

# Future of energy

We will start at 11.02 to allow participants to finish previous meetings and join the call

Slido.com  
#gtx5

# Welcome and Opening

Thank you for joining us today

Slido.com will be used for feedback and for Q&A.

Slido.com  
#gtx5



# Who will be speaking?

**Tony Green**

**Hydrogen Director**



**Jennifer Randall**

**Commercial Codes  
Change Manager**



**Danielle Stewart**

**Hydrogen Programme  
Manager**



**Michelle Hocknull**

**Net Zero Stakeholder  
Experience Manager**



# Logistics



Should last for approximately about 60 min



Questions and polling via slido.com #gtx5



All callers will be placed on mute



We will circulate the slides and a recording of this webinar

# Agenda

What does the future look like?

Gas Market Update

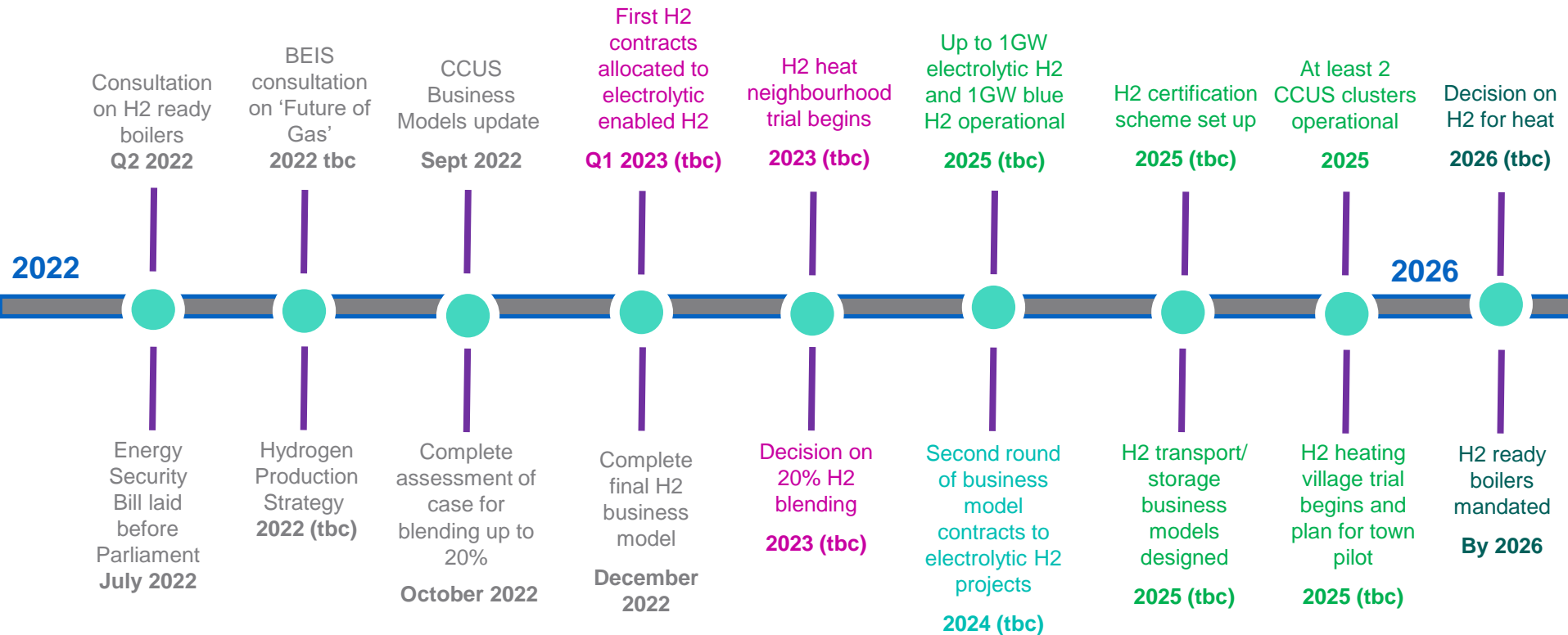
Our Hydrogen Journey

Customer & Stakeholder Engagement

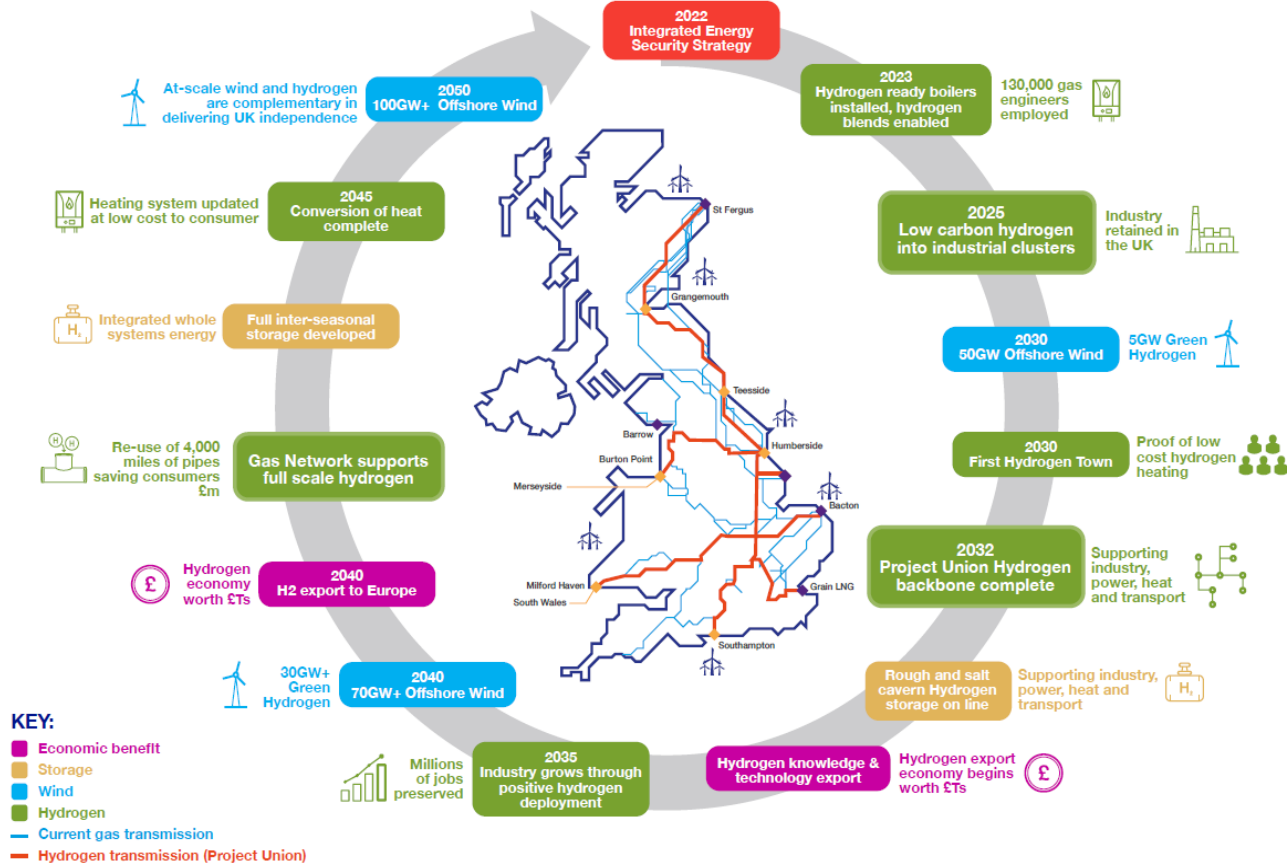
# What does the future look like?



# UK Hydrogen Policy



# Hydrogen roadmap: delivering clean energy independence for the UK





# How we transition to net zero...

## Blending in the NTS

### - reducing emissions today

Blending at 2% has the potential to remove the CO2 equivalent of 3.7 million cars off the road today with...

...**no disruption** to consumers heating of cooking and

...**reduced impact** on consumer bills as using existing pipework and heating systems.

Whilst...

...**creating the hydrogen market** (at pace) to build a hydrogen economy and...

