

Network Innovation Competition Screening Submission Pro forma

Notes on completion

Before completing this form, please refer to the relevant Network Innovation Competition (NIC) Governance Document(s).¹

Please use default font (Verdana size 10) in your submission and retain 1.5 line spacing.

We will only accept the text visible in the text entry areas.

The text entry areas are predetermined and should not be changed.

The full-completed submission should not exceed 19 pages in total.

Ofgem will publish all the information contained within this Screening Submission.

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|---|
| Is the application for the Gas or Electricity NIC? If a Cross-Industry Project, please state 'Cross-Industry'. |
| Gas NIC |
| Funding Licensee |
| Scotland Gas Networks plc and Southern Gas Networks plc |
| Project Partners including other Licensees |
| Cadent, Northern Gas Networks (NGN), Wales and West Utilities (WWU), GTC. |
| Project Title |
| H100 Fife |

¹ <https://www.ofgem.gov.uk/publications-and-updates/version-30-network-innovation-competition-governance-documents> All capitalised terms used in this document have the meaning given to them in the respective NIC Governance Document.

Project Summary

The H100 Fife project forms part of a national programme of hydrogen evidence and pathway to decarbonisation, under the 'Gas Goes Green' movement and seeks to demonstrate a 'first of a kind' hydrogen energy system. Hydrogen will be derived from water, using electrolysis through an electricity supply from a 7MW offshore wind turbine in Levenmouth, Fife. The hydrogen will be stored locally and transported through a new hydrogen distribution network to appliances in domestic homes. The new network will be constructed of materials and fittings commonly employed by natural gas networks today, evidenced as fit for purpose with hydrogen through extensive testing under the H100 Network Innovation Allowance (NIA) project. This dedicated hydrogen network will be installed in parallel with the existing natural gas network, to allow up to 300 customers initially to connect on an 'opt-in' basis. To support the customer proposition, a demonstration facility, incorporating three demonstration homes will be constructed to showcase hydrogen appliances, developed under the Department of Business, Energy and Industrial Strategy (BEIS) Hy4Heat programme. Following a year's construction period (2021-2022), the H100 Fife project will be operational ahead of the UK Government heat policy decision in 2023/24 and will run for 5 years (2022/23-2027). This will provide critical and scalable understanding of the network's operation; confidence to customers in the hydrogen solution; a lasting facility for training and demonstration; with opportunity for expansion and cross sector integration in future phases.

| Estimated Start Date | | Estimated End Date | |
|--|------|-----------------------|--------|
| 2021 | | 2027 | |
| Total Project Cost | £25m | NIC Funding requested | £18.0m |
| Technology Readiness Level (TRL) at start and end of project | | | 4 to 8 |

What is the Problem that the Project seeks to address?

Decarbonisation is necessary. It is yet unclear what solution or combination of solutions will deliver the net-zero emissions necessary to limit global temperature increases to 1.5°C.

The UK has an extensive gas network that supplies the energy to heat the majority of its buildings, fuels industry and provides both base energy and intermittent energy for power generation. The demand for heat is highly variable with both seasonal and diurnal swings, with the UK gas supply network currently being the only energy delivery system capable of meeting this highly variable demand profile. However, despite significant progress with green gas such as biomethane, the natural gas energy vector in its current form is not compatible with net-zero targets.

The UK Government has committed to substantial reductions in greenhouse gas emissions in order to achieve net-zero by 2050. Decarbonising heat is a key strand of the policy which is required to meet these targets. The Scottish Government has set out ambitions to become a net-zero society by 2045, this includes a new target to reduce emissions by 75% by 2030. UK Government heat policy decisions are due in 2023/24.

The UK, Scotland in particular, is blessed with natural energy resources, from oil and gas to wind, wave and tidal. To meet net-zero, or 'real' zero emissions, it will be necessary to decarbonise almost every aspect of human activity. The UK's energy needs for heat, transport, power and industry are collectively the largest contributors to its carbon footprint and hydrogen is a credible energy vector to achieve this. Although it is the most abundant element on Earth, hydrogen is not freely available in molecular form. Thus hydrogen, like electricity, is a secondary form of energy. How energy is recovered and maximised from natural resources and distributed in a form that customers want, requires evidencing and options to be demonstrated.

