

Sugarcane Bioenergy Inquiry 2025

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SUBMISSION TO THE QUEENSLAND
PARLIAMENTARY PRIMARY INDUSTRIES
AND RESOURCES COMMITTEE:

INQUIRY INTO SUGARCANE BIOENERGY OPPORTUNITIES IN QUEENSLAND

24 October 2025



Ethanol Storage Tanks at Mackay Harbour

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INTRODUCTION

The Royal Automobile Club of Queensland (RACQ) is Queensland's largest member-owned mutual, and we exist solely for the benefit of our more than 1.7 million members. Throughout our 120-year history, we have actively engaged with Government in the interests of our members, sharing our expertise and recommendations on a wide range of policy areas including transport affordability and sustainability, road safety, transport and infrastructure, natural hazard resilience, and disaster response. Our membership makes up a significant portion of Queensland's population, and we have a presence in more than 60 per cent of Queensland homes.

RACQ is well qualified to comment on all matters of road safety, mobility, as well as transport affordability and sustainability, and we bring a unique insight into how the laws, regulations and policies that are in place could be improved for the benefit of road users, industries, and the broader community. RACQ is seeking diverse options to decarbonise our corporate fleet (passenger cars) and direct owned/operated and contractor specialist fleet (roadside assistance vehicles, tow trucks, etc). Our technical review of our specialist fleet has helped inform this submission. Accordingly, we make this submission to the *Inquiry into Sugarcane Bioenergy Opportunities in Queensland*, providing comments and recommendations we believe will assist in developing the state's sugarcane bioenergy industry while supporting decarbonised and lower cost land transport for Queenslanders more broadly.

Queensland is the most decentralised mainland state with major populations residing in dispersed towns and cities and in many remote communities. RACQ advocates for practical and affordable ways to address decarbonisation while maximising benefit to our members and their diverse needs. Ultimately, we want to see a transition that is smooth, efficient, and ensures regional communities do not get left behind by providing strong economic opportunities including biofuel.

RACQ believes the main opportunity for biofuel policy in Australia is policy support for biofuel-electrification hybrid drivetrains. In the coming years, most of Australia's private land transport will be electric powered, but we see an important role for biofuels to support and extend the range and utility of electric vehicles and electrified transport options, especially in the Light Commercial Vehicle (LCV), heavy 4WD and heavy vehicle segments (freight and public transport).

While electrified LCVs (Light Commercial Vehicles) are likely able to achieve a range of 300km to 400km, the addition of ethanol or biofuel range extenders could give these vehicles practical ranges of up to 800km. Additionally, these vehicles could provide capacity for 'Vehicle to Load', providing electricity supply in workplace, recreational activities and during climate and other disasters.

RECOMMENDATIONS

Through the committee, RACQ recommends the Queensland Government should:

1. Promote policies and support research that
 - a) encourage the adoption of extended range drivetrains combining electrification and high blend ethanol fuels (E85), with a focus on light commercial vehicles, heavy 4WDs, and freight segments.
 - b) expand the use of E85/High-Blend Ethanol Fuels: Fund research and development of advanced "super-ethanol" blends, and infrastructure upgrades to expand E85 availability. This potentially could

be funded through the Sovereign Industry Development Fund from the recent Queensland Government Energy Roadmap.

2. Incentivise the deployment of Extender Range Electric Vehicles (EREVs) using E85 ethanol to extend range, reduce emissions, and provide disaster resilience, especially for regional and specialist fleets.
3. Support the roll-out of E85 at regional service stations, ideally along highway corridors.
4. Streamline approvals for bioenergy precincts and corridors, align with regional employment strategies, and ensure land use supports both sugar cane and ethanol industry, and regional economic growth.
5. Prioritise liquid fuel production from sugarcane to enhance Australia's sovereign fuel capacity and support defence and regional resilience. Structure policies and funding to prioritise liquid fuel production from sugarcane. Use grants, infrastructure upgrades and incentives for ethanol production to de-risk investment.