...**Policy decisions** are made



## 100% hydrogen transmission

### - Enabling the future

**Today**...connecting production to industry and power

**Tomorrow**...enabling decarbonisation of power generation, transport and wider industry.

Whilst **keeping options open** for heating

# Gas Market Plan



**Within the GMaP theme areas, what should be the future focus areas for the GMaP programme? (In addition to those included in the following slides).**

- Hydrogen storage
- CCUS
- Biomethane
- Information Provision
- Interaction with EU markets
- Potential regional variation of markets

**Is there anything we've missed?**

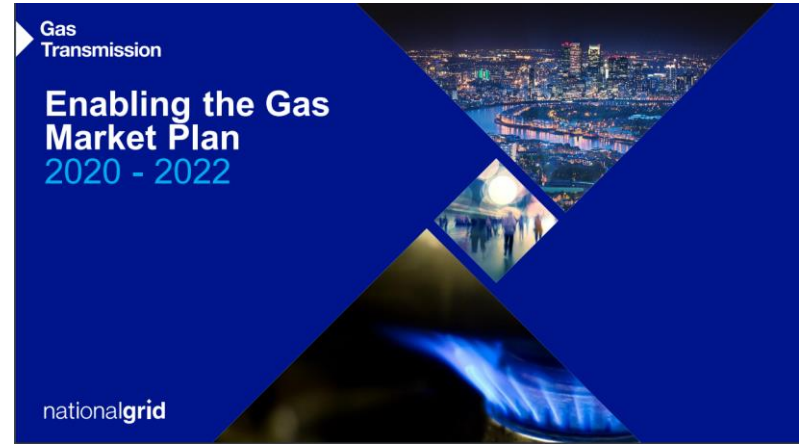
# Gas Market Plan (GMaP)

The Gas Markets Plan (GMaP) was launched by National Grid Gas in 2019 to proactively and strategically consider how gas market frameworks may need to change across all potential energy futures.

To find out more about our GMaP program and to sign up for updates ...

<https://www.nationalgrid.com/gas-transmission/future-of-gas>

For specific enquiries please email: [box.fogforum@nationalgrid.com](mailto:box.fogforum@nationalgrid.com)



# GMaP Vertical Themes: 2022-23 Plan

Over 2022 we will be exploring three “**Vertical Themes**” of potential market change, including hydrogen (*full/ 100%*), hydrogen blending and natural gas.



## Hydrogen (*full/ 100%*):

The projects we are progressing are:

- Market framework exploration for 100% H2 network using [Project Union](#) as a case study
- [The role of Guarantees of Origin in driving a future UK hydrogen market](#)
- Low carbon hydrogen standard UK/ EU alignment



## Hydrogen Blending:

The projects we are progressing are:

- Domestic blending arrangements
- Blending on the gas interconnectors
- [Hydrogen deblending feasibility study \(\*phase 2\*\) markets workstream](#)



## Natural Gas:

The project we are progressing is:

- Reviewing the principles of the natural gas market in the H2 transition

# GMaP Horizontal Themes: 2022-23 Plan

Along with our “Vertical themes” we will be exploring a number of “Horizontal themes” which cuts across each stage of the transition.



## Heat:

- Providing a view on home heat solutions according to building type, usage & proximity to fuel sources
- Exploring the role Hydrogen could play in heat networks



## Transport:

- Investigate the opportunities for Hydrogen in the transport sector



## Industry:

- Working with our industrial and commercial customers to understand how market frameworks can be adapted to meet their needs in the energy transition



## Power:

- Investigate the market framework developments required for the greater interaction between power and gas in the future



## Fair and Secure Transition:

- Ensuring future gas market arrangements are fair for all consumers and overall security of supply is not degraded during the evolution of market frameworks

## Within the GMaP theme areas, what should be the future focus areas for the GMaP programme?

- Hydrogen storage
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- Potential regional variation of markets

## Is there anything we've missed?

# Our Hydrogen Journey



$H_2$   
HYDROGEN



**Can we repurpose  
our existing assets  
for hydrogen?**

**How do we transition  
to Hydrogen?**

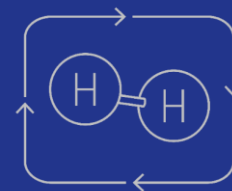
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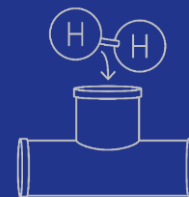
# FutureGrid

