

**From:** ■  
**To:** [Drax Re-power](#)  
**Subject:** comments on appl. response to wqs deadl. 2 - 20011847  
**Date:** 22 November 2018 23:59:30

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With regards to EN010091-000854-Drax Power Limited - 8.5.3 Applicant's Response to First Written Questions - Deadline 2 Submission:

"2.1.8 [...] Biogas technology is listed within the LCP BREF Document which quotes a maximum output of 15MWe and a wide range of efficiencies between 28% and 38% (Table 7.19)."

It is worth pointing out that the efficiency quoted relates to existing "Biogas-fired simple-cycle gas turbine[s]" and variations in efficiency is likely to be down to differences between the power stations examined, and not necessarily due to variations in the fuel. It seems to reflect relatively closely the efficiencies found on conventional natural gas fired power stations in open-cycle mode.

The indirect quote of "a maximum of 15MWe" is misleading too, as it doesn't reflect a technical limit, but again refers to "In France, according to the available information, the largest 100 % biogas-fired gas turbines" in 2013. One of the main reasons for the smaller scale is to make use of the thermal output of these power generators. As heat and electricity demands as well as the source of the biogas are all geographically dispersed the smaller scale reflects good policy. It is beneficial for grid-loss and -stability reasons as well and advocated in most renewable energy scenarios.

The LCP BREF Document then goes on to state that: "Nevertheless, there are cases where biogas is fired in conjunction with other fuels like natural gas (Plants 65-1/2 and 421-3) with biogas yearly average participation in the fuel mix between 6 % and 16 % (thermal input basis).", again this is a statement of factual evidence, not technical limitations, which should mean that a gradual increase of biogas in the mix should be an option, further information below.

"2.1.8 [...] Transport of waste to the Drax site would encompass hundreds of HGV movements per day"

"2.1.9 In addition, there is currently no national transmission system for either biogas or syngas which Drax could connect into, and no agreed technical specification for biogas and syngas, for example calorific value, moisture, chemical composition etc."

As commonly advocated in most renewable energy scenarios and soon to be common practise both synthetic and biogas gets injected into the existing gas grid by conditioning the fuels to meet the grid standards - the main component of all three gasses is always methane. In this way the biogas can be produced on farms and in other anaerobic digestion facilities around the country, transported and stored afterward in the existing infrastructure rather than being transported as biomass or waste itself. This would allow a gradual increase in the proportion of biogas use as well.

"The methane in biogas and synthetic gas can be stored in very large quantities just as natural gas is currently. The UK today has a highly developed gas infrastructure that includes storage facilities, such as the Rough gas store off the coast of Yorkshire, which has a capacity of 35,000 GWh." (Zero Carbon Britain - Rethink the Future; p.67)

"2.1.8 [...] Impact on the gas turbines of off-spec biogas, e.g. acid content and corrosion issues."

"2.1.10 With respect to part (i) of the question, biogas and synthetic gas were not explored as options because neither power generation systems nor associated infrastructure have been developed and tested at the scale required to repower

the existing gas turbines and steam turbines associated with Units 5 and 6 and do not, therefore, meet the Applicant's objectives."

According to 2.1.6 there are no existing gas turbines, the turbines would be new.

If Drax chose to produce greater quantities biogas on site and use it without much treatment, the turbines could be made of materials utilized in existing biogas turbines and would be able to deal with corrosion. If the power station remains connected to the grid, the generation system should be much the same. Co-firing of lower percentages of little treated, on site produced biogas to some degree should still be an options.

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