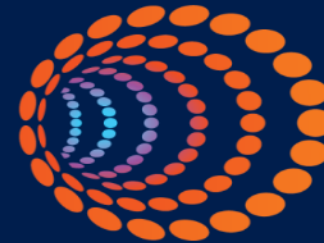


H100 Fife Domestic Supplier Event

04 May 2022



SGN

Your gas. Our network.

Agenda

- | | |
|--------------------------------------|---------------|
| 1. Welcome and Introductions | 10:00 – 10:20 |
| 2. Background & project | 10:20 – 10:40 |
| 3. Supplier engagement & involvement | 10:40 – 11:00 |
| 4. Q&A | 11:00 – 12:00 |



Welcome and Introductions



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Background and Project



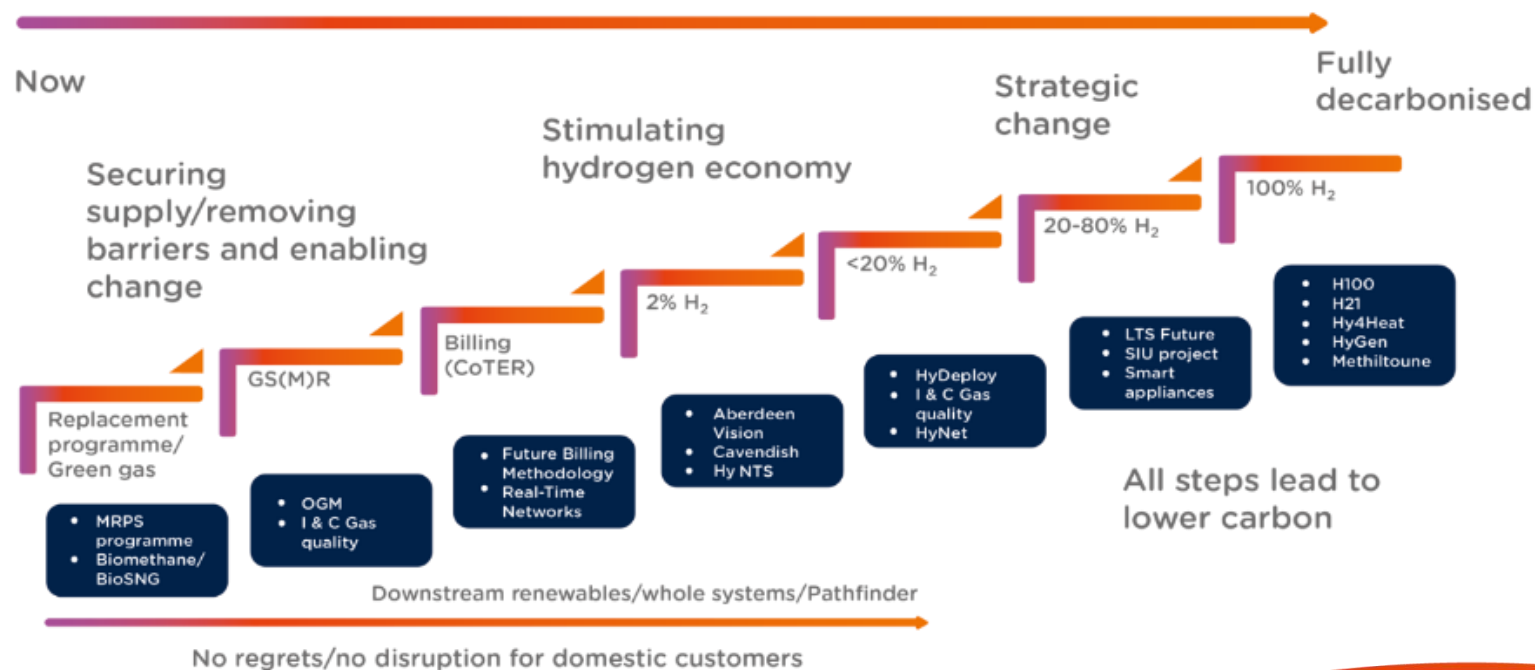
SGN
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Hydrogen Context