An ambitious programme to build a hydrogen test facility from decommissioned assets at DNV's facility in Cumbria to demonstrate the National Transmission System (NTS) can transport hydrogen. Testing will be completed in two parts:



Offline Hydrogen Test Facility

NTS assets of different types, sizes, and material grades will be tested with 2, 20 & 100% hydrogen



Standalone Hydrogen Test Modules

Standalone hydrogen test modules will provide key data required to feed into the main facility

This will help us understand how hydrogen interacts with our assets, so that we can develop the appropriate safety standards required to operate our network.

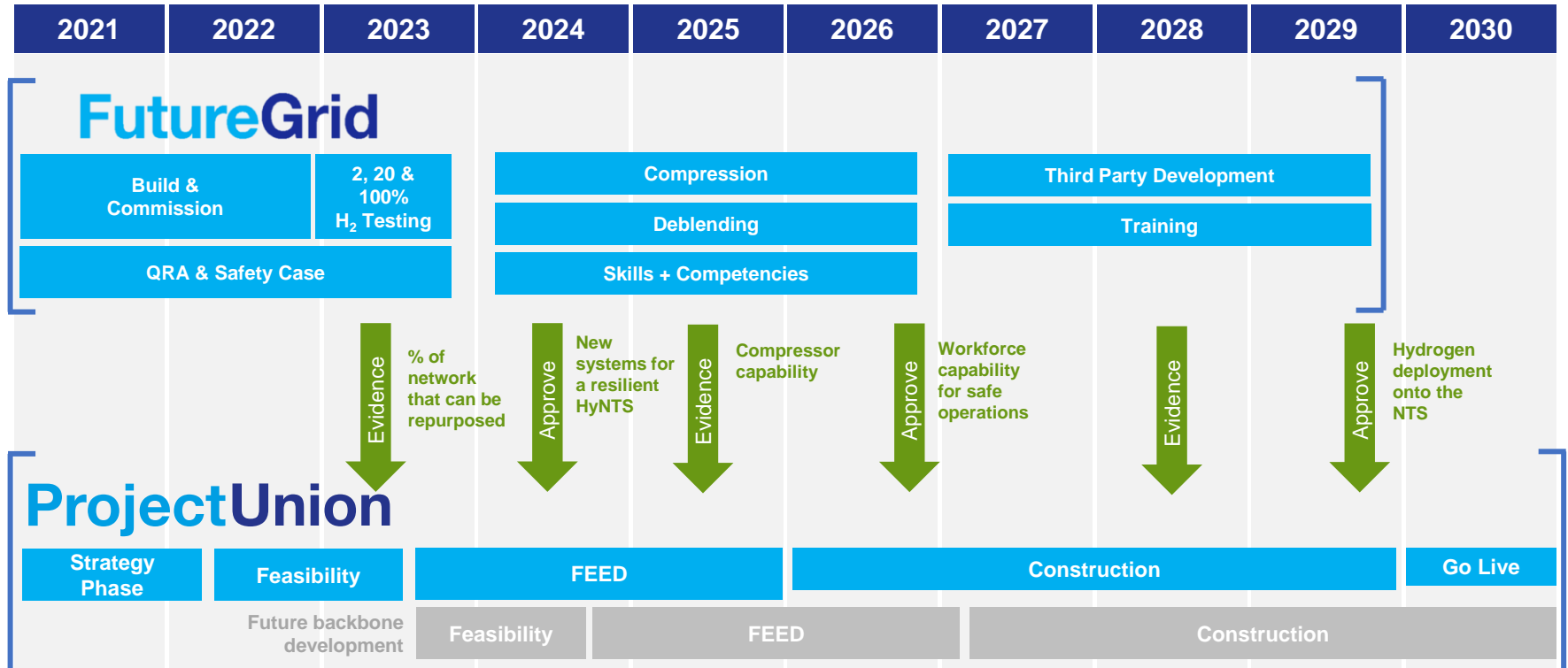
Construction is now underway with testing on the main Offline Hydrogen Test Facility set to begin mid 2022.

