



CONSULTATION – LOW CARBON LIQUID FUELS – A FUTURE MADE IN AUSTRALIA: UNLOCKING AUSTRALIA'S LOW CARBON LIQUID FUEL OPPORTUNITY

AUSTRALIAN TRUCKING ASSOCIATION AND TRUCK INDUSTRY COUNCIL SUBMISSION 25 JULY 2024

1. About the Australian Trucking Association

The Australian Trucking Association (ATA) is a united voice for our members on trucking issues of national importance. Through our [ten member associations](#), we represent the 60,000 businesses and 200,000 people who make up the Australian trucking industry.

2. About the Truck Industry Council

The Truck Industry Council (TIC) is an independent, not-for-profit peak industry organisation representing the united views of truck manufacturers, truck importers, heavy vehicle engine companies and major component suppliers to the Federal Government, State and Territory Governments, Local Government, Industry and Business associations and the general public.

3. Introduction

The Australian Government has announced a new *Made in Australia Act* to coordinate a package of reforms and initiatives which will support the growth of new industries and benefit communities and workers. The low carbon liquid fuels (LCLF) industries have been identified as a key element of the package.

The Government is seeking informed views from industry to understand how a LCLF industry can support Australia's net zero transformation, leverage competitive advantage in in Australian domestic LCLF production, and align economic incentives with national interest. We believe in a holistic approach to modernising Australia's truck fleet to reach net zero targets, supported by realistic transition arrangements. LCLFs are an important element of achieving this goal.

Throughout this submission, the term 'alternative/transitional fuels' will be used interchangeably with LCLF to refer to renewable diesel, green diesel, Fisher-Tropsch diesel, HEFA diesel, and biodiesel. The name of a particular advanced transitional fuel will be used when referred to specifically. Diesel will be referred to as a traditional fuel due to its almost exclusive application in the heavy vehicle industry.

Trucking is a hard-to-abate sector for carbon reduction due to its reliance on diesel engines, limited alternative fuel options, and high transition costs. Instead of aiming for net zero, focusing on lowering emissions through productivity measures, fuel efficiency improvements,

and hybrid technologies is more practical for the immediate future. This approach allows for significant emission reductions while accommodating current technological and infrastructural limitations, ensuring effective progress without disrupting the industry. The Australian trucking sector has shown improvements in reducing emissions per tonne-kilometre over time. Advancements in vehicle technology, stricter standards, and higher productivity measures have contributed to a downward trend. We aim to continue this trend and work with the government to reduce emissions across our sector.

Table 1¹

Year	Emission Standard	PM		NOx	
		Test Limit (g/kWh)	Multiple	Test Limit (g/kWh)	Multiple
Pre-1996	None (Euro 0)	1.2	x120	16	x40
Pre-2003	ADR70/00 (Euro 1)	0.4	x36	7.6	x28
Pre-2008	ADR80/00 (Euro 3)	0.1	x10	5	x13
Pre-2011	ADR80/02 (Euro 4)	0.02	x2	3.5	x9
2011 - 2024	ADR80/03 (Euro 5)	0.02	x2	2	x5
Nov 2024	ADR80/04 (Euro 6)	0.01	x1	0.4	x1

The above table shows the exhaust emission levels in g/kWh (grams per kilowatt hour). The data for pre-1996 vehicles is an average, and in many cases would be much higher. The data for other years assumes that the engine is built to the applicable "EURO" standard, and not one of the acceptable equivalent standards from the USA or Japan.

4. Summary of recommendations

The recommendations throughout this submission can be summarised as follows.

1. The Australian Government should recognise that heavy road transport is a hard to abate sector and focus on achieving sensible emissions reduction targets by a variety of means, rather than mandating net zero emissions by an arbitrary date.
2. The Australian Government should facilitate the rapid establishment of a domestic LCLF industry in Australia.
3. The Australian Government should invest in supply-side LCLF measures that place significant weight on factors such as bowser cost, quality, and the reliability of supply. The ATA and TIC are open to various mechanisms including contract for difference schemes, fixed-grant amount incentives, or production tax incentives to achieve this goal.
4. The Australian Government should recognise that any 'green premium' applied to transport fuel costs will be passed to customers, resulting in increased costs to business and living.
5. The Australian Government should not introduce burdensome measuring and reporting requirements on transport operators, particularly smaller operators.
6. The Australian Government should introduce blending mandates and increase these by the end of 2028 and 2030.