QUEENSLAND DOMESTIC LOW CARBON LIQUID FUEL PRODUCTION

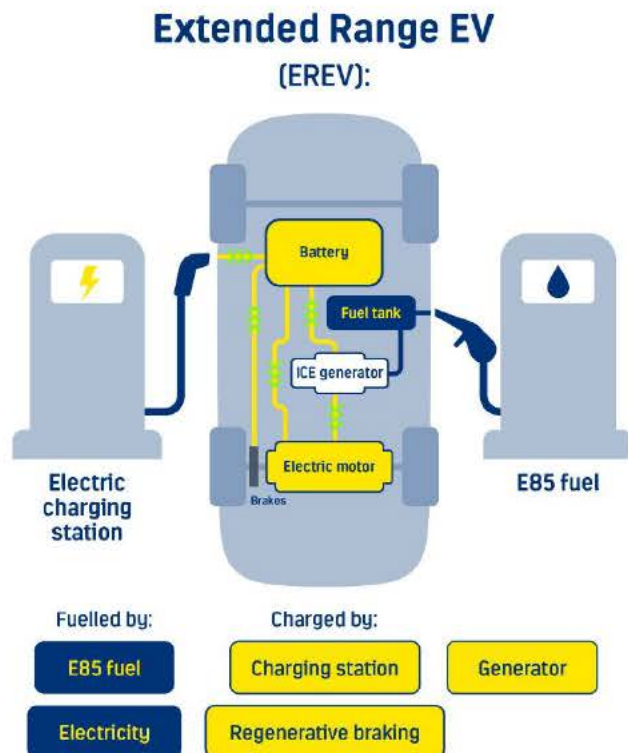
Queensland's vast geography and diverse industries present unique challenges for vehicle electrification. From remote national parks and long-haul delivery routes to heavy-duty towing and regional travel, many vehicles require extended driving range and robust performance. Extender Range Electric Vehicle technology offers a practical and flexible solution that is too compelling for governments to ignore, especially when paired with E85 ethanol fuel.

What is an EREV?

An Extender Range Electric Vehicle (or EREV) is primarily a battery electric vehicle equipped with a small internal combustion engine (ICE) or generator. The ICE generator activates when the battery is low, generating electricity to extend the vehicle's range. The ICE generator never directly drives the wheels, ensuring the vehicle operates as an electric-first solution.

Key Features:

- Electric-first design: Most driving is zero-emission, using only the battery.
- Range anxiety eliminated: The ICE/generator provides backup electricity for longer trips or remote operations.
- No mechanical ICE-to-wheel connection: All propulsion is electric, with the ICE acting solely as a generator.
- Larger battery: Compared to traditional hybrids, EREVs have a substantial all-electric range.



Why would EREVs suit Queensland?

Queensland's vast geography, remote communities, and long-distance travel needs make EREVs especially practical:

- Long Distances: EREVs operate as full EVs in towns and cities, switching to generator mode for regional trips - ideal for Queensland's dispersed towns and adventure tourism routes.
- Remote Operations: EREVs enable access to remote areas with limited charging infrastructure.

- Heavy Loads and Towing: Freight, public transport buses, agricultural and construction sectors benefit from on-demand power generation, ensuring reliability under load.
- Emergency Response: EREVs can provide electricity supply in disasters via vehicle-to-load (V2L) capability.

The Role of E85 Ethanol

Pairing EREVs with E85 ethanol (85% ethanol, 15% petrol) as the generator fuel further reduces lifecycle emissions:

- Lower greenhouse gas emissions than mineral petrol.
- Cleaner combustion: Reduces particulate and nitrogen oxide (NOx) emissions.
- Supports local industry: Utilises Queensland's sugarcane for ethanol, boosting regional economies and employment.

Strategic Benefits

- Bridges infrastructure gaps: EREVs offer electric driving where chargers exist and with liquid fuel where they do not.
- Supports regional and specialist fleets: Ideal for councils, public transport buses, delivery vans, light commercial vehicles (dual cab utes and 4WD), freight and emergency vehicles.

RACQ RESPONSE TO THE TERMS OF REFERENCE

In this section, RACQ provides a response to the individual terms of reference.

1. Role and Benefits of Sugar Cogeneration in Queensland's Electricity Generation Mix

Cogeneration using sugarcane bagasse can contribute to Queensland's renewable electricity supply, especially in regional areas. Higher-value applications such as cellulosic ethanol could deliver superior environmental and economic outcomes. Decisions about bagasse utilisation should be guided by lifecycle analyses to ensure the lowest emissions, highest value, and lowest cost.

2. Market, Regulatory, and Infrastructure Barriers to Increased Bioenergy Production from Sugar

Expanding bioenergy production from sugar should focus on the use of ethanol in E85 as a sustainable, low-carbon liquid fuel. RACQ recommends the consideration of R&D grants for EREVs, and support for retail and wholesale infrastructure upgrades to expand E85 availability. E85 is widely available at fuel service stations in metropolitan and urban areas, including regional towns and cities, being mostly sold as a 'race fuel'. In addition to supporting the adoption of EREVs using E85 the government should support the roll out of E85 at regional service stations, ideally along highway corridors.

R&D should also investigate advanced "super-ethanol" blends – a combination of low-carbon synthetic fuel and ethanol. Policy should focus on supporting high-blend ethanol fuels, rather than low-impact blends like E10, to maximise the environmental and economic benefits of sugar-derived biofuels.

