Additional benefits include improvements to air quality compared with mineral diesel by reducing pollutants. The technology developed to produce renewable diesel can also be used to produce other renewable products such as SAF, a product that has been recognised as a main lever to reduce emissions in the aviation sector.² It is proven technology with an established market, with global

¹ [Industry Letter, 'Open Letter to The Hon Chris Bowen MP - Minister for Climate Change & Energy' \(2023\)](#).

² Department of Infrastructure, Transport, Regional Development and Communications, ['Aviation Green Paper'](#) (2023)

transport renewable liquid fuel capacity expanding by 7% in 2022, driven mainly by growth in renewable diesel, thanks to attractive policies in the United States and Europe.³ Renewable diesel has been used in Australia with over 162,000L of renewable diesel used by Australian construction companies.⁴

- **Ethanol** provides a proven, low-cost and nationally available pathway to decarbonise transport fuels without requiring new vehicles, infrastructure or behavioural change. Ethanol burns cleanly, lowers emissions, and improves the efficiency of engine combustion by providing additional oxygen (it is known as both an octane enhancer and oxygenate). On a lifecycle basis, ethanol achieves approximately 40–60 per cent lower greenhouse-gas emissions than fossil petrol, reducing both carbon intensity and harmful urban air pollutants such as particulate matter, carbon monoxide and benzene — pollutants directly linked to respiratory and cardiovascular disease. These represent direct, measurable Scope 1 emission reductions at the tailpipe, reportable under the NGER framework, rather than indirect credit-based offsets.

In 2021, Australia produced 180 million litres of fuel ethanol, but capacity could be increased to approximately 440 million litres, highlighting an immediate opportunity for on-site emissions abatement from liquid fuels.⁵ In the same way that biodiesel and renewable diesel provide a credible and achievable pathway for reducing emissions from on-site diesel use, ethanol blending offers an equally effective, readily deployable and technology-neutral abatement mechanism for petrol consumption.

- **Biomethanol** is chemically identical to fossil fuel based-methanol but result in significantly lower GHG emissions during the entire life cycle.⁶ It is compatible with current methanol dual-fuel marine engine technology, offering a clear pathway to decarbonisation without future investment or compatibility issues. Bio-methanol is a safe, proven, cost-competitive marine fuel for the commercial shipping industry that can meet or exceed current and planned emissions regulations.⁷
- **BioLPG** is a renewable, carbon-neutral fuel that can replace fossil fuels, reducing the carbon footprint of mining activities. BioLPG is chemically identical to conventional LPG and so can act as a 'drop-in' replacement for conventional LPG, which does not require any changes to existing infrastructure or appliances. BioLPG has the potential to replace all conventional LPG use, abating up to 1.5 million tonnes of CO₂-e each year. It will be available in Australia from as early as 2025-26.⁸
- **Renewable Natural Gas or Biomethane** can meet all technical requirements set by the manufacturers and natural gas transportation system operators and can be used everywhere in the same way as natural gas itself. Its use can result in significantly lower emissions of pollutants

³ IEA, 'Tracking Biofuels Supply: Investment'

⁴ Australian Constructors Association, 'ENVIRONMENTAL SUSTAINABILITY'

⁵ <https://cdn.revolutionise.com.au/cups/bioenergy/files/nyydxvvoi7belg4m.pdf>

⁶ <https://www.sciencedirect.com/science/article/abs/pii/S1364032118304945#:~:text=If%20the%20bio%2Dmethanol%20fuel,to%20the%20conventional%20diesel%20fuel.>

⁷ Methanex, 'Methanol as a Marine Fuel'.

⁸ GEA, Pathway to Zero Emissions for LPG (2023)

(such as hydrocarbons, carbon monoxide, nitrogen oxides, and particulate matter).⁹ Approximately 20–30 million vehicles globally are fuelled by compressed natural gas or biomethane.¹⁰ CO₂ and biomethane can also be converted to support other LCLFs such as synthetic diesel and SAF.¹¹

We encourage NSW EPA to recognise there is a range of low carbon fuels that will play an important role in emission mitigation for NSW Coal Mines. We also wish to stress that low carbon fuels will continue to play role in the long term, beyond “an interim measure while electrification develops”.

Australian mining and other high-emitting industries will continue to rely on liquid fuels over the long term due to the extended operational lifespan of assets and the practical limitations of electrification in mining environments.

Mining operations are often located in remote, isolated regions with little or no access to grid power, and the long distances combined with the high energy demands of equipment make electrification challenging.

While electrification has a role to play, it faces significant constraints including battery production limitations, resource constraints, restricted range, and the absence of charging infrastructure in rural and regional areas, making it less suitable for long-haul, heavy-duty applications. Even as electric infrastructure and feasibility expand, it is unlikely to do so at the pace or scale required to meet the sector’s decarbonisation needs. Therefore, the mining sector requires emissions reduction solutions that can work with existing equipment both now and in the long term, and low carbon fuels provide exactly that.

Liquid fuels will remain essential within the energy mix for decades to come, and we support a regulatory focus that includes measures to reduce emissions from the existing fuel base. This approach will deliver tangible, on-site decarbonisation outcomes while supporting Australian low carbon fuel producers and improving regional air quality through reduced particulate and nitrogen-oxide emissions.