¹ Truck Industry Council.

7. The Australian Government should introduce a renewable diesel fuel standard and certification scheme for LCLFs.
8. The Australian Government should retain the existing fuel tax credits (FTC) system for conventional diesel to ensure that transport costs are affordable.
9. The Australian Government should adjust net taxes and charges applied to LCLFs (either produced domestically or imported) via the RUC and FTC system to ensure at least price parity with traditional diesel.
10. The Australian Government should recognise LCLFs as a crucial transitional step in reducing heavy transport carbon emissions in the short to medium term. The ATA and TIC assert that the contrary views of the Climate Change Authority are unrealistic.
11. The Australian Government should continue to work with industry to map a realistic transition pathway to LCLFs.

5. Industry overview

The average age of the Australian truck is 15 years² which poses risks for health and environment. Newer vehicles have greater safety features than older ones and tend to be better maintained. No matter how they are powered, new vehicles are more efficient, have the latest safety technologies and meet more stringent noxious emissions standards.

Trucks will continue to play a critical role in the delivery of the freight task to 2050 and beyond as it grows by approximately 26%. As a result, we must take appropriate action to begin modernising Australia's truck fleet now, including –

- Encouraging the take up of alternative fuel vehicles such as battery electric or hydrogen;
- Reducing noxious emissions by supporting the upgrade of the diesel fleet to ADR 80/04 (Euro VI equivalents) and beyond; and
- Supporting renewable diesel as a transitional fuel.

The ATA's and TIC's individual submissions on the Transport and Infrastructure Net Zero Roadmap will further explore the required steps in modernising Australia's truck fleet.

The key facts and figures for the heavy vehicle industry are as follows:

a. Make-up of Australia's trucks

Of the approximately 600,000 trucks in Australia above 4.5t GVM, roughly 20% (100,000) are articulated, whilst 80% (500,000) are rigid trucks. When it comes to emissions, articulated trucks are responsible for approximately 60% of emissions output, whilst rigid trucks account for around 40%.³

² Truck Industry Council/BITRE.

³ Heavy Vehicle Industry Australia, 'HVIA Submission – CCA: Targets, Pathways and Progress' (2024) 3.

b. Current fuel usage

Australian Petroleum Statistics estimated that 32,574 million litres of diesel were sold in 2023. This figure includes automotive diesel, industrial and marine diesel fuel. The road freight sector is a major user of diesel, and diesel accounted for 99.8% of fuel consumption by trucks. This represents a huge opportunity to reduce carbon emissions across the road freight sector and beyond with the uptake of transitional fuels.

c. Challenges

Heavy vehicles are major contributors to greenhouse gas emissions and air pollution.⁴ Forecasts suggest that without a policy to cause the diesel fleet to retire early, diesel heavy vehicles in Australia will remain at around 55 per cent of the total heavy vehicle fleet in 2050, locking in emissions from diesel combustion well past 2050.⁵

The Australian trucking industry faces some challenges in the uptake of alternative fuel vehicles generally, which may impact attitudes towards reducing carbon emissions overall.

i. Readiness of electric vehicles

Electrification of transport is currently limited to passenger transport and short-haul transport. Application in trucking is limited by long and unpredictable routes, stringent driving time regulations, and substantial payloads. As it stands, heavy batteries, slow charging speeds and lack of charging facilities means the Government should be exploring drop in fuels as part of the emission reduction strategy.⁶

ii. Readiness of hydrogen vehicles

Hydrogen has emerged as a potential solution to reducing carbon emissions in the long-haul freight sector due to faster refuelling speeds and longer range. The development of a hydrogen fuelling solution is still in its infancy, and the Government should focus on this in the medium-term as part of a holistic view to reducing emissions.⁷

iii. Lack of operator's confidence

The trucking industry is made of small businesses. In June 2022, almost 58,000 of the industry's 59,100 businesses had fewer than twenty employees. 31,600 trucking businesses had no employees at all.⁸ Without a clear roadmap and range of solutions, small and medium operators will struggle to back the alternative fuel vehicle movement.

"Decarbonisation can be a difficult concept for operators to get their minds across, but its important that they do because the low and no carbon future is already upon us. We have targets from governments, but we have little assistance and no definitive direction that can be implemented based upon current expectations around cost reductions".⁹

⁴ Luisa Franchina, 'Thinking green: The role of smart technologies in transforming cities' waste and supply Chain's flow' (2021) 2 *Cleaner Engineering and Technology* 1.