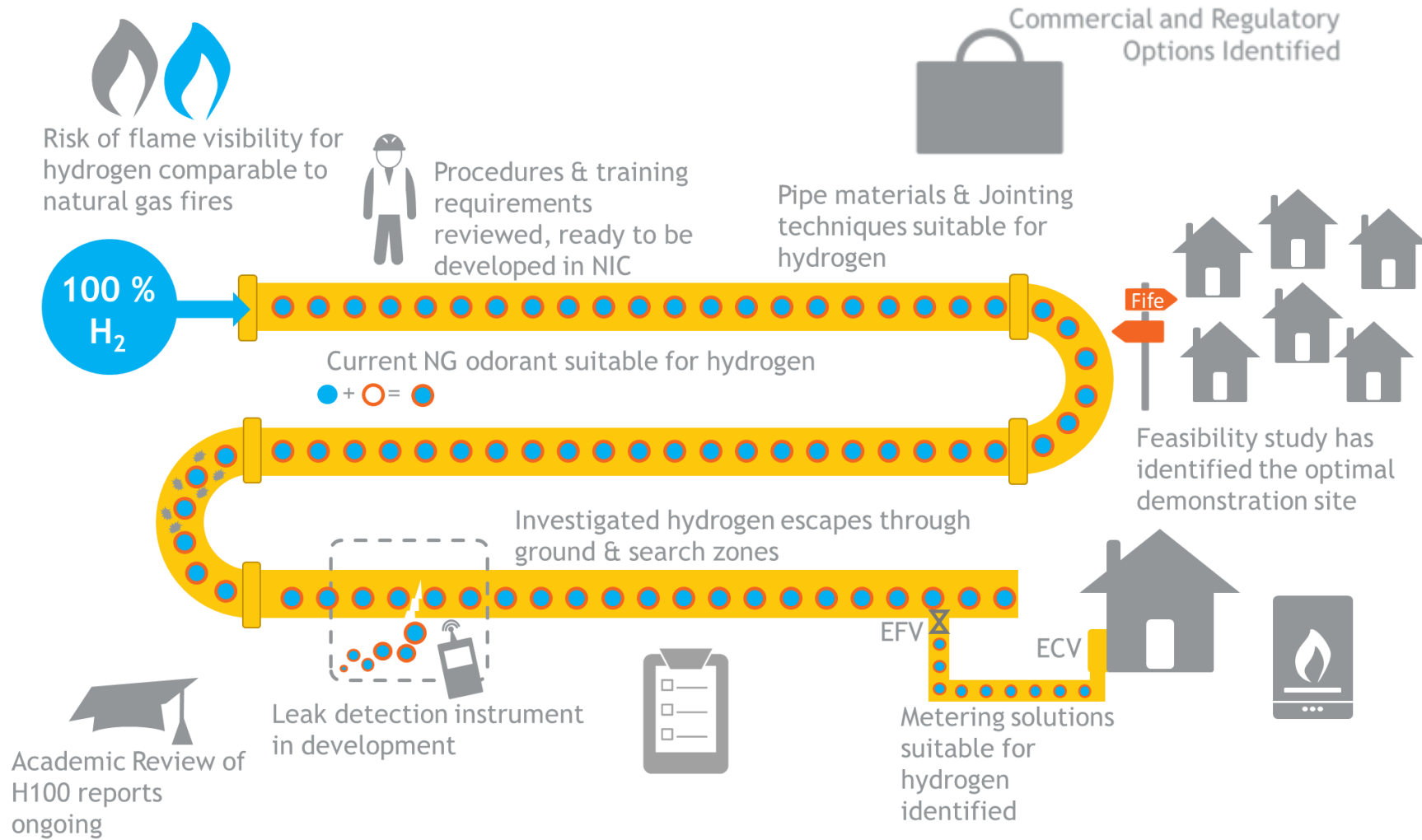
H100 Fife is recognised by the networks, industry and government as a key demonstration project with critical national significance in evidencing the role of hydrogen to decarbonise the gas networks.



