

Written evidence submitted by GT Energy UK (DHH0141)

Introduction

GT Energy UK Ltd (GTE) is geothermal development company specialising in the exploration and development of deep geothermal¹ resources primarily for the supply of renewable heat. It is the only utility scale renewable heat resource which can be deployed in urban areas, with the potential to heat thousands of domestic, commercial and other properties for generations.

We aim to develop large scale (5mw+)renewable heat plants in urban areas supplying heat to homes via district heating networks and large scale heat users such as airports, universities, hospitals, large public buildings etc.

GTE is part of the IGas Energy PLC (IGAS) group of companies. IGas is a leading British oil and gas explorer and developer, producing c.2,200 barrels of oil equivalent per day from over 100 sites across the country. IGas has played a key role in Britain's onshore energy production; safely exploring, developing and producing onshore oil and gas at its sites for over three decades.

As part of the energy transition to net zero in 2050 IGas and GTE are extremely well positioned to harness this as yet untapped indigenous source of energy. As we transition from fossil fuels, geothermal development carries many similarities to the oil and gas industry from a subsurface and drilling perspective.

This plan for the future coincides with the launch of the Governments North Sea deal to protect jobs in the green energy transition. The government states that "high-skilled oil and gas workers and the supply chain will not be left behind in transition to low carbon future as landmark North Sea Transition Deal is agreed with industry." Geothermal could provide that opportunity by creating thousands of jobs for the transitioning oil and gas sector, as the new industry will need all the same skillsets and supply chains as it matures over the coming years.

Heating is the United Kingdom's biggest source of carbon emissions. In June 2019, the UK Government committed to a Net Zero carbon emissions target across the economy by 2050. Provision of heat currently contributes around a quarter of all UK greenhouse gas emissions and will take a concerted effort from government, regulator and industry to decarbonise. In 2019, 35% of power generation came from low carbon sources in 2019, in contrast to only 7.9 per cent of total buildings heat demand came from low carbon heat sources. There are a number of low carbon technologies which can be utilised as sources of heat at present, but these technologies are mainly suited to small scale heat supply. There is currently a significant gap in the market for large scale renewable heat technology. We believe geothermal could quickly address this gap in the market.

Deep geothermal is hybrid between natural resources and a renewable technology. There is still exploration risk which both industry and the private sector is willing to take, but the end product is still renewable heat. All of the technology used to harness deep geothermal is similar to the oil and gas sector and is available "off the shelf".

Deep geothermal is a dispatchable technology meaning it can supply energy on demand and is not reliant on weather conditions, unlike wind and solar. There are currently no operating plants in the UK however there are number of projects in development across the UK which are subject to government support.

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Deep geothermal is a proven technology with hundreds of plants in operation across Europe. There are over 50 deep geothermal plants in operation in Paris alone. There are more than 180 plants in operation in Germany which has created 22,000 jobs since the early 2000's.

There are significant untapped geothermal resources in UK. The British Geological Survey has stated that there is enough deep geothermal resources to provide all the heat for the UK for the next hundred years. Geothermal plants can supply heat for 100+ years compared to a 20-30 year life cycle of other renewable technologies. A deep geothermal plant size starts at circa 3 megawatt (mw) in size and can reach up to 30mw + in size from deeper wells providing heat on demand with a minimal footprint and with no visual impact in urban areas where renewable heat is most needed.

An average size geothermal plant could provide 30-40 thousand megawatt hours of renewable heat per annum. There is potential for at least 150-200 projects in the UK. This represents a private capital investment of £3-4 billion. Private risk capital is available to take the exploration and development risk.

However, with the closing of the Non-domestic renewable heat incentive, geothermal needs support from government for the first few projects, similar to the support granted by other countries. Projects in Germany and France no longer receive government support and projects are now price competitive with fossil fuel equivalents.

1. What has been the impact of past and current policies for low carbon heat, and what lessons can be learnt, including examples from devolved administrations and international comparators?