⁵ Department of Primary Industries and Regional Development, *Renewable Diesel Factsheet* (2023) <[https://www.agric.wa.gov.au/sites/gateway/files/Renewable Diesel Factsheet.pdf](https://www.agric.wa.gov.au/sites/gateway/files/Renewable_Diesel_Factsheet.pdf)>.

⁶ Samson Kwok Yu Fu, 'Metropolitan Freight Efficiency and Emissions Project Review and Closure Report' (2024) Western Roads Federation & Curtin University, 9.

⁷ Ibid.

⁸ Australian Trucking Association, *Trucking Australia – The Report* (March 2023) 12.

⁹ Samson Kwok Yu Fu, 'Metropolitan Freight Efficiency and Emissions Project Review and Closure Report' (2024) Western Roads Federation & Curtin University, 10.

Recommendation: The Australian Government should recognise that heavy road transport is a hard to abate sector and focus on achieving sensible emissions reduction targets by a variety of means, rather than mandating net zero emissions by an arbitrary date.

6. The low carbon liquid fuels opportunity

Given the challenges outlined above, renewable diesel has clear potential benefits as a drop in solution to bring emissions down quicker, and as a potential decarbonisation pathway for harder to abate parts of the heavy vehicle fleet.¹⁰ There is a clear and pressing need to increase the supply and lower the cost of low carbon fuel options in Australia.¹¹

Fundamental: Emphasising the supply-side approach

We strongly support a supply-side approach and the creation of a domestic market for low-carbon fuels. This should be a cornerstone of the LCLF strategy. Ensuring a reliable and affordable supply of LCLFs is crucial for the sustainability and effectiveness of this transition. We are open to various mechanisms, such as contract for difference schemes, fixed-grant amount incentives, or production tax incentives, to achieve this goal.

Recommendation: The Australian Government should facilitate the rapid establishment of a domestic LCLF industry in Australia.

In evaluating these options, the government must place significant weight on factors such as bowser cost, quality, and the reliability of supply.

Recommendation: The Australian Government should invest in supply-side LCLF measures that place significant weight on factors such as bowser cost, quality, and the reliability of supply. The ATA and TIC are open to various mechanisms including contract for difference schemes, fixed-grant amount incentives, or production tax incentives to achieve this goal.

Fundamental: Ensuring demand-side cost neutrality

Subject to the success of the supply-side measures, the government must ensure the transition to LCLF is cost-neutral for trucking operators. Fuel taxation is a critical instrument. We support retaining the Fuel Tax Credits (FTC) for conventional diesel and recommend adjusting taxes or the Road User Charge (RUC) for LCLF components to achieve price parity.

The Californian and Swedish approach detailed later in this submission supports the types of supply and demand-side measures we are suggesting.

Pricing and green premium data:

The average retail price of diesel in Australia for the week ending 30 June 2024 was \$1.93 per litre.

¹⁰ NatRoad, 'Australian road freight transport decarbonisation' (2023) 9.

¹¹ Ibid.

The issue with calculating precise costs for renewable diesel is there is no domestic supply industry, and the cost of renewable diesel is subject to international import and export factors. The price fluctuations of feedstock are also a consideration.

We can look to the Sustainable Aviation Fuel (SAF) discussion for perspective. SAF costs are 120%-700% higher than fossil-fuel based jet fuels and can reduce CO2 emissions by between 27%-87%.¹² Internationally, SAF costs two to four times more than conventional fuel. There is a large gap between the demand for SAF and net-zero by 2050 projections. Without a mechanism to manage the green premium associated with renewable diesel, this effect may be replicated in the heavy vehicle industry.

The point is the price of renewable diesel will be higher than regular diesel at least until a domestic industry is established. As such, without policy, there will be no incentive to produce or use renewable diesel.

Impact of increased charges on trucking:

Freight is a significant input cost for all businesses. Trucking is a high capital, high turnover, and low-margin industry. Any increase in costs, including a green premium for LCLF, will be passed on to customers, raising the cost of business and living.

Australian Bureau of Statistics data has shown that freight costs directly impact the price of goods in a household basket.¹³ Additionally, rising freight costs have led some businesses to relocate outside of Australia¹⁴, reducing the country's competitiveness.

