

# Future Ready: Transforming off-grid Britain

**2040**  
VISION





# 1



**LPG is a key feature of the UK's energy mix ensuring 2 million off-grid homes in the UK have access to gas.**

## LPG overview

### What is LPG?

LPG (Liquefied Petroleum Gas) is a clean, low carbon, affordable and efficient fuel for providing heat and energy to thousands of off-grid homes and businesses across Britain<sup>1</sup>.

It's made up of a mixture of hydrocarbons (butane and propane) which are easily converted to liquid form and can be stored and transported safely.

For off-gas grid homes and businesses, LPG is the lowest carbon conventional energy source that is readily available in the UK today making it a fundamental part of the UK's energy mix. One of LPG's greatest strengths is its versatility, as it can be used for several applications such as: domestic heating and cooking, commercial heat and power, industrial heating and portable uses.



Source:

1. <https://www.uklpg.org/uploads/DOC5A5F2DC5A7907.pdf>



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**LPG is a low carbon, clean burning, highly efficient fuel which is readily available in the UK.**

## What are the benefits of LPG?



**Low carbon** – Compared with conventional fossil fuels, LPG emits 33% less CO<sub>2</sub>e than coal and 12% less than oil.<sup>2</sup>



**Clean energy** – LPG supports cleaner air quality as it emits virtually no black carbon and very low levels of NO<sub>x</sub>, SO<sub>x</sub> and particulate matter (PM).<sup>3</sup>



**Available today** – LPG is readily available and can be used practically anywhere, including the most remote areas of the UK.



**Highly efficient** – LPG provides optimised performance with modern heating systems which allows for reduced energy consumption.



**Security of supply** – At Flogas Britain, we've made significant investments in the security of supply of LPG across the UK. We've recently been granted planning permission for the Flogas Avonmouth Storage Terminal which has the capacity to store over 34,000 tonnes of LPG. The largest of its kind in the UK, the facility will provide customers with an unrivalled UK LPG supply chain.



Sources:

- <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012R0601&from=en>
- <https://www.wlpga.org/about-lpg/lpg-society/climate-change/>

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**LPG remains a vital component of the UK's energy mix and infrastructure.**

## How does LPG compare to other fuels?



**Lower carbon** – Switching from an oil boiler to an LPG boiler can reduce CO<sub>2</sub>e emissions by 25%.<sup>4</sup>



**Cleaner energy** – An LPG boiler produces 60% less particulate matter (PM) than oil boilers contributing to cleaner air quality.<sup>5</sup>



**Faster burning** – LPG offers an instant and consistent clean flame for cooking and faster speeds in heating hot water for central heating systems and industrial processes.



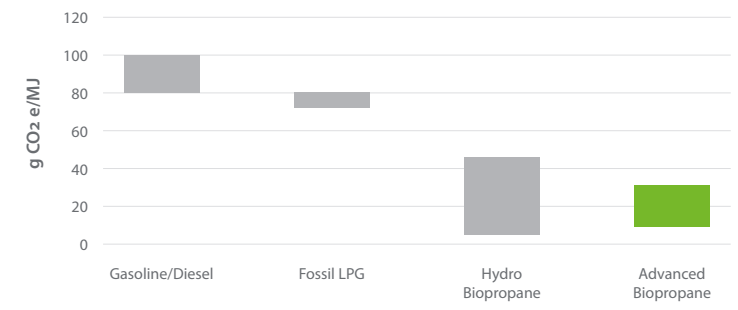
**Infrastructure availability** – The infrastructure for LPG already exists across the UK including in remote areas. The “electrification of everything” would require huge investments in existing rural networks.



**Bio-propane ready** – As LPG is chemically identical to biopropane, the existing infrastructure does not need to be changed when transitioning to biopropane.

LPG is the lowest carbon off-grid conventional fuel and offers significant reductions in NO<sub>x</sub> emissions, SO<sub>x</sub> emissions and PM compared with other conventional fuels.

### Comparison of carbon footprints of LPG with other fuel sources:<sup>6</sup>



Sources:

4. [https://aegpl.eu/images/vision\\_2050\\_SCREEN.pdf](https://aegpl.eu/images/vision_2050_SCREEN.pdf)

5. [https://aegpl.eu/images/vision\\_2050\\_SCREEN.pdf](https://aegpl.eu/images/vision_2050_SCREEN.pdf)

6. <https://www.wlpga.org/wp-content/uploads/2018/10/BioLPG-The-Renewable-Future-2018.pdf>

