

18th July 2024

Department of Infrastructure, Transport,
Regional Development, Communications and the Arts (DITRDCA)
GPO Box 594
CANBERRA ACT 2601

RE: Feedback on Low Carbon Liquid Fuels Consultation

This document provides feedback on the *Low Carbon Liquid Fuels Consultation Paper* ("Paper") from Maritime Impulse Pty Ltd ("Maritime Impulse", "we", or "our").

About Maritime Impulse

Maritime Impulse exists to help domestic commercial vessel (DCV) owners in Australia decarbonise their existing vessel fleets. We offer digital energy optimisation solutions for DCV fleet owners and innovation services for marine equipment manufacturers.

Maritime Impulse has founded a program called [MERC \(Maritime Emissions Reduction Coalition\)](#) which is uniting leading organisations in the maritime, manufacturing, energy, finance, government, and education sectors to drive emissions reduction in the Australian maritime industry for a greener, more sustainable future. It is an innovation ecosystem that aims to bring coordination, focus, and innovation to accelerate the reduction of maritime emissions and deliver a greener, more sustainable future for our waterways and oceans.

MERC addresses the reduction of maritime emissions by:

- Uniting leading organisations in the maritime, manufacturing, energy, finance, government, and education sectors,
- Advocating with governments for industry needs,
- Researching the best ways forward for maritime operators,
- Connecting suppliers with early adopter customers,
- Improving Australia's sovereign capacity to deliver maritime electrification, and
- Coordinating collaborative projects across the industry.

Our Feedback

We have tailored our feedback around the questions asked by the Paper.

The low carbon liquid fuels opportunity

What do you think are Australia's comparative advantages as an LCLF producer? Where does Australia face international competition?

Australia's advantage is that it has a vast array of potential feedstocks and renewable energy sources to create high quality low carbon liquid fuels (LCLF).

Australian waste materials (tallow) are already being sourced and used overseas to create Renewable Diesel by Neste. Unlike many countries, Australia can easily dedicate growing space to fuel crops without significantly affecting the production of food.

The challenges we see for Australia in the maritime fuel space is that local refineries have all been shut down, and most have been dismantled. Local countries like Singapore have the infrastructure to take raw materials from Australia and elsewhere, giving their fuel producers a diversity of suppliers and ensuring they are insulated from single supplier issues. They are also already used for bunkering by many shipping lines as they are physically located in a central position. Ports in Australia suffer from being at the end of most routes, and therefore not currently being used for bunkering (although this may need to change with LCLF being less energy dense than marine fuel oil or marine gas oil).

The primary risk we see is that Australia is used as a LCLF feedstock source and not a producer of the more valuable LCLF itself.

Based on the current policy and market environment, to what extent will Australia rely on imports of LCLF, as opposed to domestic production?

In the maritime space, the current policy mix means that Australia will remain completely dependent on imports as there are no incentives to create local demand for these fuels, other than niche ESG requirements and some small amount from the Safeguard mechanism. The market environment shows a very small demand for Renewable Diesel with most fuel producers offering it as a custom business solution, usually via containerised tanks, or deliveries straight to vehicles/vessels – and always imported from overseas. It would not be economically sensible for a local producer to expect much demand in the current policy mix.

Options to support an Australian domestic low carbon liquid fuel production

The Government is seeking your views on the options for a production incentive scheme:

What mechanism do you think would best support production – through the tax system, contract for difference or grant based funding?

With regards to LCLF there are only a few options that really suit the needs of maritime operators. The standout is Renewable Diesel, which as a drop-in fuel is the easiest to implement. Sustainably produced methanol, most likely from biomass, is also a possible fuel as it can be treated using current regulations for low flashpoint marine fuels (e.g., like petrol). Other fuels, such as

Hydrogen, have significant regulatory and safety hurdles to cross and are unlikely to be practical solutions given the advances in battery-electric technologies.

With Renewable Diesel the USA experience has been that early profits for refiners that had moved into the renewables space led to a rush to move into producing Renewable Diesel ahead of the EPA's mandated blending targets which then created a glut of supply that exceeded demand¹.

