

Gas Network Innovation Competition Screening Submission Pro-forma

Notes on completion			
<p>Before completing this form, please refer to the Gas Network Innovation Competition (NIC) Governance Document, which details all of the information that you are required to provide.</p> <p>Please use Verdana size 10 font in your submission. The text entry areas are suggestions and the size of each text area can be altered if you need to provide more information in one section and less in another. In all cases the full-completed submission should not exceed 11 pages in total.</p> <p>Ofgem will publish all the information contained within the Screening submission.</p>			
Funding Licensee			
Northern Gas Networks			
Network Licence Project Partners			
Leeds City Council, Private Sector (via commercial Tender)			
Funding Licensee area (or where the licensee does not operate in a specific area the geographic location(s) of the Project)			
North of England			
Project title			
City CNG			
Project Summary			
<i>The Licensee must provide an approximate Project start and end date.</i>			
<p>There are several small Compressed Natural Gas (CNG) fuelling stations around the UK which serve specific limited customer bases. These existing stations are predominantly for the use of long distance HGV type vehicles. Currently no locations exist in the UK to accommodate large scale conversion of city based vehicles to CNG. These vehicles could include any depot based vehicles for example garbage trucks, buses, local taxis, fleet vans.</p> <p>The most significant obstacle to accelerating the step change towards CNG vehicles and the associated cost and carbon savings is the lack of a proven economic business case to build a city based CNG fuelling station. The City CNG Project will provide this business case as a UK proof of concept accelerating private sector investment and the onset of the CNG market. The upfront cost of the high pressure connection will be funded via the NIC and paid back as the station becomes economically viable. This means that the funds associated with the cost of the fuelling station, subject to the station becoming economically viable, will be at zero cost to UK gas customers.</p> <p>In addition there will be a proactive stakeholder marketing campaign to support the conversion rate of city based CNG vehicles. The project will commence in Q4 of 2015 and complete in 2020.</p>			
Estimated Project funding			
<i>The Licensee must provide an approximate figure of the total cost of the project and the NIC funding it is applying for.</i>			
Total cost of Project	£5,700K	NIC funding requested	£1,200K
Cross Sector Projects only: Requested funding from Electricity NIC or NIA?	<i>If yes, please specify</i> N/A		

Problem(s)

The Licensee must provide a narrative which explains the Problem(s) which the Project is seeking to address.

The limited opportunity for depot based city vehicles to convert to Compressed Natural Gas (CNG) is preventing the opportunity for large scale reductions in operating costs and carbon emissions. CNG offers the opportunity for a vehicle fuel that is cheaper, less volatile to price fluctuations (than diesel / petrol) and with proven reductions in Carbon emissions.

There is no proven economic business case to build a city based CNG fuelling station to allow significant conversions of large numbers of city based vehicles. There are also no examples in the UK where the fuel (natural gas) for such a station has been taken directly from the gas high pressure network ensuring security of supply and scalability of the station.

The high level of upfront capital cost for both the station and associated High Pressure gas connection is preventing investment. This is based on two significant risks firstly, technical complexities as a station has not been connected to the UK high pressure grid before. Secondly, the lack of evidence for the time it could take for the station to become economically viable - i.e. the numbers of vehicles converting over time.

Until a station is built which can provide a proven case study for large scale city based UK deployment of CNG vehicles the private sector is unwilling to invest. The situation is enhanced by the high upfront cost of the high pressure connection. As a result the UK is falling behind its European counterparts in the conversion and uptake of CNG Vehicles. This is having a significant and detrimental impact on reductions in carbon emissions (circa 30-40% compared to diesel equivalents), reduced operating costs (fuel) and improved air quality and associated health benefits for UK cities.

Currently there is no commercial mechanism to allow deferred upfront HP connection costs with the ability to pay back (including interest) based on the economic performance of a CNG fuelling station over time to encourage private sector investment in these stations.

Method(s)

The Licensee should describe the Method(s) which are being demonstrated or developed. The Licensee must outline how the Method(s) could solve the Problem. The type of Method should be identified where possible eg technical, commercial etc.

The City CNG Project will build a city scale CNG fuelling station in Leeds with the associated conversion of a 'based load' of vehicles from the council's garbage vehicles fleet. A proactive stakeholder campaign will run in tandem with the build of the station to provide technical support to other city based vehicles to convert to CNG. This could include any depot based vehicles for example buses, taxis, local van fleets including NGN vans.

