INEOS Infrastructure (Grangemouth) Limited

DECC – A call for evidence on the role of gas in the electricity market

Response from INEOS Infrastructure (Grangemouth) Limited

Introduction & General Discussion

INEOS Infrastructure (Grangemouth) Limited welcomes the opportunity to respond to this consultation. We believe that natural gas will play a key role in the electricity market and as an important primary fuel in the UK, for at least the medium term. In doing so, it will facilitate decarbonisation of electricity generation as the UK moves to using more renewable generation technologies. There are also considerations that extend beyond the use of natural gas for electricity generation, which our response will consider.

INEOS Infrastructure (Grangemouth) Limited (IIGL) owns and operates a generating plant that provides steam and power to the INEOS businesses operating at Grangemouth, in additional to some third parties. These businesses include:

- INEOS Manufacturing Scotland Limited: a 210,000-barrel-per-day crude oil refinery that produces ~9 million litres of clean fuels per day. This is the only fuels refinery in Scotland and supplies around 70% of the local market.
- INEOS Chemicals Grangemouth Limited: a petrochemicals complex including two ethylene crackers and derivative plants that produce polymers, synthetic ethanol and other chemical commodities.
- BP Exploration Operating Company Limited: operating the Kinneil Terminal at the end of the Forties Pipeline System, transporting ~40% UK North Sea oil production and liquids associated with ~40% UK North Sea gas production.

IIGL operates its facilities in coordination with a third party and combined with this is a single good quality Combined Heat and Power (CHP) plant. The third party operates a gas turbine which consumes natural gas. IIGL's plant consumes any excess gas produced on site and then uses natural gas as its marginal fuel. Our site consumes natural gas for the efficient production of electricity and industrial process heat, as steam. CHP plants are around 70-80% efficient versus power-only production in conventional power stations, which is less than 50% efficient. It is essential that the UK has in place the correct legal and fiscal framework to support the most effective use of available natural gas. In the case of CHP this is not currently the case. The removal of Levy Exemption Certificates (LECs) from 2013, will undermine future investment in CHP and even make existing operations financially uncompetitive. The loss of LECs will cost Grangemouth around £6m a year. The site would actually save around £5m a year, under current plans, if it were to stop operating CHP and revert to using boilers to raise steam and source power from the grid. This would increase emissions by around 300,000 tonnes a year. When industry is also shouldering the burden of increased costs from Phase III of EU ETS and the introduction of Carbon Price Support Rates, it is unlikely that CHP operations will continue if no longer financially competitive.

It is essential that the legal and fiscal framework is co-ordinated and supports the most effective use of the natural gas that is available within the UK.

While considering the consumption of natural gas for electricity, it should also be noted that environmental legislation, both current and proposed, already encourages greater consumption of natural gas for industrial heat (in large combustion plants). For example Best Available Technique Reference documents (BREF) produced for Integrated Pollution Prevention and Control generally

recommend that gaseous fuel is used in industrial heaters rather than liquid. The Large Combustion Plant Directive (LCPD) and Industrial Emissions Directive (IED) are only increasing this pressure.

Looking forward, demand for natural gas is likely to increase for the purposes of:

- Electricity generation – driven by de-carbonisation
- Industrial heat as steam – driven by de-carbonisation
- Direct industrial heat (furnaces) – driven by legislation / de-carbonisation

Demand side pressure will continue to put upward pressure on gas prices in the UK, which will lead to consistently high electricity prices in the UK, unless measures are taken to counteract this.

Electricity prices in the UK are already uncompetitive. For example, the UK wholesale electricity price for 2013 is 25% higher than Germany's and nearly 70% higher than Scandinavia's. This is before the impact of national taxation is considered. We also note that in Germany, for example, there has been a very clear and long-term policy to protect energy intensive industry from the impact of costs associated with the heavy investment in renewables generation. The result is that the largest consumers currently pay close to wholesale price and this situation is expected to prevail.

