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Productivity Commission Interim Report: Investing in cheaper, cleaner energy and the net zero transformation

The LPG industry safely and securely supplies 43PJpa of energy to industrial, commercial and residential consumers nation-wide, including around 30% of all regional Australian households[1]. Gas Energy Australia (GEA) represents Australia's liquid gas supply chains including Liquefied Petroleum Gas (LPG) and associated gases with members spanning from producers to retailers and everything in between.

GEA welcomes the opportunity to provide a submission to the Productivity Commission consultation on the *Investing in cheaper, cleaner energy and the net zero transformation* interim report.

Productivity in the context of energy decarbonisation requires each energy consumer to be able to access the least cost decarbonisation option available to them. To date, Energy policy has largely focused on electricity decarbonisation, electrification of fossil fuel demand, and hard to abate customers which cannot electrify. The coming decade requires this focus to expand to renewable fuels such as renewable liquid gas (rLG).

Productivity and the Third Cohort of Energy Consumers

Energy policy to date has focused on two cohorts of energy consumers – those which can decarbonise their energy at least cost through renewable electricity, and those which cannot use renewable electricity. Renewable fuels including rLG, rDiesel, Biomethane and even Hydrogen are being pigeonholed as being only those 'hard to abate' energy customers which cannot electrify – but **pigeonholing renewable fuels as only for hard-to-abate customers harms productivity through the transition.**

That's because there is a third cohort of energy consumers that sits between the cheaper-to-electrify and hard-to-abate. Energy consumers which *technically could* electrify their energy demand but would achieve lower-cost decarbonisation if allowed to choose to consume renewable fuels via lower-cost fuel consuming appliances.

[1] DCCEEW, 2024, Australian Energy Update 2024, https://www.energy.gov.au/publications/australian-energy-update-2024
Australian Bureau of Statistics, 2014, Environmental Issues: Energy Use and Conservation, https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4602.0.55.001Main+Features1Mar%202014

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All fuel supply chains have these customers. Customers where the energy savings from retrofitting or starting new with electric appliances doesn't stack up against the higher cost of these appliances; installing these appliances; or firming the energy supply to these appliances. This is part of why there is consumer pushback against the energy transition – **they're being told electrification is cheaper when they know it's not**.

LPG and rLG

The LPG supply chain is one of these supply chains where customers can decarbonise at lower cost through a renewable fuel. LPG supplies energy to industrial, commercial, residential, recreational and transport energy consumers across Australia. A choice in Australian cities, LPG can be a necessity in regional Australia where energy supply becomes unreliable or unavailable. Here, LPG provides not only energy supply, but energy security and even energy access.

These regional LPG customers *technically could* electrify. To do so in the absence of a stable or sufficient capacity grid connection, they would need to produce and firm their own renewable electricity on top of incurring the cost of electric appliance purchase and installation. **GEA encourages the Productivity Commission to investigate the costs of self-firming electricity supply for regional Australian homes and businesses.**

Alternately, with the right policy support, these customers could have access to BioLPG. A co-product of SAF or rDiesel production, BioLPG will cost more than conventional LPG. But even at twice the current retail cost, BioLPG would provide a lower cost decarbonisation outcome for a wide range of regional LPG customers, especially those which would need to firm their own electricity supply.

This is in part because of the extremely low cost of energy storage in LPG cylinders – a form or renewable energy storage when supplied with BioLPG. A typical residential LPG installation includes two 45kg LPG bottles which hold around 1.25MWh. These are rented for $100 - $200 per year – a three-fold lower cost than home batteries.

Policy Recommendations

GEA separates its recommendations into General and LPG Specific recommendations.

General Recommendation

Pursue more productive overarching renewable fuel policy: Policy to enable all renewable fuels in parallel which could help optimise productivity across all energy supply chains while decarbonising Australian fuel use.

LPG Specific Recommendations

Recommendations are based on the REMOVE ROADBLOCKS – ENABLE MARKETS – DRIVE MARKETS format for renewable energy development. With technical roadblocks addressed, BioLPG now needs markets to be ENABLED (1) and DRIVEN (2, 3).

1. **BioLPG Certification and Recognition:** Combining Product GO Certification with legislative amendments to recognise certificates in emissions accounting to create the cost-benefit relationship required for a BioLPG market to form.