Through the overarching H100 programme and associated programmes such as Hy4Heat and H21, there are a series of co-ordinated projects underway seeking to address the outstanding technical, regulatory and safety considerations for conversion of existing gas networks and associated appliances.

Validation is required for the extensive research that has been undertaken in the form of a controlled demonstration, evidencing the safe, reliable distribution of hydrogen to customers opting into the trial. This demonstration will be a critical evidentiary step for social acceptance and customer confidence.

What Method(s) will be used and why? Ie, what is being demonstrated or developed? Please describe in terms of the NIC eligibility criteria. (page 1/3)

The project will be broken down into a series of elements each with its own delivery milestones with associated payment triggers and go/no-go project stage gates.

An indicative list of project elements, timelines and funding sources is below, these are being continuously reviewed and will be finalised prior to full submission:

(See funding commentary section for cost breakdown)

- Element 1 – Planning Design Progression (NIC funded) - Q2 2021 – Q3 2021
Build on the work undertaken in the H100 NIA package. Progress site designs, baseline surveys and stakeholder liaison in support of planning application and award.
- Element 2 – Prelim Works (NIC funded) - Q2 2021– Q3 2022
Secure key third-party agreements including, grid connection, wind turbine connection, water/utilities etc. Continue to develop the H100 Fife safety case with risks quantified and appropriately managed. Finalise terms for required land. Determine network validation requirements.
- Element 3 – Planning and Land (NIC funded) - Q3 2021 – Q4 2021
Following on from the successful completion of Element 1, submit planning application and obtain permission. Obtain required land either via ownership or leasing option as determined in Element 2.
- Element 4 – Technical and Engineering Support (Scottish Government match funding) – Q2 2021 – Q1 2022
Ensure key construction and operational permissions and consents are secured and/or adequately progressed. Progress feasibility and Front-End Engineering Design (FEED) works to detailed design. Develop procurement strategy capturing all critical and long lead items.
- Element 5 – Electrolyser Acquisition (Scottish Government match funding) - Q2 2021 – Q2 2022
Conduct and complete procurement event defined in Element 4, obtain the delivery of the appropriate electrolyser equipment on site in line with construction timelines. The final choice of electrolyser will enable the continuation of the overall detailed design package in support of procurement and construction.

What Method(s) will be used and why? (page 2/3)

- Element 6 – Demonstration Facility (Scottish Government match funding) - Q2 2021 – Q3 2022

Tender and award build contract. Construct and complete the demonstration facility as defined. This facility will then be available to assist with customer engagement and securing voluntary participation in the project.
- Element 7 – Pre-Construction Activities (NIC funded) – Q2 2021 – Q4 2021

Continue to develop all required activities for construction including safety case development and Health & Safety Executive (HSE) Science Division review, local operating procedures (LOPs), operative training. Obtain all required permitry and permissions necessary for construction. Finalise development of specialist tooling and equipment.
- Element 8 – Procurement (NIC funded) - Q2 2021 – Q3 2022

Execute the procurement strategy defined in Element 4. All required works, supply and services contracts will be procured in line with required construction timelines.
- Element 9 – Construction (NIC funded) - Q2 2022 – Q1 2023

Complete the construction and commissioning of the production, storage, and distribution systems to the designs developed in Elements 4. Utilising the contracts procured during Element 8.
- Element 10 – Customer Works (NIC funded) - Q1 2023 – 2027

Connect participating properties, install appliances, liaising with Hy4Heat and other manufacturers. Implement appropriate billing arrangements with existing suppliers at no cost or disruption to customers. The objective is to have as close to 300 homes connected for optimal learning and data gathering before heat policy decisions.
- Element 11 – Operational Phase (NIC funded) - Q1 2023 – 2027

Commence operation and maintenance of the commissioned network and implementation of developed LOPs. Validate network models. Utilise asset repository and records system. Gather data and optimise system operations.
- Element 12 – Decommissioning / Enduring Solution (NIC funded) – 2027

Assess project success and viability and prepare for enduring solution OR develop and implement decommissioning of the plant and network that minimises environmental and local community impact.

