halite
energy group

28th June 2012

Gas Generation Call for Evidence
Area 4E
3 Whitehall Place
London
SW1A 2AW

Dear Sir/Madam

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

Halite Response

Summary

- The level of gas CCGT cannot be set by UK Government alone as it depends on the world cost of natural gas and carbon
- Increased wind requires more flexibility in gas combined cycle gas turbine (CCGT) plant as no other options are credible
- Some electricity system only integration may help such as interconnections with other EU countries but this benefit is limited as demand and weather tends to be similar in neighbouring countries
- Storing electricity (batteries or pumped storage or compressed air) are very energy inefficient and not the preferred options
- Smart meters that allow demand shifting can be useful
- Gas and electricity system integration offers the most potential benefit
- Shallow salt cavity storage has a round trip (efficiency of putting gas into store and then taking it out again) energy efficiency of around 97% which is much better than deep storage (depleted gas fields, deep salt) and much higher than any means to store electricity

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- Shallow salt storage essential as wind penetration (and associated CCGT) increases
    - Gas stored in shallow salt storage can feed CCGTs when wind is low
    - Shallow salt storage can absorb excess gas when wind is blowing and CCGTs are shutting down
- Government should consider market mechanisms to ensure that the lowest cost option to manage the wind intermittency issue is selected, which includes shallow salt gas storage coupled with flexible CCGTs

General Points

Halite Energy Group Limited (HEGL) welcomes the opportunity to respond to Government's call for evidence on the role of gas in the electricity sector. Pertinent to this call for evidence, HEGL is bringing forward significant investment in UK energy infrastructure, whose principal purpose is twofold.

- Firstly, to store gas which increases the UK's security of gas supply and increases the number of days gas storage available in the UK (by adding around 20% of UK storage capacity)
- Secondly, to ensure that UK gas infrastructure has the necessary capability to provide flexible gas storage services as the electricity generation mix changes.

We will achieve this by providing a high capacity, flexible gas storage facility near Fleetwood in Lancashire. The project is currently in the PINS Process.

Our response to the call for evidence focuses on the flexibility point.

The HEGL project is the construction 900 million cubic-metres of underground gas storage, at an onshore facility in Preesall, Lancashire. The facility is designed to deliver 28 million cubic metres per day and will cycle from low flow to maximum flow in less than one hour. This fast-cycle design can provide rapid responses to both excess demand on the gas transmission system (e.g. low wind) and as a necessary reservoir for relieving system pressures when demand falls away (e.g. high wind).

Generation Mix

We agree with the call for evidence synopsis that more rapid cycle CCGTs capacity will occur (and is necessary) and that the consequential impact on the gas infrastructure will be significant; sufficient indeed to require that further investment (such as fast-cycle gas storage) is needed in order that system security is maintained and overall costs to consumers are minimised.

However, we believe that further consideration of the consequential gas infrastructure investment is urgently needed and should be considered as part of the EMR reforms. At the very least we would encourage Government to review the flexible gas storage coupled with flexible CCGT option as the most efficient means of, in effect, storing electricity.

Transition to low carbon generation

Government's commitment to meet its target of 30% renewable generation by 2020 means that the penetration of wind in the generation mix must increase significantly in the next 5 years. We believe that the inherent variability of wind generation will require more resources, and significant investment, in conventional generation and associated infrastructure in order that short-term (electricity) demand and supply balancing is adequately managed.
We agree with the call for evidence that these investments will include both base load replacement (for coal and nuclear) and more flexible CCGT. However, we would urge further consideration of the wider gas and electricity system impacts that increasing wind penetration will have. This should include consideration of system planning requirements to deliver an integrated onshore, offshore and cross border transmission system, in particular the work currently underway in Ofgem's ITPR Project and how this correlates to the establishment of a capacity market under the EMR proposals.
Our primary concern however is to ensure that the need for adequate fast-cycle storage capacity - as a corollary of the increased penetration of wind and associated CCGT capacity that wind requires - is understood and fully considered within this call for evidence. We consider that gas storage of this type is a vital part of the further (gas and electricity) system integration needed to deliver Government's wider carbon reduction targets

Halite Energy Responses to Specific Questions

a) What are the main strengths and weaknesses of gas generation in helping deliver a secure, affordable route to decarbonisation through to 2020 and then by 2050?

   The main benefit of gas is that it offers a means to support intermittent generation from wind and solar in the period to 2020 and 2030. If the UK is able to develop shale gas resources then there will also be significant benefit from reduced energy imports. Beyond 2030, gas CCGT load factors can decline as renewables/nuclear increases.

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

   The UK economy must compete with ones in the EU, North America and Asia. As such, the cost of natural gas and the cost of carbon are the determining factors, both of which are outside the control of the UK Government. It is therefore not possible to predict a desirable level of gas fired CCGT. However, as we have postulated above, increasing wind penetration is likely to be the key determinant for further investment in CCGT and associated gas storage capacities; see also c) below.

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

The key issue is the load factor of new gas CCGTs and how the relationship with intermittent wind will change the market. The uncertainties over possible new nuclear generation and the world prices for gas and carbon are also key factors

d) 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?

The issues associated with gas CCGTs are set out in b) and c) above. In relation to the gas supply infrastructure there are a number of key issues:

- How much shale gas can be produced in UK and over what time-frame will flow s build up?
- How can UK incentivise new gas storage ?
- What are the risks associated with LNG supplies to UK, both in terms of availability and gas price?

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

We believe that the Government should consider the benefits from shallow salt storage in relation to managing intermittent wind generation. It may be possible for the EMR reforms to make investment in such storage more attractive

f) 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?

As set out above the world-wide costs for gas and carbon are outside the control of the UK Govt, both these are impacted by unconventional gas produced in the US. We cannot put our industry at a disadvantage compared to our competitors as if we do we will see industry move abroad. Unconventional gas produced in the UK can have a major benefit in relation to jobs, taxes and balance of payments. If the UK economy is able to benefit from large indigenous shale gas resources then these can be used to help reduce the carbon footprint of CCGT generation. This is because it is highly likely that the 'well to generator' footprint from shale gas will be significantly lower than that from LNG, due to the avoided carbon impact of making, transporting and re-gasifying LNG.

With or without shale gas in the UK, intermittent wind is required and such wind requires both flexible CCGT and flexible gas storage in order to deliver lowest possible cost to consumers and highest round trip efficiency.

Yours faithfully

Halite Energy Group Limited