   This includes:
   - BioLPG inclusion in HEFA Product GO Certification (*low-hanging fruit*)
   - NGER Market-based Method for BioLPG (*replicating biomethane method*)
   - BioLPG recognition in retail emissions accounting (*investigation required*)
2. **Parallel Funding:** Biorefineries receiving government financial support should be required to support regional LPG decarbonisation by including BioLPG co-production as a condition of receiving financial support.
3. **Targets or Mandates:** To ensure BioLPG uptake, include proportionate BioLPG targets or mandates alongside targets or mandates for SAF or rDiesel.

Recommendations (1) and (3) reflect observations in the European BioLPG market that indicate government funding alone is insufficient to form a renewable fuel market.

Further reading

Beyond the body of this submission, please see further reading in the following pages:

- The Role of LPG in Australia's Energy Landscape
- An example of possible overarching renewable fuel policy
- Synopsis of BioLPG as a least-cost decarbonisation option

To discuss any of the above feedback further, please contact me on +61 422 057 856 or via jmccollum@gasenergyaus.au.

Yours sincerely,

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The Role of LPG in Australia's Energy Landscape

Liquefied Petroleum Gas (LPG) plays a vital role in Australia's energy security and net zero transition. As a versatile energy source with drop-in renewable alternatives, LPG provides essential energy services to millions of Australians, particularly in regional and remote areas where it serves approximately 30% of households[2]. The LPG industry safely and securely supplies 43 petajoules of energy annually across industrial, commercial, and residential applications nationwide[3]. A further 120 petajoules of LPG is exported annually, with the LPG sector as a whole contributing over $5bn of GDP and 20,500 FTE to the Australian economy[4].

LPG stands out as a cleaner alternative to many traditional fossil fuels, producing 14% fewer greenhouse gas emissions than diesel[5]. The industry is actively embracing Australia's transition to net zero through the pursuit of renewable forms of LPG[6]. These include bioLPG (a co-product of Sustainable Aviation Fuel) and renewable LPG (rLPG) produced from hydrogen. These alternatives reduce scope 1 emissions by 99% while utilizing existing infrastructure and appliances.

One of LPG's most significant advantages is its superior energy storage capability in cheap, transportable LPG tanks. This is key in regional areas where mains power may be unreliable or unavailable. A standard residential LPG tank installation provides energy storage equivalent to more than 42 Tesla Powerwall 3 home battery systems at around one-tenth the cost[7]. This storage capacity, combined with the portability of LPG tanks, makes it an invaluable resource for energy security and emergency resilience.

The LPG industry is uniquely positioned to support Australia's energy transition without requiring government funding or subsidies. As the nation moves toward net zero emissions, renewable forms of LPG complement renewable electricity, offering a practical decarbonisation pathway for applications where electrification may not be feasible or cost-effective. By recognizing and supporting the development of renewable forms of LPG, Australia can ensure a diverse and resilient energy mix that retains energy security while achieving its climate goals.

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[2] Australian Bureau of Statistics, 2014, *Environmental Issues: Energy Use and Conservation*, https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4602.0.55.001Main+Features1Mar%202014

[3] Australian Federal Department of Climate Change, Energy, the Environment and Water, 2024, *Australian Energy Update 2024*, https://www.energy.gov.au/publications/australian-energy-update-2024

[4] ACIL Allen, 2022, *Economic contribution of the Australian gas economy in 2020-21*, https://www.gasenergyaus.au/get/2123/economic-contribution-of-australian-gas-economy.pdf

[5] Australian Federal Government, *2024, National Greenhouse and Energy Reporting (Measurement) Determination 2008*, https://www.legislation.gov.au/F2008L02309/latest/text

[6] Frontier Economics, 2023, *Pathways to Zero Emissions for LPG*, https://www.gasenergyaus.au/get/2016/pathway-zero-emissions-for-lpg-frontier.pdf

[7] Elgas, 2025, *LPG Gas Bottle Sizes*, https://www.elgas.com.au/elgas-knowledge-hub/residential-lpg/lpg-gas-bottle-sizes-gas-bottle-dimension-measurements/

RET 2.0: Renewable Fuels

Prioritizing productivity through the energy transition will require customers to access renewable options that deliver the lowest combined energy and appliance costs for their unique circumstances. Sometimes this will be achieved via electrification, and sometimes this will be achieved via renewable fuels consumed in lower cost appliances.

