NGN 2014/15 Network Innovation Competition
Optimising the Transportation of Shale and Other Unconventional Gases in the UK
ISP Questions – April 30th 2014

1. Noting your licence obligation to provide connections to the gas network efficiently and also recognising that GDNs already provide connection of non-conventional sources of gas, please explain:

   a. What is the output of this project which would be distinct from normal business operation. What will be different if the project is successful? (e.g. will the model you produce deliver a different connection solution to that which would otherwise be offered?)

   The potential scale of production of shale gas and the associated investment in the gas transportation infrastructure are far in excess of any unconventional gas seen to date and closer to the scale of activity last seen during the conversion of the UK to North Sea gas. The development of the regulatory and commercial framework to accommodate new connections to the gas infrastructure since that time have been based on a relatively simple model of single points of connection. This project will assess whether this approach will be sufficient and provide optimal investments decisions for the more complex and significant infrastructure investment required.

   The project will seek to analyse and design a framework that allows the most efficient transportation of these large volumes of gas taking into account a wider range of factors than has been considered including:

   - Technical efficiency
   - Operating efficiency
   - Investment cost
   - Carbon impact
   - Sustainability
   - Socio-Economic Factors

   This will require full consideration of the wider options available for connection. And is likely to generate a range of new and alternative connection solutions than would be derived or offered under current arrangements.

   b. Please explain how that output is innovative?

   It is clear that to date there has been little consideration of the transportation infrastructure investment requirements of the development of large scale unconventional sources of gas. Additionally, the framework that currently exists to facilitate efficient single point connections to the gas transportation networks has not been tested to ensure that it can deliver an optimal investment programme that clearly manages the efficient cost of the programme with the wider benefits that can be delivered from the development of new sources of gas.

   The Project will seek to develop and test new and innovative industry protocols, commercial processes and technical solutions, for the purposes of creating an economic model, a decision-tool, a simulation model and a UK framework for shale and unconventional gas transportation. The project will aim to deliver a framework that allows the assessment and identification of an investment programme with a stronger cost benefits analysis than under current arrangements

and hence deliver potentially significant financial and environmental value for customers and the wider UK economy.

2. In your response to our initial set of questions, you state that "The proposed scope of this project includes a range of issues that have not previously been addressed due to the uncertainties surrounding the development of shale gas", please can you detail what these specific issues are?

   The main driver for the project is the requirement to consider the impact of the potential large volumes of gas derived from shale gas production with geographically dispersed production facilities and long production durations.

   There has been little or no substantive work carried out on the framework required to develop the infrastructure required to support the development of this resource. Instead research and development work in this area has focussed largely on the significant issues associated with the legal, regulatory, environmental and commercial development of the production facilities alone. The project will not seek to address any of the issues associated with production.

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   - Technical efficiency
   - Operating efficiency
   - Investment cost
   - Carbon impact
   - Sustainability
   - Socio-Economic Factors

   Each of these factors are uncertain in the context of developing new sources of unconventional gas and in particular shale gas. But they provide an opportunity to model innovative combinations of connections to NTS and/or Gas Distribution Networks that deliver significant additional benefits for gas customers and the wider UK economy.

   Clarity on the key issues and uncertainties surrounding the framework for the development of the gas transportation infrastructure will assist in the delivery of these wider macroeconomic benefits. But will also be critical in ensuring that the economic/financial business case for each production facility is developed on an efficient and timely basis.

3. Please explain why the connection of off-grid consumers would not take place through the development of unconventional gas sources and the associated infrastructure alone? (i.e. what is it in this project specifically that would provide these benefits. Why is it not the case that the proliferation of shale gas would alone result in these benefits?). Further, could you explain why?

   It is important to clarify that the project is not starting with a hypothesis that connection of shale gas at the distribution network will provide better opportunities for off grid consumers or other unconventional sources of gas, than if shale gas connected directly to the Transmission system. Instead it will seek to identify and deliver a framework that allows the most optimal solution to be identified across a wide range of economic, environmental and social factors.

   Under the current framework, the financial viability of connecting both Off-Grid customers and other non-conventional sources of gas is linked directly to availability and proximity of gas transportation pipeline capacity. The framework is based on providing a technically feasible connection at the most efficient cost and does not attempt to capture and reflect any of the wider financial, economic or environmental benefits that these connections could deliver. As such, currently many schemes/initiatives are deemed not viable based on this assessment.

   The development of the existing and new gas transportation infrastructure provides a significant opportunity to exploit both economies of scale and of scope to:

   - Increase the capacity available for other alternative sources of gas (including low carbon sources of gas) to connect to the transportation network
   - significantly reduce the unit cost of extending gas networks into non-gas areas
   - reduce the costs of addressing fuel poverty through greater access to the gas networks

   Through the work outlined within the project, the potential large scale development of shale gas would be managed to ensure benefits are maximised when compared to costs of development. The various options available for connection and identified within the project will need to be understood using systems and processes developed by the project.