

Written evidence submitted by Liquid Gas UK (REW0036)

Liquid Gas UK is the trade association for the Liquefied Petroleum Gas (LPG) and biopropane (bioLPG) industry in the UK, representing companies who are LPG producers, distributors, equipment and service providers, and vehicle converters. It is dedicated to the safe and effective development of LPG. Member companies cover 99% of the total LPG distributed in the UK; and over the next 5 years, plan to invest over £600m as an industry in infrastructure, fleet and decarbonisation. In our response, we outline how LPG and bioLPG can play a key role in the future energy mix in Wales.

An introduction to LPG and bioLPG

- LPG is the lowest carbon conventional energy source available to off-grid homes and businesses in the UK, which provides immediate, expedient and cost-effective heat and energy. As LPG emits more than 33% fewer carbon emissions than coal and up to 20% fewer carbon emissions than oil¹, LPG is a transitional solution in its own right. It also emits virtually no NOx, SOx and Particulate Matter, enabling immediate air quality improvements.
- It is the industry's ambition to offer 100% renewable energy solutions by 2040 through the rollout of bioLPG. BioLPG, alternatively known as biopropane, is a versatile, 'drop-in' renewable solution which can provide up to 90% carbon emissions reduction². Already available on the market today, bioLPG is chemically indistinct from LPG and can be used as it is, just like conventional LPG. This means it can be 'dropped-in' to existing supply chains and can be used by consumers in their existing heating appliances, stored in existing bulk tanks and cylinders, and transported using today's infrastructure and skilled workforce.
- Switching to LPG systems today also locks-in a seamless pathway to renewable energy use, as bioLPG can directly replace conventional LPG going forward in a hassle-free way. LPG and bioLPG can also be used in hybrid systems, alongside heat pump technology. The Committee on Climate Change (CCC) modelled off-grid hybrids using bioLPG in their leading Net Zero report³ and the National Grid also deploys biofuels in its Future Energy Scenarios⁴ planning.
- As highlighted above, LPG and bioLPG offer viable routes to decarbonise the heating of homes in the case where electrified heat pumps cannot be viably or cost-effectively be retrofitted nor provide consistent heating. More widely, they support what is the most affordable route to Net Zero in relation to off-grid heating. An Ecuity study showed that a typical pre-1918 detached family home would face levelised costs of 40% higher, equating to £22,6000, between now and 2050, if forced to switch to a heat pump rather than to switching onto LPG/bioLPG. These estimates are also backed up by Savills⁵, which has conducted analysis based on UK Government data.

How should the UK and Welsh Governments work together to support the development of renewable energy projects in Wales?

¹ UKLPG, Response to A Future Framework for Heat in Buildings (June 2018)

² WLPGA, 'BioLPG: The Renewable Future' (2018), Page 52

³ Committee on Climate Change, Net Zero – Technical Report (2019)

⁴ National Grid, Future Energy Scenarios, July 2020

⁵ Savills, EPCs and the Green Homes Grant, 2020

With the Welsh Government recently legally committing to net zero emissions by 2050 and committing to becoming a zero waste society, it is right that a key focus of both the Welsh and UK Governments should be to encourage more renewable energy production in Wales. This is a two stage process: first joint support for LPG and bioLPG as being among a basket of sustainable fuels and technologies that can enable Net Zero; then joint support to bring bioLPG production to Wales.

LPG and bioLPG are readily available, well established and affordable decarbonising fuels for off-grid homes and businesses in Wales. LPG is the lowest carbon conventional energy source which provides immediate, expedient and cost-effective heat and energy for off-grid homes in Wales. LPG and BioLPG also compares very favourably to biomass on air quality⁶.

