Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form. The full completed submission should not exceed 6 pages in total.

NIA Project Registration and PEA Document

Date of Submission

Oct 2022

Project Reference Number

NIA_NGN_334

Project Registration

Project Title

Improving Carbon Monoxide Awareness

Project Reference Number

NIA_NGN_334

Project Licensee(s)

Northern Gas Networks

Project Start

April 2022

Project Duration

0 years and 11 months

Nominated Project Contact(s)

Steve Dacre (sdacre@northerngas.co.uk) / Thomas Jackson (Thomas.jackson@sgn.co.uk)

Project Budget

£130,649.00

Summary

The project will provide a roadmap for increasing CO awareness by identifying gaps in the current understanding and areas for improvement in current practices. Initially this will involve research to identify the sources of CO and previously completed work in this area, and to understand the current scale of the problem. A gap analysis will then be undertaken to create a roadmap and provide recommendations for the best way to close these knowledge gaps, through future strategies, interventions, and further innovation projects. The roadmap will take into consideration the various ways in which different demographics and local areas may respond to the options suggested, allowing for a tailored approach, based on the individual circumstances faced by customers.

Third Party Collaborators

Energy Innovation Centre

Institution of Gas Engineers and Managers

Frazer-Nash Consultancy

Nominated Contact Email Address(es)

innovation@northerngas.co.uk

Problem Being Solved

Currently, there is a lack of public understanding about the serious dangers and risks associated with carbon monoxide (CO). Whilst safety campaigns to improve awareness have previously been conducted, HSE have signalled that there needs to be greater emphasis on improving understanding of this silent killer. Due to a lack of relevant, formal educational programs, HSE are actively advocating enhanced education and awareness of the dangers of Carbon Monoxide. When Gas Distribution Network (GDN) front-line

operatives have direct interaction with customers, CO awareness sessions can be provided if the circumstances permit. These sessions typically take 15 minutes to deliver by fully trained operatives, however, this creates increased pressure on network resources. Additionally, time is incurred to train staff to the necessary standard for delivering these sessions but there will inevitably still be varying quality of delivery and levels of customer engagement. This is exacerbated by the different ways in which individuals access information.
It is understood that there are multiple categories of vulnerable customer, as well as many different communities and cultures, all of which may have preferred methods for receiving the required information. The transient nature of vulnerability, for example the expectation of increased numbers of newly vulnerable customers due to the Covid-19 pandemic, increases the difficulty of ensuring the correct message is received by all.

Method(s)

Two separate approaches for solving this problem were presented to Northern Gas Networks (NGN), which has led to a collaborative research project between FrazerNash and IGEM.

The Frazer-Nash approach will utilise data analytics and behavioural science expertise to fully understand the risks associated with CO and the communication preferences of diverse groups of consumers, and to guide targeted local level intervention strategies.

IGEM has a wealth experience and knowledge in this sector and bring a great understanding of the requirements for compiling an information repository, utilising different research approaches, and engaging with key stakeholders.

The project team will collaborate closely to conduct desktop and stakeholder research in order to present a deep understanding of the sources and risks of CO, historical campaigns that have been conducted to raise awareness, and perform gap analysis to create a roadmap for future strategies that NGN can use to improve public awareness of the dangers of CO. Data analysis will also be used to quantify and produce maps of these risks for the network area, providing visualisation of the locations most in need of targeted intervention.

Measurement Quality Statement:
The methodology used in this project will be subject to our supplier’s own ISO 9001 certified quality assurance regime and the quality assurance applied to each stage of data gathering and processing will be documented in the supplier's quality plan. The source data and processed results will be clearly referenced and documented in the relevant deliverables and made available for review.

Data Quality Statement:
The project will be delivered under the NIA framework in line with OFGEM, ENA and NGN internal policy. Data produced as part of this project will be subject to quality assurance to ensure that the information produced with each deliverable is accurate to the best of our knowledge and sources of information are appropriately documented. All data, deliverables and project outputs will be stored on our suppliers’ project drive to ensure backup and version management. Relevant project documentation and reports will also be made available on the ENA Smarter Networks Portal.

Scope

The aim of this project is to provide a roadmap for increasing CO awareness by identifying gaps in the current understanding and areas for improvement in current practices. Initially this will involve research to identify the sources of CO and previously completed work in this area, and to understand the current scale of the problem. A gap analysis will then be undertaken to create a roadmap and provide recommendations for the best way to close these knowledge gaps, through future strategies, interventions, and further innovation projects. The roadmap will take into consideration the various ways in which different demographics and local areas may respond to the options suggested, allowing for a tailored approach, based on the individual circumstances faced by customers.

At the end of this project, network partners will have an increased understanding of issues surrounding CO awareness and any knowledge gaps. Funding licensees will have a roadmap of suggested future strategies, which will help guide investment, when considering schemes for improving customer awareness of the dangers and risks associated with CO, taking into account that members of the public receive information more effectively in different ways.

