

NSW EPA low emissions fuels and vehicles at NSW coal mines: 2 October 2025, Sydney Australia

Workshop attendees

Facilitator: - Steve Rossiter, ATX Consulting NSW EPA: - Asela Atapattu, Executive Director Strategy and Policy - Shagofta Ali, Director Strategy and Policy - Kay Baxter, Manager Policy - Amanda Allan, Unit Head Policy - Jenny Haining, Senior Policy Officer Other NSW Government agencies or independent bodies: - Todd Settle, Principal Policy Officer, Department of Climate Change, Energy, the Environment and Water (DCCEEW) - Tim Stock, Director Hydrogen and Clean Energy, DCCEEW - Esha Thapar, Policy Advisor- Emissions Reduction, Net Zero Commission Technical Note Taker: - Daniel Atkins, Palaris Fuel suppliers: - Peter Chomley, Just Biodiesel - Paul Hetherington, Ecotech Biodiesel - Simon Roycroft, Refuelling Solutions - Aaron Holmquest, Biodiesel Industries Australia - Maria Garces, AMPOL - Robert Cavicchiolo, Viva Energy - Kirsty Beavon, Manildra	Vehicle/engine suppliers: - Jason Linke, Cummins - Daniel Simone, Liebherr - Jason Arthur, Komatsu - John Delany, Penske ANZ - Dominic Burton, Penske ANZ - Khushal Polepalle, Decarice - Frank Gili, Construction & Mining Equipment Industry Group (CMEIG) - Osama Ali, Caterpillar Mining sector representatives: - David Frith, NSW Minerals Council - Kathryn Ryan, Centennial Coal - Sandy Tickell, Glencore - Tim Gray, Glencore - Frank Fulham, Yancoal - Lynden Cini, Whitehaven Coal - Russell Thomas, GM3 - Damian Wichlacz, Peabody Energy - Chris Knight, The Bloomfield Group - Liam Wilson, Idemitsu - Michael Redman, MACH Energy - Hayley Frazer, Bengalla Mining Company - Taresa Hateley, Castlereagh Coal
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Context

On 2 October 2025, the EPA held a workshop on low emission fuels and vehicles at NSW coal mines, to inform its *Proposed Greenhouse Gas Mitigation Guide for NSW Coal Mines* (coal guide) and related regulatory settings.

The workshop brought together representatives from the NSW coal mining industry, fuel suppliers, and mining vehicle and engine suppliers, alongside relevant NSW agencies, to discuss technical information needed to support the EPA in finalising the proposed coal guide.

The EPA's proposed coal guide is the first of many sector guides intended to drive and support onsite abatement. It contains the following proposed requirements for diesel emissions:

Mitigation objective	Proposed EPA requirement and expected start	Example measures	Criteria
Reduce fossil diesel emissions at all coal mines	By July 2030: 5% of fuel used at the mine site is a low carbon alternative to fossil diesel. By July 2035: 10% of fuel used at the mine site is a low carbon alternative to fossil diesel. By July 2040: 25% of fuel used at the mine site is a low carbon alternative to fossil diesel, and 75% of large mining machinery and vehicles are zero emissions(a). By July 2050: 25% of fuel used at the mine site is a low carbon alternative to fossil diesel, and 100% of large mining machinery and vehicles are zero emissions(a).	Low carbon fuels: • biodiesel • renewable diesel • renewable methanol • renewable hydrogen • methane utilisation (drainage gas). Electrification: • battery electric • hydrogen fuel cell • cable-tethering.	All mines that emit (or are likely to emit) >25,000 t CO ₂ -e/year (scope 1).

Table notes:

(a) Large mining machinery and vehicles means >560 kW capacity.

The purpose of the workshop was to discuss the proposed requirements for diesel emissions, with a focus on feasibility of low carbon fuels, low emissions vehicles, and implementation timelines in the NSW coal mining context.

The slides from the workshop are attached to these notes as an appendix.

