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Dear Paul,

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

Thank you for the opportunity to comment on this matter. E.ON UK has a number of significant reservations about the environmental, economic and regulatory implications of the proposed scheme. We believe that the environmental benefits may be undermined or negated as a consequence of the proposal to install a turbine to draw energy from the pressure of the NTS. It is not clear in the document where the energy to run this turbine will be sourced. We are concerned that it could be provided by additional compression elsewhere on the network. If this is the case, then an additional commercial and regulatory issue arises as customers of National Grid Gas's regulated business will effectively be cross subsidising the "fuel" of an affiliated generation activity which sits outside of this.

It is unclear to us why the value of any additional environmental and energy efficiency benefits should be captured largely by the Blue-ng Joint Venture as these benefits are fundamentally derived from the gas system. Surely gas customers should benefit from this venture?

We also have a general concern about National Grid as the independent electricity GB System Operator, acquiring affiliated generation interests.

Our more detailed responses to the questions raised are as follows.

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

It is difficult to answer this question as there is a lack of detail regarding the technical and commercial parameters of these schemes. For instance, there is no information on the size of the proposed CHP plant or on the carbon costs of the present decompression procedure compared with those associated with the schemes.

It is important to consider the main energy inputs and outputs in the present system and to compare these with what would happen under the new arrangements.

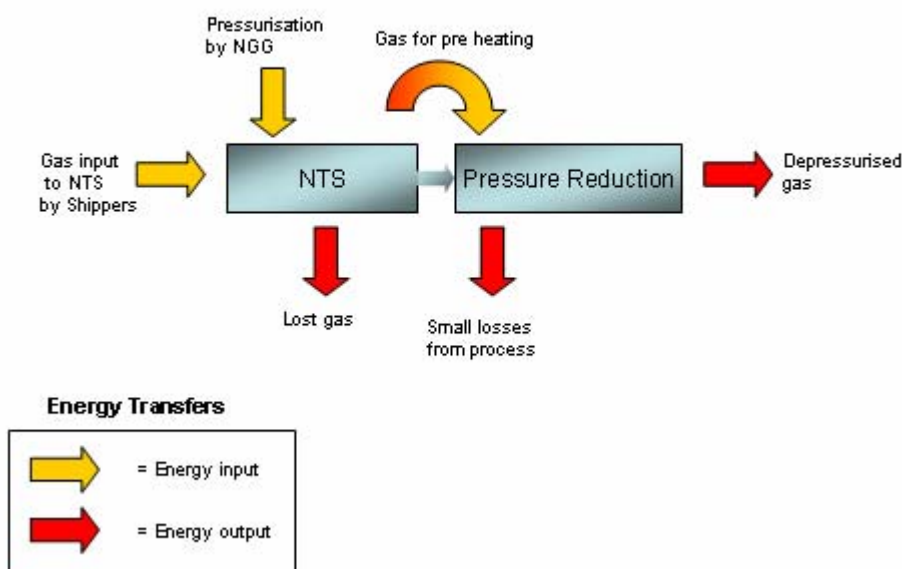


Figure 1: High level illustration of main energy inputs and outputs under present pressure reduction process

Figure 1 illustrates the apparent main energy inputs and outputs in the present depressurisation process. Initially, gas is input into the system by producers on behalf of shippers. The pressure of this gas is produced by a combination of natural pressure ("geopressure") and additional pressurisation undertaken by producers. In order to transport the gas through the NTS further pressurisation is provided by National Grid Gas (NGG). Additionally, along the way an amount of gas is lost. Prior to pressure reduction some gas is used to preheat the remaining gas that is to be depressurised. This is essentially not a net input or output as the energy is converted from chemical energy to heat energy, but maintained within the system as a whole. A small amount of losses are to be expected as part of small inefficiencies in the depressurisation process. Finally, lower pressure gas emerges into the distribution network.

Figure 2 illustrates what appear to be the main inputs and outputs of energy under the

proposed process. There are three main differences in the two processes. Firstly, gas is not drawn from the system to pre heat the gas to be depressurised. Secondly, this heating is provided by the heat output from a biomass CHP plant. Thirdly, the use of a turbine in the depressurisation process generates electrical energy.

In effect these differences amount to one new energy input to the process and one new output. These are the addition of heating from the CHP and the removal of energy in the form of electrical energy through the installation of the turbine. As we mention above, the effect of not drawing off gas for preheating is essentially neutral in terms of energy for the network as a whole as although the gas is saved the heating it provides is lost.