In assessing all options for both demand and supply-side measures, the government must strive to achieve at least a cost-neutral outcome for trucking operators, considering factors such as fuel costs, engine efficiency, maintenance, and administrative burdens. This is especially crucial during the transitional period to ensure the viability of the industry and prevent negative economic impacts.

Recommendation: The Australian Government should recognise that any 'green premium' applied to transport fuel costs will be passed to customers, resulting in increased costs to business and living.

Current and future demand:

Australia is focusing on developing its LCLF industry with significant government support. The Federal Budget 2024-25 includes measures to support the industry, such as \$22.7 billion for renewable initiatives and \$18.5 million over four years for developing a certification scheme for these fuels.

Market acceptance:

If alternative fuels have a premium price, the demand must be generated. Regulatory pressures can begin the transition, but widespread uptake requires economic feasibility and

¹² Madelynn Watson *et al*, 'Sustainable aviation fuel technologies, costs, emissions, policies, and markets: A critical review' (2024) 449 *Journal of Cleaner Production*.

¹³ Australian Bureau of Statistics, 'Spotlight on recent trends in Freight costs' (2023) <<https://www.abs.gov.au/articles/spotlight-recent-trends-freight-costs>>.

¹⁴ Forbes, 'What challenges does the logistics industry face in 2023?' (2023) <<https://www.forbes.com.au/news/leadership/what-challenges-does-the-logistics-industry-face-in-2023/>>.

competitive pricing with traditional diesel. Without demand incentives, supply incentives will have little effect.

Production volumes:

The potential production volumes for renewable diesel in Australia are highly dependent on the level of government support. High support could enable rapid scaling and significant production capacity, making Australia a major producer of renewable diesel. Moderate support would result in steady but slower growth, while low support would lead to limited production and reliance on imports. For a successful transition to renewable diesel, comprehensive government policies, funding, and supportive regulatory frameworks are essential.

Industry size and maturity:

Currently there is no commercial renewable diesel production or supply in Australia, but the domestic production of low carbon liquid fuels could provide opportunities for regional development and new jobs, alongside liquid fuels security benefits.¹⁵

There is no mature low-carbon technology to slash emissions from heavy vehicles that travel long distances or haul heavy loads. This is why drop in fuels are essential while we continue to find other ways to reduce carbon emissions from the fleet, including by supporting the uptake of battery electric trucks in Australian cities.

The ATA's submission to the House of Representatives Standing Committee on Climate Change, Energy, Environment and Water's inquiry into the transition to electric vehicles sets out recommendations for increasing the use of battery electric trucks.¹⁶

Several companies are looking to develop domestic LCLF production. Three groups are progressing proposals in Western Australia with two based in the Wheatbelt region and one in Perth.¹⁷ The Government believes that domestic production of low carbon liquid fuels could provide opportunities for regional development and new jobs, alongside liquid fuels security benefits.¹⁸

Part of the effort by industry is being undertaken by bp. They plan to transform its Kwinana oil refinery in Western Australia into a multi-use energy hub, focusing on renewable energy production and storage. The key elements of the Kwinana Energy Hub plan include:

- a) **Green Hydrogen Production:** bp intends to produce green hydrogen using renewable energy sources, contributing to the decarbonisation of industrial processes and transportation.
- b) **Renewable Fuels:** The hub will produce sustainable fuels, including sustainable aviation fuel (SAF) and renewable fuels for mining and heavy transport, supporting the transition to lower-carbon transportation fuels.
- c) **Integrated Energy Solutions:** The site will host renewable energy generation and storage facilities, to support the hub's operations and supply energy to the grid.

¹⁵ Australian Government, Transport and Infrastructure Net Zero Consultation Roadmap, May 2024, 6.

¹⁶ ATA, [Inquiry into the transition to electric vehicles](#). Submission to the House of Representatives Standing Committee on Climate Change, Energy, Environment and Water. 22 March 2024.

¹⁷ Department of Primary Industries and Regional Development, *Renewable Diesel Factsheet (2023)* <[https://www.agric.wa.gov.au/sites/gateway/files/Renewable Diesel Factsheet.pdf](https://www.agric.wa.gov.au/sites/gateway/files/Renewable_Diesel_Factsheet.pdf)>.