Q1. Should the EPA progress a regulatory requirement for 2.5% of fuel used at NSW coal mines to be a low carbon alternative to fossil diesel by 2027?

We commend the NSW EPA’s ambition to reduce emissions across NSW coal mines and encourage the NSW EPA and NSW Government to work with and align with the work being undertaken by the Federal Government. We note that the Federal Government has committed to undertaking regulatory impact analysis of the costs and benefits of introducing demand-side measures for low-carbon fuels.

⁹ <https://www.europeanbiogas.eu/wp-content/uploads/2019/07/Biomethane-in-transport.pdf>

¹⁰ [IEA Bioenergy: Task 37, Perspectives on biomethane as a transport fuel within a circular economy, energy, and environmental system \(2021\)](#)

¹¹ [EDL, Biomethane Fact Sheet](#)

We encourage the NSW Government to align with this work so that a practical, scalable, and appropriately staged pathway can be established to help fuel users access low-carbon fuels, achieve on-site emissions reductions, and maintain operational and commercial feasibility.

Alignment and coordination between state and federal governments can help build a coordinated approach that accelerates uptake of low-carbon fuels and supports the development of a sustainable domestic industry—while avoiding conflicting or inconsistent requirements that could reduce competitiveness across sectors and jurisdictions.

Q3.2 Can coal mines transition to low or zero emissions large mining machinery and low carbon alternatives to fossil diesel sooner?

Yes, coal mines have the technological capability to transition to low- or zero-emissions machinery and low-carbon alternatives sooner. However, without appropriate supply-side support and measures to facilitate adoption, the cost of accessing and adopting low-carbon fuels can be commercially challenging.

Q3.3 What are the barriers and opportunities?

Existing ineffective policy and signals: The Biofuels Act 2007 (NSW) has been criticised for its poor design and ineffectiveness, including its limited scope of eligible fuels and insufficient enforcement mechanisms and exemption processes. Exemptions are frequently granted due to an alleged inability to secure sufficient supplies, despite Australia having sufficient biodiesel and ethanol production volumes. Australia’s biodiesel producers have expressed that they have the capacity to supply biodiesel to NSW. Yet due to the exemptions granted under the NSW biodiesel mandate, the actual percentage of biodiesel supplied in NSW in 2021 was well below 0.1 percent for biodiesel.¹² There is an opportunity to revise the current biofuels mandate exemption process to ensure that exemption requests based on “lack of supply” are properly verified, and that the mandate is enforced consistently and effectively. Strengthening this process would help unlock the potential of existing domestic production and support immediate decarbonisation opportunities. Together, biodiesel and ethanol represent complementary, low-carbon pathways that can deliver immediate, on-site abatement across both diesel and petrol use — supporting the EPA’s objectives through proven, scalable and locally produced solutions.

Costs and supply-side support: The higher cost of low carbon fuels compared with traditional fossil fuels remains a barrier to widespread uptake. Measures such as capital and development investment, production tax credits, contracts for difference, and R&D incentives are critical for stimulating innovation, initiating local projects, expanding existing domestic production capacity, de-risking long-term investment in the industry and bridging the price premium of low-carbon fuels.

For example, achieving Australia’s biodiesel industry full output would require a ramp-up period of roughly six to twelve months; however, given that demand growth is expected to occur progressively,

¹²[USDA, Biofuels Annual, December 15, 2022](#)

this target is considered achievable through to 2035 (aligning with the EPA's proposed target of replacing 10% of current fossil diesel consumption with low carbon alternatives). Beyond 2035, additional capital investment would be required to meet projected demand by 2040.

Supply-side support is a key stackable incentive that can work alongside Federal Government support to reduce the cost premium and maximise supply potential. Supply-side support should be directed at our existing capabilities, as well as emerging low carbon fuels, to increase supply and ensure offtakers can access these fuels at commercially viable prices.

Funding for blending and storage infrastructure: Investment in developing and upgrading infrastructure for blending and storing low carbon fuels. This includes constructing new blending facilities, retrofitting existing ones, including repurposing underutilised existing gas pipelines, and implementing advanced storage solutions. This could give NSW a competitive edge compared to other states.

Public-Private partnerships: By partnering on projects, the government can provide investment support while showcasing technology readiness and project feasibility. This also acts as a direct market signal, demonstrating the government's commitment in this area and giving industry certainty that policy levers will be put in place to ensure success.

Streamline regulatory approvals: streamlining regulatory approvals for renewable fuel projects and supporting the integration of supply chains with renewable energy sources can enhance efficiency and reduce overall costs across the state.

Support Regional Hubs: Develop regional hubs for low carbon fuel production and distribution, particularly in areas with strong feedstock availability and existing infrastructure that can be repurposed.

Enhance Connectivity: Improve transportation networks, such as rail and road, to ensure efficient and cost-effective movement of feedstock and low carbon fuels from production sites to end-users across the state.

Thank you for taking the time to consider our submission. Any questions or request for further assistance are welcome and can be directed to [REDACTED]

Sincerely,

A handwritten signature in black ink that reads 'Shahana McKenzie'.

Shahana McKenzie
CEO Bioenergy Australia