Stage 1 Exploring the problem using desktop and stakeholder research. Identifying and collating necessary datasets. TRL start: TRL2, and TRL end: TRL2
Stage 2 Data analysis to understand the factors that most significantly contribute and interact to create the risks associated with CO. TRL Start: TRL 2, and TRL end: TRL 3.
Stage 3 Gap analysis and creation of a roadmap, including recommendations for next steps. TRL Start: TRL 3, and TRL end: TRL 4.

Objective(s)

Stage 1 – Exploring the problem:
Develop a greater understanding of:

• the risks and dangers associated with CO
• the work that has been done to improve awareness
• enforcement of CO awareness.

Identify risk factors required to quantify risk and collate the associated datasets.

Measure:
Document the findings from the desktop study, collating information on work and campaigning undertaken in this area, and the current state of CO awareness across the UK and different sources of CO.
Undertake an evaluation of the external stakeholder workshop which aims to capture further knowledge of previous work and campaigning and the factors that influence risk.
Acquire and collate relevant datasets identified during the desktop study and external stakeholder workshop, to feed stage 2.

Stage 2 - Data Analysis and Risk Assessment:
Develop a method for quantifying risk using common risk factors and understand relationships between them.
Generate maps of the network for identifying areas where customers are viewed to be at increased risk of CO.

Measure:
Identify statistical methods and data analytics used to quantify risk using publicly available data sources for CO incidents, hospitalisations, deaths, CO awareness, and CO alarm installations.
Create a list of areas where targeted CO awareness campaigns would see greatest impact.

Stage 3 – Gap analysis and Roadmap
Identify gaps in knowledge base and determine avenues for future research.
Create roadmap indicating potential interventions, including short-term and longer-term strategies.

Measure:
Create a final report outlining the new understanding and identified risk factors, and where the gaps remain in relation to achieving networks targeted understanding.
Produce a roadmap of actionable interventions that seek to close the gaps and improve public CO awareness. Propose further research that will evaluate the efficacy of National and Regional, low-cost, high-impact interventions used successfully across the social sciences.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

An assessment of distributional impacts, (technical, financial and wellbeing related), for this project has been carried out using a bespoke assessment tool, which assesses the project as having a positive, negative or neutral effect on consumers in vulnerable situations. To help inform the assessment, this tool considers the categories of consumers identified in the Priority Services Register.

This project has been assessed as having an overall positive impact on consumers in vulnerable situations. The assessment has identified that this project will look to improve the exchange of information between networks and customers. Other considerations including the projects impact on supply, immediate health and safety in the home have been made in carrying out this assessment.

Success Criteria

Minimum success criteria (Must and should)

MUST:
identity existing research, to provide a baseline understanding of the current problem.
include a knowledge gap analysis.
identify the most appropriate method for accessing the varying categories of vulnerability and community.
provide a roadmap of potential future work, including relevant stakeholders, timescales and cost.
link to commitments made by the networks e.g., Social Mobility Pledge and UN Sustainable Development Goals (SDGs).
include awareness of all domestic sources of CO, not necessarily linked directly to the networks.
SHOULD:
Consider the wider energy industry, including those living off-grid.

identify the groups at heightened risk.
represent the beginnings of a collaborative framework with shippers, suppliers, gas safe, manufacturers, other industries (leisure etc.)
engage with parliamentary group to influence government.
look at the impact of particulates from burning solid fuel (e.g. wood burners).
Desirable criteria (Could):
Capture enforcement methods and tailor education of these methods to different customer demographics.

Measure

The Information Repository, developed through this project, will include awareness campaigns and research found to be relevant to this area. This will include regional, national, and potentially international research, if required.
The output report will provide an overview of prior work in this area.
The gap analysis will be completed and identify the missing knowledge and work required to achieve NGNs' baseline target for CO awareness and risk prevention.
The project will create a roadmap that will:
identify the best approach[s] for implementing interventions for each of the 26 categories of vulnerable customer, along with other demographics of interest.
provide recommendations for future work, including relevant stakeholders, estimated timescales, and indicative cost
Work completed in Stage 2 will align maps and findings from Stage 1 (information repository) with Ofgem's Consumer Vulnerability Strategy and relevant commitments made by the networks e.g., Social Mobility Pledge and UN Sustainable Development Goals (SDGs).
Research from Stage 1 and gap analysis in Stage 3 will consider all domestic sources of CO, not limited to network related sources.
A wider whole system appreciation will be used, with off-grid properties also being considered in the risk analysis
Maps of the network area will be used to assess risk at a localised level, and the report will indicate demographics most at risk.
All relevant stakeholders will be invited to the workshops, notably at the end of the project where actions on next steps and future work will be shared.