What Method(s) will be used and why? (3/3)

- Element 13 – Stakeholder (NIC funded) - Q2 2021 – 2027
Co-ordinate with associated projects including H21, Hy-Deploy, Hy4Heat and overarching UK hydrogen programme for continuity of learnings, timelines and complementary scope e.g. appliances/domestic. Continue engagement with key stakeholders on a site-specific, regional and national level to cover disciplines of statutory consultees, local authority, political, industry, regulatory bodies, local community, public and customers, and other project stakeholders. Execute customer engagement plan. Deliver stakeholder and customer events at demonstration facility, informed by successful engagement initiative, such as the Oban and Real-Time Networks projects.
- Element 14 – Project Support (NIC funded) - Q2 2021 – 2027
Source appropriate support functions for the project to ensure the legal, regulatory and insurance requirements are implemented.

Funding Commentary (page 1/2) *Licensee must provide a commentary on the accuracy of its funding estimate. If the Project has phases, the Licensee must identify the approximate cost of each phase. If the NIC is being used as match funding, please state the other sources of funding.*

Element 1 – Planning Design Progression (NIC funded) - £0.20m
 Element 2 – Prelim Works (NIC funded) - £0.20m
 Element 3 – Planning and Land (NIC funded) – £0.10m
 Element 4 – Technical and Engineering Support - £0.70m (Scot Gov match funding)
 Element 5 – Electrolyser Acquisition (Scot Gov match funding) - £3.70m
 Element 6 – Demonstration Facility (Scot Gov match funding) - £0.60m
 Element 7 – Pre-Construction Activities (NIC funded) - £0.60m
 Element 8 – Procurement (NIC funded) - £0.15m
 Element 9 – Construction (NIC funded) - £6.75m
 Element 10 – Customer Works (NIC funded) - £3.50m
 Element 11 – Operational Phase (NIC funded) - £7.00m
 Element 12 – Decommissioning / Enduring Solution (NIC funded) - £0.50m
 Element 13 – Stakeholder (NIC funded) - £0.50m
 Element 14 – Project Support (NIC funded) – £0.50m

Funding Commentary (page 2/2)

All costs are best estimates and may change before the full NIC bid by +/- 10%. These will be further refined in advance of the full submission and supplemented with cost risk scores and accuracy assessments. The current risk of the Covid-19 pandemic and its impact on cost will be continually assessed. The uncertainty of this may alter the accuracy of these estimates beyond the +/- limit initially stated for the project. Nevertheless, the urgency and necessity to decarbonise remains for SGN, the gas networks, the energy system and the UK.

All costs have been determined by various sources and means. This includes the earlier feasibility and FEED stages of H100 NIA and Phase 1 of Project Methilltoun, funded by BEIS, or by utilising SGN's own resources and subject matter experts for Elements which fall under its usual remit, e.g. distribution system and pressure reduction station and site works build costs.

There are three funding sources for H100 Fife; a Hydrogen Heat Demonstrator Grant from the Scottish Government (subject to award), the GDN contributions and NIC funding. The Scottish Government grant is anticipated to be matched funding of £5.0m to cover Elements 4, 5 and 6 which relate to technical engineering and support, detailed design, production of procurement packages and assessment of tender returns, electrolyser acquisition and the construction of the demonstration facility. The terms of this grant understandably require match funding confidence. Due to the intricacies of utilising interconnecting funding sources, analysis on dependencies has been undertaken to understand risk and opportunities to programme and outcomes based on a variety of funding scenarios. The current programme assumes both Scottish Government grant and NIC funding will not be available until April 2021 due to their match funding linkage. Should funding commitment and agreement on early release of the Scottish Government grant be obtained from both funding parties, then it may be possible to expedite this timeline (subject to uncontrollable external factors such as the Covid-19 pandemic) and commence the live demonstration phase in Q3/4 2022 as opposed to Q1/2 2023 in the current programme.