Last year in December, the Welsh Government funded 120 homes to be heated by LPG hybrid heat pumps through its Optimised Retrofit Programme. We also commend the Welsh Government for its proposal in the recent Clean Air Strategy to develop a boiler scrappage scheme to promote conversions away from coal, (which we note should also extend to heating oil). This is a measure that off-grid consumers will understand and allow them to make carbon emissions savings with a LPG / bioLPG standalone boiler or installing a hybrid or pure electric heat pump. These are two initiatives that the UK Government should look to fund to support cleaner heating systems. In the non-domestic environment, the fuels also have the potential to replace one third of all the coal and oil currently used to heat non-domestic buildings as well as for industrial processing, saving 3.5million tones of CO².⁷

However, the UK and Welsh Governments need to clearly back bioLPG as a technology that can support and complement decarbonisation. Most urgently, with the UK Government's draft off-grid regulations to be published soon, the phase out of high carbon fuels should not block fuels that can support a transition to Net Zero, such as LPG and bioLPG. The flawed EPC methodology also needs to be reformed so that off-grid homeowners aren't unfairly penalised just because they are off the gas grid and it no longer encourages off grid users to move to high carbon fuel sources. With areas in Wales like Powys having 70% of homes off the gas grid, this unfairness will disproportionately affect Welsh rural homeowners, landlords and feeding through to renters.

Industry has been investing not only in its infrastructure as highlighted at the beginning of the response, but also specifically in bioLPG. In the last 12 months to April 2020, industry investment in bioLPG totalled more than £100 million. Support for bioLPG from across Government will help secure more investment in supply, and to be covered further below, developing UK-based production. With the right support, we could see the establishment of the indigenous production of bioLPG in Wales.

What opportunities are there for renewable energy to aid Wales post-COVID-19 economic recovery?

⁶ Opportunities to Decarbonise the Non-Domestic Off-Grid Sector with LPG and bioLPG, by Ecuity Consulting, January 2021. This recent study showed that while biomass and bioLPG boilers both emit low levels of CO², air quality damage costs are 24 times worse when using biomass than when compared to LPG or bioLPG. Indeed, based on a lifetime modelling study if the fuels were used in a distillery, biomass would produce 250 times more Particulate Matter 2.5 and 60% more Nitrogen Oxide than bioLPG.

⁷ Opportunities to Decarbonise the Non-Domestic Off-Grid Sector with LPG and bioLPG, by Ecuity Consulting, January 2021.

LPG and BioLPG can a significant part in to play helping Wales reduce its emissions and deliver a circular economy; this role is further enhanced through indigenous production of bioLPG using waste products, sustainable feedstocks both as a sole product or as a co-product of making renewable aviation or road fuels.

A recent study by NNFCC found that the deployment pathway for a full switch from fossil LPG to bioLPG by 2040 is considered feasible⁸. NNFCC found that there is significant potential for rapid scale-up of indigenous bioLPG production in the UK, as a co-product of sustainable aviation fuel production at new HVO⁹ plants or from establishing gasification and fischer tropsch synthesis facilities.

Indeed, there is currently a strong focus on how to promote production and use cleaner aviation fuels. **As bioLPG is a co-product of sustainable aviation fuel production, there should be incentives developed to direct the bioLPG into decarbonising hard-to-treat homes, businesses and industrial processes.** This also ensures best use of feedstocks, with a two for the price of one mentality and enables industry to tackle the two largest emitting sectors – heat and transport.

Examples of feedstocks which will be available to support UK production of bioLPG include used cooking oil, animal fat, vegetable oil, waste, plant dry matter, sugar and starch. Both Governments should work with industry to look at what feedstocks are most available and appropriate in different parts of the country and if they can facilitate the development of production facilities which can in turn supply local / regional bioLPG demand. BioLPG production also could be established near high use demand in off-grid heat, such as clusters of industrial and commercial consumers.

These new production facilities could sit at the heart of a circular economy in Wales, utilising sustainable local feedstocks, creating jobs for the local area, contributing to economic growth and ultimately creating the energy to be used in rural homes, businesses and industries.

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⁸ NNFCC, Biopropane: Feedstocks, Feasibility and our Future Pathway, 2019 (p. 5)

⁹ Hydrotreated Vegetable Oils