Key points

Low carbon fuels

- The EPA's proposed low carbon fuel mandates for coal mines are technically feasible but more expensive than fossil diesel and the cost per tonne of abatement is more expensive than Australian carbon credit units.
- Biodiesel is 40 to 100c/litre more expensive than fossil diesel. Renewable diesel is \$2-\$3/litre more expensive than fossil diesel. Without subsidies, uptake is unlikely at NSW coal mines because the cost of abatement is higher than the prices of Australian carbon credit units.
- Existing biodiesel production capacity is enough to meet the EPA's proposed 2030 low carbon fuel target for the NSW coal sector (5% low carbon fuel use). Expansion in production is needed for the 2035 and 2040 targets (10% and 25%). Biodiesel producers advised that 5-10 years is enough time to generate that capacity, if regulation creates certainty for investment decisions.
- Domestic feedstock is available for biofuels and renewable diesel. Feedstock prices are driven by global prices. Eighty percent of Australian canola, a key feedstock, is currently exported. However, Australian suppliers of feedstock may prefer to supply domestic biodiesel plants, as there is less risk than exporting.
- Biodiesel prices may not decrease with greater domestic production. US incentives are being removed or halved for imported feedstock into the US, which has seen a decrease in the price of feedstock. There has been about a \$100/L drop in tallow price recently, but it will likely not drop to 2012 levels.
- There is limited domestic production of renewable diesel, but fuel suppliers are investing in sustainable aviation fuel production. Most facilities are designed to produce both sustainable aviation fuel and renewable diesel. Renewable diesel typically makes up at least 10-20% of output when optimised for sustainable aviation fuel production.
- Renewable diesel is engine-compatible and high-performing but economically prohibitive for NSW coal mines. This stems from high production costs and lower yield compared to biodiesel.
- Mining engines are typically warranted to use biodiesel blends ranging between B5-B20 depending on engine make, model and whether Tier 4 after treatment is in place. Some original equipment manufacturers guarantee blends of biodiesel up to B7 for Tier 4 "Final" engines due to catalyst sensitivity and increased maintenance. See Table 1.
- Biodiesel blends require extra handling and maintenance compared to fossil diesel.
- The biodiesel producers and fuel suppliers attending the workshop do not import palm oil feedstocks and have traceability measures in place to provide confidence on sustainability and ethical measures.
- Mine representatives queried how the EPA would assess the financial feasibility of the low carbon fuels mandate. They assess abatement options based on marginal abatement costs

compared to Australian carbon credit units forecasts and other factors. Abatement costs above this, such as biodiesel, would not be considered by mines to be cost-effective carbon abatement. The EPA asked about the potential impact of proposed low-carbon fuel mandates on coal mine cost margins. Mining representatives highlighted concerns about sharing commercial data and maintaining independence in financial decision-making.

Table 1: Manufacturers' warranty limits for biodiesel use

Manufacturer	Large mining engines	Large Tier 4 engines
Caterpillar - vehicles	Up to B20	B20 (see page 106 of Caterpillar Machine Fluids Recommendations SEBU6250-21).
Komatsu - vehicles	Up to B20	B5
Liebherr - vehicles & engines	Up to B10 Above B10 requires onsite studies before any guarantees	Do not offer Tier 4 engines
Cummins (original equipment manufacturer) – engine supplier	Up to B20	B7
Penske (original equipment manufacturer) – engine supplier	B7 (Can guarantee up to B20 pending onsite assessment)	B7

Zero emission vehicles

- Tethered electric excavators are commercially available for use at mines. Battery trucks and dozers are still in development. Hybrid options for large mining vehicles offer the operational flexibility needed by coal mines as well as emissions reduction opportunities. However, they require further development to prototype and become commercially available.
- Grid capacity and electricity usage is a major barrier for the large-scale deployment of battery electricity trucks at coal mines. Mines face pressure to reduce electrical power use from the grid during peak times, and some have been approached to limit productive mining and participate in demand response schemes to support grid stability.
- Charging infrastructure, battery lifecycle, and workforce limitations are other barriers.
- It is anticipated that battery trucks will likely be more expensive and require more frequent overhauls. Investment is constrained by their current low technical readiness level, mine development consent durations and uncertain payback periods.
- Truck lifespans (about 15–20 years) mean 2040 targets require immediate action, but the technology and infrastructure are not yet ready.

- Capital investment decisions are generally easier in metals mining than in coal, due to coal mines' shorter consent periods and difficulties gaining approvals beyond 2050. Achieving investment payback is difficult when future site extensions are uncertain.

Other emission reduction initiatives

- Engine swap out and repower and pre-drainage projects at open cut mines are being explored by some coal mining companies as abatement options. Methane gas drained from underground coal mines can be converted to LNG and used to fuel haul trucks for open cut operations.

Exemptions and feasibility

- Mines requested clarity on exemption processes and feasibility assessments. The EPA confirmed it will develop a transparent framework, potentially using external expertise where needed, and is seeking feedback on this through the public consultation process.