We believe that this shows a willingness on the part of the refiners to secure their place in a future-proof business segment. For this reason, we recommend the use of time-limited production tax incentives to incentivise the production of LCLF Renewable Diesel, but with greater emphasis on demand creating policies than tax incentives.

Grant based approaches lead to Government picking winners and have been prone in the past to organisations being created to take advantage of Government largesse without creating long-term businesses that deserve to be considered part of the solution to decarbonisation. Our understanding is that grants are better used to help incentivise early demand from customers, rather than supply from producers.

Are there other mechanisms Government could consider to deliver production support, other than a production tax incentive or competitive grant-based payment? What do you think is the highest priority form of support?

We do not have an opinion on this element.

What are expected production costs of LCLF in Australia? How would you design production incentives to make production competitive in Australia?

We do not have an opinion on this element.

What would an expected rate of support be under a competitive grant-based production scheme (contract for difference or fixed grant amount per production unit)?

Current supplies of Renewable Diesel are available at 2.5 to 3.5 times the cost of diesel in most parts of Australia (notwithstanding that diesel prices are rising). Most vessel operators would not consider changing to more sustainable fuels unless the cost was closer to parity.

How many producers would you expect a production incentive scheme to support in Australia?

For domestic use, two or three producers of Renewable Diesel, but there should be an opportunity for exporting to Singapore and other bunkering ports. Bio-methanol is harder to identify, but local demand will be much lower than Renewable Diesel, so less producers are likely to be able to be supported unless a significant bunkering or export market is developed for international shipping. Unless local production is vastly cheaper than expected, there will also remain competition from imported fuels – some of which may not have the same provable sustainability credentials.

¹ <https://www.reuters.com/markets/commodities/renewable-diesel-glut-hits-us-refiner-profits-threatens-nascent-industry-2024-05-13/>

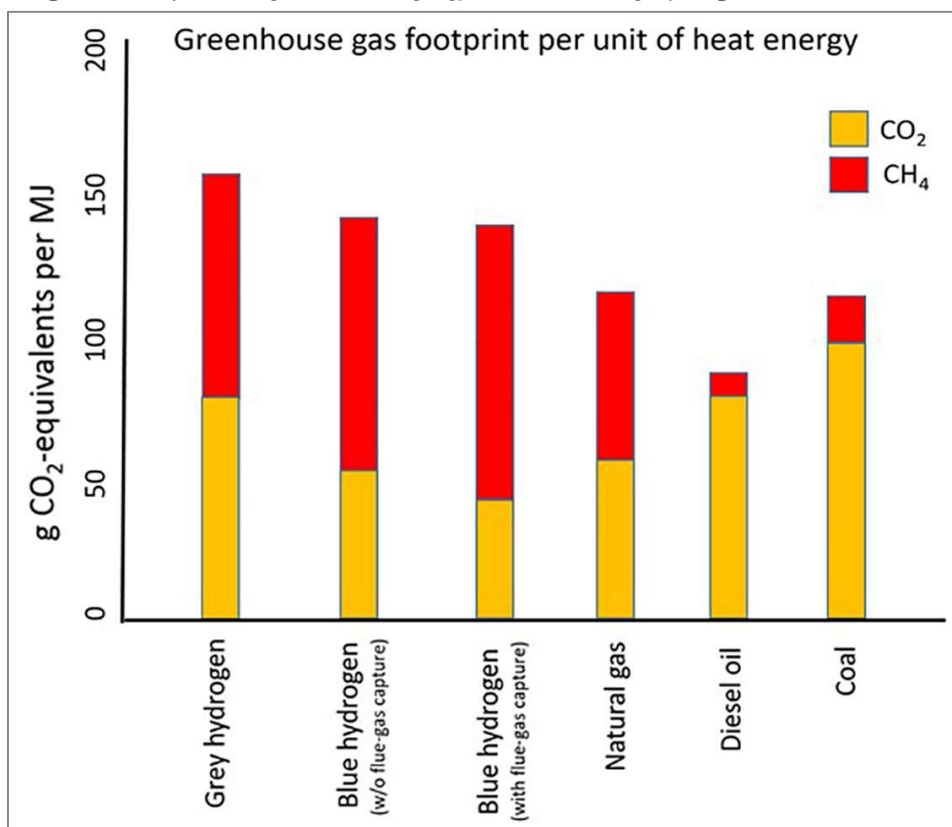
How could the introduction of a production incentive scheme affect competition in fuel production and supply markets, and also amongst fuel users?