The number of vehicles converting over time and the associated commercial viability of the station will be published on a web based portal at regular intervals. The project will act as a 'build it and they will come' proof of concept for UK cities with the ambition of proving the case for private sector investment in large scale city based CNG stations.

Funding from the NIC will cover the upfront high pressure connection (including design, build and project management) and the stakeholder engagement / web portal development. The remainder of the project will be funded by LCC and a private sector investor appointed via a competitive tender process.

Method(s) continued

The funding for the project will be provided to LCC via the development of a novel commercial arrangement. This will allow deferred upfront payment of the HP connection. The overall value of the connection will be recoverable over a period of time as/when the station becomes economically profitable i.e. as more vehicles convert. The recovery will be inclusive of a set interest charge which means, provided the station becomes economically viable, that there is no cost to UK gas customer associated with the overall build of the CNG fuelling station.

Providing the Leeds CNG Station is built NGN will look to convert its local van fleet around the Leeds area as part of BAU upgrades over time. This should allow a reduction of circa 30% of fuel costs for these vans. This will provide direct primary benefit to UK gas customers through lower operating costs for gas network vans with additional secondary benefits of lower carbon vehicles, lower city vehicle operating costs and improved health benefits from improved city air quality.

Funding commentary

The Licensee must provide a commentary on the accuracy of its funding estimate. If the Project has phases, the Licensee should identify the approximate cost of each phase. IGTs should indicate potential bid costs expenses.

Costs for the project can be broken down into the following sections:

- 1) **HP Connection**, £700K funded by NIC 2016
- 2) **Land costs for the station**, £600K funded by LCC 2016
- 3) **Cost for the station build**, £2,000K (established via LCC 'soft market test' from four suppliers) funded by private sector via competitive tender 2016.
- 4) **Conversion of Leeds garbage truck fleet**, £1,500K funded by LCC 2016 to 2020
- 5) **Operational costs for the station** £400kpa (£100kpa) - funded by Private Sector (2016 - 2020)
- 6) **Web portal and stakeholder management support for technical conversion**, £500K funded by NIC (2016 - 2020)

Total NIC: £1,200K

Total LCC: £2,100K

Total Private Sector: £2,400K

Project Total £5,700K

Specific Requirements (please tick which of the specific requirements this project fulfils)

A specific piece of new (ie unproven in GB) equipment (including control and/or communications systems and/or software)	
A specific novel arrangement or application of existing gas transmission or/and distribution equipment (including control and communications systems software)	Y
A specific novel operational practice directly related to the operation of the gas transportation system	
A specific novel commercial arrangement	Y

Accelerates the development of a low carbon energy sector & has the potential to deliver net financial benefits to existing and/or future Customers

The Licensee must demonstrate that the Solution has the potential to accelerate the development of the low carbon energy sector in GB and/or deliver wider environmental benefits to GB Customers. The Licensee must demonstrate the potential to deliver net financial benefits to existing and/or future Customers.

As stated in the Gas NIC Governance Document, the Network Licensee must provide the following to demonstrate compliance with this criterion:

- i. How the proposed Project will make a contribution to the Carbon Plan. In particular the Network Licensee should outline:
 - What aspects of the carbon plan the Solution facilitates;
 - The contribution the roll-out of the Method across GB can have in facilitating these aspects of the Carbon Plan;
 - How the roll-out of the proposed Method across GB will deliver the Solution more quickly than the current most efficient Method in use in GB; and/or*
- ii. How the proposed Project could deliver environmental benefits to Customers; and*
- iii. The expected financial benefits the Project could deliver to Customers.*

Currently the UK is lagging behind its European counter parts in the uptake of CNG vehicles and the associated benefits to carbon reduction, cost and air quality. On completion this project will have developed a proven business case to provide the private sector with confidence to invest in these city based fuelling stations across all UK cities.

Since 2009 Leeds City Council have been trialling CNG vehicles at small scale using a purpose built, small LNG fuelling station. Through these trails, which included five of the council's garbage trucks, the council have established credible evidence for the following:

- 1) Dual fuel city based vehicles do not reap the benefit of the CNG fuel as the vehicle predominantly uses the diesel fuel.
- 2) Carbon emissions for CNG vehicles operating in a city centre capacity are circa 30-40% of diesel equivalents
- 3) Cost savings for CNG vehicles operating in a city centre capacity are circa 30% of diesel equivalents
- 4) There are projected significant associated improvements in city air quality for using CNG vehicles - this has proven beneficial health effects.
- 5) LNG based fuel is difficult to scale as the rate of fuel use must be proportionate to the storage capacity and delivery schedule or significant losses can occur.
- 6) LNG based fuel is not appropriate for city scale CNG, There have been several supply problems for this small scale trial. Security of supply is critical to large scale take up of these vehicles.
- 7) There is interest from city based vehicles to convert to CNG. This can only ever be considered anecdotal until a station is physically built.