While the burden of energy policy on the energy intensive sector has been recognised in the package of mitigation announced by the Government in the 2011 Autumn Statement, this is only a first step that will protect certain electro-intensive industries from Carbon Price Support Rates for one Spending Review. The Government must also develop a medium term framework which recognises the specific risks to the energy intensive sector and provides longer term policies to ensure it can prosper and grow.

Gas and electricity prices are already high in the UK. With growing demand and increased levels of taxation, the current energy competitiveness gap between the UK and the rest of the world will only increase, significantly disadvantaging UK manufacturing.

Looking to the medium term we see that gas will continue to be a critically important primary fuel in the UK which will determine if the UK has competitive energy prices or not.

We can envisage two scenarios:

Scenario 1 - There is no development of shale gas and the UK market becomes increasingly dependent on imported gas as indigenous production declines and coal fired generation is retired.

In this scenario we expect:

(i) Gas will remain a premium fuel (more expensive than coal) and will largely be used as a back-up source of electricity generation. In this scenario, the back-up generation will require subsidy to support already expensive and subsidised renewables;
(ii) Feed in Tariffs (FiTs) would be required to deliver investment in new generation: already we see that despite much consented new CCGT very little is actually being built;
(iii) Additional infrastructure, such as more gas storage, will be required adding to the overall costs of energy supply;
(iv) Energy intensive industry, which is already unable to afford energy based on the costs of renewables on their own, will need further protection from the additional costs of FiTs, CfDs , storage levies etc, however they arise; and
(v) Without such protection (which is the default situation in Germany) energy intensive industry will not be viable and will close.

Scenario 2 – The UK embraces shale gas. Exploration and production develops to provide a significant new source of indigenous production.

In this scenario we expect that:

(i) The UK could enjoy gas prices which are competitive on a European and global level;
(ii) Gas will become competitive with coal as a primary fuel, reversing the current incentive to burn coal and consequently lowering CO2 emissions;
(iii) Security of supply will improve for the UK, reducing the need to increase the levels of gas storage;
(iv) The UK's balance of payments will improve as less gas is imported into the UK; and
(v) There will be the right environment for energy intensive industries to thrive.

Natural gas and North Sea hydrocarbons have been an important fuel and petrochemical feedstock in the UK for many years. A large infrastructure is already in place to support this, putting the UK in an excellent position to take advantage of shale gas. With the decline in North Sea reserves, shale gas could provide an excellent competitive replacement fuel source in the medium term and act as a bridging fuel for the longer term while other low carbon technologies are developed.

We view support for shale gas as critical to the success of UK energy intensive industry. This has the potential to provide competitively priced energy and feedstocks, but must be developed within a timescale before UK energy intensive industry becomes terminally uncompetitive.

Crucially, such support does not need to be financial, through support mechanisms such as those proposed for renewables and nuclear (FiTs, CfDs etc). Instead, the support would be through backing exploration of UK resources and ensuring there is appropriate regulation to manage this.

Summary

In summary, we believe that there is a key role to be played by natural gas in the medium term as a primary energy within the UK.

- The potential exists for natural gas, using mature technologies, to bridge the gap and lower carbon emissions while the move is made to low-carbon renewable generation technologies.
- It is essential that the legal and fiscal framework is co-ordinated and supports the most effective use of the natural gas that is available within the UK.
- The UK Government must develop a medium term framework, which recognises the specific risks to the energy intensive sector and provides longer term policies to ensure it can prosper and grow.
- The UK Government must support the development of shale gas, for energy and feedstock, if it wishes to maintain a competitive UK Manufacturing / energy intensive industry sector.

Following on from these more general comments, please find our responses to the questions asked in the call for evidence below:

1. What are the main strengths and weaknesses of gas generation in helping deliver a secure, affordable route to de-carbonisation through to 2020 and then by 2050?