The RHI has been a success story for the establishment of the renewable heat industry in the UK. The tariff-based mechanism has provided a bankable solution for long-term investments in renewable heating systems across the domestic and non-domestic scale. While the RHI has been very supportive in the roll out of renewable heat there is now a need to introduce both a carrot and stick approach. Even with the RHI, prices of fossil fuel equivalent in some cases have been cheaper than converting to renewable meant the level of renewable heat has not grown substantially comparable to that of electricity. The Government needs to maintain support for renewable heat while also introducing a carbon tax on fuels which will incentivise and push consumers to convert while also providing the government with the revenue need to maintain the financial support for the renewable technologies. It is our opinion that grant aid alone supports a project but a geothermal development incentive (GDI) or RHI equivalent will support the creation of an indigenous industry with the associated supply chains and skill sets.

2. What key policies, priorities and timelines should be included in the Government's forthcoming 'Buildings and Heat Strategy' to ensure that the UK is on track to deliver Net Zero? What are the most urgent decisions and actions that need to be taken over the course of this Parliament (by 2024)?

The Government needs to address existing barriers of cost and availability of low carbon heat solutions. They can do this by maintaining financial support for renewable heat, while also raising the carbon tax to encourage heat users to convert to low carbon technologies. The planned closure of the RHI has slowed down roll out of renewable heat projects in the last 12 months. It leaves a significant policy gap around large scale heat decarbonisation. As it stands, there is no equivalent replacement scheme for medium or large-scale heat decarbonisation projects. In considering the sustainability of the heat sector, the committee should also consider what further support is available beyond the domestic sector. The Clean Heat Grant Scheme (CHG): The CHG is the proposed

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replacement for the Domestic RHI, starting in 2022, providing a grant of £4000 for systems below a capacity cap of 45kW. Unlike the RHI, that supported projects across a range of sizes, this is a grant level focused on small, predominantly air source heat pump, installations. Analysis of RHI costs of deployment data from BEIS suggests a £4000 grant is unlikely to support schemes much larger than 10 kW before the cost to the consumer becomes too great.

The geothermal industry is asking government for the introduction of a geothermal development incentive which will only cost the government money if renewable heat is actually produced. This approach is low risk, with the developers and private capital taking the exploration risk upfront. This incentive should be in place for the first 20 projects to help the industry get established and in time help the sector become cost comparative or cheaper than fossil fuel equivalent as seen with both the wind and solar sectors. The sector is also happy to have a tariff degeneration system in place after the first 20 projects are rolled out as we expect to see significant cost saving as the industry matures, similar to other large scale renewables together with a rise in fossil fuel equivalent in the that time.

3. Which technologies are the most viable to deliver the decarbonisation of heating, and what would be the most appropriate mix of technologies across the UK?

Geothermal is well suited to deliver large-scale decarbonisation of heat as it is the most suited technology for deployment in urban areas due to its low visual impact and on demand despatchability.

4. What are the barriers to scaling up low carbon heating technologies? What is needed to overcome these barriers?

The main barriers to scaling up low carbon heating technologies is cheaper fossil fuel equivalents. In the absence of an RHI the geothermal sector would like to see the introduction of a geothermal development incentive (GDI) and a carbon tax level which encourages energy user to convert to low carbon technologies.

6. What incentives and regulatory measures should be employed to encourage and ensure households take up low carbon heat, and how will these need to vary for different household types?

Incentives should include renewable heat incentive or GDI, grants to retrofit housing to accommodate low carbon technology and grants for connection to district heating networks in urban areas. Regulatory measures should include earlier ban on sale of new gas boilers. Regulations to make all new developments connect to district heating where available. Introduce a levy on replacement boiler and boiler parts encouraging consumer to convert to low carbon technology

8. Where should responsibility lie for the governance, coordination and delivery of low carbon heating? What will these organisations need in order to deliver such responsibilities?

Responsibility should lie primarily with BEIS but also with the Ministry of Housing, Communities & Local Government for the governance, coordination and delivery of low carbon heating. They in turn should delegate powers and responsibilities where needed to councils and Ofgem and other relevant government bodies.

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