**nationalgrid**



[www.nationalgrid.com/FutureGrid](http://www.nationalgrid.com/FutureGrid)

There is a critical pathway of evidence development that feeds into the development and deployment of 100% hydrogen in our high pressure gas pipelines. Time is a critical factor to deliver a hydrogen transition at pace to meet net zero targets.



Assets being Installed





# FutureGrid

An ambitious programme to build a hydrogen test facility from decommissioned assets at DNV's facility in Cumbria to demonstrate the National Transmission System (NTS) can transport hydrogen.



Gas Transmission  
and Metering

# FutureGrid Explore

## Our compression & deblending challenges

Tuesday 26 July 2022 | 11am to 12pm GMT

nationalgrid

Join us at our next virtual FutureGrid Explore webinar on Tuesday 26 July at 11am, where we'll be discussing the challenges associated with hydrogen compression and deblending.

During the session, Dave Hardman (Strategic Innovation Specialist) and Lynsey Stevenson (Hydrogen Innovation Engineer) will give an overview of some of the innovation projects we're looking at, to help us overcome these challenges.

Spaces are available on a first come, first served basis, so [sign up now](#) to avoid missing out!

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Alongside this, on Wednesday 27 July (10am – 12pm), Dave will be hosting a webinar alongside Suki Ferris (Hydrogen Market Strategy Lead) and Frontier Economics, to provide an overview of the findings of two Gas Transmission & Metering sponsored studies carried out on deblending.

The first study (conducted by DNV) considers the potential role of deblending on the networks and associated engineering issues, while the second (led by Frontier Economics) considers the implications of deblending for the GB gas networks.

If you would be interested in attending this session as well, please register your interest [here](#).



**Can we  
repurpose our  
existing assets  
for hydrogen?**

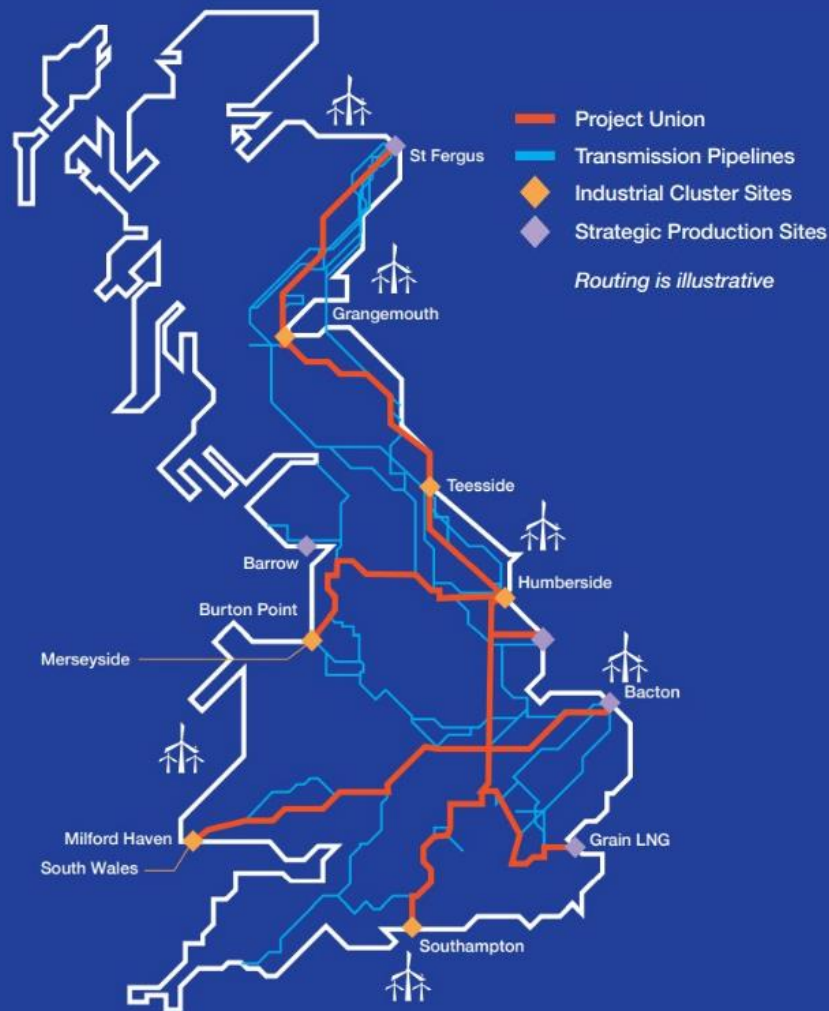
**How do we  
transition to  
Hydrogen?**