For Renewable Diesel a production incentive scheme would enable the greenlighting of very expensive refinery projects and would encourage some vessel operators to consider using it. However, given it is a drop-in fuel, and assuming no other incentives, they would mostly not bother changing their fuel until the price was close to parity. Some commercial operators in sectors such as tourism or ferries may find that public support for sustainability actions justifies a price increase which can offset the higher fuel prices, but Renewable Diesel still creates local pollution due to releasing exhaust gases into the air, and sometimes water, so it makes the sustainability message less likely to be believed.

Bio-methanol is more likely to find an export market (either via sending it overseas, or providing local bunkering for international shipping), and a production incentive would probably help create a local industry that explores the many different pathways for creating Green Methanol.

One concern we have with Green Methanol as an LCLF is that production incentives may lead to a significant volume of the fuel being created through pathways that come from Blue Hydrogen, which science shows are likely to be corrupted by significant greenhouse gas emissions from released or leaked emissions during the production process, as shown in Figure 1 below².

Figure 1: Comparison of Emissions of Different Sources of Hydrogen with Other Fuels



Publicly listed company Pure Hydrogen is one such producer that aims to create Turquoise Hydrogen by pyrolysis of methane. While their technology stack uses plasma generated by

² Howarth RW, Jacobson MZ. How green is blue hydrogen? Energy Sci Eng. 2021; 9: 1676–1687. <https://doi.org/10.1002/ese3.956>

electricity rather than methane burning (which will slightly decrease the emissions shown in Figure 2), there is still significant leakage of methane gas along the supply chain, not to mention that Hydrogen is itself a greenhouse gas which should be minimised.

Many of the slow diesel engines in large ships will be modified or built to use Methanol, but across Asia we are seeing Biodiesel blends taking off in popularity in order to comply with European regulations³, there are concerns that virgin palm oil will be marketed as "used cooking oil" in order to get around regulations designed to protect food crops⁴. The larger size of these engines means that the concerns smaller, faster diesel engines have with biodiesel are less of an issue. This is likely to create an opportunity for local bunkering and/or exporting of Biodiesel. A production incentive tied to Biodiesel production would most likely cannibalise feedstocks for Renewable Diesel and SAF, which would not be ideal for the maritime and aviation sectors.

In a similar way, the production of Butanol for blending with petrol in outboard motors would probably cannibalise feedstocks for SAF. It would probably not affect demand for Ethanol, which is used in E10 fuel as this is not a recommended marine fuel⁵.

What are the expected timeframes for when an industry would be sustainable without support from Government?

Our opinion is that until there is sufficient demand for these fuels Government support would be required. Given current policies this would be unlikely to happen before 2035 when emissions reduction targets for most Australian States are around 75%.

How should production support be funded, and how could this best be aligned with the beneficiaries of the production support?

Taxes on high carbon liquid fuels (HCLF) would be an ideal way to fund production support as they would help alter demand for HCLF whilst providing funds for LCLF production. As LCLF production becomes established and more efficient, then demand for HCLF should wane, and so funding for LCLF production could be reduced. As most HCLF are imported, and LCLF production will be local, this also helps develop more sovereign fuel systems.

However, LCLF production will take time to be created, and immediately taxing HCLF without the existence of suitable replacements will only create demand for imported LCLF and potentially quench the very market demand that locally produced LCLF are supposed to meet. So, a tax on HCLF would need to be introduced gradually, and other funding sources found in the short-term.

