

Department of Energy and Climate Change
Gas Generation Call for Evidence
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National Grid
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28th June 2012

Dear Sir/Madam,

National Grid Grain LNG Ltd response to "A call for evidence on the role of gas in the electricity market".

Thank you for the opportunity to respond to the Department of Energy and Climate Change's (DECC) A call for evidence on the role of gas in the electricity market. This response is made on behalf of National Grid Grain LNG Ltd (Grain LNG).

Grain LNG is an independent liquefied natural gas (LNG) importation terminal operator. The Grain LNG terminal has a capacity of 14.8 million tonnes of LNG per annum (equivalent to circa 20% of UK gas demand), it is the 8th largest terminal in the world and in terms of tank capacity the largest in Europe. At full rate GRAIN LNG can send out enough gas to fuel around 15GW of CCGT generating plant. The facility provides the UK and interconnected continental networks with direct access to world LNG markets and this coupled with its scale and location, make it a cornerstone of UK energy security and diversity of supply. Our role as terminal owner and operator is to safely and economically operate, maintain, and develop the terminal for our customers.

This response is split into two parts: the first aims to cover some key points while the second part provides responses to DECC's specific questions.

Gas Need Case

We would note that in addition to the role of gas highlighted in the consultation document (i.e., in electricity generation, decarbonising of power sector, domestic heating) we believe that gas will play an increasingly crucial role in the overall security of energy supply in the UK, as well as in the transition to a low carbon economy, supporting the environmental targets for 2020 and 2050.

According to the call for evidence document, 12GW of fossil fuel plant have opted out of the Largest Combustion Plant Directive and are due to close by the end of 2015 at the latest. The Industrial Emissions Directive could also lead to further closures by the end of 2023, while the recently announced Emissions Performance Standard (EPS) is certain to encourage more gas fired generation to be developed. The amount may depend on the speed of deployment of new nuclear and the take up of renewable generation, albeit that significant amounts will also be required as backup when the wind is not blowing. Therefore gas based generation and the related infrastructure (gas supply, gas importation and storage including LNG and gas transmission) will play a key role in the diversity of energy mix and security of supply in a low carbon environment.

Security of Gas Supply

- Access to diverse gas supply sources and world markets

With declining UKCS gas supplies and given that the UK is at the end of very long pipelines from suppliers such as Russia, increased LNG importation will be essential going forwards, not only to meet demand but also to ensure security of supply by providing access to a variety of worldwide LNG sources. In recent years the LNG importation terminals have demonstrated a clear role in supporting the market in response to adverse weather and in mitigating supply shocks by providing rapid responsiveness and delivery of high volumes of gas to the transmission system. For this level of support to continue in the future, when the baseload throughputs of those LNG terminals are expected to be higher, we believe it will be necessary to have additional capacity available.

- Network flexibility and energy storage

Uncertain future gas supply and demand patterns require the gas network to be flexible. This coupled with more variable power generation both nationally and locally (as a result of the greater intermittency of renewable wind generation) intuitively implies even greater flexibility will be required across the gas network to accommodate rapid response and ramp rates and to maintain security of energy supply. In addition, the closure of coal power stations together with the loss of their stock piles of coal (and with no method to economically store electricity on a large scale) will place much greater emphasis on gas storage capability in the future.

LNG may provide an economic alternative to moving large volumes of gas long distances into storage and subsequently reduce the cost and risk of constraints when transporting it back to the power stations at critical times. It may provide significant benefits in relation to speed of response, diversity and security of supply of energy storage while reducing some of the burden on the transmission system. This could be achieved through a more dispersed storage model with a mix of conventional storage coupled with greater volumes of LNG stored at those LNG importation terminals which are in close proximity to clusters of CCGTs. In Grain LNG's case there are currently 3 CCGTs (including one CHP) amounting to 2.8GW of generation within 12km of the facility, with potential for more to be built in the future¹. As well as being able to provide a local and rapid response to any changing situation on the networks and avoiding the cost of transmission and compression into storage this model could provide a significant blackstart capability close to London and the densely populated South East and could also be rapidly refilled year round with new molecules, as opposed to molecules already in the system.

- Availability of LNG supply

While more LNG capacity (both in terms of importation and/or storage) is desirable, market signals for LNG supply to the UK are currently weak. Given LNG's destination flexibility and the influence of world wide markets (which are often indexed to oil prices) current supply-demand fundamentals are driving the LNG to higher priced markets elsewhere. Depending on how the supply-demand positions develop in those other markets in the future it may be difficult for UK market players to enter into long term LNG supply contracts to the UK. Consequently we believe Government and Regulators have a key role to play in making the UK market and its facilities as attractive as possible to the upstream market, including facilitating long term certain access (commensurate with the cost and risk associated with developments upstream) combined with a stable regulatory environment and clear and sufficient incentives.