Project Partners and External Funding

SGN as joint gas distribution network project partner
Frazer Nash consultancy
Institution of Gas Engineers and Managers
Energy Innovation Centre will facilitate the project

Potential for New Learning

1) Overview of current state of CO awareness, and work that has been performed in the past.
2) Gap analysis demonstrating areas that can be used to build a roadmap of the most suitable short-term and long-term interventions to improve CO awareness.
3) Areas of the network that are statistically more likely to contain at-risk customers.

Scale of Project

Health and safety
the project will improve understanding of the dangers of CO, the report and roadmap will provide the gas networks (and wider stakeholders) with a better understanding of work needed to improve CO awareness.
Environmental
the project may provide incentives to move away from fossil fuels and offer longer term solutions to prevent dangers of CO and as such may lead to a wider understanding of possible low carbon heat solutions such as heat pumps or future hydrogen appliances.
Customers
the project will provide improved CO awareness, deploying various delivery mechanisms to be identified and suggested within roadmap of future projects.
Community
this project will engage with wider stakeholder groups, and require broader engagement with stakeholders throughout the community, with their inputs being crucial to project success.

Technology Readiness at Start

Technology Readiness at End

TRL2 Invention and Research	TRL3 Proof of Concept

Geographical Area

The research project will look at all areas and capture all previous information across the UK.

Revenue Allowed for the RIIO Settlement

N/A

Indicative Total NIA Project Expenditure

NGN external spend: £45,250
NGN internal spend: £15,083.33
NGN total NIA expenditure: £60,333.33

SGN external spend: £52,750
SGN internal spend: £17,566
SGN total NIA expenditure: £70,316

Total project value: £130,649.33

Project Eligibility Assessment Part 1

There are slightly differing requirements for RIIO-1 and RIIO-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RIIO-2 / RIIO-1).

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations (Please complete sections 3.1.1 and 3.1.2 for RIIO-2 projects only)

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

N/A

How the Project has potential to benefit consumer in vulnerable situations:

This project will have the potential to benefit customers in vulnerable situations as it is understood that there are multiple categories of vulnerable customer, as well as many different communities and cultures, all of which may have preferred methods for receiving the required information related specifically in this instance to CO awareness. The transient nature of vulnerability, for example the expectation of increased numbers of newly vulnerable customers due to the Covid-19 pandemic and the ongoing energy crisis, reinforces the need to improve safety messaging and ensure these are understood received by all.

Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter's and/or Electricity Transmission or Electricity Distribution licensee's network, or wider benefits, such as social or environmental.

Please provide an estimate of the saving if the Problem is solved (RIIO-1 projects only)

N/A

Please provide a calculation of the expected benefits the Solution

N/A

Please provide an estimate of how replicable the Method is across GB

This project has national relevance and is taking information from across the UK. As such outputs from this work will be applicable and relevant to all UK gas networks and communities alike and therefore could readily adopted to inform future approaches to CO awareness.

Please provide an outline of the costs of rolling out the Method across GB.

N/A

Requirement 3 / 1

Involve Research, Development or Demonstration

A RIIO-1 NIA Project must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

☐ A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).

☐ A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)

☐ A specific novel operational practice directly related to the operation of the Network Licensees system

☐ A specific novel commercial arrangement

RIIO-2 Projects

☐ A specific piece of new equipment (including monitoring, control and communications systems and software)

☐ A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is unproven

☑ A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)

☐ A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology

☐ A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution

☐ A specific novel commercial arrangement

Specific Requirements 4 / 2a

Please explain how the learning that will be generated could be used by the relevant Network Licensees

This project will create an overview of the existing state of CO awareness within the UK, and what work that has been undertaken in the past to improve consumer awareness.
The gap analysis will identify areas that can be used to build a roadmap of the most suitable short-term and long-term interventions to improve CO awareness and highlight where further work is required.
This work will articulate those geographic / socio-economic locations network that are statistically more likely to contain at-risk customers.

Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-1 only)

n/a

Is the default IPR position being applied?

☑ Yes

Project Eligibility Assessment Part 2

Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

The project is facilitated by the EIC and the outputs of the research will be shared with all GDN's and interested parties and on the smarter networks portal.

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

N/A

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

This project will create a central repository of previous CO research and will establish a roadmap which GDN's can adopt to identify and deploy those methods of communication having the greatest impact on consumers including specific detail as to the 'how to deliver a targeted and impactful CO message'.

Relevant Foreground IPR

N/A

Data Access Details

N/A

Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities

This project has the potential to benefit all GDN’s and wider industry by bringing together all previous knowledge, research and learning around Carbon Monoxide for the benefit of customers in vulnerable situations.

Please identify why the project can only be undertaken with the support of the NIA, including reference to the specific risks(e.g. commercial, technical, operational or regulatory) associated with the project

The project is looking to address issues around Carbon Monoxide awareness and vulnerability, these are key areas of focus for the RIIO2 funding mechanism.

This project has been approved by a senior member of staff

☑ Yes