³ Argus Media Webinar: Development of B24 marine biodiesel in Asia: Guangzhou vs. Singapore (<https://view.argusmedia.com/marine-fuels-webinar-july-24.html>)

⁴ <https://www.transportenvironment.org/articles/80-of-europes-used-cooking-oil-now-imported-raising-concerns-over-fraud-study>

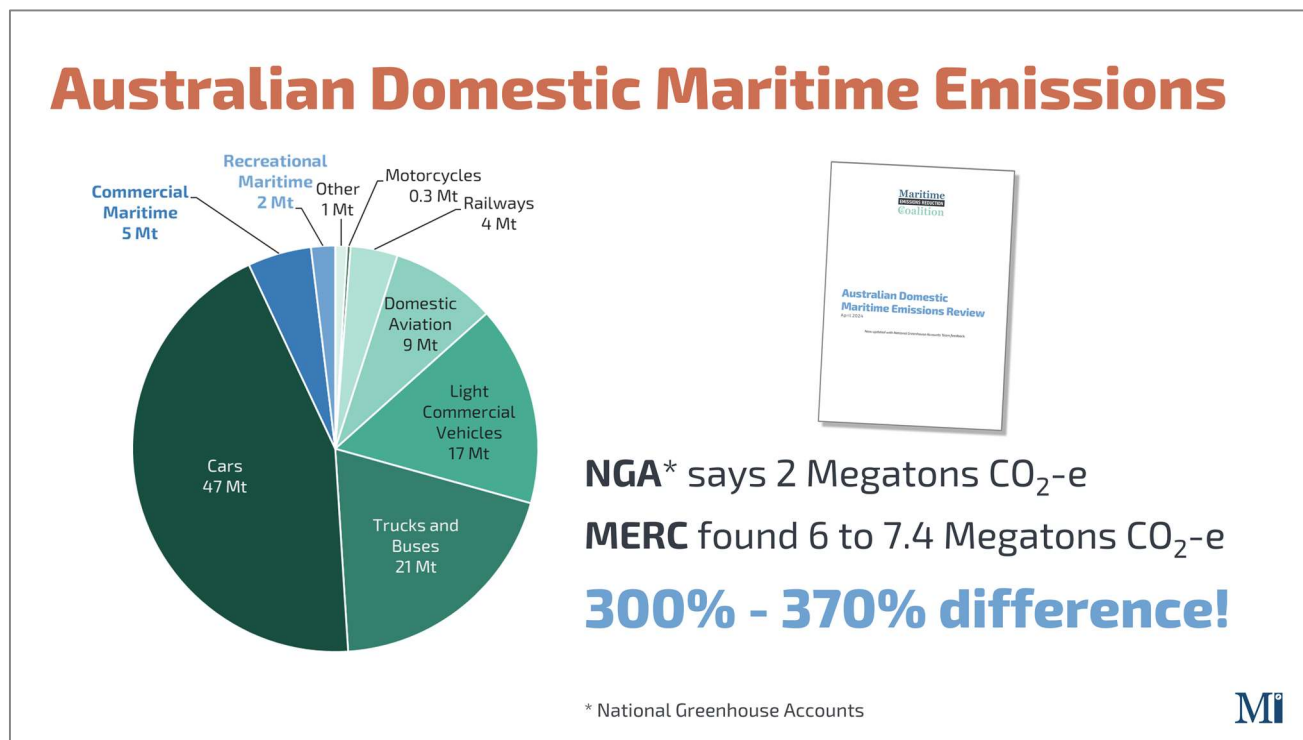
⁵ <https://www.nsw.gov.au/driving-boating-and-transport/e10-fuel/e10-facts>

The Government is seeking your views on the design of production incentives to appropriately incentivise the production of SAF and renewable diesel and different pathways to produce LCLF:

Would production support need to offer a different rate of incentive for SAF and renewable diesel?

We believe that the National Greenhouse Accounts estimate of domestic maritime fuel use significantly underestimates actual petrol and diesel use by the domestic maritime sector⁶. Figure 2 shows the scale of the problem.

Figure 2: Australian Domestic Maritime Emissions



This difference is significant because it shows that whilst domestic aviation has an important need for LCLF, so does domestic maritime.

In the absence of significant demand increasing policies, the Paper notes that production incentives will likely favour Renewable Diesel over SAF. The long-term outlook for domestic maritime is that battery-electric will become the primary solution for most of the industry, whilst the long routes flown in Australia mean that domestic aviation is unlikely to be able to follow the same path.

Therefore, we believe that production incentives should be tuned differently for SAF and Renewable Diesel, and perhaps for other LCLFs, such as bio-methanol.

Does a potential production support program need to prescribe certain proportions of production volumes towards SAF or renewable diesel?

