

H100 Fife

Monthly Report
July 2021



SGN

Your gas. Our network.

Contents

1 Executive Summary	3
2 Overview	5
3 Progress	6
3.1 Progress during period	6
3.2 Next steps	8
4 Risks	9
5 Safety	9
6 Programme	11
7 Finance	12
8 Scottish Government Grant	12
8.1 Grant Expected Outcomes	12
8.2 Grant Milestones Status	13
8.3 Grant Expenditure Profile.....	15

1 Executive Summary

An SGN Futures (H100) Ltd Board meeting was held on 1 July 2021 in light of cost and programme risks associated with construction materials caused by BREXIT and COVID-19. to discuss the initial cost assessment and cost reduction options such as applying for research and development tax relief through the RDEC scheme. At the Board, the project was given approval to progress with the cost recovery plan. This is being managed by the Project Team and updates will be provided to the Board.



The H100 Fife electrolyser ITT process has now concluded with a clear recommendation for NEL to be the selected contractor for the supply, installation, operations & maintenance of the H100 Fife electrolyser. A recommendations paper will be

¹https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf

² <https://www.ofgem.gov.uk/sites/default/files/2021-07/Hydrogen%20Consumer%20Trial%20-%20Open%20Letter%20to%20GDNs%20%28004%29.pdf>

H100 Fife Monthly Progress Report

presented to the CEO with members of the SGN Futures (H100) Ltd Board present for discussion and approval on Monday 2 August 2021. Subject to approval, the contract will be executed with NEL in August 2021, with a target operational date of January 2022.



In addition to the 3 major engagement sessions that have been held with the HSE on the H100 programme, a meeting was held on 28 July 2021 with SHE and the project team to commence initial discussions with the HSE on the format and frequency of the HSE involvement throughout the progression of the cases for safety production (to be undertaken by DNV) to define the roles and processes for submitting the cases for safety to the HSE prior to operation. A further meeting has been scheduled in September to have more detailed discussions once key project partners are in contract.

Upcoming highlights in August

- Appointment of the H100 Fife Director
- Electrolyser award and contract execution, subject to approval
- Community Liaison Group kicked off in local project area
- H100 Fife Phase 2 Village Trial work commences

2 Overview

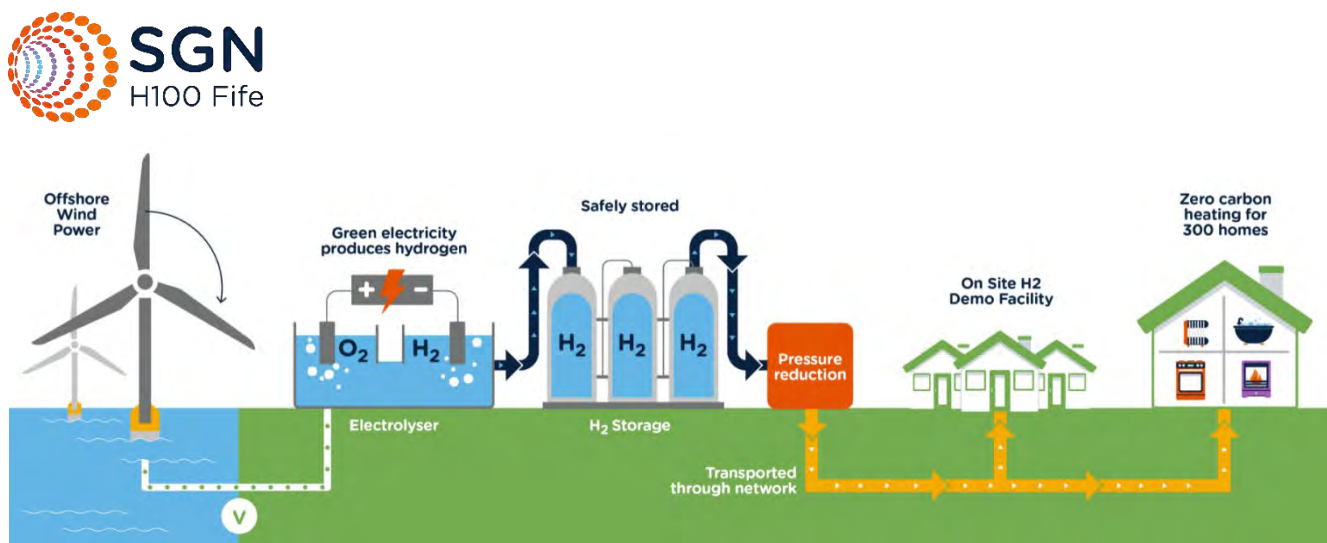
H100 Fife is seeking to deliver a ‘first of a kind’ demonstration of a 100% hydrogen network that aims to supply 300 customers in the area of Levenmouth, Fife. In a move to decarbonising the gas networks, in line with government net zero targets, hydrogen offers a credible and opportunistic route to securing the asset for gas networks in the future of energy. When derived from renewables and produced through the process of electrolysis, a zero carbon system can be achieved from production through to end use. The project will comprise of an end to end system, to include power generation, hydrogen production, storage, pressure reduction, odourisation, distribution and customer connections to serve domestic hydrogen meters and appliances. H100 Fife will construct a new PE hydrogen network to run in parallel to the existing natural gas network. This is a key feature of the project that offers the opportunity for customers to opt-in and be connected to the hydrogen network or remain with their existing natural gas supply. Similarly, customer who participate in the project, can revert back to their original natural gas supply if desired. By promoting and maintaining customer choice, critical information on customer attitudes and interest towards hydrogen can be measured, providing evidence on public acceptance of hydrogen.

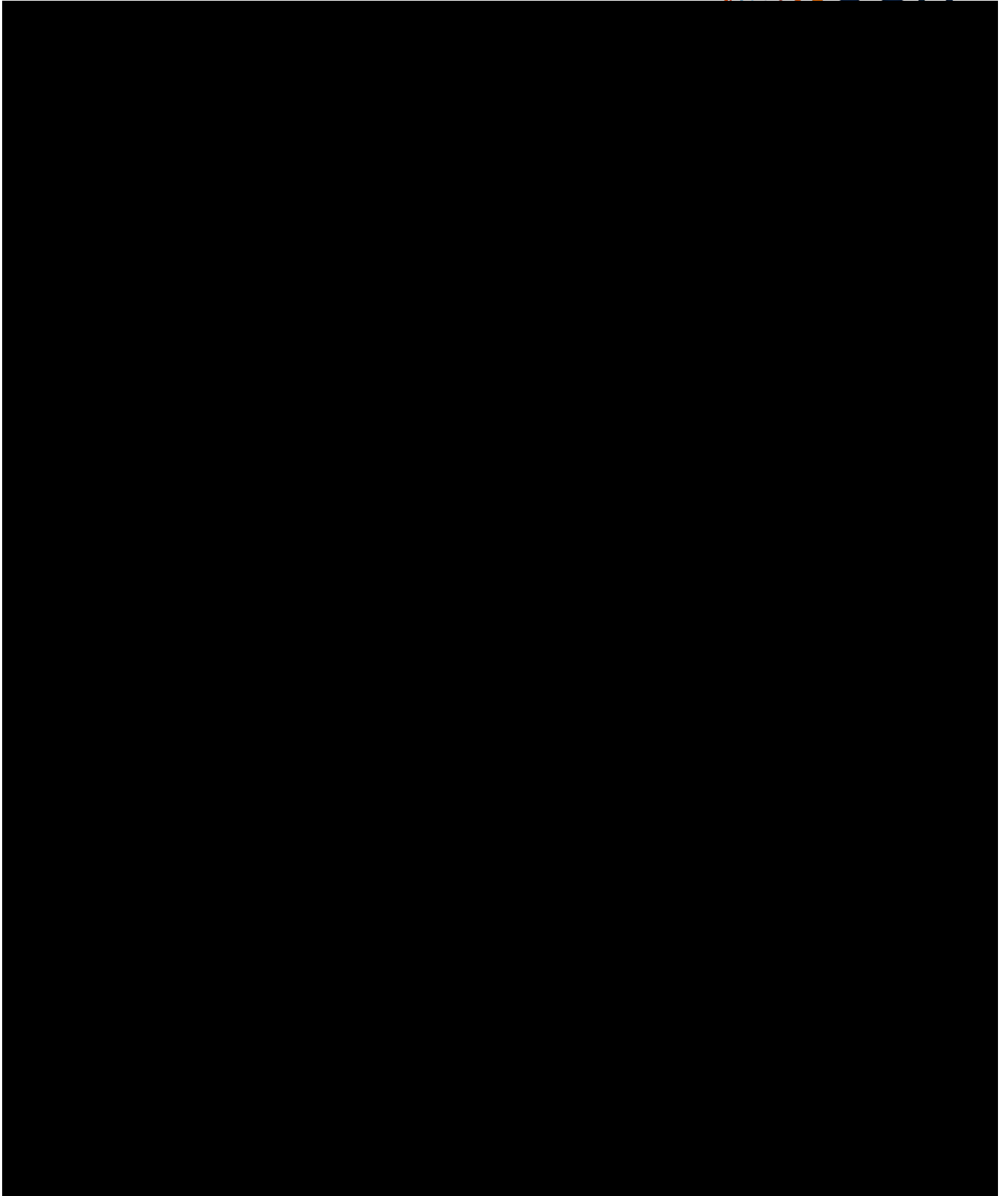
The primary power input for the system will be supplied by an existing 7MW offshore wind turbine located on the coast at the Energy Park Fife in Levenmouth. A back-up grid connection will supplement the power provision when wind energy is not available. The H100 Fife Site will also be situated at Energy Park Fife, consisting of the high-pressure system components that supply the low-pressure new distribution network, which will serve the adjacent residential area. The Hydrogen Demonstration Facility, functioning as a customer engagement tool, training centre and education hub, is also located within the H100 Fife Site.