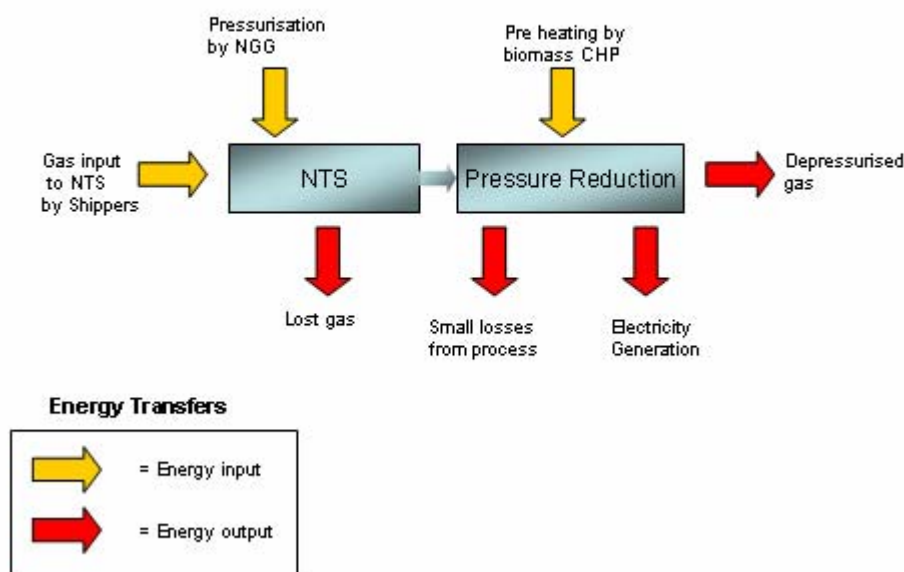


Figure 2: Energy Inputs under proposed arrangements

This essentially allows us to consider the implications of the scheme from a carbon emission, as well as a commercial, perspective. Clearly, replacing the heating provided by burning gas with heating from the Biomass CHP would represent a net carbon saving. However, the addition of the turbine means that additional energy is drawn from the system. If this is not provided entirely by additional heat from the CHP then it has to come from elsewhere. Assuming that pressure of the system is not altered, then this will have to come from greater use of pressurisation at the input end of the system or at NGG compressors along the way.

It has been claimed that additional carbon neutral generation could be provided by the use of natural geopressure. We would question whether this is indeed a renewable resource in the context of the NTS. As mentioned above, NGG and producers already have to provide additional pressurisation to the system in order to transport gas to end customers. Therefore, any further use of pressure to drive generation at decompression

sites has to result in additional pressurisation being required at the input stage or further along the NTS. This will be provided mostly by gas driven, and occasionally electric, compressors meaning additional use of fossil fuels.

Therefore, we agree with the environmental benefits claimed if the electricity produced by the turbo expander is driven solely by additional heat energy from the biomass CHP, over and above that already required for heating the gas prior to decompression. However, if any energy is derived from the wider pressure of the system, then this has to incur additional use of fossil fuels. However, without knowing the specifics of the schemes it is hard to gauge the effects further.

It is worth noting that NG states that up to 1GW of generation could be provided through such installations at gas reduction sites across the NTS. If energy is not being drawn from the wider NTS pressure, then this additional capacity has to be provided by at least 1GW of CHP generation. To achieve the carbon savings attributed to this technology, all of this CHP generation will have to be renewable.

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

We believe that it should be clear before these trials commence that a fault with the turbo expander will not have a significant impact on the NTS or electricity system with respect to stability or safety of the relevant networks.

Additionally, although perhaps out of scope for this consultation, the methodology for providing ROCs for this generation will have to be devised carefully. Clearly any generation derived directly from the operation of the biomass CHP should be eligible. However, any generation deriving from the wider pressure of the NTS would be fuelled indirectly by a fossil fuel source and should be ineligible. If this is not the case then customers will be paying renewable prices for energy that does not reduce carbon emissions.

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?

There is clearly a conflict if National Grid is able to effectively arbitrage between the costs of operating the NTS and making profits through its generation interests. Indeed, if as we fear a cross subsidy is involved such arbitrage would clearly be inefficient.

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?

If significant energy is being wasted as a consequence of excessive pressure reduction through the current throttling valve mechanism, then pressure reduction could possibly be

considered as an efficiency measure. However, we are uncertain as to how this waste would occur in practice. We assume that operating the NTS at lower pressures would have other operational issues associated with it.

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?

We are concerned that it is being proposed that National Grid be allowed to acquire generation interests in this manner. When creating the British Electricity Trading and Transmission Arrangements, Ofgem and the DTI stated¹ that *“the development of effective competition across GB is contingent upon the creation of a GB system operator that is independent of generation and supply interests”*. Clearly, this proposal will remove such independence. We assume Ofgem is also considering whether it would be consistent with potential European unbundling objectives.