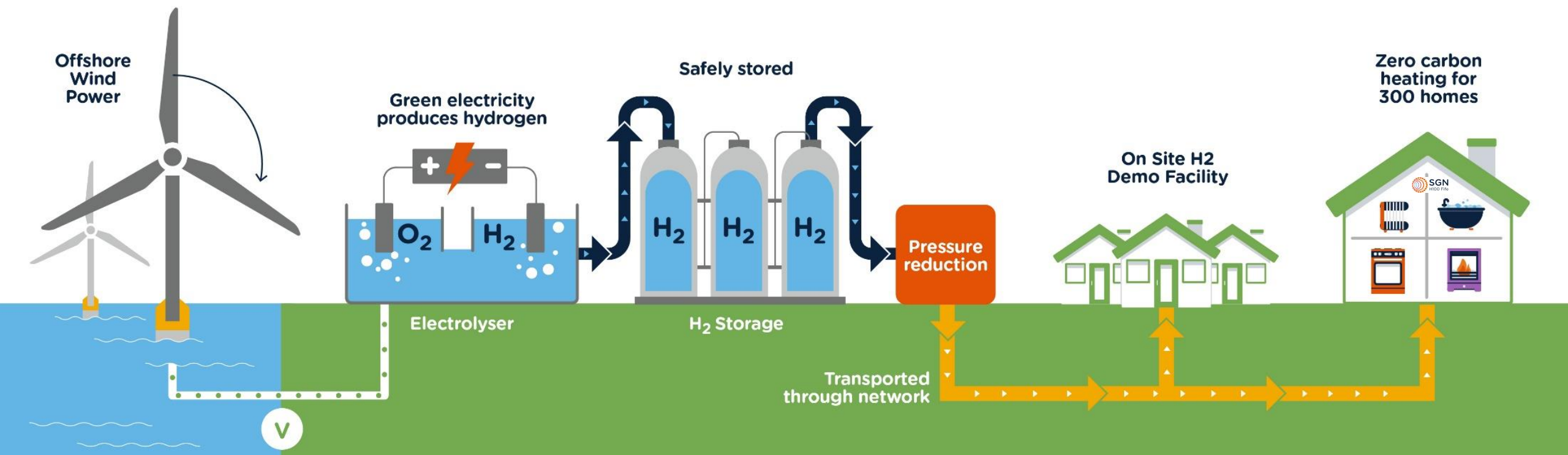
The gas quality decarbonisation pathway

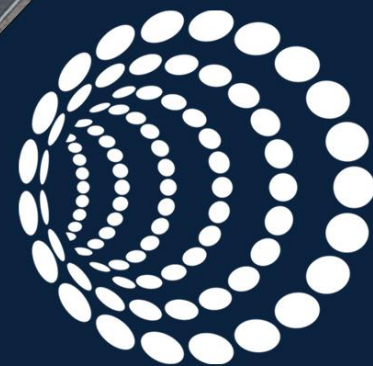


Hydrogen Evidence Base



System Overview - End to End Demonstration





SGN
H100 Fife

An end to end 100% hydrogen system

H100 Fife – Levenmouth Site

Defined network area with up to 300 customers, minimum of 270



Energy Park Fife



● Project coverage area ● Green hydrogen facility ● Offshore wind turbine



Governance

Project funders

The 'Project funders' section contains six logos arranged in a 2x3 grid. The top row includes SGN, Cadent (Your Gas Network), and Northern Gas Networks. The bottom row includes Wales & West Utilities, ofgem, and the Scottish Government logo.

ofgem
Making a positive difference for energy consumers

Company Secretary
Scotland Gas Networks Plc
Axis House
5 Lanehead Drive
Newbridge
Edinburgh
Scotland
EH28 8TG

Email: Cara.Yates@ofgem.gov.uk
Date: 16 April 2021

Dear Company Secretary,

Network Innovation Competition: Decision on outcome of Condition 3 of the 2021 Project Direction for Scotland Gas Network Plc's H100 Fife Project

Background
Scotland Gas Networks Plc (ScGN) was awarded NIC Funding in November 2020 for H100 Fife ("the Project") subject to compliance with the terms contained in the Amended Project Direction issued on 8 February 2021 ("the February 2021 Direction").

These terms included, under Condition 3, a requirement for ScGN to submit a report to the Authority by 17 March 2021, demonstrating an end-to-end regulatory framework plan, covering regulatory issues identified by the Authority, proposals to resolve these and indicators of what the ScGN considers should constitute evidence of resolution and an estimated date of resolution for each issue.

This letter contains our decision on the outcome of Condition 3 and sets out, in Annex 1, the Authority's amendments to the February 2021 Direction ("the April 2021 Direction").

The 2020 decision

http://www.ofgem.gov.uk/system/uploads/2021/02/25109_fife_amended_project_direction_2021_final_signed.pdf

The Office of Gas and Electricity Markets
Commonwealth House, 32 Abbot Street, Glasgow, G1 1UH. Tel 020 7901 7000
www.ofgem.gov.uk

DFG1161

Department for
Business, Energy
& Industrial Strategy

HSE
Health & Safety
Executive

Project Partners

The 'Project Partners' section features a collection of logos. On the left is the SGN H100 Fife logo. In the center are Cadent (Your Gas Network), Northern Gas Networks, and Wales & West Utilities. On the right, there are logos for BAXI HEATING, WORCESTER, BOSCH, HyFires, Enertek International, GAZCO, Valor, Charlton & Jenrick, HyCookers, and GlenDimplex.

