blue-ng
Ralph Allen House T: +44 (0) 1225 220000
Railway Place www.blue-ng.
Bath BA1 1SR

Paul Branston
Ofgem
9 Millbank
London
SW1P 3GE

Andrew Mercer
CEO Blue-NG Ltd

andrew.mercer@blue-ng.com

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Dear Paul,

Open letter consultation on National Grid's proposal to commence generating electricity at gas distribution pressure reduction stations.

Blue-NG Ltd ("Blue-NG") is a company that exists to moderate the effects of climate change by reducing carbon dioxide emissions in a sustainable and commercially viable manner. Blue-NG will achieve this by producing renewable energy using a range of highly efficient CHP generating technologies. Blue-NG will locate this technology at sites very close to the point of consumption - so called "embedded generation". In addition to generating renewable electricity, embedding generation in this manner will minimise power losses and maximise the possibility of renewable heat sales. Blue-NG is investing in the development of sustainable, world leading power generation.

Subject to agreeing contract terms with NGG, obtaining the relevant regulatory clearances and becoming accredited as a generator of renewable electricity, Blue-NG intends to install and operate combined cycle bio generation plants ("CCBG") at up to eight trial sites located at Distribution Pressure Reduction Stations ("PRSs") on National Grid Gas's network. The first two sites at Beckton and Southall in London have been selected for phase 1 of the trial.

Locating its CCBG plants at a PRS enables surplus heat from the CHP engine to be efficiently recovered by using the gas flow as a carrier fluid for the heat; this is not energy that

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is normally lost in the process of pressure reduction as indicated by Ofgem in the consultation.

A turbine installed in this gas flow converts the heat to shaft power. The amount of heat that will be injected into the gas flow will be sufficient to enable the turbine to operate at maximum generation capacity at the maximum flow through the site at peak. Only heat from the CHP engines will be converted to shaft power and this permits the existing gas powered boilers to be switched off. This reduces the amount of carbon dioxide emitted by NGG and immediately reduces NGG's own use gas ("OUG") consumption; a benefit that will accrue to gas consumers.

Blue-NG's specific answers to the questions raised by Ofgem in its consultation are set out below in the remainder of this letter.

Do respondents agree with NG's proposed environmental benefits associated with this technology?

The environmental benefits that will be delivered with this technology include:

- Sustainable low carbon electricity generation;
- Reduced carbon dioxide emissions due to less use of gas fired boilers;
- Potential to supply renewable, low carbon, heat to developments surrounding the power station – this is presently the subject of a call for evidence by BERR.

Are there any potential benefits, costs or risks to consumers that have not been considered in this letter?

Costs and benefits

A venture of this type has not been undertaken before and there are a number of ways development of the commercial arrangements between NGG and Blue-NG could be taken forward. The exact form of the arrangements will be dictated by the degree of risk NGG, and the gas consumer, is willing to take in facilitating the development of this project.

The current working assumption is that it would not be appropriate for NGG or gas consumers to bear any of the costs

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of facilitating the project's development, and that these substantial costs should be borne entirely by Blue-NG.

Once the contractual framework is developed NGG can simply re-use it with any other third party. Therefore, although the long term benefits could be significant, the initial benefits to gas consumers will be modest as these consumers will not be exposed to any of the significant development costs.

Furthermore, the presence of a readymade framework for wide scale deployment of this or similar technology should permit rapid take up by others if it proves cost effective to do so.

Blue-NG believes the real financial benefit for gas consumers will arise if the trials are successful. This should attract investors who are willing to pay a premium to access the NGG facilities for similar schemes. At that time an appropriate level of sharing of these premiums with gas consumers could then be agreed with Ofgem.

Given the potential scale of this technology the major benefit will be from the increase in supply of renewable power generation, which will help meet the targets set by the Government.

Risks

The nature of the plant design ensures that NGG can operate its network unaffected at all times. The equipment is simply "plugged in" to the existing network and can be isolated remotely and removed without interfering with existing gas flows. This minimises any risk to consumers and any costs that could be incurred in the future.

Before construction and installation can take place the plant designs will need to be approved by NGG. Construction and installation will then proceed only if NGG's strict policies and procedures are complied with.