Strengthening the Queensland Biofuels Mandate could increase ethanol use. Since its introduction, E10 compatibility has become normal in the state's vehicle fleet. In 2011, a report on vehicle E10 compatibility was prepared by UQ¹ for the Biofuels Association of Australia, with support from RACQ, other automobile

¹ UQ SMART (2011), *The E10 compatibility of the Australian fleet - A report prepared for the Biofuels Association of Australia*. Supported by VACC, BP, Caltex, Manildra Group, NRMA, RACQ, RACV, Shell and Sucrogen.

clubs, major fuel companies and ethanol producers. It found in 2011, 24.3% of petrol vehicles were not E10 compatible; by 2020, this dropped to 6.9%. Extrapolating this trend to 2025, suggests that less than 2% of petrol vehicles are non-E10 compliant. Given the estimated 98% E10-vehicle compatibility, strengthening the ethanol component of the Queensland Biofuels Mandate could be considered.

3. Opportunities to Align Sugar Biofuel Production with National Security and Defence Liquid Fuel Needs

Biofuels derived from sugarcane offer strategic advantages for Australia's defence and national security. By powering Extended Range Electric Vehicles (EREVs) with locally produced ethanol, Australia can strengthen its sovereign fuel capacity and reduce reliance on imports. These vehicles are particularly well-suited for remote and regional operations, providing resilience and redundancy. The combination of electric drivetrains and ethanol fuels enhances energy independence and operational flexibility, supporting both defence objectives, regional economic development and broader national interests.

4. Policy and Funding Mechanisms to De-risk Investment in Cogeneration and Biofuels

To stimulate investment in biofuels, RACQ recommends policies that prioritise liquid fuel production, with cogeneration as a secondary priority. Drawing on international models from Brazil, the US, and Europe, suggested mechanisms include grants for vehicle conversions, infrastructure upgrades, and support for demonstration projects. Incentives for ethanol production from sugarcane and molasses are also advised. These measures are designed to reduce investment risk and accelerate the growth of Queensland's bioenergy sector.

5. R&D Agenda to Underpin a World-Leading Sugar-Led Bioenergy Industry

A robust R&D agenda should focus on supporting EREVs with E85 ethanol which enhances fuel security and boosts regional economies. This approach bridges infrastructure gaps, supports disaster resilience, and leverages local sugarcane resources, aligning with goals for sustainable, affordable, and practical low-carbon mobility.

R&D should also advance cellulosic ethanol and other advanced biofuels, integrating EREV drivetrains with ethanol, and supporting pilot programs and commercialisation. Lifecycle and economic analyses are essential to guide sustainable development. By prioritising innovation and practical demonstration, Queensland can position itself as a leader in sugar-based bioenergy, delivering both environmental and economic benefits.

6. Strategic Land Use and Regional Development Considerations

Sugarcane bioenergy development requires careful planning around land availability, feedstock diversification, and regional infrastructure. Streamlined approvals for bioenergy precincts, corridors and alignment with regional employment strategies are crucial. Ensuring that land use supports both cane expansion and broader economic growth will help maximise the benefits of bioenergy for Queensland's regions.

7. Benefits for Growers in Diversification Opportunities

Bioenergy offers Queensland's sugar growers new revenue streams from ethanol, reducing dependence on sugar markets. It encourages innovation in feedstock and product development and enables growers to participate in climate-positive industries. Diversification through ethanol fuel production strengthens the resilience and sustainability of the agricultural sector.

8. Consideration of Food Versus Fuel

RACQ supports a balanced approach that prioritises whole-crop sugarcane, and waste-derived biofuels. This ensures food security is maintained while supporting sustainable land use. Transparent lifecycle assessments should guide decisions, ensuring that bioenergy development does not compromise food supply.

CONCLUSION

RACQ sees an important role for ethanol to support and extend the range and utility of certain electric vehicle types and electrified transport options (light and medium freight trucks and light commercial vehicles/4WDs).

We suggest that the focus for decarbonising the light and medium freight and light commercial/4WD vehicle fleet should be on supporting electrification with a complementary electric-biofuel strategy.

RACQ sees a specific and ongoing role for the use of biofuel/ethanol range extender, in combination with battery electric drivetrains. Such a system will provide decarbonisation of difficult to electrify edge-case applications for light commercial vehicles and 4WDs, and light to medium freight tasks. It could also and provide disaster resilience and community recovery support.

RACQ recommends the committee and the Queensland Government focus on low carbon liquid fuels for the future development of the Queensland sugar industry. It is these fuels in combination with electrification and hybrid renewable liquid fuel/electric drive trains will provide the heavy lifting in decarbonising the transport section and provide on-going, sustainable growth for Queensland's sugar industry.

For light and medium freight and light commercial/4WDs vehicles RACQ sees the most promising technology in terms of cost, utility, and carbon reduction to electrified drivetrains and with ethanol powered range extender engines/generators.

Queensland sugar and ethanol industry has the potential to become a global leader in low carbon renewable liquid fuels, powering Australia's vehicle fleet to a self-sufficient, secure, low-carbon and Queensland homegrown future.