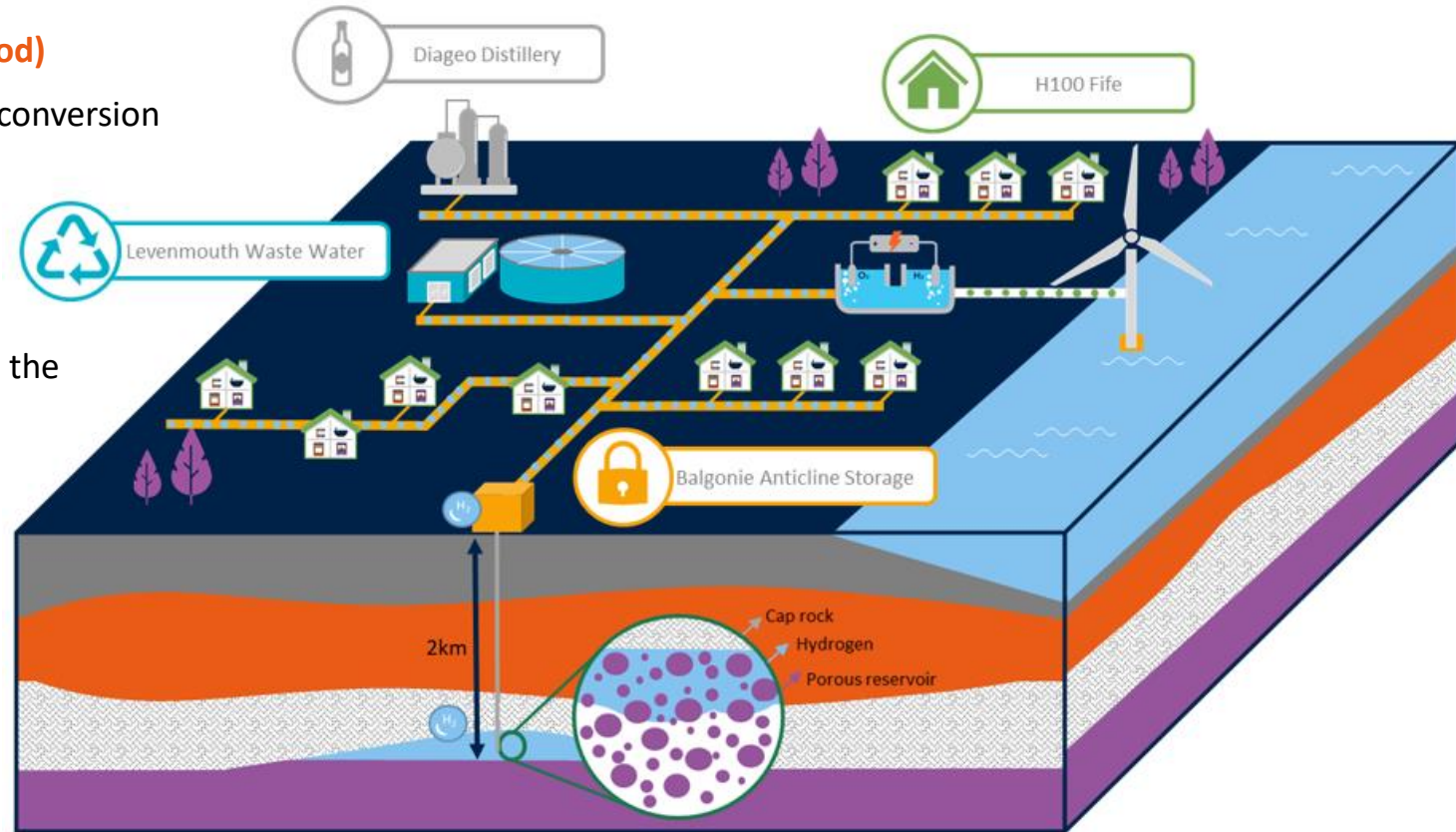


Project Phasing & Staging

- **Phase 1 – 300 homes on hydrogen (Hydrogen Neighbourhood)**
- **Phase 2** – Increase number of homes on hydrogen with grid conversion
- **Phase 3** – Industrial and commercial hydrogen supply
- **Phase 4** – Hydrogen transport
- **Phase 5** – Whole systems solution

At a high level, the project stages of Phase 1 can be split out into the following:

- **Stage 1:** Project Development April 2020-March 2021
- **Stage 2:** Pre-Construction April 2021- 2022
- **Stage 3:** Construction 2022-2023
- **Stage 4:** Operation 2023-March 2027
- **Stage 5:** Project Exit/Enduring Strategy