The total amount being requested from the NIC is £18.0m, however the total H100 Fife cost is £25.0m. See breakdown below:

£5.0m - External funding (Scottish Government grant: match funded by NIC),

£2.0m - Contribution from GDNs: 10% of total less external funding,

£18.0m - Remaining NIC funding request.

| Which specific requirements does the Project fulfill? | | |
|--|--------------------|------------|
| <i>Mark YES in the appropriate box(es)</i> | Electricity | Gas |
| A specific piece of new (ie unproven in GB) equipment (including control and/or communications systems and/or software) | | YES |
| A specific novel arrangement or application of existing electricity/gas transmission and/or distribution equipment (including control and communications systems software) | | YES |
| A specific novel operational practice directly related to the operation of the electricity/gas transmission and/or distribution systems | | YES |
| A specific novel commercial arrangement | | YES |

| How does the Project accelerate the development of a low carbon energy sector and have the potential to deliver net financial benefits to existing and/or future customers in the relevant sector? (page 1/2) |
|---|
| <p>H100 Fife embraces cross-vector technology and a whole system approach forming a platform for hydrogen market creation. The NIC funding will expedite this trial delivering an operational system by 2023, providing critical evidence to help inform a decision on UK Government heat policy.</p> <p>H100 Fife will demonstrate a novel system that combines established technologies to deliver a currently unproven solution for the decarbonisation of heat. By demonstrating the role of the gas networks in the future of heat as an established reliable industry, an innovative and unique solution to mobilise hydrogen networks is presented. Market creation is necessary to allow customer access to the appliances developed under the Hy4Heat programme. The established infrastructure of the gas networks offers an attractive solution for energy delivery in a net-zero landscape, achieving deep decarbonisation by adopting hydrogen as its primary energy vector. The project will offer a blueprint for replication at key strategic hubs across the UK for hydrogen production and distribution, transitioning the operation of the gas networks. This starts with the first 100% hydrogen network in Levenmouth, Fife. Hydrogen is not currently cost competitive with natural gas, however this is something that</p> |

Accelerates the low carbon energy sector (page 2/2)

can only be achieved at scale through creation of markets, investment and infrastructure. Thus, H100 Fife is a strategic project and not designed to deliver direct financial returns. When electrolytic hydrogen is produced from renewables, there is no associated carbon emissions, and therefore, combustion of hydrogen in appliances at point of use is zero-carbon. This offers a market creation opportunity for not only the gas industry but also the renewables sector. Through integrating power and heat in a low carbon system, the potential is created for multi-sector participation and growth in the future of energy in the UK. Therefore, H100 Fife is a critical demonstrator in solving the decarbonisation of heat challenge that will contribute significantly to the development of a net-zero movement. The location of this trial is ideal to contribute to the decarbonisation of the east coast of Scotland as well as mobilising wider network transformation. Levenmouth is an accessible and central location, which is home to Offshore Renewable Energy Catapult's (OREC) existing 7MW offshore wind turbine.

The social interest and acceptability of hydrogen for heating appliances in customer homes will be evidenced by H100 Fife through implementing an opt-in approach to the trial, so customers participating do so on a voluntary basis. This, along with extensive stakeholder and customer engagement work, will present key learnings that can be used to inform the gas networks' strategy to ensure customers are brought along on the journey to net-zero. The customer value proposition that hydrogen appliances affords, which has been widely recognised as relatively lower cost and lower disruption than other decarbonisation solutions when changing from existing appliances to lower carbon alternatives, needs to be tested to inform key decisions on the future of energy in the UK. In subsequent project phases (not requested under this NIC), H100 Fife is exploring the opportunity to expand beyond the initial 300 homes up to 1000 homes and then consider a whole town network conversion to hydrogen. In parallel to this, there are opportunities to include a hydrogen solution for industrial heat, transport and underground storage in the local area. Fife is ideally situated to roll out an extensive hydrogen network on the east of Scotland that combines both electrolysis of hydrogen using offshore wind and Steam-Methane Reformation (SMR) production of hydrogen with Carbon Capture and Storage (CCS) to decarbonise at an accelerated rate. This links in with other key hydrogen projects SGN is leading and collaborating on, including Aberdeen Vision, The Future of Local Transmission System (LTS) and East Neuk.