Blue-NG will bear the following risks

- Development risk - the risk that the proposed installations do not take place. For example because:
    - Costs of establishing the commercial arrangements for access to NGG's network are uncertain and large;

- NGG does not agree the design;
- Blue-NG and NGG cannot agree on a mutually acceptable set of terms for access to the NGG network;

- Construction risk – a CCBG plant has never been constructed before. Therefore, there is a risk that the plant may face delays before it may become operational or that construction costs increase well beyond expected. Either of these could seriously jeopardise the project's success;

- Operational risk – the risk that the technology does not perform as anticipated, and or the input fuel prices rise to a point where the project is not economical or power prices drop sufficiently to again render the project uneconomic;

- Maintenance – Blue-NG's rights to perform maintenance will be subordinate to NGG's at the same site. Therefore, Blue-NG could face costs associated with having to move its maintenance and pay stand down costs or not operate its equipment if it cannot be maintained at the necessary times. This reduces Blue-NG's potential income;

- Decommissioning risk – Either at the end of the contract with NGG or upon the occurrence of a termination event Blue-NG will be required to remove all of the equipment associated with the project and bear all of these costs. These costs are not yet known;

- Regulatory and legal risks – whereby Ofgem does not accredit the technology as being power generation from renewable sources, or the renewables obligation order is changed in such a way to render the proposed technology ineligible to receive Renewable Obligation Certificates ("ROCs") for the power it generates.

Changed operation of the network

The equipment is designed to operate within a range of efficiencies dictated by the pressure and flow parameters expected through the PRS. For this, historic information has been used to design the turbine and heat supply apparatus.

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Ofgem has raised concerns about NGG changing the way it operates its system to benefit Blue-NG. The technology decisions and design calculations are complex and NGG is not privy to these. If NGG were to change the way it operated its system it is likely that this would reduce the effectiveness of the design and reduce Blue-NG's income. However, should NGG change the flow parameters at a PRS over time, to maintain compliance with its Gas Transporters obligations, it is possible for Blue-NG to simply swap some components at the site to recover previously lost efficiencies.

Therefore, there is no reason for NGG to operate the network in any way other than that which it deems is economic and efficient for the purpose of conveying gas to premises.

Are there any other licence conditions that could be affected by NGG's proposal?

None identified

Should this kind of arrangement be ruled out as it has the potential to dilute the incentive on NG to operate either the transmission or distribution networks efficiently?

Blue-NG's technology does not require, or rely on NGG, or any other network operator, changing the way it operates its network. Most of the generation occurs from the CHP engine and the turbines will be designed to operate within the pressure ranges that the Pressure Reduction Stations currently exhibit. There will, therefore, be no benefit in increasing pressures to generate more power, as it will reduce efficiency and increase maintenance costs for Blue-NG.

Given that NG also owns the England and Wales electricity transmission network and is therefore not allowed to generate electricity itself, are there any concerns regarding the proposal from this perspective?

Blue-NG is neither an affiliate nor a related undertaking of National Grid Electricity Transmission ("NGET") and is therefore permitted to generate electricity. Ofgem already has sufficient powers to monitor and enforce any action by NGET if it were to favour any one party over another; that includes Blue-NG. Blue-NG does not believe any further monitoring or enforcement powers in this respect are necessary.

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Are there any other issues Ofgem should be considering in reviewing NGG's proposal?

Blue-NG believes Ofgem has addressed all the main issues arising from this proposal.

Should Ofgem be considering the proposal to reduce own use gas for pre-heat using biomass generators separately from the proposal to convert the energy lost in depressurisation into electricity turbo-expanders?

Blue-NG does not fully understand this question. If NGG wished to pursue a proposal to reduce OUG using biomass then it can already. If this was to be achieved by purchasing heat from a third party supplied by apparatus connected to its gas network, NGG would require the same consents as those it has requested for this proposal as the risks to consumers and encumbrances would be similar.

It therefore appears to Blue-NG that it is not necessary to treat the presence of a turbine to recover the surplus heat from the CHP engine as a separate issue. In fact, Blue-NG does not believe it would be economic to pursue, on this scale, biomass CHP as a source of heat without the efficiency increase due to the heat recovery possible with a turbine.

Are there any modifications to NGG's gas transportation licences that would be appropriate to safeguard consumers if the Authority grants the relevant consents?

Blue-NG believes there are sufficient provisions within NGG's gas transmission and gas distribution licences to provide adequate safeguards for consumers.

Conclusion

Blue-NG believes that this proposal will assist the UK Government and Ofgem meet its objectives to reduce carbon emissions and increase distributed generation, using existing pressure reduction facilities that would otherwise be unexploited.

Blue-NG believes that the environmental and potential energy consumer benefits of this proposal provide a compelling case for Ofgem to grant the consents requested by NGG without the need for additional regulatory intervention. Blue-NG has also indicated how there is little or no incentive on NGG to

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operate its gas and electricity systems in an uneconomic and/or inefficient manner.

If you would like to discuss any aspect of this response please do not hesitate to contact me.

Yours sincerely

Andrew Mercer
CEO, Blue-NG
(by e-mail)