H100 Fife builds on an extensive research and evidence base for 100% hydrogen in the gas network and is recognised as one of national significance in contributing to the validation of hydrogen networks. It is a key element on the Gas Quality Pathway to Decarbonisation, through the Gas Goes Green programme and as part of the BEIS Hydrogen Programme Development Group, where it is acknowledged as one of the eligible demonstrations under the Integrated Hydrogen Trials programme. The project has received support and backing from Scottish and UK Government, industry, local stakeholders and the other gas distribution networks.

The H100 Fife programme aims to begin operation at the end of 2022, and endeavours to have 300 customers connected in the first 6 months. Operation is envisaged to continue until 2027, by which point it is expected that government decisions on heat policy will have been made. Following a successful demonstration, expansion opportunities exist beyond the H100 Fife project, encompassing network conversion, industrial and commercial supply, transport and whole system transformation.

A H100 Fife animation provides a visual and narrated project overview available at: <https://sgn.co.uk/H100Fife>





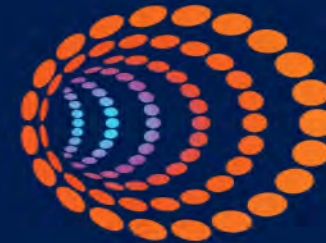
assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf

⁴ <https://www.ofgem.gov.uk/sites/default/files/2021-07/Hydrogen%20Consumer%20Trial%20-%20Open%20Letter%20to%20GDNs%20%28004%29.pdf>



H100 Fife – Project Advisory Board

21 September 2022



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Agenda – Project Update

1. Summary
2. Budget
3. Schedule
4. Risk
5. Ofgem Project Direction
6. Scottish Government Grant Conditions
7. Contracts & Procurement
8. Stakeholder and Customer Engagement
9. Actions
10. AOB



Summary

Upstream

- MWC contract progression
- Storage tanks manufacturing and delivery schedule on track
- Demo home contractor appointed by DNV-Marshalls Construction



Downstream

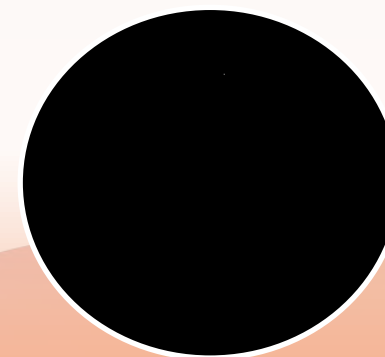
- H100 Fife Downstream risk workshop took place on the 12/13 September. Included HAZID/Bow-tie which will support Cases for safety
- Kiwa and Warmworks scopes being finalised, including property assessment.
- End-to-end interface matrix & process mapped

Midstream

- Distribution Contractor selected
- Resilience and emergency services/third party utilities workshops underway
- Distribution network construction deferred to 2023

Recruitment/Sales/Marketing

- 83 sign ups in the network area
- Face-to-Face engagement with Customers in the local area to increase our customer recruitment began at Levenmouth Fayre
- H100 Fife Launch Event now planned for 6/7 October
- Customer Journey Brochure launched for anyone in the local area and stakeholders describing the high level H100 Project in more detail



AOB



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H100 Fife Project Advisory Board - September Meeting

Date: 21 September 2021

Time: 1pm-2pm

Attendees:

Name	Organisation	Title
[REDACTED]	BEIS	
[REDACTED]	BEIS	Trials Regulatory Framework
[REDACTED]	BEIS	Head of Hydrogen Heating Consumer Trials
[REDACTED]	Scottish Government	Energy Industries Division
[REDACTED]	Ofgem	Senior Analyst, Project Officer for H100 Fife
[REDACTED]	SGN	Programme Lead – H100 Fife
[REDACTED]	SGN	Project Director – H100 Fife
[REDACTED]	SGN	Project Officer – H100 Fife
[REDACTED]	SGN	Project Graduate – H100 Fife
[REDACTED]	HSE	
[REDACTED]	HSE	
[REDACTED]	HSE	
[REDACTED]	NGN	Senior Strategy Manager – H21
[REDACTED]	Cadent	Future Networks Manager

Apologies:

Name	Organisation	Title
[REDACTED]	SGN	Director of Energy Futures
[REDACTED]	Cadent	Future Networks Manager
[REDACTED]	Cadent	
[REDACTED]	BEIS	
[REDACTED]	BEIS	
[REDACTED]	BEIS	Head of Delivery for the Hydrogen for Heat programme
[REDACTED]	BEIS	H100 Lead
[REDACTED]	Scottish Government	Head of Hydrogen Policy
[REDACTED]	HSE	Head of Major Hazards Policy Unit and Net Zero Hub
[REDACTED]	WWU	System Operation Manager
[REDACTED]	WWU	Hydrogen Transformation Manager
[REDACTED]	SGN	Downstream Project Manager – H100 Fife
[REDACTED]	Scottish Government	
[REDACTED]	Cadent	Head of Future Networks
[REDACTED]	BEIS	End User Workstream Lead

Agenda:

1. Budget
2. Schedule
3. Risk

H100 Fife – Project Advisory Board

19 October 2022



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Agenda – Project Update

1. Summary
2. Budget
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5. Ofgem Project Direction
6. Scottish Government Grant Conditions
7. Contracts & Procurement
8. Stakeholder and Customer Engagement
9. Actions
10. AOB



AOB



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H100 Fife Project Advisory Board - October Meeting

Date: 19 October 2022

Time: 1pm-2pm

Attendees:

Name	Organisation	Title
[REDACTED]	SGN	Project Director – H100 Fife
[REDACTED]	SGN	Project Officer – H100 Fife
[REDACTED]	SGN	Project Graduate – H100 Fife
[REDACTED]	SGN	Project Manager – Village
[REDACTED]	BEIS	
[REDACTED]	BEIS	Head of Hydrogen Heating Consumer Trials
[REDACTED]	BEIS	H100 Lead
[REDACTED]	Ofgem	Senior Analyst, Project Officer for H100 Fife
[REDACTED]	HSE	
[REDACTED]	Cadent	Head of Future Networks
[REDACTED]	Cadent	Future Networks Manager
[REDACTED]	NGN	Senior Strategy Manager – H21
[REDACTED]	HSE	
[REDACTED]	SGN	

Name	Organisation	Title
[REDACTED]	BEIS	Trials Regulatory Framework
[REDACTED]	Scottish Government	Energy Industries Division
[REDACTED]	SGN	Programme Lead – H100 Fife
[REDACTED]	HSE	
[REDACTED]	SGN	Director of Energy Futures
[REDACTED]	Cadent	Future Networks Manager
[REDACTED]	Cadent	
[REDACTED]	BEIS	
[REDACTED]	BEIS	
[REDACTED]	BEIS	Head of Delivery for the Hydrogen for Heat programme
[REDACTED]	Scottish Government	Head of Hydrogen Policy
[REDACTED]	HSE	Head of Major Hazards Policy Unit and Net Zero Hub
[REDACTED]	WWU	System Operation Manager
[REDACTED]	WWU	Hydrogen Transformation Manager
[REDACTED]	SGN	Downstream Project Manager – H100 Fife
[REDACTED]	Scottish Government	

Agenda:

1. Update
2. Budget
3. Schedule
4. Risk
5. Ofgem Project Direction Conditions
6. Safety
7. Scottish Government Grant Conditions
8. Contracts & Procurement
9. Recruitment
10. Stakeholder & Customer Engagement
11. Actions
12. AOB

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Credit: Offshore Renewable Energy
(ORE) Catapult



SGN
H100 Fife

**The world's first green
hydrogen gas network**

We're here to keep you safe and warm, but using natural gas for heating is also responsible for a third of the UK's greenhouse gases. We've got to start solving this now to help reduce emissions to net zero by 2045 in Scotland and 2050 in the UK.