How will the Project deliver value for money for electricity and/or gas customers?

Earlier H100 NIA work included a national procurement event that investigated the suitability of five UK demonstration trial locations and carried out detailed feasibility and FEED studies on a shortlist of three to select a final site. This comprehensive selection process ensured that Levenmouth, with its key strategic advantages as outlined in this ISP, was the most suitable site for the initial H100 Fife trial with the greatest value and learning opportunity potential. Go-no-go stage gates will be utilised to ensure the project is structured to manage risk and uncertainty of success as far as practicable. This allows the project to manage investment risk and ensure valuable learning is achieved throughout.

Going forward, the H100 Fife project will continue to deliver value for money to gas customers by ensuring a competitive procurement strategy is in place. Research has already been carried out on major contracts (electrolyser suppliers shortlisted from 42 under the Methilltoun Project, for example). This 'first of a kind' demonstration project, if successful, will deliver an end to end system blueprint that can be replicated and used to mobilise hydrogen market growth, consequently driving down the cost of equipment, such as electrolysers. With capital expenditure reduction, the cost of hydrogen production can become more competitive, particularly when derived from offshore wind which is currently at its lowest recorded cost of approx. £39.65/MWh. The project will deliver evidence that supports the use of hydrogen as a viable decarbonised energy vector for heat and aims to demonstrate that the costs associated with rolling this out compare favourably to the electricity network upgrade costs required for electrification of heat.

Other work proposed under H100 Fife includes further development of safety case, standards and procedures gap analysis, specific demonstration operating procedures, and proposed commercial models and regulatory/legislative options that will help inform the development of enduring commercial solutions to be adopted by the gas industry in relation to hydrogen supply. The project has been structured as a national project to maximise learning dissemination and avoid duplication.

For the duration of the trial, participating customers' heating bills will not increase above their average annual gas bill. Customer protection measures form part of the NIC request. Participating customers will receive like for like replacement of their existing gas appliances, and free maintenance cover.

How will the Project generate knowledge that can be shared amongst all relevant Network Licensees?

Buidling on SGN's effective communication, knowledge dissemination will continue from the H100 NIA project and the technical elements delivered under Workstream A will be published on the Smarter Networks Portal. The future phases of the project will also produce reports and information that will be proactively shared through various media platforms. This NIC project is a collaborative effort between all the GB Gas Distribution Networks (GDNs) and as such, transparency of shared learning will be paramount. Due to the collaborative nature of H100 Fife, its acknowledgement as a critical project by BEIS and Scottish Government and the support from stakeholders as represented by letters of support, effective information dissemination is key. A dedicated project board is proposed offering representation from key stakeholders e.g. GDNs, HSE, BEIS, Ofgem, OREC, Scottish Enterprise, Fife Council and Scottish Government, to ensure project progress is clearly communicated. A variety of dissemination activities will be undertaken across the course of the project, including a launch event, conference presentations, workshops and other key events.

Outputs from this project aim to generate learning for industry, government, stakeholders and the public on a national and international level to serve a multitude of benefits such as;

- a world first trial for an end to end hydrogen system (from turbine tip to burner).
- a demonstration of a gas transporter participating and leading a decarbonised energy system.
- a unique demonstration centre for industry testing, stakeholder events, customer sessions, education and training.
- a facility for training operatives to install, operate and maintain/repair hydrogen appliances and pipework.
- an opportunity to prove the suitability of existing or newly developed health & safety and operational standards and procedures from industry.
- building customer confidence around hydrogen that will provide invaluable learning on social acceptance.

Answering Yes or No, does the Project conform to the default Intellectual Property Rights (IPR) arrangements set out in the NIC Governance Document? *If answer is NO, the Licensee must demonstrate how learning will be disseminated to other relevant 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 IPR arrangements.*

Yes

How does the project demonstrate it is innovative (ie not business as usual) and has an unproven business case, that the innovation risk warrants a limited Development or Demonstration Project to demonstrate its effectiveness?