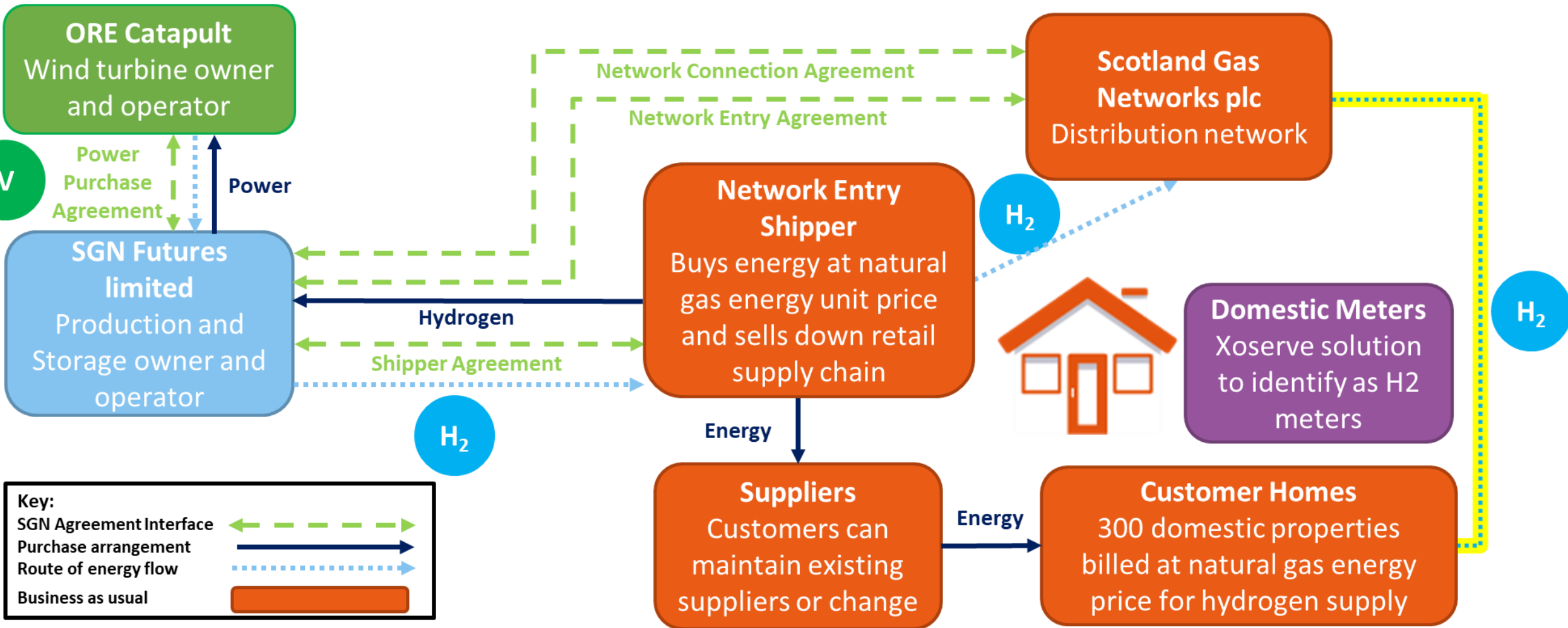


Customer Promise

- £ • Cost neutral for customers to participate
- 🐷 • Free hydrogen gas appliances/meters, replacing existing natural gas appliances/meters
- 👛 • Free maintenance and servicing of appliances
- ⚖️ • Billed for hydrogen gas supply at energy unit price of natural gas
- 🔒 • Time off gas during switch not expected to exceed 24 hours
- 📄 • Existing gas customers will be invited to opt-in, can also opt-out during participation
- ↔️ • Customers can switch suppliers as normal
- ⏪ • Customers that opt-out reverted to natural gas at no cost



Customer Centric Regulatory Model



Systems
Hydrogen CV excluded from Scotland LDZ FWA calculations

Billing
Suppliers bill customers for energy unit cost of natural gas

Billing

- The current gas market system bills customers based on Calorific value (or CV) of the gas. As hydrogen has a lower calorific value, an unmodified billing system would charge customers incorrectly. Therefore, a bespoke billing solution is required.
- Project specific CV through declared CV approach.
- Consultation period 18 October – 8 November 2021
- Consultation shared with:
 - UK Link Change Distribution List, Energy UK - Regulation Managers, Joint Office, REC Smart Energy Code, Citizens Advice – Regulation Policy Team, Ofgem, GDNs direct
- **Multiplication Factor** defined specifically for H100 project hydrogen meters. When a Valid read is received, this MF value will be used in consumption calculations to account for difference in volume required for hydrogen to deliver the equivalent energy of natural gas.

**Outcome: Option 2
Multiplication Factor
approved at Change
Management on 10
November 2021**

**Status: Ongoing design
phase for Option 2
Multiplication Factor due
to conclude April 2022,
targeting November 2022
major release**

2918.4 - MT - PO - XRN5298 - H100 Fife Project - Phase 1 - Solution Review

This Change Pack is out for a 15 working day consultation. We invite the industry to review the information and provide any responses. At the ChMC meeting in November, we will seek approval for the change.



2918.4 - MT - PO - XRN5298 - H100 Fife Project -
Phase 1 - Solution Review
updated 18/10/21



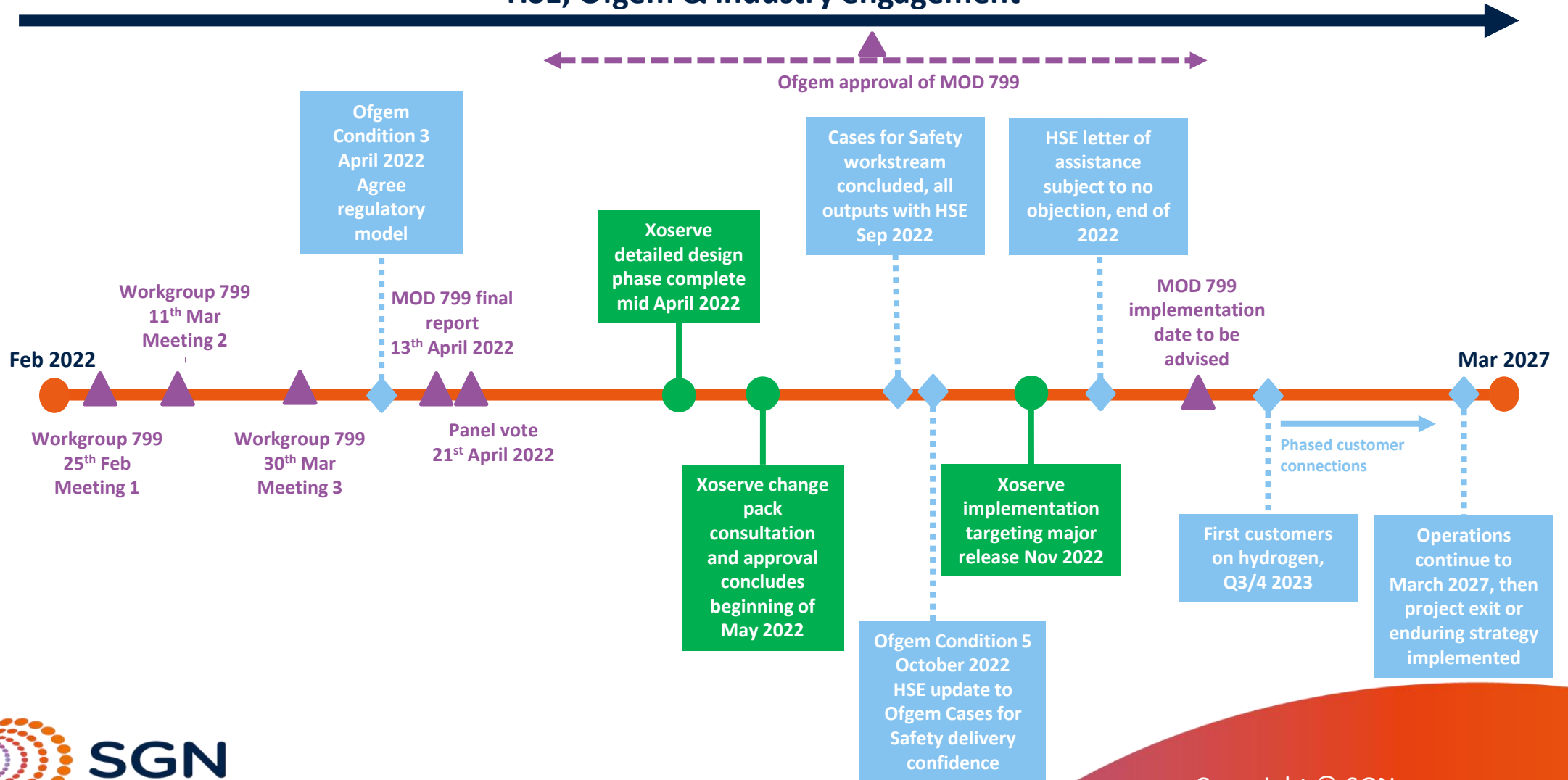
Start Date:
18th October
2021
**Consultation
end date:**
8th November
2021