To meet these net zero targets, all of us will need to transition our heating systems to a renewable technology. Over 80% of homes in Scotland use natural gas for heating, so by swapping it out for something low carbon, we can help reach net zero and stop climate change from getting worse.

It's a historic change that will make Scotland and the UK a better, greener place to live for future generations - and it all starts here, in Buckhaven and Denbeath.



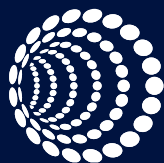
A green circular icon containing a white letter 'H', positioned on the right side of the page, partially overlapping the orange text box.

Hydrogen gas

Hydrogen gas is the smallest and lightest element. It's non-toxic and doesn't have a colour, smell, or taste. When hydrogen heats up, its atoms bond with oxygen atoms releasing a large amount of energy and leaving behind a small amount of water.

Hydrogen energy can heat homes and cook food in the same way as we do now with natural gas. The best news is hydrogen gas doesn't produce any carbon when it burns and when it's created using clean energy, like wind power, there are no harmful carbon emissions at all.

All of Great Britain's gas networks are working hard to transition the gas in our pipes from carbon-emitting natural gas to hydrogen gas. We believe it's the lowest-cost, least disruptive way to heat homes in Great Britain that currently use natural gas appliances.



SGN

Your gas. Our network.

We manage the network that distributes natural and green gas to 5.9 million homes and businesses in Scotland and the south of England. Whoever your supplier is, our pipes deliver gas safely, reliably and efficiently to all our customers.

What is H100 Fife?

H100 Fife is leading the way in decarbonising home heating. It will be the first 100% green hydrogen-to-homes zero carbon network anywhere in the world, demonstrating the potential for the whole British gas network to deliver hydrogen gas.

Up to 300 homes in Buckhaven and Denbeath, Fife, have the choice of signing up to H100 Fife to use clean hydrogen gas or remaining with their existing natural gas supply. If you decide to take part, you'll receive £1,000, a new hydrogen gas boiler, hydrogen gas meter and new hydrogen gas appliances to replace your existing natural gas appliances. We'll supply, install, service and maintain everything for you.

Why here?

Buckhaven and Denbeath were chosen following a nationwide search for the most suitable site for this 100% hydrogen network. The area has access to offshore wind, an existing gas network, a dedicated energy park and a rich history in energy, once being home to one of Scotland's largest collieries and a major player in coal export. Decades later, we're retaining the energy heritage of this area, and developing the Fife Energy Park for our H100 Fife project.



Here are the great reasons to join H100 Fife - the world's first hydrogen gas network



Help the environment and protect future generations by moving to a clean energy source.



Receive £1,000 for taking part and playing an important role in our journey to net zero.



Have your natural gas boiler and meter, and natural gas appliances, replaced with brand new hydrogen gas alternatives.



Free installation and free servicing and maintenance until 2027.



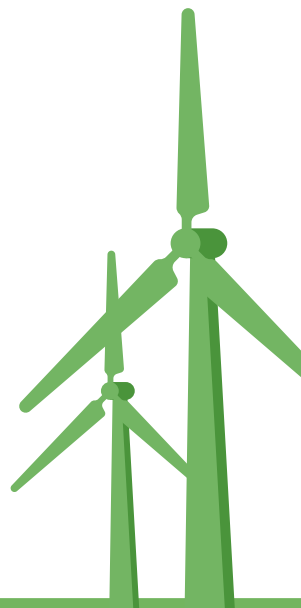
It doesn't cost to participate in H100 Fife. Hydrogen gas will be billed at the energy unit price of natural gas with the option of changing your gas supplier at any time.



Help us gain valuable insight, which will in turn help Scotland get to net zero.

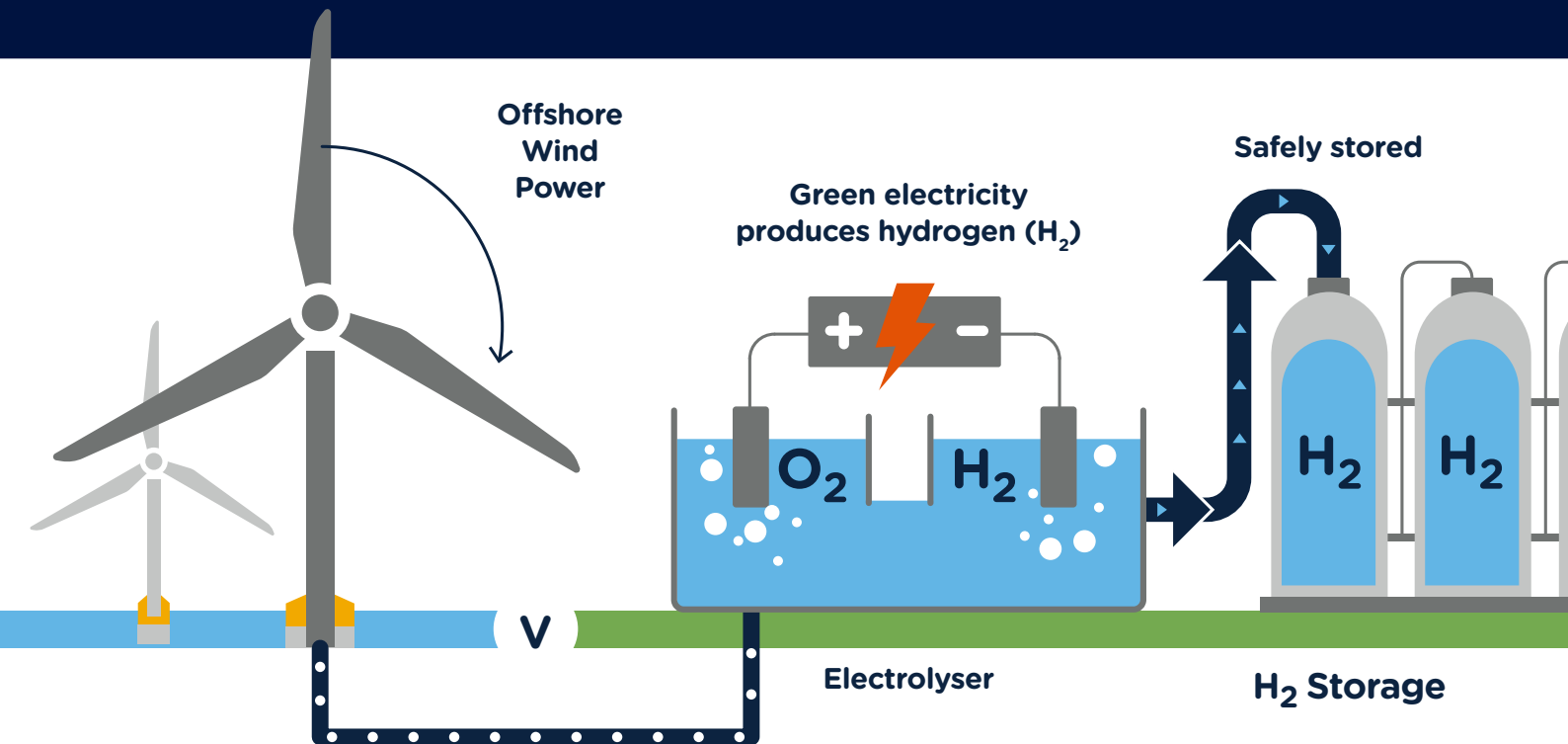


Continue to enjoy a gas supply that gives you instant warmth and full control of your heating.



How will it work?