Summary:

GRAIN LNG is of the view that gas fired generation will make a significant contribution in the transition to a low carbon economy in combination with a diverse generation mix. It appears clear that further investment in the gas supply chain, both in importation and storage capacity, will be essential to maintain security of supply and an appropriate incentive mechanism will be required to achieve both of these requirements at the same time as promoting gas fired generation.

We believe a hybrid storage model which combines increased LNG importation and storage capacity (in those locations where it makes strategic sense) together with long term contracts with its customers (who may or may not have long term access to LNG supply) could line-up with the above

¹ Including the proposed 1000MW CCGT at Damhead Creek Power Station

points and have the potential to decrease the likelihood and/or duration of a gas supply emergency occurring, which in turn has the potential to decrease the risk of interruption for firm load customers (i.e electricity generation) particularly in the South Eastern corner of UK. If this was combined with a black start capability, then clearly this would significantly limit the severity, particularly in London and the South East.

Moreover, LNG importation terminals may have an increasing role to play, in the same way they do for example in countries such as Japan and South Korea, by providing access routes for gas importation as well as local storage to ensure security of supply for power generation. Such an approach could help to provide the necessary responsiveness to wind intermittency much more effectively than the transmission system linking traditional storage to more distant power stations. Achieving this where CCGTs are clustered should also facilitate more economic moves to an even lower carbon economy as and when Carbon Capture and Storage (CCS) is deployed.

As part of this process, Grain LNG would like to cordially extend to yourselves an open invite to visit the terminal and the infrastructure associated, should you consider this useful.

Yours faithfully,

A handwritten signature in dark ink, appearing to read 'Simon Fairman', with a stylized, cursive script.

Simon Fairman
Director UK LNG
National Grid

Appendix 1 – Addressing DECC’s specific questions

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

- Gas fired generation has inherent key benefits in that it has the lowest carbon emissions of the fossil fuels, it is a proven technology and provides the lowest cost power generation
- Existing supply chain infrastructure already exists, including the gas transmission system, long term access to importation and storage capacity and diverse forms of gas supply bringing with it the key to the provision of security of supply
- It provides a high degree of responsiveness especially given the intermittency of some renewable generation (wind), and speed to market to help the transition to deployment of other generation technologies (nuclear)

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

- Given the forecast outlook in either the Slow Progression or Gone Green Scenarios², gas will make a significant contribution to meeting the UK’s overall energy needs as well as assisting in the security of energy supply in the UK and in the transition to a low carbon economy
- The deployment of gas-fired generation will play a significant role in decarbonising the electricity system, which can be enhanced further in the future with the availability and affordability of CCS technology and through its use in Combined Heat and Power Plant

Q c – What are the key factors in driving the economics of investing in the new gas-fired plants in the UK and how are these factors likely to change?

- While GRAIN LNG does not invest in gas fired generation it is clear that market players will look at cost of infrastructure in terms of capital and operating costs (including ready access to water), fuel, carbon and power prices on a forward basis as well as forecast generation hours. Incentives which provide greater revenue certainty by providing fixed payments for capacity (including when plant is idle as a result of wind generation) which in turn reduces the cost of capital, are likely to be key to incentivise new gas generation
- Investment in new gas-fired plant may be impacted by related but necessary development in the energy chain. For example, incentives for infrastructure supporting gas-fired plant (including additional importation capacity, gas sourcing, storage, transmission, carbon capture) must be sufficiently large and need to develop at the same rate to ensure that adequate security of supply is maintained

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

- GRAIN LNG does not build generation in the UK and therefore has no direct comment as to the barriers investors face

Q e – Are there any other policy issues that need to be addressed beyond the government’s proposals for the capacity mechanisms in the EPS?

- DECC has acknowledged the necessity of providing further regulatory certainty in the market through the provision of EMR, and EPS legislation which maintains the 450g/kWh emission factor until 2045. However we believe that a transparent Gas Generation Strategy attracting investment in gas generation and its supply chain is necessary in order to meet the overall energy supply in the UK as well as in the transition to a low carbon economy beyond 2020 and through to 2050

Q 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?

- GRAIN LNG does not source gas or LNG and therefore has no direct comment other than to reiterate the points above, including that the supporting infrastructure needs to be incentivised and developed at the same rate as the gas fired generation if security of supply is to be maintained

² National Grid’s 2011 UK Future Energy Scenarios document