Challenged with a net-zero target, and following a detailed site selection process, across the gas network H100 Fife is the optimal location for demonstration of a hydrogen network to understand the role of 100% hydrogen in the future of heat ahead of heat policy decisions. The trial will build on a significant base of research and evidence that has already been compiled, enabling its validation by demonstrating the myriad technical and safety evidence in real world operation.

In order to deliver H100 Fife, SGN, as a gas transporter, will be delivering an end to end system that involves activities from turbine tip to burner, which is outside of the business as usual of the GDN role. Accordingly, H100 Fife is an unprecedented but necessary expansion of SGN's activities in order to facilitate and evidence the decarbonisation potential of hydrogen. This 'first of kind' system did not form part of RIIO GD1 price controls. The level of funding required to build H100 Fife encompasses a broad range of uncharted operations which will be of benefit to the industry as a whole enabling the demonstration of a storage and distribution solution to hydrogen production that meet the demands of domestic heating. The project facilitates market creation and provides critical evidence to support heat policy decisions and market investment. As the primary value is one of public information and knowledge creation rather than return on an investment, private investors will be unwilling to fund a substantial proportion of the project.

This innovative project considers cross-vector and cross-sector whole systems integration opportunities, aligning to the joint Gas and Electricity Innovation Strategy 2020.

How were Project Partners, external resources/funding identified, and what are their respective roles in the Project? Please evidence how Partners were identified and selected, including the process and rationale that has been followed. *The Licensee should provide details of any Project Partners who will be actively involved in the Project and are prepared to devote time, resources and/or funding to the Project. If the 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.*

H100 Fife has a number of project partners and participants. This bid is supported by all the UK GDNs and GTC to benefit the national programme for hydrogen development and demonstration across the gas industry collectively.

External Funders – Scottish Government grant (See Funding Commentary).

Project Participants – OREC to execute electricity supply arrangement with SGN as the wind turbine owner and operator to provide primary power to the electrolyser. Scottish Power Energy Networks grid connection for secondary power supply. Key suppliers and contractors to be appointed subject to funding through a tendering process, or from existing framework contracts where relevant.

Project Supporters – Fife Council/Scottish Enterprise through joint venture landowners of Energy Park Fife & network property interests. The project is also providing a mechanism for the demonstration of the hydrogen appliances under Hy4Heat.

Project Stakeholders – There are a vast number of stakeholders for the project, ranging from Shell with an interest in trialling and deploying decarbonisation solutions to accelerate the energy transition to international governments and industry.

The proposed project integration board will appoint key stakeholders for programme monitoring, national hydrogen programme alignment and progression function.

Many project supporters, participants, external funders, suppliers and stakeholders have demonstrated their backing for H100 Fife through letters of support. These are available on request and further letters will be obtained prior to the full bid. All project partners for H100 NIA (can be found online via ENA portal) were selected through a competitive procurement process.

Would the Project require any derogations or exemptions to current regulatory arrangements? *If YES, please provide details of the required changes.*

Following assessment of the options for regulatory structure, SGN have engaged with Ofgem, setting out a spectrum of options. These range from maintaining the current regulatory structure where possible, to undertaking the project under derogation. SGN recognise that protection of the participating customers is sacrosanct to the project. A solution must be sought that allows customer participation to be simple, without disadvantage and with minimal disruption. Following further option refinement, a regulatory position and approach for the project will be agreed upon by the full NIC bid submission later this year and SGN would ask that Ofgem support the determination of this through ongoing engagement.

The majority of the regulatory complexity stems from delivering an end to end system that includes activities normally outside of the regulated activity of a gas transporter, yet inexorably linked to the successful delivery of the project. The exploration of regulatory barriers and the process of seeking solutions to resolve these, offers valuable information and insight into the future operation of the UK gas networks and reoccurring challenges that will be faced by different projects. Therefore, SGN believe that the regulatory solutions sought for this project may be replicable, or at the very least, generate a blueprint for adaptation in other hydrogen network projects.

As an example of working to overcome regulatory barriers to the project, SGN are exploring the use of a Special Purpose Vehicle (SGN Futures Limited) as a means of delivering activities relating to hydrogen production to avoid the need for a licence derogation for Scotland Gas Networks plc to carry out gas production. The interaction with the shipper, power providers and ensuring security of supply for customers is being reviewed to arrive at an optimal commercial solution. Detailed options will be mapped out during the full bid process.