¹⁸ Australian Government, Transport and Infrastructure Net Zero Consultation Roadmap, May 2024, 6.

- d) **Innovation and Technology:** bp plans to invest in advanced technologies to enhance the efficiency and sustainability of the hub's operations.

Overall, the Kwinana Energy Hub aims to leverage bp's existing infrastructure to support Australia's energy transition and contribute to achieving net-zero emissions goals.

As part of the Future Made in Australia plan, the Australian Government will fast-track support for a low carbon liquid fuel industry, with an initial focus on renewable diesel fuel to reduce emissions in the heavy vehicle sector.¹⁹ The ATA and TIC look forward to the development of the renewable diesel fuel quality standard and the emergence of a domestic supply industry.

Reporting requirements:

Small trucking operators often lack the resources to collect data, assess impacts, and report carbon outcomes to government or supply chain entities. These tasks are resource-intensive and require investments in data management systems and staff which small operators can't afford due to tight margins.

Imposing reporting requirements on small operators can be overly burdensome. Instead, these responsibilities should fall on larger entities within the supply chain, who have the capacity to manage these tasks effectively. This approach ensures that environmental goals are met without overwhelming smaller operators.

Recommendation: The Australian Government should not introduce burdensome measuring and reporting requirements on transport operators, particularly smaller operators.

Comparative advantages:

More than half of Australia's canola crop is exported to the European Union. At least 60% of that amount is used in biodiesel production. This ownership of the raw feedstocks means Australia is already well positioned to sell domestically if a domestic renewable fuel industry can be created.

Reliance on imports vs. domestic production (energy security):

Australia imports most of its oil. In 2021, 91% of all refined product consumed in Australia was imported. This includes imported refined oil and imported crude and condensate that is refined domestically.²⁰ Australia remains heavily reliant upon fossil fuels and has some of the highest reliance on fossil fuels for power generation in the world.²¹ This dependence on imported fossil fuels makes the trucking industry vulnerable to supply disruptions and price volatility in global oil markets. Encouraging the adoption of alternative fuels reduces reliance on finite fossil fuel resources and enhances energy security and resilience. These fuels can be produced domestically from renewable sources²², reducing dependence on imported oil

¹⁹ Australian Government, Transport and Infrastructure Net Zero Consultation Roadmap, May 2024, 6.

²⁰ Department of Industry, Science, Energy and Resources (June 2021) *Australian Petroleum Statistics – Issue 299*.

²¹ Hong Li *et al*, 'A review on renewable energy transition in Australia: An updated depiction' (2020) 242(1) *Journal of Cleaner Production* 6.

²² Department of Climate Change, Energy, the Environment and Water, *Enabling supply of renewable diesel in Australia: A consultation paper on establishing a paraffinic diesel fuel standard for Australia* (November 2023) 4.

and strengthening Australia's energy independence.

7. Demand mechanisms

Mandates and targets:

In 2023, one per cent of new truck sales were zero or low emission vehicles, which represents an increase of almost 400 per cent on 2022 figures. Of those sales, 50 per cent were zero emission and 50 percent were hybrid. At the start of 2024, there were approximately 200-250 zero emission trucks on Australian roads.

Forecasts from the Truck Industry Council suggest by 2030, 1 in 4 new truck sales will be zero emission and there will be 20,000 zero emission trucks on the road. This only represents 2-3 per cent of the truck fleet. A blending mandate will provide the road transport industry with a carbon abatement opportunity that works across the entire existing fleet.

A blending mandate creates a stable demand for renewable diesel, encouraging investment in its production and distribution infrastructure. This can lead to economies of scale, reducing costs over time to a point where subsidies are not necessary. A clear blending mandate also provides regulatory certainty for businesses, allowing them to plan long-term investments.

We note that the recommended targets could be progressively increased to ensure continuous improvement and sustained momentum in reducing emissions. This approach would provide clear, long-term signals to the market, encouraging investment in low-carbon technologies and infrastructure.

Incremental increases in targets can also help mitigate the potential shock to the industry, allowing businesses to adapt and innovate in a manageable way. This would align with the broader goals of the LCLF initiative. A similar approach has been adopted successfully in California, discussed on the next page.

Research undertaken by TIC has forecast current and projected production capabilities:

Bio-diesel production facilities (3 currently in operation):

Current capacity: 100 million litres/year

Current production: 5 million litres/year (primarily for mining and marine use)

Potential capacity by 2026: 100 million litres/year

Based on recent transport diesel oil sales figures and under current production capacity, a lower blend is quickly achievable.