We do not think that SAF and Renewable Diesel demand curves will change at the same rate – for this reason it is very tricky to demand minimum amounts of local production of each of these

⁶ <https://www.merc.blue/resources>

fuels. It may make sense for instance to import SAF but produce Renewable Diesel locally (or vice versa).

What is important is that the local use of LCLF increases. If that can best be supported by local production then that is a great outcome, but that may not be the case.

Would production support need to provide different levels of support for emerging and established production pathways? What are some of the design considerations Government should consider?

It is vitally important that pathways which continue to increase demand for fossil fuels (e.g., turquoise hydrogen to methanol) are not ones which are incentivised by Government. Where production methods rely on techniques such as carbon capture, it is important that the analysis of potential markets for that carbon, or sequestration methods used, consider commercial realities. We have seen far too many projects begin with good intentions, only to never make it into production when they find that their CO₂ is not a useful product or where assumptions around sequestration amounts prove to vastly underestimate the actual amounts sequestered.

What policy approaches are technology agnostic, applying efficiently to new technologies as they emerge?

We think that production tax incentives are the most technology agnostic of the production incentives mentioned.

However, the sentiment of many leading economists is that a carbon tax on goods that recognises their contribution to greenhouse gas emissions is worthwhile⁷. Such a tax is technology neutral, in that it accounts for the environmental externalities inherent in most high carbon liquid fuels (HCLF) and thus helps make LCLF more competitive options.

It is also worthwhile to consider what value the Australian Government places on sovereign fuel production as production incentives necessarily provide support for this over importation of LCLF from overseas. Our opinion is that sovereign supply has some value, but that the impact on emissions reduction should be the priority of Government policy.

The Government is seeking your views on the following considerations regarding emissions and sustainability criteria:

Do you support an emissions reduction threshold being included as part of eligibility criteria for fuels to receive support under a production incentive program? What threshold would you seek to be included in eligibility criteria (for example 50 per cent emissions reduction relative to conventional fuels, or another emissions reduction ratio)?

We believe this is a vital part of the policy framework as the LCLF we believe are most vital to decarbonisation (SAF and Renewable Diesel) are both drop-in fuels that can be blended by their customers to create the desired level of emissions reduction for their needs.

The threshold that we would seek to have implemented is emissions that are 75% lower than conventional fuels. This ensures that the LCLF created offers significant emissions advantages

⁷ <https://www.energypolicy.columbia.edu/publications/leading-economists-offer-5-carbon-tax-recommendations-3-12-are-basic-principles-economics/>

over existing fuels, but also acknowledges that there may be issues (especially initially) with removing all of the emissions associated with the production process.

Do you think any threshold should increase over time?

We think the threshold should increase to 95% as we approach 2050. This is a very difficult level to achieve, but without such an ambitious target these fuels will not help us reach the Paris Agreement targets by 2050. We expect electrification to offer solutions for the majority of the maritime sector by that time, so there should only be a few edge cases that still need LCLF.

Do you think incentives should be included to encourage emissions reduction in addition to a minimum eligibility threshold?

We do not see this as necessary, as markets for LCLF should be able to rely on the Guarantee of Origin Scheme to help customers determine the amount of emissions reduction they will achieve by purchasing a given LCLF, and suppliers of lower emissions fuels will find customers willing to pay for that benefit.

If you don't support a threshold, what emissions requirements do you think are better?

We support a threshold.

Do you have views on the sustainability criteria under consideration as part of the criteria? What additional or alternative criteria would you want to see form part of the criteria?

We believe the sustainability criteria are an excellent starting point. But we do have some concerns with the implementation of these criteria.

Community benefit principles, as outlined in the Future Made in Australia Act, are vague and may be open to politicisation. It would be helpful to have credible, objective rules established for the value of a specific "community benefit" when comparing options.

Do you have any other views on emissions and sustainability criteria?

Our priority is to ensure that these criteria are firm on ensuring the reduction of greenhouse gas emissions in these LCLF beyond the emissions targets set nationally, as not all customers will switch in time, so the ones that do will need to have an outsized impact on emissions reduction.

What are the community benefits associated with LCLF production in Australia?

The main community benefits will be securing new regional jobs for current and future generations, advancing the economic complexity of Australia's exports, and securing sovereign supplies of transport energy sources.