How will the Project activities impact customers? *The Licensee should outline any planned interaction with customers or customers' premises as part of the Project, and any other direct customer impact (eg amended charging arrangements, supply interruptions).*

Key stakeholders have been identified during the H100 NIA project and an engagement strategy has been implemented to keep all parties fully informed. Site-specific stakeholder engagement has been undertaken to raise awareness of the project, tailored to manage the expectations across the three potential sites evaluated under H100 NIA. Customers are central to SGN's company values and will play a key role in H100 Fife. SGN are working with Fife Council to identify eligible customers in the planned network area, where ~200 of which are Fife Council owned (Fife Council letter of support acquired). The project will produce detailed, effective and clear customer engagement as part of H100 Fife's overall stakeholder engagement strategy, enshrined in a publicly available customer engagement plan.

Customers will be informed on the application, benefits, importance and safety of hydrogen in order to become both comfortable and confident with an alternative gas. The demonstration home forms a critical component of the project, facilitating interactive engagement with new appliances to ensure customer confidence. It will play a key role in building this confidence and understanding where customers can visit and experience a home-like interactive setting that is supplied by hydrogen with operational appliances. This will allow customers to make an informed choice both on whether they wish to connect to the proposed 100% hydrogen distribution network and which appliances they want installed.

SGN will liaise closely with the local authority on the project's customer engagement plan to address any issues and to ensure minimal disruption. They will be kept informed on the planned works and entry into properties and ensure customers are given adequate notice. SGN have robust procedures in place for customer interruptions that will be utilised for this project and adapted as circumstances dictate. A dedicated operations team will be assigned to the hydrogen network that will be responsible for delivering routine or unplanned maintenance works as well as responding to emergency call outs. The option for a dedicated hydrogen network support line is something that is being explored as well as integrating into SGN's existing customer service facility.

This question is for Cross-Industry Projects only. What funding is being requested from each NIC? Please include justification for the funding split.

N/A

Are there any further details the Licensee considers would support its submission?

SGN in agreement with the UK GDNs, have set out the Gas Quality Decarbonisation Pathway in collaboration with key industry stakeholders, Scottish and UK Governments. The steps are now collectively recognised by policymakers and the gas networks as necessary for moving towards decarbonisation. This has generated a portfolio of work to deliver evidence for utilisation of the gas network in the form of a pathway as part of the net-zero decarbonisation solution. There are two key strands to this pathway; the safety, technical and practical evidence to demonstrate that the gas network and associated infrastructure can distribute hydrogen and; how the hydrogen solution would be delivered in each region. The projects SGN have identified for this year and for GD2 are designed to provide the underpinning evidence for each step. For example, H100 NIA and H100 Fife, are key national projects within the pathway proposed, forming early phases of the overall hydrogen programme. H100 Fife therefore holds significance to all UK gas customers and the future of the gas networks. SGN are committed to delivering H100 Fife in line with the significant support shown by stakeholders and customers for decarbonisation activity.

Examples of high level project outcomes include (not exhaustive):

- Demonstrates the end to end system for generation, storage and transportation of hydrogen sourced from renewable energy.
- Validation of the extensive hydrogen research carried out under H100 NIA and other key national collaboration projects, such as H21 and Hy4Heat.
- Critical insight into demand and supply management, security of supply operation.
- Market creation: opportunity for manufacturers to demonstrate and market hydrogen appliances.
- Testing customer appetite for hydrogen applications through consented participation.
- A test bed for regulatory models.
- Key evidence for heat policy decisions.
- A platform for establishing hydrogen as an energy vector, with cross-sector opportunities.
- Demonstrating a route to facilitate market growth of offshore wind.
- A legacy for hydrogen testing and training by delivering a hydrogen demonstration facility.

Contact Information (Cross-Industry Projects can provide two contacts)

| Contact Name(s) and Title(s) |
|--|
| <p>Angus McIntosh, Director of Energy Futures, SGN Stephen Tomlinson, Project Manager, SGN</p> |
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