$30,000,000,000 \text{ litres/year} \times 0.003 = 90,000,000 \text{ litres/year}$ (10 per cent under current capacity).

Proposed renewable diesel refineries (Ampol and BP):

Combined projected volume by 2030: 2,550 million litres/year (renewable diesel and SAF combined)

Both refineries use the HEFA process that produces 55% renewable diesel and 45% SAF
Renewable Diesel Production (55% of total): 1,403 million litres/year

Total Renewable Diesel Production by 2030 (including bio-diesel from refineries currently operating): 1,500 million litres/year

$30,000,000,000 \text{ litres/year} \times 0.05 = 1,500,000,000 \text{ litres/year}$ (forecast post-2030 capacity).

The introduction of blending mandates for bio and renewable diesel is a pivotal move towards a sustainable transport sector. To achieve this effectively, the Australian Government should adopt a book and claim system. This system allows for accurate tracking and certification of bio and renewable diesel volumes within the overall diesel supply chain, facilitating seamless integration, supporting incremental increases in mandates, and enhancing transparency and credibility. A book and claim system would also remove the cost of complexity of requiring every single diesel purchase to meet the mandated proportion of renewable and biodiesel.

A book and claim system allows for the meeting of mandates by separating fuel certification from the physical fuel. This separation reduces the need for physical blending and complex storage and transport, making it easier to integrate renewable diesel into the supply chain.

Fuel producers receive certificates for producing the mandated fuel blends. Suppliers buy these certificates to ensure they are meeting the mandated amount. Suppliers don't need to physically blend the mandated amounts at the point of sale, they simply ensure they have the right certificates to cover the mandated blend amount of their diesel sales.

The system supports increases in renewable diesel production and blending mandates as capacities grow, ensuring a smooth transition over time, and applies uniformly across all diesel usage in Australia, avoiding complications in differentiating between various uses (heavy vehicles vs passenger vehicles, off-road vs on-road).

The focus should be on the total amount used across the country. A book and claim system ensures that every litre of renewable diesel produced collectively contributes towards carbon reduction targets, rather than focusing on where or by whom the fuel is consumed.

By mandating blending with current production capacity and planning for higher mandates as capacity increases, Australia can start realising substantial carbon abatement from diesel vehicles.

Recommendation: The Australian Government should adopt a book and claim system to introduce blending mandates and increase these by the end of 2028 and 2030.

Recommendation:

Bio-diesel mandates pre-2030:

- **Aspire to introduce a 0.3% biodiesel mandate by the end of 2026.**
- **Aspire to introduce a 0.6% biodiesel mandate by the end of 2028.**

Bio/renewable diesel mandate post-2030:

- **Aspire to introduce an R5 mandate by the end of 2030.**
- **Aspire to reduce the carbon intensity of diesel (compared to mineral diesel) by 2035.**

Recommendation: The Australian Government should embark on a renewable fuels information/education campaign outlining the environmental benefits of low carbon liquid fuels and their compatibility with existing and new diesel engines.

Renewable diesel fuel standard:

A renewable diesel fuel standard will bring several environmental, economic and social benefits.

- Renewable diesel produces significantly lower lifecycle greenhouse gas emissions compared to conventional fossil diesel.
- Renewable diesel burns cleaner than conventional diesel, resulting in lower emissions of pollutants such as particulate matter (PM) and sulphur oxides (SO_x). This leads to better air quality, particularly in urban areas.
- The renewable element of processing promotes the use of sustainable resources and reduces reliance on finite fossil fuels.
- Establishing a renewable diesel standard can stimulate investment in renewable diesel production facilities and infrastructure. This can create jobs and drive economic growth in the renewable energy sector.
- By diversifying the fuel supply with domestically produced renewable diesel, Australia can enhance its energy security and reduce vulnerability to global oil price fluctuations and supply disruptions.
- A renewable diesel standard can be used to dictate carbon intensity. The government should develop measures to assess and progressively reduce the carbon intensity of low carbon liquid fuels, as demonstrated in the Californian case study below.