There may also be a community benefit in reducing the amount of shipping of petroleum products into Australia, which could reduce Australia's share of international shipping emissions. However, significant export volumes of LCLF could reduce or eliminate this benefit.

The Government is seeking your views on the design of demand-side mechanisms:

What options should the Government consider in its regulatory impact analysis, such as a mandate introduced over time, low carbon fuel standard connected with a trading scheme, a non-binding target or other demand options?

We believe that the Government should consider introducing mandates over time as that will help scale demand in line with the likely availability of locally produced LCLF.

The commercial maritime sector is the major contributor to domestic maritime emissions, and there are large differences in the scale of operations of Kelsian Group, TT Line, Transdev, Svitser Australia, MMA Offshore, Bhagwan Marine and smaller, often family owned, businesses providing tourism or charter services. There would be a benefit in mandating different amounts of LCLF for different sized businesses, especially as in many sectors (e.g., fishing) we see consolidation into a few large businesses.

While it will be important to promote the use of LCLF among hard to transition industries, especially for some maritime users such as commercial fishers, tourism operators, large ferries, offshore services, and coastal shipping, it is also important to ensure that where electrification is possible, the Government encourages that to happen as it has proven to be the most efficient way to apply renewable energy to transportation use cases.

So, while a mandate can help drive systemic change towards LCLF, it would be best if there were also incentives in place to promote electrification as many maritime use cases can already be met by battery-electric or plug-in hybrid electric vessels. For this reason, we do not think it necessary to bring LCLF into price parity with existing high carbon liquid fuels (HCLF) as there should remain an incentive to consider electrifying.

One option to help promote electrification is making grants and low interest green loans available to commercial vessel operators who are looking to electrify their vessels. We have seen this work with bus and truck fleet owners, but the financial support they receive is not available for commercial vessel operators – this is despite the fact that an urban ferry might create as much emissions as twenty-five (25) buses⁸.

We think the Government should consider whether some LCLFs are worth creating incentives for. Many LCLF are not good candidates for domestic marine fuels because:

1. They have significant regulatory blockers, with an absence of domestic and international regulation to fall back on.
2. They have significant safety risks, with little history of being used as marine fuels, and few examples from which lessons have been learned.
3. There is no production pathway for them that both meets science-based sustainability criteria and provides commercial competitiveness versus other decarbonisation options.
4. There are better uses for these chemicals than using them as fuel.
5. Other LCLF or electrification pathways do exist without these issues.

⁸ <https://newsroom.co.nz/2023/08/22/slow-boat-to-ferry-electrification/>

We consider that LCLF based on Hydrogen and Ammonia have these problems. In particular, there are industrial uses of fossil-fuel derived Hydrogen that need to be decarbonised, a global analysis by the International Energy Authority shows that there are already not enough low emissions hydrogen projects to decarbonise industrial uses of Hydrogen to the levels required for 2030 targets⁹. Using Green Hydrogen as a fuel simply further delays the decarbonisation of existing Hydrogen using industries. There are also good reasons to expect that both of these fuels will make poor exports¹⁰. We feel this analysis is backed up by recent events, especially the announcement by Fortescue on the 17 July 2024 that they were slowing down their 2030 Hydrogen production commitment¹¹, and the news that the European Court of Auditors is calling for “a reality check to ensure that the EU’s [renewable hydrogen production and importation] targets are realistic, and that its strategic choices on the way ahead will not impair the competitiveness of key industries or create new dependencies.”¹²

When providing advice to Government, you may like to consider:

What demand-signals would best drive confidence and certainty for a domestic LCLF production industry?

Progressive mandates that require the maritime sector to start using LCLF will certainly help give certainty to producers, but also to organisations responsible for bunkering facilities at ports, harbours, marinas, and fuel wharfs around the country. This has certainly proven to be the way that Renewable Diesel has taken hold in California, where the California Air Resources Board (CARB) first started using a low carbon fuel standard (LCFS) in 2011. It was not applied to domestic maritime craft until July 2022 when it was mandated that all commercial harbour craft must use RD99 (99% Renewable Diesel) fuel from January 2023 – this is a far faster introduction than has been pushed for from trucks and would be a problem in Australia given the lack of a Renewable Diesel industry. It shows however, that adoption by maritime operators of Renewable Diesel is certainly possible.