There are several direct benefits to current a future UK customers that will occur as a result of the onset of city based CNG stations. These include:

- A) Return on investment - the HP connection and build of the station will be recoverable, subject to economic viability.
- B) Operating costs of network vehicles will reduce through a phased conversion to CNG.
- C) Increased usage of the network will result in lower costs for customers.

Following this proof of concept project there will be a proven business case for significant deployment of CNG fuelling stations across UK cities. The development of this commercial payback mechanism will significantly increase the onset of CNG fuelling stations by de-risking the initial investment. A conversion to CNG will give an immediate reduction in carbon emissions, reduce the UK's reliance on diesel and provide the first step change towards zero carbon vehicles (for example hydrogen) in the longer term.

Delivers value for money for gas Customers

The Licensee must demonstrate that the Method(s) being trialled can derive benefits and resulting learning that can be attributed to or are applicable to the gas transportation system.

As stated in the Gas NIC Governance Document, the Network Licensee must provide the following to demonstrate compliance with this criterion:

- i. What is the potential Direct Impact of the Project on a Network Licensee's gas network or on the operations of the GB System Operator;*
- ii. Justification that the scale/ cost of the Project is appropriate in relation to the learning that is expected to be captured;*
- iii. The processes that will be employed to ensure that the Project is delivered at a competitive cost;*
- iv. The expected proportion of the benefits which will accrue to the gas transportation system as opposed to other parts of the energy supply chain.*

Sub-criterion v (the internal systems, procedures and processes used by the Network Licensee to identify Project Participants and Project ideas) should be covered in the 'Project Partners and external resourcing/funding' section, below.

The City CNG Project will be delivered under a novel commercial arrangement. This will allow deferred upfront payment of the HP connection. The overall value of the connection will be recoverable over a period of time as/when the station becomes economically profitable i.e. as more vehicles convert. The recovery will be inclusive of a set interest charge meaning that there is no cost to UK gas customer associated with the build of the CNG fuelling station.

There are significant primary and secondary benefits from a single CNG city based fuelling station to UK gas customers. This NIC bid will provide primary benefits including return on investment for the High Pressure connection and lower operating costs for NGN fleet vehicles (based around Leeds). It will also provide secondary benefits including lower carbon emission city based vehicles, improved health through better air quality and lower city based vehicle operating costs. Once this station is built and the business case for these city based CNG stations is justified city based CNG stations will begin to be built across the UK's cities. The primary and secondary benefits when extrapolated across all UK cities will begin to exponentially increase.

With respect the NIC element value for money will be ensured by using NGN's normal procurement processes for all activities. The high pressure connection will be competitively tendered via utilising the networks design and delivery frameworks in line with NGN's Major Projects integrated management system. The project management, marketing and stakeholder engagement will all be undertaken via NGN's professional services framework and / or NGN's usual procurement processes.

Demonstrates the Project generates knowledge that can be shared amongst all Licensees

The Licensee must explain the learning which it expects the Method(s) it is trialling to deliver. The Licensee must demonstrate that it has a robust methodology in place to capture the learning from the Trial(s).

As stated in the Gas NIC Governance Document, the Network Licensee must provide the following to demonstrate compliance with this criterion:

- i. What new knowledge is intended to be generated from completing the Project;*
- ii. What methodology will be used to capture results from the Project and how the Project's results will be disseminated to other Network Licensees; and*
- iii. Whether the Network Licensee wishes to conform to the default IPR arrangements as set out in Chapter 9. If the Network Licensee wishes to deviate from the default IPR arrangements it must outline the proposed arrangements, justify why the arrangements are more suitable than the default arrangements and justify how the new arrangements will deliver value for money for Customers.*

The City CNG Project will be shared openly via a web based portal. This will include information on the following areas:

- 1) The commercial viability of the station i.e. numbers of vehicles converting over time
- 2) The new commercial arrangements, contracts, changes to policy etc.
- 3) Technical complexities of the high pressure gas connection - case study on the challenges and lessons learnt.
- 4) Case studies/ information on the stakeholder plan and marketing strategy to encourage conversion of 'depot based' vehicles to CNG.

Please tick if the project conforms to the default IPR arrangements set out in the NIC Governance Document?