Case studies

a) California's Low Carbon Fuel Standard

California's Low Carbon Fuel Standard is a key policy aimed at reducing greenhouse gas (GHG) emissions in the transportation sector. Using market-based incentives, it encourages the use of cleaner, low-carbon fuels. It has had some notable impact since its introduction -

- Since inception, the LCFS has reduced carbon intensity by more than 10%.
- Reduced GHG emissions from the transport sector and improved air quality via the reduction of pollutants associated with fossil fuel combustion.
- The LCFS credit system has encouraged technical innovations in fuel production and efficiency.

It has done this by –

- Setting decreasing annual targets for carbon intensity, encouraging continuous improvement.
- Utilising a credit and deficit system to create a market-driven approach to emissions reductions.
- Using lifecycle analysis to assess the intensity of fuels, ensuring emissions are considered from production to combustion.

There are lessons to be learned from the Californian experience. These are that –

- Market-based incentives can effectively drive the adoption of low-carbon fuels.
- Lifecycle analysis promotes full account of emissions from across the supply chain.
- Periodic reviews can maintain the relevance and effectiveness of policy.
- A renewable fuel standard can drive economic growth, investment and innovation. It can significantly reduce carbon emissions, GHGs and air quality generally.

It is essential to remember that the success in California was built on their support for technological innovation, ability to manage the indirect costs associated with the promotion of a standard and infrastructure that can produce, distribute and use renewable fuels.

The LCFS's market-based incentives effectively promote the uptake of renewable fuels by creating a financial mechanism that rewards low-carbon fuel production and penalises high-carbon fuels. The credit and deficit system, coupled with lifecycle analysis and flexible compliance options, provides a robust framework that drives innovation and investment in renewable fuel technologies. By leveraging these market-based incentives, the LCFS has successfully reduced GHG emissions in California's transportation sector and serves as a model for similar policies globally.

Recommendation: The Australian Government should introduce a renewable diesel fuel standard and certification scheme for LCLFs.

b) Sweden's Tax Exemptions

Sweden grants tax exemption of energy and CO₂ taxes to sustainable non-food-based biogas and bio-propane used as motor fuel or in heat generation. This approach has significantly increased the market share of renewable fuels, contributing to targets in climate agendas. These exemptions make renewable fuels much more economically competitive with fossil fuel alternatives and overcomes the 'green premium' associated with renewable fuel options. This provides significant financial incentive for business and consumers to choose low-carbon alternatives. This approach has –

- Made renewable fuels financially attractive by reducing the end-user cost via the elimination or significant reduction of the energy and carbon taxes traditionally applied to fossil fuels.
- Driven market share of renewable fuels through heightened awareness and regulatory support.
- Promoted reinvestment of capital generated into the renewable fuel sector, allowing for more production facilities and refuelling stations.

The policy mechanisms utilised in Sweden include –

- Energy tax exemptions – Models predict that exemptions reduce the retail price by 20-30%.
- Carbon tax exemptions – Exemption from carbon tax reduces the costs by an additional 10-15%.
- Blending mandates – These have been essential in maintaining a baseline market for renewable fuels, providing stability and encouraging investment.
- Additional mechanisms such as renewable fuel certificates and tradable credits have provided further incentive for uptake.

There are lessons to be learned from the Swedish experience. These are that –

- The economic incentives have been effective in increasing renewable fuel uptake.
- Australia could implement similar measures to support the uptake domestically.
- Stimulating investment in renewable fuel technologies and infrastructure could create jobs and drive economic growth.

Sweden's tax exemptions for renewable fuels demonstrate the effectiveness of economic incentives in promoting clean energy. By adopting a similar approach, Australia can achieve significant environmental and economic benefits, drive technological innovation, and support

a sustainable transition in the transportation sector. The detailed analysis of Sweden’s policy highlights the importance of financial incentives, infrastructure support, and regular policy reviews in ensuring the success of renewable fuel policies. This framework can serve as a model for Australia to develop a robust renewable fuel standard that effectively reduces GHG emissions and promotes sustainable energy use.

Recommendation: The Government must establish a domestic market for renewable diesel to stimulate supply and demand. Mechanisms discussed above are options, but without the demand for renewable diesel, there will be no uptake.

8. Impact on the fuel tax credits system:

The operators of trucks and buses pay for their use of the road system through very high registration charges and a road user charge on diesel. This charge is imposed indirectly on truck and bus operators as a reduction in the fuel tax credits they claim on their monthly or quarterly business activity statements.