We've chosen Energy Park Fife as the ideal location to produce the hydrogen we need. Our site is in Buckhaven, right next to the large wind turbine which we'll be using to supply the electricity for the project. You can see our site from the viewing platform on Wellesley Road, near its junction with Swan Street.



Clean power

We're working closely with ORE Catapult to use its huge offshore wind turbine. Fife's rich wind resources provide the turbine an abundant source of clean electricity. We'll also have a back-up connection from the electricity grid.

Green hydrogen

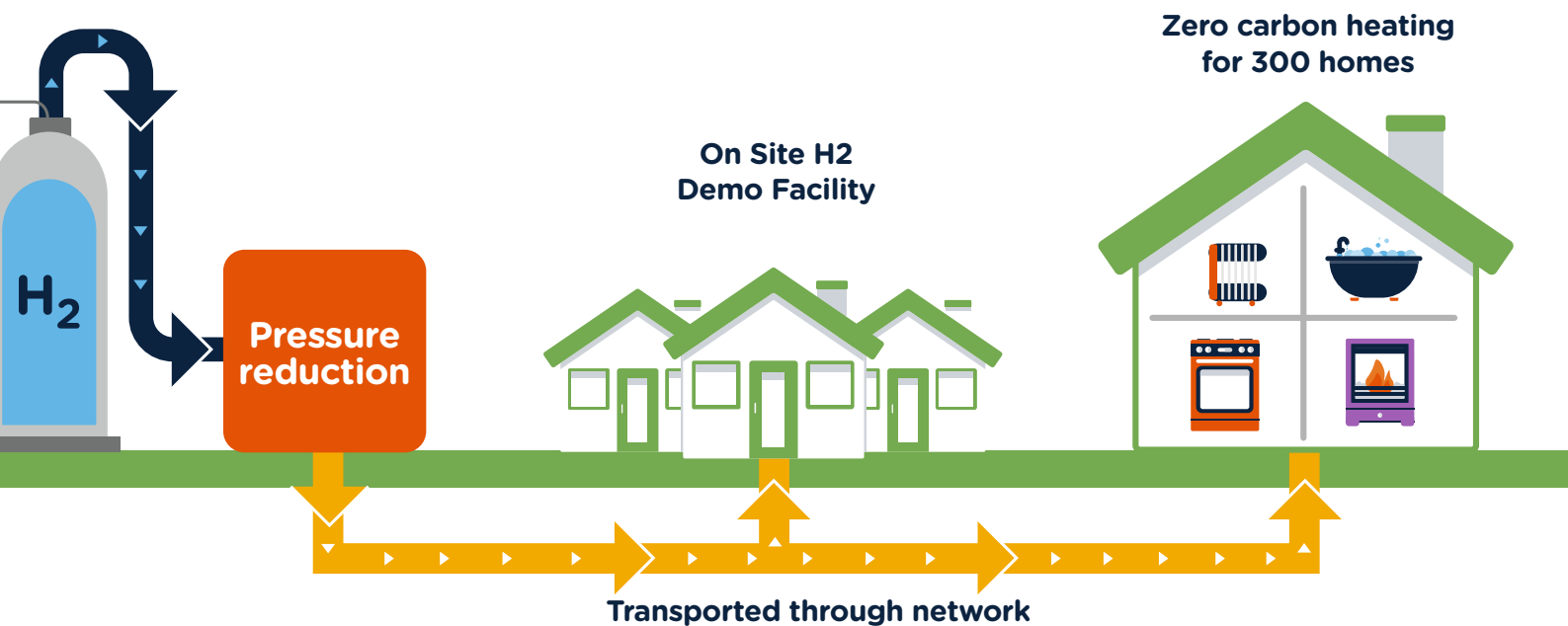
Electricity generated by the turbine is used to produce hydrogen at a dedicated electrolysis plant. This facility separates water into its elements: hydrogen and oxygen gas. If the electricity used is from renewable sources, like the wind we're using, the hydrogen produced is called green hydrogen.

Storage facility

Hydrogen is stored on-site in six purpose-built tanks. We'll store more than enough to heat 300 homes, ensuring supply won't be disrupted during even the coldest weather conditions.

The project is investing £32 million to help the community to transition to zero-carbon heating and develop the energy park into a hub for renewable energy innovation, bringing jobs and opportunities to local residents and businesses.

A range of green technologies will go into H100 Fife's end-to-end green hydrogen network. Here's how the project will use tried-and-tested tech to show the world it's possible to turn wind energy into safe, warm homes.



New network

We'll transport the green hydrogen through a newly built gas network to 300 opted-in homes in Buckhaven and Denbeath. Homes which decide not to opt in can remain on our existing natural gas network.

Visit our demonstration homes

Before hydrogen is installed in your home, we want you to see what a hydrogen home looks like and how similar it can be to your existing central heating set up. So, we're building a hydrogen demonstration facility. You'll get the chance to visit the homes to test and use hydrogen appliances before they are installed in your home. You'll also be able to see the minimal changes that will be made to your heating system and ask us any questions.

Clean, warm homes

State-of-the-art hydrogen appliances and boilers, fitted and maintained free for participants, provide zero-carbon heating and cooking for the project until 2027.

Project benefits

This is an exciting opportunity for you to transition early to zero-carbon energy and have a key role in this world-first project. All homes that opt-in will be connected to our new hydrogen gas network from 2023/24 to 2027.



New hydrogen boilers and appliances completely free



We'll replace your natural gas boiler, gas meter and any gas appliances with brand new hydrogen gas alternatives. You won't pay a penny for any of these. They will all also be installed by gas safe registered engineers free of charge.



Hydrogen boilers and appliances take up the same amount of space as standard boilers and appliances and work in the same way. They have already been tested to the same high



safety standards as their traditional counterparts. Our project partners Baxi and Worcester Bosch are trusted and market leading boiler manufacturers.

Understandably you might be worried about disruption to your home during the installation. We believe hydrogen gas is among the least disruptive renewable energy sources out there and you'll be able to see this for yourselves in our hydrogen demonstration facility.



£1,000 for taking part

As well as receiving free new hydrogen appliances, we'll pay you £1,000. You're playing an important part in our journey to net zero and this is our way of recognising that and thanking you. We'll pay you £50 when you sign your H100 Fife contract, £250 when we install the new appliances, and £250 every year for the remaining three years of the project.



Free maintenance

We'll maintain all the new hydrogen heating systems, including boilers, cookers, and other appliances for free. This will be until 2027.

When you sign up, we'll give you a detailed customer pack which will include information on each step of the process including maintenance visits and who to contact if you have any questions.



Your energy bills

You won't pay any more for your hydrogen gas supply compared to natural gas. You'll pay the same standing charge and price per kilowatt hour (kWh) for natural gas, while using hydrogen gas. You'll also be able to change your gas supplier, just as you can do now, at any time during this project.

In safe hands

We've been maintaining Scotland's gas network and providing the nation's gas emergency service for decades. Safety is always our number one priority and at the heart of everything we do.

We've already done an extensive amount of work in trials and studies to provide the evidence that hydrogen is safe. This includes research and testing to understand how hydrogen behaves and how it can be used safely. Throughout this project, we'll continue to liaise with the Health and Safety Executive to ensure hydrogen is delivered and can be used at least as safely as natural gas.

Another great benefit of hydrogen is it doesn't produce any carbon monoxide when it burns. The same odorant we add to natural gas can also be added to hydrogen gas to make sure it smells familiar and can be easily detected.

Did you know? Hydrogen gas is not new. Town gas, used to heat UK homes until the 1970s, was made of 50% hydrogen.

Your H100 Fife journey

Customers are so important to us, so we've worked closely with key stakeholders, experts and customers to map out your journey from beginning to end, and will be with you every step of the way.

You'll have the choice of opting in for a hydrogen gas supply or remaining with your existing natural gas supply. This is subject to a full assessment of your property.

Landlords and tenants must all agree to join the project. Properties in multiple occupancy buildings, such as flats which aren't on the first or ground floors, and non-domestic properties, are not eligible.

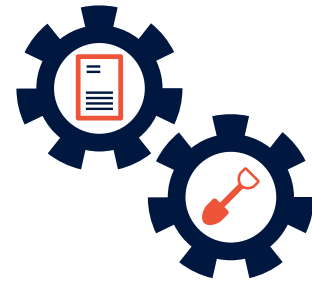
You can opt out of H100 Fife at any time during the entire length of the project. Your natural gas supply will be reinstated with the relevant appliances, boiler and meter installed at no charge.