We note that NGG has stated that it does not initially expect to receive significant benefits from development of CCBG technology. However, it must believe that it will make money from this or it would not have gone to the trouble of setting up a joint venture with 2OC.

If these schemes have demonstrable environmental and commercial benefits for customers then they should be communicated and then allowed to proceed. However, it does not follow that National Grid has to take a financial stake in the generating company in order for these benefits to be realised. If all 1GW of potential capacity were to be installed this would leave National Grid with very significant generation interests and its independence as the GB Electricity System Operator would be open to question.

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

It is not clear why as many as eight trials will take place. If as NGG states the benefits “can only be determined when the outcome of the trials is known” then we would have assumed that only one or two trials would take place. Additionally, biomass CHP has only been specified as the technology for the first stage involving two sites. Notwithstanding our concerns regarding the desirability of the first stage, the second stage should not be contemplated until it is clear what technology is to be utilised.

We also believe that there are some concerns regarding the financial transactions that appear to be based around the proposal. For instance, the heat exchange equipment appears to be leased to National Grid for a “nominal” rent. Why isn’t this provided at a commercial rate reflecting the value of the equipment? There is a general lack of detail regarding the commercial and technical parameters of the proposal which makes it difficult to assess the implications of the project for users of the NTS or the environment. In this case we believe that it would not be appropriate to state commercial confidentiality as being a reason not to release such details. This is a private venture proposing to operate in the competitive market but affiliating closely with the regulated transportation

¹ The Development of British Electricity Trading and Transmission Arrangements (BETTA) Ofgem/DTI Report on consultation and next steps (May 2002) p

business of NGG. Customers of this business have to know the full details of such a transaction if they are to be effectively consulted on whether such a proposal is appropriate. Details such as transactions occurring at lower than commercial rates are important in this context as they increase the likelihood of cross subsidies between regulated and unregulated businesses.

We note that it is proposed that any shrinkage benefits will not accrue to Users until 2013. It is not clear why the relevant price controls could not be reopened to provide benefits sooner. This would appear to undermine the case for this proposal even further.

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?

Possibly yes. We believe that there are three separate stages to this proposal.

1. Preheating the gas prior to pressure reduction using biomass.
2. Generating electricity from biomass CHP.
3. Generating electricity from turbo expander.

There is no information as to why the three stages described above have to be operated as one integrated scheme. It would be possible for instance to simply preheat the gas using biomass heaters and derive benefit in terms of carbon savings without inputting additional energy to generate electricity. Alternatively, the CHP could be configured to provide sufficient preheat for a throttling valve and generate electricity directly without the need to install a turbo expander.

The savings in gas and carbon emissions that can be achieved by preheating the gas using a renewable energy source are fairly apparent, although information on the present fuel burn would be helpful to assess the potential size of such benefits. Additionally, if additional generation is generated from the use of CHP technology then again this should be clear.

However, the only clear energy loss that would occur as a result of decompression would be caused by installing the turbine. We are not convinced that significant energy is presently wasted simply through the use of a throttling valve. If this is the case then we believe that further information is required on how such a loss manifests itself. As we mention above, we suspect that the turbine will simply use energy generated further down the system by use of fossil fuels, unless additional heat is input into the gas from the CHP. The details of the schemes are not precise enough for us to assess whether additional heat is the source of the energy for the generator.

If energy is drawn from the pressure of the NTS then a significant cross subsidy would be introduced. As we mention above, we are not convinced that natural geopressure of the gas in the network is capable of driving such generation as NGG and producers already have to provide additional pressurisation to operate the network with no turbines

connected. Therefore, not only would any carbon savings from the CHP pre heating process be reduced by the use of fossil fuels to provide more pressurisation, the cost of providing this pressurisation would be paid by shippers through higher transportation charges. This cost would therefore provide a free fuel source to Blue-ng. In other words, a cross subsidy paid by customers of NGG's regulated business would realise profits for a company that falls outside of this.

We believe that Ofgem has to be confident that it is able to monitor the day to day operations of this plant and the NTS to ensure that such a cross subsidy cannot occur before agreeing to commencement of the trial. Separating out the two elements of the process may facilitate this.

Therefore, we do not support the progress of the trial until the fundamental issues that we have raised around the environmental, commercial and regulatory aspects of the project are addressed along with our concerns about the lack of transparency of the arrangements. We would urge Ofgem to carry out a wider consultation of the full regulatory implications of this project before giving its consent to the trial.

We hope you find the above comments helpful. Please contact me on the above number should you wish to discuss anything in this response.

Yours sincerely

Paul Jones
Trading Arrangements