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Dear Paul,

Re: Open Letter Consultation on National Grid proposal to commence generating electricity at Gas Distribution pressure reduction sites

This response is a joint response on behalf of the following gas shippers:

E.ON UK plc
Centrica Storage Limited
British Gas Trading Limited

As a matter of principle, we believe that National Grid and other distribution network owners should have incentives to introduce technology that reduces CO2 emissions and operating costs. However, as System Operator for both electricity and gas, it is appropriate that the industry is consulted prior to National Grid being allowed to be involved in electricity generation and as such we welcome this consultation.

In the attached note, we have provided a detailed response to the consultation questions.

We also attach a presentation prepared by TPA Solutions which reviewed:

- The basic thermodynamics of pressure reduction
- Pressure reduction technologies in operation worldwide
- Capex, fuel costs, electricity income and estimated carbon dioxide benefits associated with each technology for a notional pressure reduction facility

Whilst generally supportive of the principle of bringing overseas technologies to the UK, our main comments on the Consultation are as follows:

- The Blue-ng proposition is for an unregulated approach to innovation in pressure reduction. Given that the drivers are both high electricity prices and the need to reduce CO2 emissions, there is an argument that such innovations should be part of the normal business of a gas distribution network. To that end, we would like to see what a regulated option would look like.

- There are two different activities. The first is generation of electricity from gas expanders which has happened before in the UK (at St Mary Cray, now owned by SGN) and represents proven technology. The second is the use of CHP to provide the additional heating required and generate additional electricity and again this is used abroad and well established. The Blue-ng innovation is to use biomass as the fuel for the CHP rather than natural gas. Whilst the Consultation says that this is being patented we believe it is unlikely that a patent will be granted because both expanders to generate electricity and biomass CHP are widely used and established.

- We have estimated the additional CO2 benefit on a theoretical pressure reduction facility as a result of replacing natural gas with biomass as the fuel for the CHP generation. The use of biomass such as palm oil and rapeseed oil for electricity generation is well established in Germany and may be expected to grow significantly in the UK as a result of the introduction of the double ROC incentive from April 2009. It is reasonable for National Grid to fund biomass CHP projects in order to earn the CO2 credits it needs to operate the NTS and as such there may be an argument for National Grid owning the 'expander' as a regulated activity and buying in a service of 'heat' from a third party, in this case Blue-ng.

We hope our comments are helpful.

Yours sincerely

Peter Bolitho, E.ON UK PLC

Roddy Monroe, Centrica Storage Limited

Chris Wright, British Gas Trading Limited

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

In order to understand this, we commissioned a study to set out what pressure reduction technology operates in other countries, together with an explanation of the thermodynamics and some high level analysis of the options for pressure reduction, with indicative CO2 savings shown for each option. This report is attached to this paper, with conclusions as follows:

- There is no such thing as 'free' electricity from pressure reduction. The fundamental device converts heat into electricity and hence heating has to be provided.
- The use of a gas expander with CHP option delivers high CO2 savings
- Use of biomass oil instead of natural gas as the CHP fuel source delivers additional CO2 benefits
- The overall life cycle environmental impact for biomass is highly complex, taking into account such things as fertilizers, land use and transport
- There are local air quality impacts associated with transport of biomass which also need to be taken into account
- The most efficient option may be for utilization of the 'cold' that can be created by pressure reduction via an expander but there may, in most cases, be no use for such 'coolth'

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

The Ofgem consultation does not consider a regulated approach to pressure reduction and this is an omission. The table below summarises the key characteristics of the unregulated and regulated approaches.

Option	**Technical description**	**Operational issues**	**Impact on RAV**	**Shrinkage**	**Electricity income**	**ROCs**	**CO2 credits**
Unregulated Model – Blue ng	Expander with biomass CHP	Storage of liquid biomass Loss of operational control	None	Reduced charge to shippers	No impact, for Blue-ng account	No impact, for Blue-ng account	No impact, for NG and/or Blue-ng account
Regulated Model	Expander with gas CHP	No impact	Assets in RAV	Reduced charge to shippers	Shippers share income	Shippers share income	Can be shared with shippers

Note – a further split is possible with part regulated and part unregulated, for example the expander and expander-gas CHP options could be regulated (as both require additional shrinkage gas) but the biomass CHP unregulated

Other features of the two options are:

- In both cases, Ofgem are required to consent to National Grid generating electricity.

- In the unregulated model option (with the expander owned by a third party) there may also be loss of operational control and transfer of assets to a 3rd party.

- The regulated model using natural gas only as a fuel is simple, with no third party contracts required, low transaction costs and less land required, which may mean more opportunity to innovate in this way on congested sites.

It would be helpful to have the two options presented to shippers so that the risks and benefits could be compared and gas distribution network owners could be given long term guidance.

In addition, no detail is provided in the consultation in relation to the biomass to be used, but clearly at the present time there is a great deal of concern over the impact of biofuels on food prices. It may be that the biomass to be used is not from a food related source and not grown on land that can be used for food, but these details are not provided.

There may also be additional risks associated with storage of biomass on these sites and hence it is important to be clear as to the liability and accountability for incidents that could occur.

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

It is not clear if NGG is actually giving up operational control to Blue-ng. The key risk relates to what happens if the expander-generator fails and gas pressure reduction reverts to the normal method.

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?