Review and register



Survey and sign up



Preparing your home



Installation



Aftercare



Credit: Offshore Renewable Energy
(ORE) Catapult

Find out more about H100 Fife

You can learn more, and find some frequent questions and answers, about H100 Fife by visiting: h100fife.co.uk.

We'll also ensure we keep our customers and the wider local community informed throughout all stages of the project. Drop-in information sessions and workshops will be held to engage with the local community, provide information and share progress. We'll also share project information through our website and social media, as well as local press and radio, and leaflets such as this one.

If you have any specific questions about the project, email: h100fife@sgn.co.uk.



H100 Fife Project Advisory Board - May Meeting

Date: 18 May 2022

Time: 1pm-2pm

Attendees:

Name	Organisation	Title
[REDACTED]	BEIS	
[REDACTED]	BEIS	
[REDACTED]	BEIS	
[REDACTED]	BEIS	H100 Lead
[REDACTED]	BEIS	
[REDACTED]	Scottish Government	Energy Industries Division
[REDACTED]	HSE	Head of Energy Policy
[REDACTED]	Ofgem	Senior Analyst, Project Officer for H100 Fife
[REDACTED]	SGN	Programme Lead – H100 Fife
[REDACTED]	SGN	Project Director – H100 Fife
[REDACTED]	SGN	Project Officer – H100 Fife
[REDACTED]	SGN	Project Graduate – H100 Fife
[REDACTED]	SGN	Project Manager – H100 Fife
[REDACTED]	Cadent	Future Networks Manager
[REDACTED]	Cadent	
[REDACTED]	NGN	Senior Strategy Manager – H21

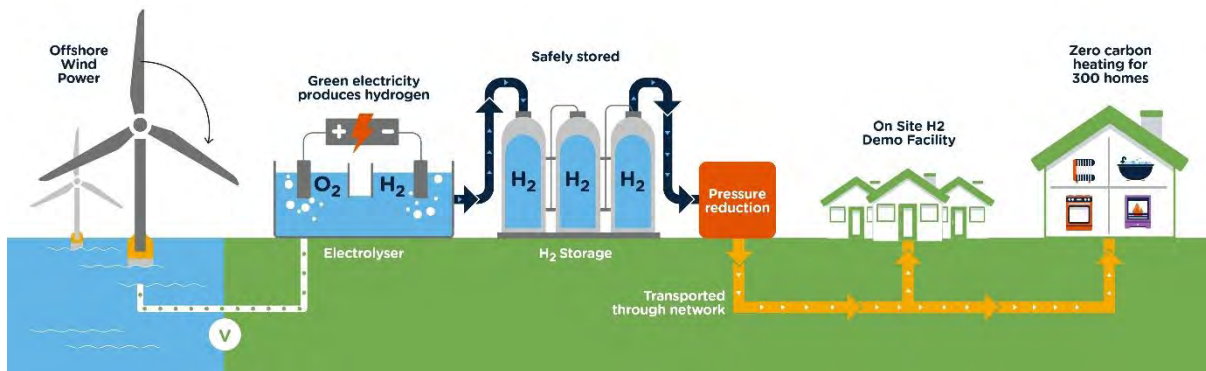
Apologies:

Name	Organisation	Title
[REDACTED]	SGN	Director of Energy Futures
[REDACTED]	Scottish Government	
[REDACTED]	Cadent	
[REDACTED]	WWU	System Operation Manager
[REDACTED]	HSE	
[REDACTED]	BEIS	Head of Delivery for the Hydrogen for Heat programme
[REDACTED]	Cadent	
[REDACTED]	Scottish Government	

Agenda

1. Project Update
2. Budget
3. Schedule
4. Risk
5. Ofgem Project Direction Conditions & Deliverables
6. Scottish Government Grant Conditions
7. Contracts & Procurement
8. Condition 3,5 and 6 discussions
9. Actions
10. AOB

Minutes:



Terms of Reference

H100 Fife

Project Advisory Board

Version	Date	Amendments
1.0	28 April 2021	First draft
2.0	09 August 2021	Revisions following group review of first draft
3.0	December 2021	Agreed by members
4.0	March 2022	Agreed by members

H100 Fife – Project Advisory Board Terms of Reference

1. Introduction

H100 Fife is an SGN led project in partnership with Cadent, NGN, WWU and appliance manufacturers Baxi, Bosch, HyCookers and HyFires. The project’s overarching aim is to validate the supply, storage and distribution of 100% hydrogen through a new gas network to customer homes for heat in Levenmouth, Fife.

This project is acknowledged as a critical demonstrator with national significance for informing the hydrogen evidence base. It forms a key project within SGN’s programme of hydrogen initiatives to deliver its medium to long term net zero strategy of replacing natural gas with hydrogen and other green gases, supporting the decarbonisation of the gas networks’ energy supply. The first phase, which involves a hydrogen supply to 300 domestic properties, has the criteria to fulfil the ‘Hydrogen Neighbourhood’ stage of the Prime Minister’s 10-Point Plan announced in November 2020 and is recognised as the key mobiliser of the BEIS Hydrogen Trials programme. SGN has successfully secured funding from Ofgem through the 2020 Network Innovation Competition (NIC) and from Scottish Government in the form of a Grant. SGN along with the other GDNs have also financially contributed towards the project value, totalling £27.7m.

Extensive engagement has been carried out to ensure key stakeholders and enablers are brought along on the project development journey. As such, we believe it to be good practice to form a Project Advisory Board consisting of the key authorities, regulators and funders to align engagement and ensure continuity of project visibility.

While future project phases are scoped including a village trial conversion (Phase 2), industrial & commercial supply (Phase 3), transport (Phase 4) and a whole system solution for Fife (Phase 5), this document refers only to ‘Phase 1’ as funded through H100 Fife NIC 2020, which now forms the ‘Hydrogen Neighbourhood Trial’ under the Prime Minister’s 10 point plan

2. Purpose

This Board provides a forum to monitor the strategic delivery of H100 Fife Phase 1 and offer full visibility of progress and any challenges encountered. It brings together those with a common and invested interest in the project success. This includes representatives across the key authorities, regulators, funders and partners required to enable SGN to deliver H100 Fife, namely BEIS, Scottish Government, Ofgem, HSE and GDN partners Cadent, NGN and WWU.

Through representation on the Board, members will have direct access to the H100 Fife project team at SGN and a platform to monitor progress, track success, raise issues or concerns and support the project’s requirements.

H100 Fife – Project Advisory Board Terms of Reference

3. Role of the Board

To support SGN in the delivery of H100 Fife, the Project Advisory Board will:

- Gain awareness and appreciation of the project and its progress.
- Have visibility of issues or challenges that risk the project's ability to deliver.
- Bring any unidentified potential risks to the attention of SGN.
- Support, where practical, with solutions to mitigate against project risks.
- Where possible, identify opportunities for coordination and alignment of Project Advisory Board reporting and actions with other existing interfaces and forums e.g. BEIS Hydrogen Programme Management Board, to ensure consistency of project dissemination
- Where required, review project deliverables and feedback in a timely manner so as not to impact the project's deliverability against the programme.
- Support the project in reaching milestones and stagegates where this ask doesn't fetter the discretion of the member and/or organisation represented.
- Visibility of any major project changes that may arise.
- Attend Project Advisory Board meetings on a regular basis as defined by these terms of reference, and where attendance isn't possible, make best endeavours to elect a stand in representative.

4. Meeting Frequency, Reporting & Governance

It is proposed that this Project Advisory Board meet on a monthly basis (3rd Wednesday of every month) and the frequency of meetings will be kept under review and revised as necessary. The H100 Fife Monthly Report will be submitted in advance of Project Advisory Board meeting by the project team to Board members. The objective of the monthly report is to provide the Board with an appropriate suite of Key Performance Indicators (KPIs) and stewardship of project progress with sufficient granularity as to enable effective oversight, challenge and support in order to ensure project success.

The proposed reporting headings that make up the monthly report updates are as follows:

- Executive summary
- Cost
- Schedule
- Risk
- Ofgem Project Direction Conditions & Deliverables
- Scottish Government Grant Conditions
- Contracts & Procurement
- Stakeholder & Customer Engagement
- Resources & Organisation
- Special Updates

SGN shall chair the Project Advisory Board and can update the terms of reference from time to time as required. Any material updates will be issued for review and challenge.