[Download](#)

UNC	
Project milestones	
Xoserve	

H100 Fife Regulatory Timeline – UNC MOD 799

HSE, Ofgem & industry engagement



Supplier engagement & involvement



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Presentation Summary

- H100 Fife Construction Timeline
- H100 Fife Domestic Customer Offer
- Customer Sign Up Model
- Engagement Summary
- Proposed Metering Contractual Framework
 - H100 Example Metering Workflow Model
 - Supplier Support
 - Data Provision and Ongoing Monitoring

Key Dates

Key Milestone	Plan/Actual Start	Plan Finish
Detailed Design (Arup/Nel)	01 Nov 2021	24 June 2022
Production & Storage site construction (MWC)	16 Aug 2022	29 Oct 2023
Electrolyser facilities construction (NEL/Cesscon)	14 Mar 2023	07 Sept 2023
Production & Storage site live commissioning to 15% KOH – (NEL)	08 Sept 2023	13 Nov 2023
Production & Storage site live commissioning (MWC)	27 July 2023	13 Nov 2023
Distribution Network construction	TBD (4Q22)	TBD (3Q23)
Distribution Network commissioning	TBD (3Q23)	TBD (4Q23)
Demonstration Facility construction	Sept 2022	June 2023
Customer in-home works	TBD (3Q23)	TBD (4Q23)

H100 Fife Domestic Customer Offer

H100 Fife aims to demonstrate that the Hydrogen gas could offer a practical, low cost, low disruption solution for decarbonisation of heat, while retaining use & benefits of GB's extensive gas networks.

Domestic Customer Offer to 300 Customers in Levenmouth, Fife (Q3/4 2023 – 31st March 2027)

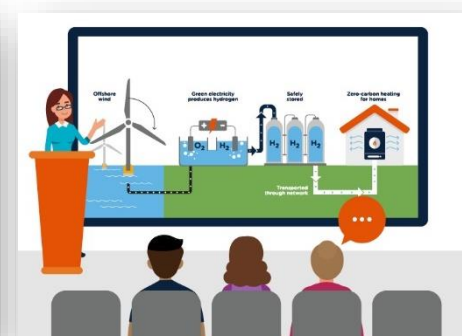
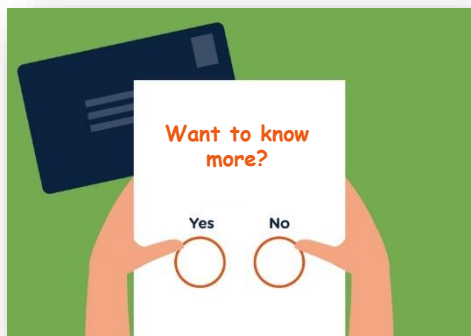
- Customers can opt-in for a hydrogen gas supply
- Customers will remain with existing suppliers and retain flexibility to switch during the trial
- Customers who participate can also revert back to natural gas during the trial
- Customers will receive free hydrogen appliances
- SMETS 2 Hydrogen meters will be installed
- It will be cost neutral for customers to participate

H100 Fife have set up a dedicated website for stakeholders and potential participants