The LCFS led to the development of much of the current Renewable Diesel industry in the USA, but it has taken time for local production to keep up with dramatically escalating demand¹³. Any mandate should therefore be progressive, perhaps starting at a 20% blend by mid-2025 for larger organisations and ramping up to a 50% blend by 2030 for all organisations.

How might demand measures interact with the Safeguard Mechanism for covered facilities?

Demand measures such as mandates would provide an avenue for Safeguard Mechanism facilities to achieve some of their emissions reduction. With regards to the maritime sector, the MERNAP Background Paper highlighted that, at present, only TT Line have any facilities covered by the Safeguard Mechanism, the two ships used as Spirit of Tasmania ferries. These are being replaced with new vessels that use dual-fuel engines running on LNG and Diesel. It is not clear

⁹ <https://www.iea.org/reports/global-hydrogen-review-2023>

¹⁰ <https://h2sciencecoalition.com/blog/hydrogen-trade-can-shipping-deliver-a-global-hydrogen-market/>

¹¹ <https://www.ft.com/content/6a3cf923-5948-43bc-9955-47fb45fdabb9>

¹² <https://www.eca.europa.eu/en/news/NEWS-SR-2024-11>

¹³ <https://www.biobased-diesel.com/post/california-accounted-for-more-than-99-of-all-renewable-diesel-consumed-in-us-in-2021>

how much of an emissions reduction will come from this change, but the Wärtsilä engines can run on either fuel, and can also handle renewable diesel or even biodiesel¹⁴.

How would the application of a mandate affect your business/operations?

Our business operations will not be affected by a mandate as we do not operate vessels or vehicles.

Should demand-side interventions be designed to only apply to some areas of the market and not others? Which sectors or sub-sectors should demand-side interventions apply? How would the introduction of a mandate or other demand measures affect competition in your industry?

Participants in the MERC community include commercial vessel operators, manufacturers, importers, and fuel suppliers. Whilst they would each be affected in different ways the most likely outcome is an increase in the cost of fuel.

Different vessel types will be affected by fuel price changes in different ways, for a tourism operator running dive/snorkelling excursions for example, fuel might be a small fraction of their costs, whilst for an urban ferry operator, it might be most of their operating costs. The ferry operator might receive support for increasing fare costs, whilst the tourism operator might find that increasing costs risks tourists substituting other activities in place of their dive/snorkelling excursion.

A progressive mandate allows all operators time to work out how to handle the change, but it is certainly true that larger operators can respond better than smaller operators. On the other hand, it is not necessarily true that larger operators have a larger greenhouse gas footprint per service unit (e.g., passengers/Nm or tons/Nm). Many smaller operators are using vessels not designed for their current operational profile, and often run older and less efficient engines that have a larger greenhouse gas impact.

In the interest of helping a Renewable Diesel market develop, it would be most useful to:

- Signal early to the industry that mandates are coming.
- Apply a larger initial mandate for larger players in the industry, and a smaller initial mandate for smaller players. Revenue is probably a good enough proxy for assessing this as looking at number of locations or number of vessels will be complicated by different vessel types and operational modes.
- Increase the mandated percentages of Renewable Diesel over time and bring parity between mandates for larger players and smaller players.

It is less clear that there would be benefits of using mandates to develop a Methanol marine fuel market. Methanol can be consumed in internal combustion engines (ICEs) as efficiently as diesel is, but a slightly more efficient pathway to consuming the fuel is to use a methanol reformer and fuel cells to create electricity. While some ICE manufacturers already have products that support methanol and there is an existing marine regulatory environment for low flashpoint liquid fuels like methanol, fuel cells are still regarded as an emerging technology and fall under the Australian

¹⁴ <https://www.wartsila.com/marine/products/engines-and-generating-sets/dual-fuel-engines>

Maritime Safety Authority's (AMSA's) novel vessel policy. This leads to increased design and build costs that do not offer significant efficiency gains.

One pragmatic option would be to specify that if methanol is being used as a marine fuel, then a mandate would apply for what is an acceptable blend of green methanol (either bio-methanol or e-methanol) and grey methanol. This mandate should be introduced in a similar way to those for Renewable Diesel.