H100 Fife – Project Advisory Board Terms of Reference
5. Membership

Organisation	Name	Title
BEIS	[REDACTED]	[REDACTED]ory Framework
Scottish Government	[REDACTED]	[REDACTED]
Ofgem	[REDACTED]	[REDACTED]
HSE	[REDACTED]	[REDACTED]
Cadent	[REDACTED]	[REDACTED]
Northern Gas Networks (NGN)	[REDACTED]	[REDACTED]
Wales & West Utilities (WWU)	[REDACTED]	[REDACTED]
SGN	[REDACTED]	[REDACTED]s
SGN	[REDACTED]	[REDACTED]
SGN	[REDACTED]	[REDACTED]
SGN	[REDACTED]	[REDACTED]

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H100 Fife Project Advisory Board - November Meeting

Date: 17 November 2021

Time: 11am-12pm

Attendees:

Name	Organisation	Title
[REDACTED]	BEIS	Senior Policy Advisor
[REDACTED]	BEIS	Neighbourhood lead
[REDACTED]	BEIS	Head of Delivery for the Hydrogen for Heat programme
[REDACTED]	Scottish Government	Energy Industries Division
[REDACTED]	Ofgem	Senior Analyst, Project Officer for H100 Fife
[REDACTED]	HSE	Policy Lead
[REDACTED]	Cadent	Future Networks Manager
[REDACTED]	NGN	Senior Strategy Manager – H21
[REDACTED]	SGN	Programme Lead – H100 Fife
[REDACTED]	SGN	Project Director – H100 Fife
[REDACTED]	SGN	Project Manager – H100 Fife
[REDACTED]	SGN	Project Officer – H100 Fife
[REDACTED]	SGN	Graduate Project Officer – H100 Fife

Apologies:

Name	Organisation	Title
[REDACTED]	SGN	Director of Energy Futures
[REDACTED]	WWU	System Operation Manager

Agenda:

1. Introductions
2. Actions
3. Key Updates
 - Detailed Design & Project Management
 - Storage Tanks
 - Cases for Safety
 - Hydrogen Demonstration Facility
 - Land
 - Xoserve
 - COP26
 - Milestones, Conditions & Project Deliverables
 - Forwards looking Q3 2021
4. Risk Register
5. AOB

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H100 Fife Project Advisory Board - June Meeting

Date: 15 June 2022

Time: 1pm-2pm

Attendees:

Name	Organisation	Title
[REDACTED]	BEIS	
[REDACTED]	BEIS	
[REDACTED]	BEIS	Trials Regulatory Framework
[REDACTED]	BEIS	Head of Delivery for the Hydrogen for Heat programme
[REDACTED]	BEIS	Head of Hydrogen Heating Consumer Trials
[REDACTED]	Scottish Government	Energy Industries Division
[REDACTED]	HSE	Head of Energy Policy
[REDACTED]	Ofgem	Senior Analyst, Project Officer for H100 Fife
[REDACTED]	SGN	Programme Lead – H100 Fife
[REDACTED]	SGN	Project Director – H100 Fife
[REDACTED]	SGN	Project Officer – H100 Fife
[REDACTED]	SGN	Project Graduate – H100 Fife
[REDACTED]	Cadent	Future Networks Manager
[REDACTED]	WWU	Hydrogen Transformation Manager
[REDACTED]	NGN	Senior Strategy Manager – H21

Apologies:

Name	Organisation	Title
[REDACTED]	SGN	Director of Energy Futures
[REDACTED]	Scottish Government	
[REDACTED]	Cadent	Future Networks Manager
[REDACTED]	Cadent	Sustainable Transport Manager
[REDACTED]	Cadent	Head of Future Networks
[REDACTED]	WWU	System Operation Manager
[REDACTED]	HSE	Head of Major Hazards Policy Unit and Net Zero Hub
[REDACTED]	BEIS	H100 Lead
[REDACTED]	BEIS	
[REDACTED]	Scottish Government	Head of Hydrogen Policy

Agenda

1. Project Update
2. Budget
3. Schedule
4. Risk
5. Ofgem Project Direction Conditions & Deliverables
6. Scottish Government Grant Conditions
7. Contracts & Procurement
8. Condition 3,5 and 6 discussions
9. Actions
10. AOB



Minutes:

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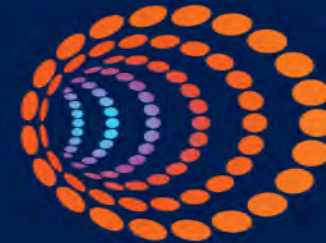
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H100 Fife – Project Advisory Board

15 June 2022



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Agenda

1. Project Update
2. Budget
3. Schedule
4. Risk
5. Ofgem Project Direction
6. Scottish Government Grant Conditions
7. Contracts & Procurement
8. Stakeholder and Customer Engagement
9. Actions
10. AOB



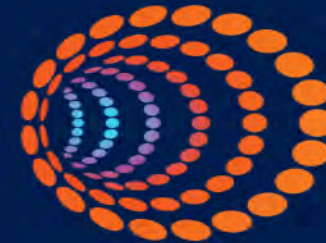
AOB



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H100 Fife – Project Advisory Board

20 July 2022



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Agenda

1. Project Update
2. Budget
3. Schedule
4. Risk
5. Ofgem Project Direction
6. Scottish Government Grant Conditions
7. Contracts & Procurement
8. Stakeholder and Customer Engagement
9. Actions
10. AOB



H100 Fife Project Advisory Board - July Meeting**Date: 20.07.2022****Time: 1pm-2pm****Attendees:**

Name	Organisation	Title
[REDACTED]	BEIS	
[REDACTED]	BEIS	H100 Lead
[REDACTED]	BEIS	Trials Regulatory Framework
[REDACTED]	BEIS	Head of Hydrogen Heating Consumer Trials
[REDACTED]	BEIS	End User Workstream Lead
[REDACTED]	Ofgem	Senior Analyst, Project Officer for H100 Fife
[REDACTED]	SGN	Programme Lead – H100 Fife
[REDACTED]	SGN	Project Director – H100 Fife
[REDACTED]	SGN	Project Graduate – H100 Fife
[REDACTED]	Cadent	Future Networks Manager
[REDACTED]	WWU	Hydrogen Transformation Manager
[REDACTED]	SGN	Downstream Project Manager – H100 Fife
[REDACTED]	Scottish Government	
[REDACTED]	Cadent	Head of Future Networks
[REDACTED]	HSE	

Apologies:

Name	Organisation	Title
[REDACTED]	SGN	Director of Energy Futures
[REDACTED]	Cadent	Future Networks Manager
[REDACTED]	Cadent	Sustainable Transport Manager
[REDACTED]	SGN	Project Officer – H100 Fife
[REDACTED]	BEIS	
[REDACTED]	Scottish Government	Head of Hydrogen Policy
[REDACTED]	BEIS	
[REDACTED]	BEIS	Head of Delivery for the Hydrogen for Heat programme
[REDACTED]	Scottish Government	Energy Industries Division
[REDACTED]	NGN	Senior Strategy Manager – H21
[REDACTED]	HSE	Head of Energy Policy
[REDACTED]	HSE	Head of Major Hazards Policy Unit and Net Zero Hub
[REDACTED]	WWU	System Operation Manager

H100 Fife

Monthly Report
August 2021



SGN

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Contents

1 Executive Summary	3
2 Overview	5
3 Progress	6
3.1 Progress during period	6
3.2 Next steps	7
4 Risks	8
5 Safety	8
6 Programme	9
7 Finance	10
8 Scottish Government Grant	10
8.1 Grant Expected Outcomes	10
8.2 Grant Milestones Status	11
8.3 Grant Expenditure Profile	13

1 Executive Summary

H100 Fife has reached a key milestone this month with the award of the major planning application for the site at Energy Park Fife, which is adjacent to the planned new network area. The planning application was awarded by Fife Council on 4 August 2021, with no onerous or unexpected conditions. This includes the revised surface drainage as per the sea outfall solution.

This timely achievement enables the signing of the lease agreement with the landowner, Scottish Enterprise. This will enable the project team and the project suppliers such as Arup and DNV to access the site to begin pre-construction activities such as surveys and sampling. The construction of the demonstration facility will precede the main site constructions works and is expected to begin early 2022, subject to contract finalisation. The construction of the production and storage facility on site will form the bulk of the construction programme which will be overseen by the Main Works Contractor, which will be appointed following completion of the detailed design. An indicative visualisation of the fully constructed facility is pictured below (a copy of this image can be made available for any communications once finalised, below is a draft).