Strengths:

- The technology is well understood and the lead times are low
- The capital costs are low
- Considerable generation capacity is already consented;
- CO2 emissions from gas are 50% of those from coal
- With competitive gas prices the UK could generate electricity at competitive prices; however the generating plant must operate at baseload, rather than peak loads.

Weaknesses:

- If gas prices are expensive (relatively) then electricity prices will also expensive;
- If gas were only used to back-up renewables then it is cost inefficient to run expensive plants that will only be used for short periods;
- More storage would be required if gas import dependency grows, incurring costs. The UK is acutely short of gas storage and already has difficulty meeting peak demands.

2. What role can gas fired generation play in the future and what level of gas generation capacity is desirable?

Gas generation could be one of the cheapest forms of generation available if the UK properly encourages the exploration and extraction of indigenous shale resources. While it may be unwise to make the country overly dependent on one energy source, experience in the US has shown the potential economic and energy security benefits that shale gas can bring.

It is apparent that gas will, at the very least, have to be available to backup intermittent renewables. However, if gas plants are only used intermittently then it is clear this will add more costs to the overall energy supply – costs which could not be borne by energy intensive consumers.

However, use of competitive gas in gas CCGT operating at baseload levels could provide very competitive electricity prices in the UK.

Furthermore, the effective use of CHP (i.e. at appropriate scale and location) could assist in the decarbonisation of providing industrial process heat via steam and space heating (both commercial and domestic). It is imperative that Government policy is co-ordinated to ensure the most efficient use of the natural gas resources that exist within the country.

3. What are the key factors driving the economics of investing in new gas-fired power generation and how are these factors likely to change?

It is apparent that the combination of uneconomic gas prices (relative to coal) and the expected introduction of FiTs has now stopped all market-based investment in new gas generation. There is already a considerable number of plants planned/consented that are not being built (as is the case with gas storage) and indeed generators are moth-balling plants and even looking to convert CCGT to less efficient open cycle.

Unless natural gas becomes a competitive fuel, then support will be needed to ensure investment in plant. If it does become competitive then market based investment may become possible again.

4. What barriers do investors face in building new gas generation plants in the UK? What are the key regulatory uncertainties that may prevent debt and equity investors making a final investment decision in gas generation and supply infrastructure?

Currently because gas is expensive, spark spreads do not provide any investment signals. Further, the expectation that FiTs will be introduced has now stopped any investment as the "market" waits for this mechanism to be introduced as the route to secure investment certainty.

5. Are there any other policy issues that need to be addressed beyond the Government's proposals for the capacity mechanism and the EPS?

Yes. The policy proposals to secure investment in generation increase costs. These costs are at a level which energy intensive consumers cannot afford (e.g. Carbon Price Support). It is essential that policy measures are adopted that ensure that energy intensive sectors are exempted from the cost of such policy mechanisms. The model adopted in Germany is the very clear bench-mark. In Germany renewals growth has out-paced that in the UK many times over, but UK industry has been protected from the implementation costs to ensure that the health of the manufacturing has been maintained.

6. Given a continuing role for gas and the potential for increased volatility in gas demand, to what extent is gas supply and related infrastructure a barrier to investment in gas fired generation? What impact will unconventional gas have on the case for investing in gas generation and the supporting infrastructure?

Gas supply infrastructure in the UK is not a barrier – indeed it offers a massive opportunity. The UK has an excellent supply infrastructure – probably actually already running at well below its potential capacity – we already see National Grid increasing its charges due to lower demand. If gas demand continues to decline then this will become a very expensive and under-used asset – but of course customers will still have to pay.

It would be much better if this asset is exploited through the extraction of shale gas to compensate for declining North Sea production and to displace expensive and less reliable imported LNG.

The availability of competitive gas supplies (which would not require government financial support to develop) would then create an environment where gas generators would also be willing to invest with minimal or no implied government support.

Such an outcome would be to the benefit of UK consumers and UK plc.