Many commercial marine operators are using petrol outboard motors on smaller boats. Many of these could benefit from converting to battery-electric, but some will require speed and range which is not yet possible using battery-electric. In land-based transportation, E10 fuel is a reasonable starting point for reducing the emissions of petrol ICE, but in marine environments it is not recommended due to ethanol's hydrophilic tendencies¹⁵. Butanol has been tested and a 16% blend ("Bu16") has been approved by most engine OEMs for marine use¹⁶, but there is no current supply of butanol blended petroleum fuel in Australia. In addition, butanol is a feedstock for the creation of SAF, and so directly competes with SAF production more than even Renewable Diesel does.

Renewable Petrol ("e-gasoline") has been suggested as a potential avenue for decarbonising marine outboard engines by the International Council of Marine Industry Associations (ICOMIA) in their report on recreational maritime decarbonisation¹⁷. We disagree with many of the conclusions of that report but accept that a drop-in fuel like Renewable Petrol could be useful. However, there are currently no producers of Renewable Petrol and every attempt to create it has failed to achieve costs low enough to justify starting volume production.

Some commercial operators have started using diesel outboard motors when speed and range is an issue as they are more fuel efficient than comparable petrol outboard motors, whilst some others are moving to battery-electric solutions. Options are now appearing in the market for outboard motors to be refit to battery-electric ones, whilst keeping the majority of the outboard casing and propeller¹⁸.

Recreational boating is split between diesel inboard engines and petrol outboard motors. The former tend to refuel at marine fuel wharves, and the latter refuel at standard petrol stations if trailering or marine fuel wharves if they have larger boats. Our recommendation is to introduce mandates around Renewable Diesel use, like those for smaller commercial operators, to recreational users too. With regards to the recreational users who use petrol outboard motors, we believe that a high carbon liquid fuels (HCLF) tax on petroleum products would help incentivise either switching to more sustainable solutions, such as battery-electric outboards, or in some cases diesel outboards, or reducing fuel used. As noted previously, a mandate on using E10 would have adverse effects on the reliability of most outboard motors, especially for occasional users, and is not recommended.

¹⁵ <https://www.nsw.gov.au/driving-boating-and-transport/e10-fuel/e10-facts>

¹⁶

<https://www.nmma.org/assets/cabinets/Cabinet515/Marine%20Biobutanol%20Research%20Book%20FS2.compressed.pdf>

¹⁷ <https://www.icomia.org/news/decarbonisation-report/>

¹⁸ <https://eclassoutboards.com.au/outboards/electric-repower-kits-for-outboard/>

Should design of a mandate, low carbon fuel standard, target or other demand option create requirements for a certain proportion of fuel use be drawn from Australian produced LCLF?

We think that specific volumes of Australian produced LCLF should not be required as it risks creating businesses that exist solely to charge rents on the exact amount of fuel required to be produced locally. We do think that the way mandates progress should be timed to support the potential local production market. This may mean that mandates on different fuels may need to be adjusted in different timelines (e.g., green methanol supply chains being likely slower to develop than renewable diesel).

How would the introduction of demand side measures impact the feasibility of domestic production of LCLFs, and what impact would this have on the appropriate design of any production support?

We believe that without demand side measures there will not be enough of a local market for LCLF producers to rely on buffering them from being wholly hostage to fluctuations in export prices and exchange rates. This is a necessary element to ensure that producers can demonstrate a potential local market to investors and financiers.

In Conclusion

Maritime Impulse wishes to thank DITRDCA for the opportunity to comment on the *Low Carbon Liquid Fuels Consultation Paper*.

We think it is critical to Australia's future that low carbon liquid fuels be made available to help hard to transition industries but temper our enthusiasm for these with acknowledgement that in the medium-term we will likely see electrification of transport as the best way of decarbonising.

We hope that our contribution to this consultation helps the *Transport and Infrastructure Net Zero Roadmap* with the domestic maritime components. If the DITRDCA team has any questions or clarifications, then please don't hesitate to contact us.

Yours faithfully,

Angus McDonald

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**Maritime
IMPULSE**

Chair of the MERC Steering Committee

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