Figure 1 H100 Fife visualisation

On Wednesday 11 August 2021, the first Community Liaison Group for the project was held at the Fife Renewables Innovation Centre - a venue local to the project site. Members who attended included representatives from Fife Council, Bright Green Hydrogen, Greener Kirkcaldy, and a local Councillor amongst other community stakeholders.

As the project moves into delivering the community and customer engagement activities, the purpose of this group is to act as a sounding board for our planned engagement within the community. These activities will be focused on raising project awareness, helping to educate the benefits of hydrogen and to gain customer

H100 Fife Monthly Progress Report

participation in the project. the project provided a presentation to the group which included content about SGN (what we do) and an overview of the H100 Fife project. Discussions on the day were focused around the purpose of the group and how they could provide an insight into the local area to ensure there is a community voice at the centre of our presence, and ensure our project engagement and comms are effective, accessible and reach everyone. The group was also able to identify other existing/ongoing initiatives that the project messaging and engagement could align with.

The H100 Fife project team and stakeholder and communications working group will review and consider all feedback and incorporate into our plans where appropriate. The next meeting of the group has been scheduled for 14 September 2021, where we will update on progress and further develop our stakeholder and engagement plans.



Figure 2 Councillor Ken Caldwell at the Community Liaison Group meeting

At the beginning of the month, the project team with support from SGN legal and procurement put forward an Electrolyser Award Recommendation Board Paper to the SGN Futures (H100) Board and presented this paper to the Board and the CEO on 2 August 2021. The outcome of this meeting was that approval was given to progress with Nel as the preferred contractor, [REDACTED]

Upcoming highlights in September

- Appointment of H100 Fife Graduate Project Officer position(s)
- Commencement of key contracts:
 - Electrolyser ECC and O&M
 - Demonstration Facility Design & Build
 - Cases for Safety
 - Detailed Design & Project Management
- 2nd Community Liaison Group meeting

2 Overview

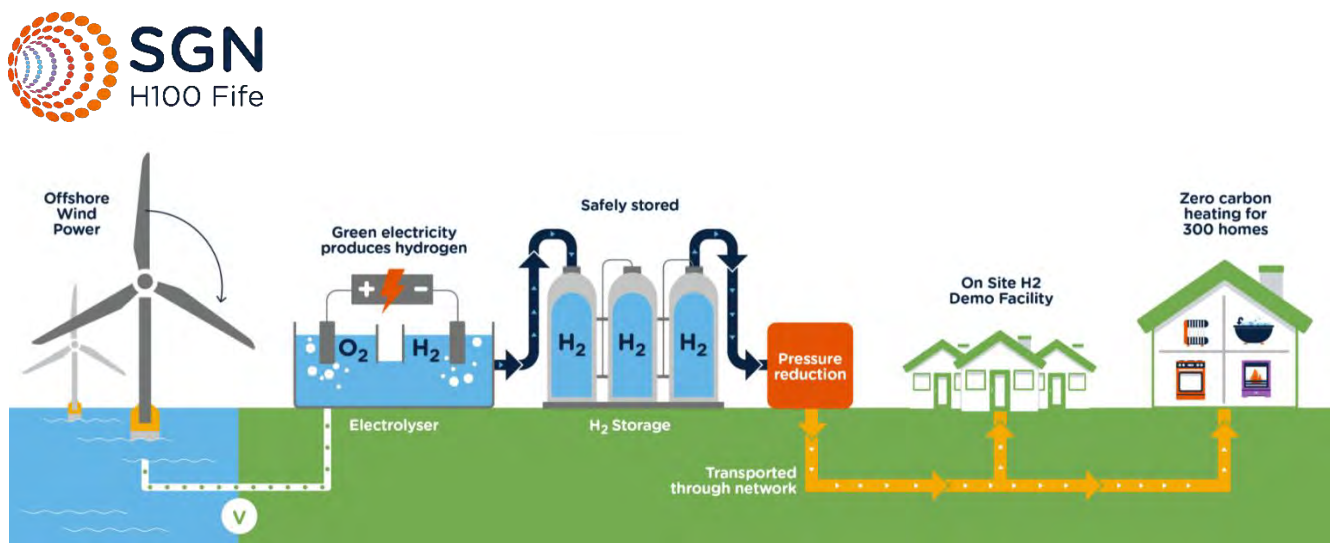
H100 Fife is seeking to deliver a ‘first of a kind’ demonstration of a 100% hydrogen network that aims to supply 300 customers in the area of Levenmouth, Fife. In a move to decarbonising the gas networks, in line with government net zero targets, hydrogen offers a credible and opportunistic route to securing the asset for gas networks in the future of energy. When derived from renewables and produced through the process of electrolysis, a zero carbon system can be achieved from production through to end use. The project will comprise of an end to end system, to include power generation, hydrogen production, storage, pressure reduction, odourisation, distribution and customer connections to serve domestic hydrogen meters and appliances. H100 Fife will construct a new PE hydrogen network to run in parallel to the existing natural gas network. This is a key feature of the project that offers the opportunity for customers to opt-in and be connected to the hydrogen network or remain with their existing natural gas supply. Similarly, customer who participate in the project, can revert back to their original natural gas supply if desired. By promoting and maintaining customer choice, critical information on customer attitudes and interest towards hydrogen can be measured, providing evidence on public acceptance of hydrogen.

The primary power input for the system will be supplied by an existing 7MW offshore wind turbine located on the coast at the Energy Park Fife in Levenmouth. A back-up grid connection will supplement the power provision when wind energy is not available. The H100 Fife Site will also be situated at Energy Park Fife, consisting of the high-pressure system components that supply the low-pressure new distribution network, which will serve the adjacent residential area. The Hydrogen Demonstration Facility, functioning as a customer engagement tool, training centre and education hub, is also located within the H100 Fife Site.

H100 Fife builds on an extensive research and evidence base for 100% hydrogen in the gas network and is recognised as one of national significance in contributing to the validation of hydrogen networks. It is a key element on the Gas Quality Pathway to Decarbonisation, through the Gas Goes Green programme and as part of the BEIS Hydrogen Programme Development Group, where it is acknowledged as one of the eligible demonstrations under the Integrated Hydrogen Trials programme. The project has received support and backing from Scottish and UK Government, industry, local stakeholders and the other gas distribution networks.

The H100 Fife programme aims to begin operation at the end of 2022, and endeavours to have 300 customers connected in the first 6 months. Operation is envisaged to continue until 2027, by which point it is expected that government decisions on heat policy will have been made. Following a successful demonstration, expansion opportunities exist beyond the H100 Fife project, encompassing network conversion, industrial and commercial supply, transport and whole system transformation.

A H100 Fife animation provides a visual and narrated project overview available at: <https://sgn.co.uk/H100Fife>



H100 Fife

Monthly Report
September 2021



SGN

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Contents

1 Executive Summary	3
2 Overview	4
3 Progress	5
3.1 Progress during period	5
3.2 Next steps	6
4 Risks	7
5 Safety	7
6 Programme	8
7 Finance	9
8. Scottish Government Grant	9
8.1 Grant Expected Outcomes	9
8.2 Grant Milestones Status	10
8.3 Grant Expenditure Profile	12

1 Executive Summary

Great progress has been made this month delivering a number of key milestones, including the submission to Ofgem of funding Condition 4 and electrolyser award.

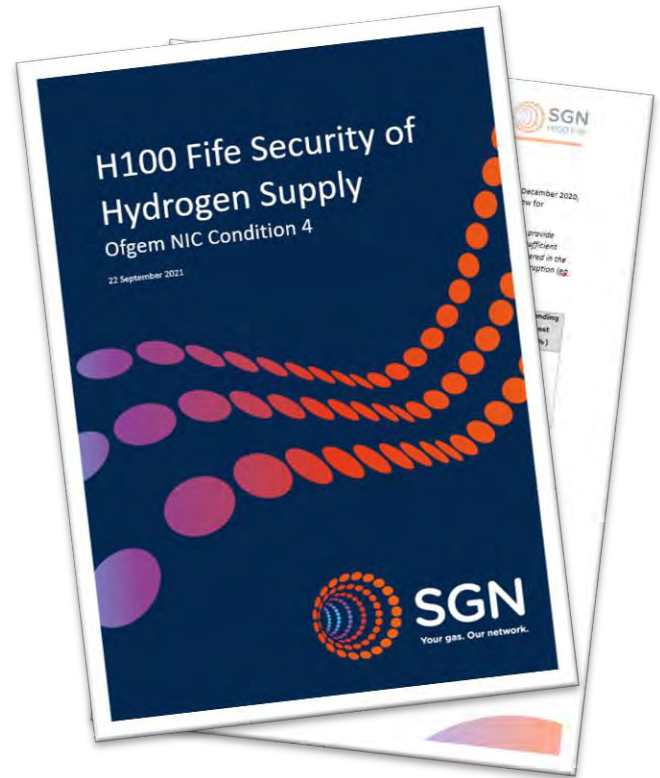
The project team, with support from the Regulation Working Group, submitted the Condition 4 report to Ofgem in line with the 22 September deadline. Condition 4 required us to provide notice to Ofgem of contingency plans in the event of electrolyser failure and insufficient storage capacity to ensure security of supply to customers.