This isn't just true of the LPG supply chain. This is true of all fuel supply chains. Be they LPG, Gas, Diesel, or aviation fuel customers, there is a portion of each customer base which could decarbonise quicker and at lower cost via a drop-in renewable fuel.

Taking a productivity lens to this understanding, policy which supports all drop-in renewable fuels across all fuel supply chains could be more productive than policy targeting each individual renewable fuel sector.

Globally, this is typically achieved via carbon trading schemes. Alas, this in politically unpalatable. The next best thing – **RET 2.0: Renewable Fuels**.

The RET provided the demand certainty necessary to deliver the first 20% of renewable electricity supply. This is exactly what renewable fuels producers need today. It is policy the Australian public knows, understand, and values.

RET-style policy is broadly understood to be more economically efficient than a grant-based approaches, with the market signal of increasing fuel cost enabling customers to choose to either stay on a decarbonising fuel supply chain or transition to electricity.

For fuel supply chains to support such a policy, the risk of cross-subsidisation between supply chains would to be addressed. But the good work delivered by the DCCEEW NGER Team means we already have the beginnings of a solution to this problem.

A 'all fuels' RET2.0 measuring compliance via renewable fuel certificate surrender in the same way NGER Market-based Methods allow – only where a reasonable physical link exists – would resolve 90% of the cross-subsidisation problem. This would represent a basis with a high probability of fuel supply chain support.

Proceeding with this policy would require two steps:

1. **Broaden Certification and Market-based Method development** so all fuel customers can have the emissions reduction of certified renewable fuel use recognised under federal fuel and emissions reporting legislation.
2. **Amend existing RET legislation to introduce a RET2.0: Renewable Fuels** referencing surrender of renewable fuel certificates recognised under federal fuel and emissions reporting legislation to comply with the target.

There is sufficient time and mandate to deliver this policy within the current term of government. However, if you would prefer to take this policy to the 2028 election, there would be ample time for analysis by a firm such as ACIL Allen to demonstrate the economic efficiency and productivity impacts of this vs other approaches.

BioLPG as a least-cost option

Energy access and energy security can be challenging in regional Australia. LPG provides energy access and security for around 30% of regional Australian households, with the majority of residential LPG installations being located in regional Australia.

This is in part due to the energy storage capacity of LPG. The typical residential LPG bottle installation stores around 1.25MWh of energy and is rented for around $100 to $200 per annum. This is enough energy storage to supply a cold climate home (56GJpa) for an entire month of heating, cooking and hot water between refills.

The same case holds for regional Australian commercial, agricultural and industrial business. One example, Alpine Resorts Victoria, would need to spend tens of millions of dollars just to install powerlines through a national park in order to electrify its LPG use.

So, what does this mean for LPG decarbonisation?

Firstly, it means that the cost of replacing the firming capacity of LPG bottles will define whether BioLPG is the least cost decarbonisation option for an LPG customer. Quite simply, a 1.25MWh battery will not be cost effective for any home or most businesses.

Publicly available pricing indicates that a solar + battery + generator installation to achieve equivalent energy security of LPG bottles (99.9% uptime) can cost as high as $50,000 to $80,000 before considering the cost of new electric appliances.

BioLPG also represents a cost increase. There is no publicly available data on BioLPG cost, however, data available for-purchase by Argus Media shows BioLPG is offered to European markets at around $2,800AUD per tonne. Considering EUR-AUS CAPEX and OPEX ratios, this could be as high as $3,500 - $4,000 AUD per tonne locally produced.

With current wholesale LPG price (around $800 per tonne) accounting for around 25% of retail prices (around 6c/MJ), retail BioLPG could reach around 2x current retail prices.

While this retail premium is steep, BioLPG at 2x current retail price may still be the least cost option for those regional customers which need to firm their own electricity supply.

This comparison reenforces the growing recognition that decarbonisation will cost Australians more. The case of regional LPG customers reenforces the need to ensure that all energy consumers have the right to access the least cost decarbonisation pathway for their unique circumstances. If BioLPG isn't made available in Australia, regional LPG customers will be paying even more for their energy, harming productivity.

For a broader information about BioLPG and other renewable liquid gases, please refer to the Liquid Gas Europe study included below.[8]

[8] Liquid Gas Europe, 2025, *Outlook for renewable liquid gas in Europe*, available at https://www.liquidgaseurope.eu/wp-content/uploads/2025/03/Outlook_lge_digital.pdf