<https://h100fife.co.uk/about-h100/>

Customer Sign Up – High Level

Project promotion and hydrogen awareness in local area



1. Build interest

2. Register interest

3. Events to learn about the project & book home visit appointments



4. Home visits and property surveys



5. Customer agreement



6. Home works



7. Support throughout trial



Engagement to Date Summary

Example External Engagement	Date	Outcome
Public meeting	March 2021	Meeting held to support enquiries around planning application. Public concerns alleviated and questions answered.
Community Liaison Group	Kicked off in August 2021, ~monthly meetings	Sounding board for engagement plans with local insight and opportunity for project advocacy from trusted partners
Conservation without Borders, Sacha Dench event	September 2021	Engagement with Levenmouth Academy and H100 Fife highlighted as flagship project in the run up to COP26
Project website created	November 2021	Dedicated resource to direct interested stakeholders and potential customers to
COP26 H100 Fife Exhibition	November 2021	Showcase of the H100 Fife programme, including plans for the hydrogen village at high profile event
Equipping local stakeholders with FAQs and training packs	November 2021	Developed to support local stakeholder knowledge of project should they be approached by members of the public
Engagement through customer postcard series	November & December 2021	Introducing customers in local area to the opportunity for green gas coming to Buckhaven and Methil. Third postcard planned for March 2022
Fife Council Officers Working Group	Monthly	Interface with key Council disciplines to support project delivery
Fife Council Senior Management Meeting	Quarterly	Interface with senior management and local councillors to keep them informed on project progress
Regular engagement with key stakeholders	Ongoing	Supports project reporting and updates e.g. Scottish Enterprise, ORE Catapult, supply chain
Project Advisory Board	Monthly, previously quarterly	Project progress tracking with key authority stakeholders e.g. BEIS, Scottish Government, Ofgem, HSE and GDN partners

Engagement example – Community Liaison Group

- Set up in August 2021
- Sounding board for community and customer engagement planning
- Advice on connecting with community/customers/hard to reach
- Visibility of local challenges and barriers
- Insight for upcoming events/activities
- Regular meetings, mostly monthly, held in person locally



- Fife Council
- Bright Green Hydrogen
- Buckhaven Community Council
- BRAG
- Greener Kirkcaldy
- The Leven Project (SEPA)
- Corra Foundation
- Levenmouth Academy
- Fife College
- OREC
- Citizens Advice Scotland
- Local Cllr / Area Committee
- CLEAR Buckhaven and Methil
- Levenmouth Rail Campaign



Examples of SMETS 2 Hydrogen Meters



<https://www.fiorentini.com/en/>



<https://www.metersit.com/en/>



Proposed Metering Contractual Framework for H100 Fife

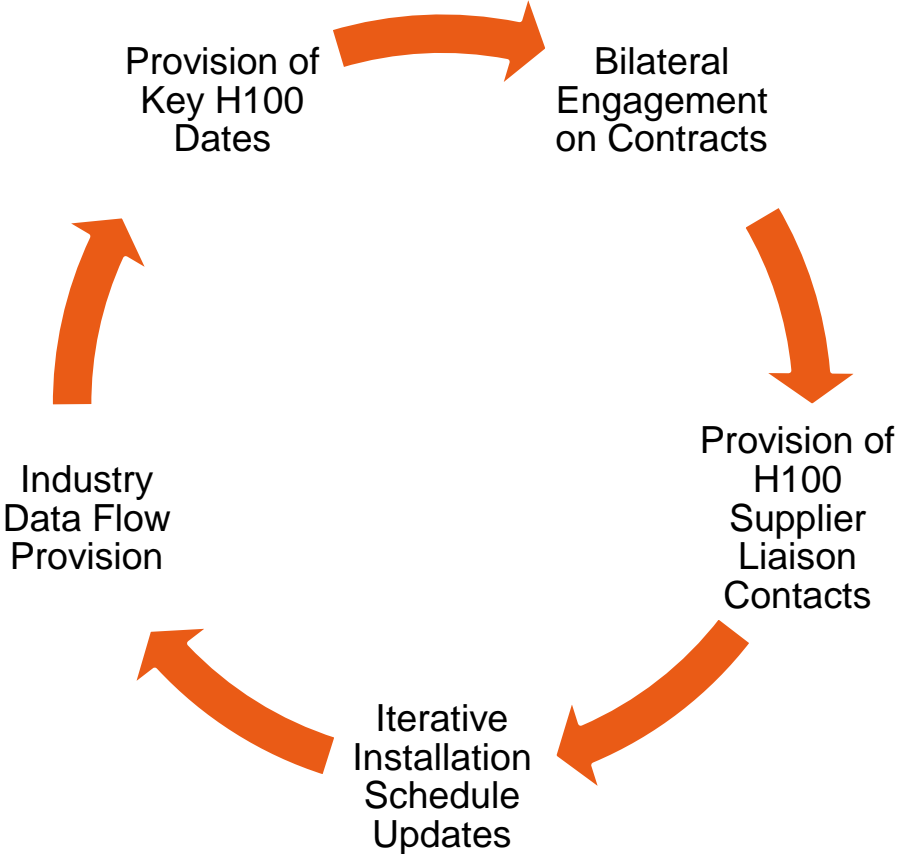
In recognition of the nascent state of Hydrogen training in the UK, SGN propose to manage the installation and maintenance of Hydrogen SMETS 2 Meters and Hydrogen Appliances