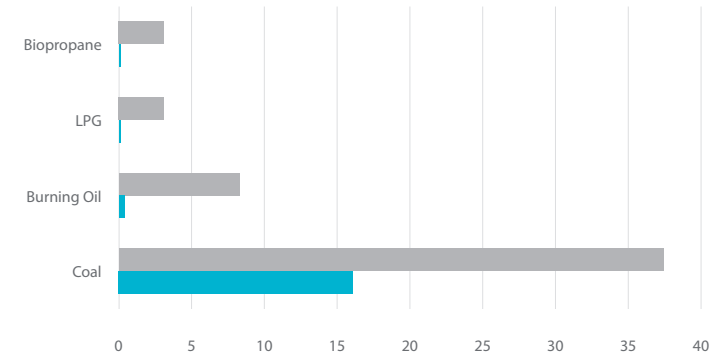


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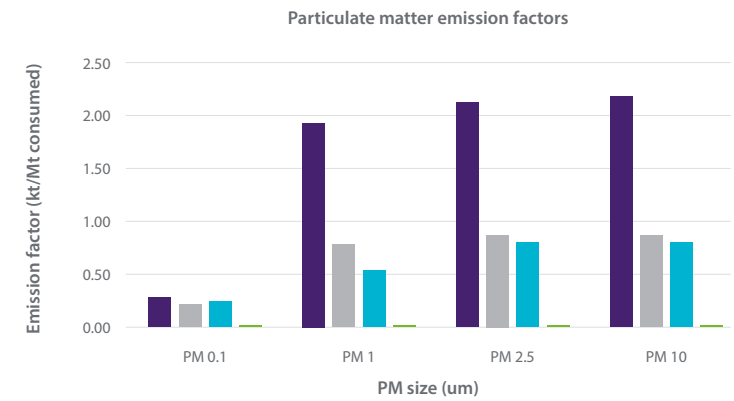


## How does LPG compare to other fuels?

Comparison of N<sub>2</sub>O and SO<sub>2</sub> emissions between fuel sources (kg/tonne) <sup>7</sup>



Comparison of Particulate Emissions Factors between fuel sources: <sup>8</sup>



Sources:  
 7. [https://www.ssb.no/\\_attachment/288060/binary/93858?\\_version=539789](https://www.ssb.no/_attachment/288060/binary/93858?_version=539789)  
 8. <http://naei.beis.gov.uk/data/ef-all>

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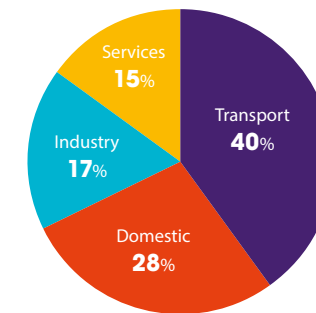
## What energy challenges does the UK face?



The UK Government faces the huge challenge ahead of decarbonising heat and transport in order to meet carbon budgets.

The Climate Change Committee (CCC) recognises that reducing carbon emissions will require the use of lower carbon energy that is highly efficient and meets consumer needs.

As a low carbon, effective and efficient fuel, LPG is well-positioned to help tackle the decarbonisation of both industry heat and transport which account for a significant amount of the UK's energy consumption.



UK energy consumption 2017: <sup>9</sup>



Heating and hot water for UK buildings make up 40% of our energy consumption: <sup>10</sup>

Sources:

9. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/729317/Energy\\_Consumption\\_in\\_the\\_UK\\_ECUK\\_2018.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/729317/Energy_Consumption_in_the_UK_ECUK_2018.pdf)

10. <https://www.theccc.org.uk/2016/10/13/infographic-the-future-of-heating-in-uk-buildings/>



# 2

The Government's commitments cement the role that LPG will play in the decarbonisation of heat and transport.

## Government commitments



### Paris Agreement

The UK is part of the treaty to limit increases in global average temperatures to well below 2°C above pre-industrial levels by 2050 and pursue efforts to limit the increase to 1.5 °C.<sup>11</sup>



### Clean Growth Strategy

This includes taking action to reduce emissions from heating the 850,000 off-grid homes in England that currently use oil for heating.

The Government aims to phase out the installation of high carbon fossil fuel heating in new and existing off-grid buildings such as coal and oil.<sup>12</sup>



### The Road to Zero

In order to tackle air quality problems across the UK, the Government has committed to ending the sale of all new conventional petrol and diesel cars and vans by 2040.

The Government supports the retrofitting of LPG systems for vans and taxis as an alternative to diesel in the transition to zero emission vehicles.<sup>13</sup>

#### Sources:

11. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/700496/clean-growth-strategy-correction-april-2018.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf)
12. [https://beis.gov.uk/citizenspace.com/heat/future-framework-heat-in-buildings/supporting\\_documents/Future%20framework%20for%20heat%20in%20buildings%20call%20for%20evidence.pdf](https://beis.gov.uk/citizenspace.com/heat/future-framework-heat-in-buildings/supporting_documents/Future%20framework%20for%20heat%20in%20buildings%20call%20for%20evidence.pdf)
13. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/739460/road-to-zero.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf)

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2040  
VISION

# Our 2040 Vision

**As a leading LPG supplier, we're fully committed to building a lower carbon future for UK homes.**

We believe the transition to a renewable future should be simple with the lowest level of disruption possible for end users. Biopropane is a renewable gas which is chemically identical to LPG but is made from biological sources such as waste, sewage and energy crops. It can easily be 'dropped-in' to the existing comprehensive LPG network – making it the most feasible, low carbon option that results in near zero disruption to the end-user.