Y

If the Licensee wishes to deviate from the default requirement for IPR then it must demonstrate how the learning will be disseminated to other Licensees and how value for money will be ensured. The Licensee must also outline the proposed alternative arrangements and justify why the arrangements are more suitable than the default arrangements.

N/A

How is the project innovative and with an unproven business case where the innovation risk warrants a limited Development or Demonstration Project to demonstrate its effectiveness.

Demonstrate why the Licensee has not previously used this Solution (including where the Solution involves commercial arrangements) and why NIC funding is required to undertake it. This must include why the Licensee would not run the trial as part of its normal course of business and why the Solution is not Research.

As stated in the Gas NIC Governance Document, the Network Licensee must provide the following to demonstrate compliance with this criterion:

- i. Why the Project is innovative and has not been tried before;*
- ii. Why the Network Licensee will not fund such a Project as part of their business as usual activities;*
- iii. Why the Project can only be undertaken with the support of the NIC, including reference to the specific risks (e.g. commercial, technical, operational or regulatory) associated with the Project.*

There is no proven economic business case to build a city based CNG fuelling station to allow significant conversions of large numbers of city based vehicles. There are also no examples in the UK where the fuel (natural gas) for such a station has been taken directly from the high pressure gas network ensuring security of supply and scalability of the station. The high level of upfront capital cost for both the station and associated High Pressure gas connection is preventing investment. This is based on two significant risks firstly, technical complexities as a station has not been connected to the UK high pressure grid before. Secondly, the lack of evidence for the time it could take for the station to become economically viable - i.e. the numbers of vehicles converting over time.

The City CNG project will provide a proof of concept model for roll out across the UK. A novel commercial arrangement will be developed to allow deferred upfront payment of the HP connection. The overall value of the connection will be recoverable over a period of time as/when the station becomes economically profitable i.e. as more vehicles convert. The recovery will be inclusive of a set interest charge which means, provided the station becomes economically viable, that there is no cost to UK gas customer associated with the overall build of the CNG fuelling station. The will require derogation from standard condition 4b of the transportation license and the associated connection charging methodology statement.

How is the project innovative and with an unproven business case where the innovation risk warrants a limited Development or Demonstration Project to demonstrate its effectiveness - continued.

Project Partners and external resourcing/funding

The Funding Licensee should provide a description of the internal systems, procedures and processes used by the Funding Licensee to identify Project Participants and Project ideas.

The Funding Licensees should also include details of any Project Partners, External Funders or Non-Network Licensees who will be actively involved in the Project and are prepared to devote time, resources and/or funding to the Project. If the Funding Licensee has not identified any specific Project Partners, it should provide details of the type of Project Partners it wishes to attract to the Project.

Leeds City Council -NGN have been approached by Leeds City Council in 2014 for guidance and input onto into their vision for a city based CNG fuelling station and how to make this pioneering project a reality. The council have already undertaken significant amounts of work in this area including the build and trial and a small scale LNG fuelling station to robustly understand the benefits of a CNG vehicle garbage fleet. The council are also prepared to fund significant amounts of this project and have undertaken soft market testing (expressions of interest) with the private sector to provide the funding and build/operate the CNG station.

Private Sector Partner (TBC) - A private sector partner will be selected via a competitive tender process in 2015/16 to build and operate the CNG fuelling station. This partner will provide the funding for the build of the station. Prior to the removal of the HP upfront connection costs no private sector investor was prepared to fund the project as a result of the level of risk.

Derogations or exemptions

The Licensee should outline if it considers that the Project will require any derogations, exemptions or changes to the regulatory arrangements.

The project will require derogation from standard condition 4b of the transportation license and the associated connection charging methodology statement. Under current license requirements all assets downstream of the connection charging point must be fully paid by the new connectee before any connection to the network is completed. For the planned high pressure connection to the CNG station the connection charging point is the LTS pipeline therefore all network assets required to connect the station would be fully chargeable up front to the developer / Leeds city council. It is assumed no reinforcement will be required to LTS.

Customer impact

The Licensee should outline any planned interaction with Customers or Customers' premises as part of the Project, and any other impacts (such as amended contractual or charging arrangements, or supply interruptions).

There will be no direct customer impacts as a result of the City CNG Project.

Details of cross sector aspects

The Licensee should complete this box only if this Project forms part of a larger cross sector Project that is seeking funding from multiple competitions (Gas NIC and Electricity NIC). The Licensee should explain about the Project it will be collaborating with, how it all fits together, and must add a justification for the funding split.

N/A

Any further details the Licensee feels would add to the submission

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