Table 1 shows the current fuel tax, road user charge and fuel tax credit rates.

Table 1: Fuel tax, road user charge and on-road fuel tax credit rates, 8 July 2024

	Cents per litre
Fuel tax on diesel ²³	49.6
Road user charge ²⁴	30.5
Fuel tax credit rate for on-road heavy trucks and buses	19.1

These charges are set with the aspiration of recovering the annual cost of road construction and maintenance attributable to trucks and buses.

Until 2023-24, heavy vehicle charges were adjusted annually, which made it harder for businesses on tight margins to make multi-year pricing decisions. It also imposed a significant administrative burden on both governments and industry.

Ministers have now set a defined trajectory for the road user charge and registration charges for the 2023-24 to 2025-26 period.²⁵

The next pricing period should run from 2026-27 to 2028-29. The ATA and TIC consider that charges for this period should be calculated using the building block model that is currently being co-developed by the NTC and industry. There is widespread agreement that the existing model, PAYGO, needs to be replaced.

ATA modelling shows that the current charging model for diesel trucks will be functional until the early 2040s. The model helps keep the cost of transport down for both domestic users and Australia’s exporters, while still recognising the impact of heavy vehicles on the road system.

²³ Poulakis, T. “Notice of substituted rates of excise duty’ in Commonwealth of Australia, *Government Notices Gazette*, No C2024G00102, 1 February 2024, item 10.10.

²⁴ *Fuel Tax (Road User Charge) Determination 2023* (Cth).

²⁵ Infrastructure and Transport Ministers’ Meetings, [Communiqué](#). 8 May 2023.

In our view, the current charging system is well able to handle the introduction of low carbon fuels.

Recommendation: The Australian Government should retain the existing Fuel Tax Credits (FTC) system for conventional diesel to ensure that transport costs are affordable.

As stated at the outset, we support retaining the Fuel Tax Credits (FTC) for conventional diesel and recommend adjusting taxes or the Road User Charge (RUC) for LCLF components to achieve price parity. This approach could:

- Encourage higher use of LCLF blends.
- Apply to imported LCLF if necessary.
- Act as a failsafe if supply-side measures fall short.

Additionally, establishing a baseline reference price for diesel, as proposed by the Australasian Convenience and Petroleum Marketers Association, could provide substantial financial relief to operators, making the transition more manageable.

To implement this approach, the *Excise Tariff Act 1921* would need to be amended to include a separate definition for renewable diesel. At present, renewable diesel has the same tax treatment as conventional diesel because it falls outside of the definition of biodiesel.

Recommendation: The Australian Government should adjust net taxes and charges applied to LCLFs (either produced domestically or imported) via the RUC and FTC system to ensure at least price parity with traditional diesel.

9. Fragmented government positions on the potential of renewable fuels:

We submit that the Climate Change Authority's (CCA) position to exclude renewable fuels as a viable option for decarbonisation in the transport sector is unsuitable. Great emphasis is placed on electricity by the CCA as the solution to decarbonising transport, but this view is unrealistic.

For this to be a viable solution, huge infrastructure and personal investments would have to be made in the immediate future to upgrade the trucking fleet. This solution does not account for the trucks travelling long distances in rural and remote environments. While they are available now, the use case for battery electric trucks is urban and peri-urban operations. Drop in fuels are a potential avenue to reduce emissions from the existing long-haul fleet as fuel production ramps up.

Recommendation: The Australian Government should recognise LCLFs as a crucial transitional step in reducing heavy transport carbon emissions in the short to medium term. The ATA and TIC assert that the contrary views of the Climate change Authority are unrealistic.

10. Federal budget measures to support LCLFs

We support the measures announced in the federal budget including \$18.5m over four years to develop a certification scheme for low-carbon fuels, and another \$1.5m over two years for a study on the costs and benefits of potential support measures.

The certification scheme investment will provide a standardised framework for verifying the environmental benefits of LCLFs. This certification will enhance market transparency and consumer confidence, encouraging wider adoption of these fuels.

The additional \$1.5 million study allocation will help map the transition to LCLFs. We look forward to this study identifying effective incentives and support mechanisms, ensuring that resources are allocated efficiently to maximize impact. We hope that the findings will guide policy development and help remove barriers to the uptake of LCLFs.

Recommendation: The Australian Government should continue to work with industry to map a realistic transition pathway to LCLFs.