SGN to offer Energy Suppliers a Hydrogen Meter Services Contract on equivalent commercial terms as Natural Gas

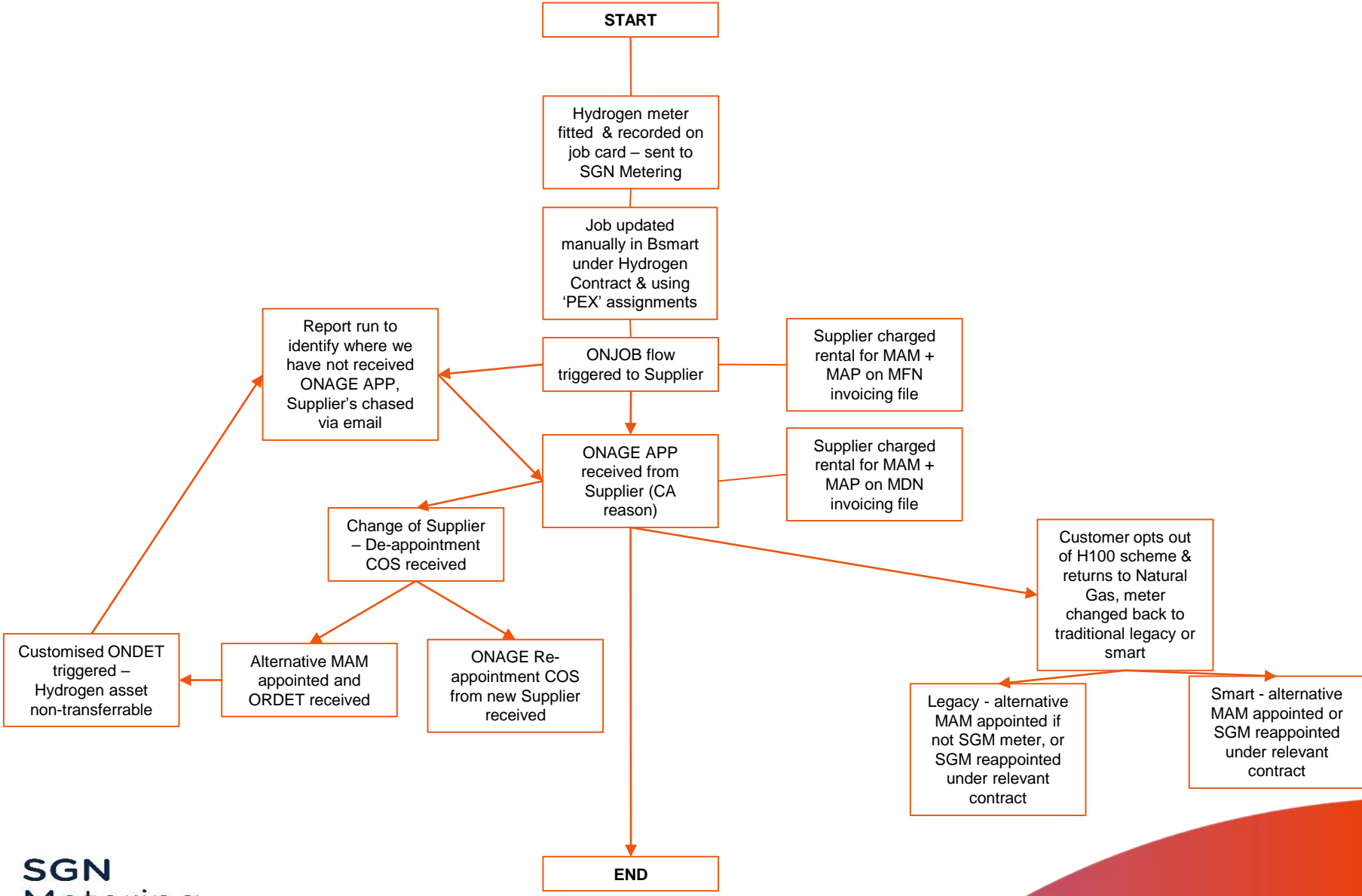
The contract will include terms for Natural Gas Meter Removal, Hydrogen Meter Installation, Metering Data Flows & Quality Assurance

SGN Operations will be providing the Hydrogen fieldforce in support of these services

Energy Supplier Support Model



H100 SGM Example Workflow Process



Data Provision & Ongoing Monitoring

- SGN will publish on a secure platform hosted by the CDSP and keep up to date information accessible by relevant industry parties detailing all H100 Supply Meter Points which are connected to the H100FIFE project network and;
- the date on which hydrogen gas was first supplied to the H100Supply Meter Point, this date being the start of the gas day on which hydrogen was first supplied to the relevant H100 Supply Meter
- The SMETS2 Hydrogen Meters installed will have unique identifiers in Market Domain Data
- Monthly shipper and supplier registration reconciliation reports will be produced & any anomalies will be reviewed and managed
- Customers will receive engagement packs which will include direct assistance telephone number provided by SGN as well as the general enquiry email address h100fife@sgn.co.uk

Q&A



SGN
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Thank You



SGN
Your gas. Our network.