We endeavour to supply customers with 100% renewable energy solutions by 2040. Not only will this help towards meeting the UK's environmental targets, but it means our customers maintain all the benefits that gas has to offer without the need for changing existing infrastructure or appliances.





# 4



**Biopropane is chemically indistinct from LPG and can be used as it is without the need to upgrade infrastructure.**

## The road to 2040

LPG is the cleanest, most efficient and effective fuel compared to conventional off-grid coal, oil and electricity.<sup>14</sup> Therefore, LPG is well placed to support the Government's decarbonisation objectives and will play a vital role in the future energy mix.

### Biopropane

As a cleaner, efficient and widely available fuel compared with conventional high carbon fossil fuels, LPG has an important role to play as both a transition and long-term fuel in tackling the challenge of decarbonising heat and transport in the UK.

Biopropane is also made from a variety of biological materials and can reduce carbon emissions of up to 90% depending on production methods.<sup>15</sup> As biopropane is chemically identical to LPG, it can simply be "dropped-in" to existing supply chains and appliances without any need for infrastructure changes or further investment.

#### Biopropane is:



**Easy to use** – Chemically identical to standard LPG and can be blended up to 100%



**Cleaner** – Biopropane is low carbon and performs extremely well from an air quality perspective on NOx, SOx and PM



**Renewable** – Made from completely renewable crops and waste feed stocks

Sources:  
14-15. <https://www.uklpg.org/uploads/DOC5A5F2DC5A7907.pdf>





# 4



## LPG security of supply

Flogas Britain's Avonmouth Storage Terminal is the largest of its kind in the UK with the ability to store 34,564 tonnes of LPG, massively increasing the UK's total LPG storage capability.

“ The significance of the storage capability that the Avonmouth terminal will offer cannot be underestimated. Given the growth ambitions of the industry, the 35,000 tonnes of additional storage demonstrates that the LPG industry can offer security of supply for both its current and new customers over the coming decades. The extra capacity added into the supply chain once this new terminal is operational means that the capability of the whole LPG industry across the UK will broaden considerably.

With future energy policy being a hot topic at present, this announcement ensures that LPG is perfectly placed as an immediate, proven solution to support the Government's decarbonisation objectives, highlighting the critical role the fuel can play in the future energy mix. As a clean, low carbon fuel available today, LPG already provides a reliable source of heat and energy to thousands of homes and businesses in off-grid areas across the UK. With bioLPG being introduced into the supply chain from 2018, it is important to note that this new facility will be able to store bioLPG, revealing how the industry is all set to deliver a pathway to a sustainable future.

**George Webb, UKLPG Chief Executive**

**Flogas Britain granted planning permission for large-scale LPG storage terminal.**





# 4



**Carbon offsetting brings about economic, social and health benefits to different communities around the world while reducing our business impact on the climate.**

## Carbon offsetting

Flogas has held The Carbon Trust Standard since 2009. As the first off-grid business in the UK to achieve this standard, we've committed to reducing CO<sub>2</sub> emissions year on year.

We've also committed to offsetting our own Level 1 and Level 2 carbon emissions.

### What is Carbon Offsetting?

Carbon offsetting allows companies to counteract their greenhouse gas emissions by purchasing carbon credits, which in turn invest in a project giving an equivalent reduction of emissions elsewhere in the world; either reducing or absorbing carbon dioxide.

### How it works



This investment in carbon offsetting demonstrates our commitment to tackling climate change and reducing global carbon emissions.

# 5



## LPG: a future off-grid fuel

LPG is the lowest carbon conventional off-grid fuel that is highly efficient, cost effective and readily available in the UK.

The Flogas Avonmouth Storage Terminal and continued global production of LPG will ensure the LPG security of supply remains strong in the long-term.

LPG and biopropane is also compatible with advanced and emerging technologies and is a perfect fuel for most modern low carbon heating appliances such as gas heat pumps, hybrid installations and fuel-cell micro-CHPs.

Due to the identical chemical make-up of biopropane, the existing infrastructure is already 'biopropane ready.' The incremental deployment of biopropane over the next few decades will continue to decarbonise the off-grid housing sector towards 2050 targets making biopropane a critical part of the UK's future energy mix.

The LPG industry sees the following timeline as a viable path for off-grid homes and businesses to transition away from high-carbon fuels and decarbonise in order to meet 2050 targets.<sup>16</sup>



**OIL TO LPG SWITCH**  
'A' Rated LPG Boiler & Heating Controls  
LPG tank and pipework installed hassle-free by your LPG supplier



**BIO SOLUTIONS**  
Incremental deployment of bioLPG into the supply chain



**INNOVATIVE TECHNOLOGIES**  
LPG Boiler & Air Source Heat Pump  
LPG Powered Heat Pump  
LPG Micro Combined Heat & Power for larger properties  
LPG Microgrid/Heat Network for multiple properties  
Commercial Heat Agricultural Combined Heat & Power/Micro Combined Heat & Power  
LPG Fuel Cells

**There is no heating process currently fulfilled by coal or oil that cannot be replaced by LPG.<sup>17</sup>**

Source: 16-17. <https://www.uklpg.org/uploads/DOC5B1F84CF86FC4.pdf>



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