As a matter of principle, if the use of Expander-CHP schemes for pressure reduction is now the appropriate technology then NGG and DNs should be allowed to introduce them. There are issues around incentives for NG, but these should be capable of being addressed through appropriate regulatory measures on NG. This may also strengthen the case for a regulated business model as sharing the benefits with Shippers will also dilute NG's incentive to attempt to profiteer inappropriately from the schemes.

Should NGG be looking at the opportunities to reduce pressures on the National Transmission System to prevent the need for excessive pressure reduction at these sites?

Under the SO Control, NGG already have incentives to minimize use of compression which would reduce the need for as much pressure reduction.

However, NGG also have incentives to target linepack levels and obligations to provide minimum pressures and flexibility.

Whilst these obligations and incentives are potentially in conflict, that is precisely what NGG's business is – minimize costs whilst providing the necessary services. The introduction of expander-CHP technology does not change the fundamentals that govern NTS operations.

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 this proposal from this perspective?

There has been discussion by 2OC, NG's joint venture partner in Blue-ng, of a potential 2 GW of power generation from these expander - biomass CHP schemes which could represent a significant proportion of renewable electricity and as such may have a significant impact on the ROCs market.

Given this, it would be helpful if NG could set out what its own likely electricity requirements (for compression and other uses) will be over the next 5 – 10 year period and what proportion of these it aims to meet from expander-biomass CHP schemes. In addition, what proportion of the electricity does NGG expect to be renewable?

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

Ofgem may want to be assured that the HSE, Security Services and Environmental Agencies are content with the NGG proposals.

In addition, it would be helpful if NGG could answer the following questions:

Allocation of Indirect Costs between NGG and Blue-ng

There are a number of areas of cost where there needs to be clarity as to the responsibility for funding to avoid any cross subsidy from the regulated businesses of National Grid to Blue-ng:

- As a result of storing large volumes of vegetable oil at these sites, will there be any increase in security required now or in the future as a result of regular vehicle movements to deliver vegetable oil together with high inventories of combustible fuel on site with potentially increased risk from terrorism? If yes, who will fund this?

- Civil costs incurred in modifying sites (roads, fences etc)

- Telemetry costs if Blue-ng plant uses any existing telemetry

- Monitoring and maintenance costs - CHP plants operating on biomass are proven technology but they require more monitoring and maintenance than machines on natural gas. It would be helpful if NGG could explain how this was to be done and what requirement there would be for NGG staff to be involved in daily inspections and other plant operations and maintenance activities, potentially taking such people away from normal operations.

Operational Risk and Control

- If there is a fire/explosion that damages the assets on the site (whether a DN site or a neighbouring NTS site) will Blue-ng assume any resultant liabilities?

- Who pays for insurance necessary for these facilities?

- What is the liability cap?

- Who funds liabilities in excess of the cap (eg if gas supplies were interrupted by a fire/explosion caused by storing biomass oil on site?)

- Is there any change in Safety Integrity Level (SIL) as a result of storing vegetable oil on site?

Direct Connects

There appear to be a number of different models for pressure reduction at CCGTs:

A. CCGT receives regulated gas at, say 30 bar, with pressure reduction O&M and fuel gas paid for by NG

CCGT receives unregulated NTS pressure and has to reduce the pressure itself.

If a shipper supplies an Option A CCGT then, in theory, Blue-ng could install an expander-biomass CHP plant without needing the consent of the CCGT.

If the CCGT is Option B, then the CCGT owner could install an expander at its plant (possibly using waste heat from the CCGT rather than a new CHP plant).

Shippers currently under Option A should be given the choice of moving to Option B with the pressure reduction assets transferred to the CCGT and NGG benefiting from lower opex and shrinkage.

Value from CO2 Credits

The Ofgem Consultation does not provide any information in relation to CO2 trading. National Grid's DNs/Blue-ng may be able to receive value from CO2 credits if NGG is part of the EUETS Scheme as a result of ownership of the NTS. Can this be clarified?

Value from ROCs

Under the Blue-ng scheme there are 2 independent electricity generators that each produce around 50% of the total electricity:

- Expander-generator – may earn ROCs

- CHP generators – earns double ROCs because a fuel derived from biomass is used as the fuel

The Government Response to the ROCs consultation published in January 2008 confirmed that the electricity from the expander would be entitled to ROCs but with a significant qualification:

"any company generating electricity from geopressure will have to agree with Ofgem a methodology for subtracting the energy used in adding pressure to the gas from their gross generation in order to establish the net renewable generation on which ROCs will be awarded"

Can Ofgem and NGG provide any further clarification in relation to this?

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 using turbo-expanders?

As shown in the TPA Background paper, there are a number of options for pressure reduction that involve capital investment and additional fuel gas consumption in return for electricity income. As such, all these schemes can be considered to relate to shrinkage optimization.

However, the use of biomass as the fuel for the CHP plant is fundamentally different and as such this may be the more appropriate distinction to make.

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

Whilst a licence change may not be necessary, NGG should agree to provide information to developers of expander-CHP schemes:

- For the sizing of gas expanders, a long term view of gas pressure at an offtake is required and it would be helpful if NGG agreed to provide this.

- In order for expander generated electricity to earn ROCs, it will be necessary to demonstrate to Ofgem the input compression energy that has increased the pressure of the gas as it flows through the NTS. Whilst not necessarily a licence change, NGG should be asked to provide the necessary information.