The Condition 4 report details the redundancy measures, contingency plans and customer protections that are defined by the design and management philosophy for the project. It highlights the design philosophy of implementing a N(100%) + 1 redundancy, storage tank sizing to accommodate 5 days peak demand in line with a 1 in 20 event, the electrolyser risks and respective mitigations as well as overall contingency plans and customer protections. We are awaiting Ofgem's review and response on this.

The signing of the electrolyser award has been another key milestone achievement. We have now signed the contract to procure an alkaline electrolyser from Nel. The electrolyser lead time for delivery to site is ~12 months. The electrolyser programme will align with the first customers on hydrogen in early 2023.

The Detailed Design & Project Management contract with Arup has been executed following SGN Futures (H100) board and CEO approval. Arup will kick off with the detailed design for the H100 Fife production and storage facility. With Arup and NEL in contract, the parties can liaise and develop a complete site design. Detailed design is expected to take 6 months, with the MWC procurement process starting in 3 months.

Development and testing to the Gas Industry Standard GIS/PL/2 for hydrogen PE pipe with Radius is progressing well with the majority of pipe diameters now manufactured and in storage. The safety report detailing the testing will be provided in October. The hydrogen pipe has been manufactured with 4 blue stripes for below 250mm pipes and 8 blue stripes for bigger sizes. The yellow shell denotes gas whilst the blue stripe denotes hydrogen. This will allow trained operatives to determine the gas in the pipe in the dual fuel locality.



Upcoming highlights in October

- Ofgem response on Condition 4 report
- H100 Fife is being presented at the Energy Networks Innovation Conference ENIC on 15th October
- Mobilisation of the detailed design following Arup DD&PM contract signing
- Progress to signing the DNV Cases for Safety and Demonstration Facility Design and Build contracts
- Supplier consultation on billing solution.

2 Overview

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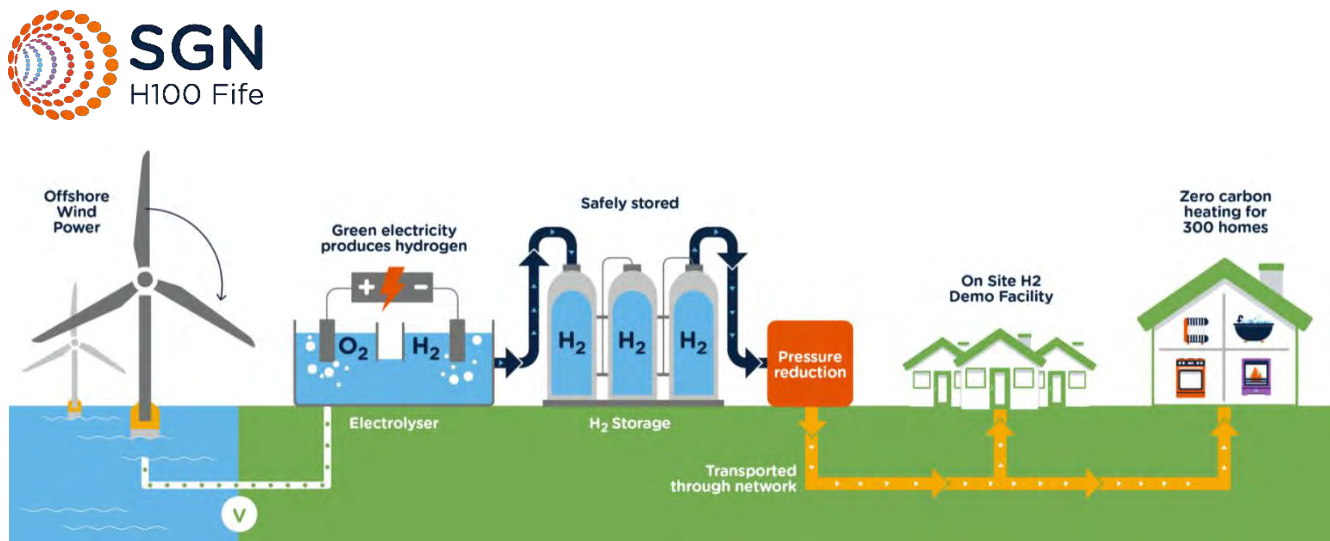
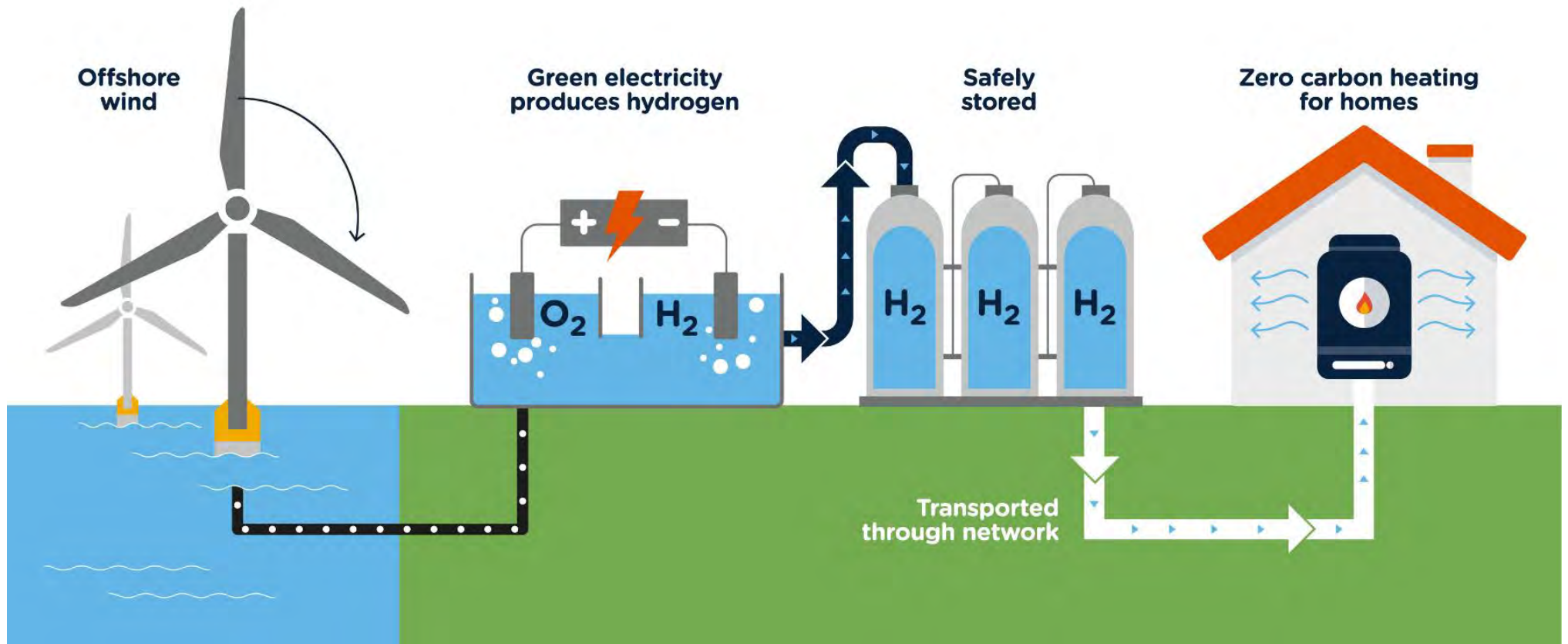


DIAGRAM 4 – GAS PRODUCTION SPILT



GAS PRODUCTION SPILT



UPSTREAM PROJECT DELIVERABLES

DOWNSTREAM PROJECT DELIVERABLES

oqa