**How do we  
transition to  
Hydrogen?**

# Project Union

- ✓ Repurpose ~2,000km of the NTS through a phased approach in line with Government's cluster prioritisation and green hydrogen development
- ✓ Connect across GB supply, demand and strategic storage sites, enabling growth of a UK hydrogen economy,
- ✓ Use existing infrastructure to deliver a low carbon future, reducing environmental impact of new construction
- ✓ Enable early and affordable market growth of a low carbon hydrogen economy to achieve net zero



# Some of the organisation we have engaged with across the value chain

### Government

HM Government

The Scottish Government

Welsh Government

### Consumers

MAJOR ENERGY USERS' COUNCIL

CIA

CHEMICAL INDUSTRIES ASSOCIATION

ena energy networks association

Energy UK

citizens advice

RWE

JM Johnson Matthey  
Inspiring science, enhancing life

### Networks

Cadent

Northern Gas Networks

Scottish Gas

WALES & WEST UTILITIES

FLUXYS

DVC

SSE

wpd  
think energy

UK Power Networks

### Regulators

ofgem

Department for Business, Energy & Industrial Strategy

Infrastructure and Projects Authority

National Infrastructure Commission

Climate Change Committee

HSE

### Producers

ITM POWER

Shell

bp

RWE

equinor

Orsted

Dolphyn

centrica

OGUK

### Clusters and projects

BACK THE SCOTTISH CLUSTER

PROGRESSIVE ENERGY

h2i

acorn

SWIC  
South Wales Industrial Cluster

HyNet North West

nepic

Net Zero Teesside

Hydrogen East

East Coast Hydrogen

# A backbone to unlock a hydrogen economy



**Decarbonisation of  
industry and power**



**Energy storage  
and resilience**



**Connectivity  
and efficiency**



**Flexibility and  
optionality**



**Consumer-  
centric**



**Promote energy  
independence**



**Market  
coupling**



**Levelling up  
and jobs**



**Global leader in  
green innovation**

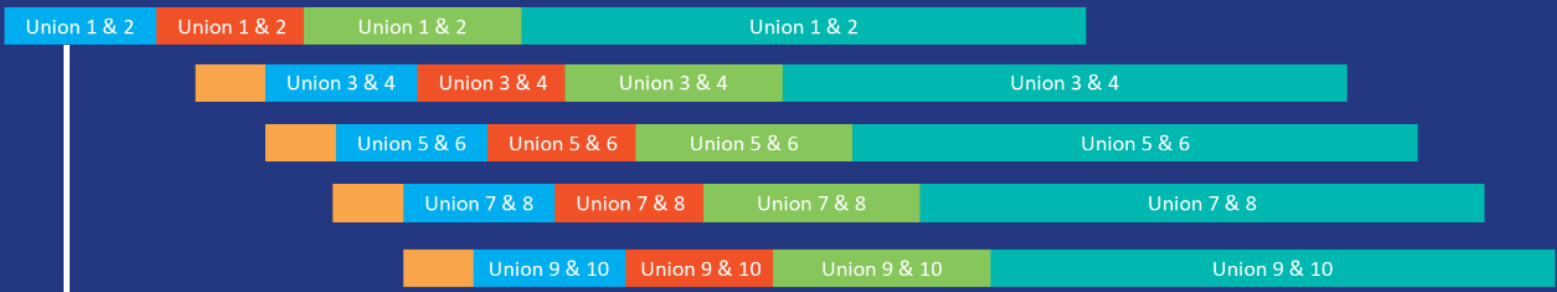
# Timeline

2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033

Strategy Phase

Transition Strategy

Phasing and Delivery Strategy



Union 3-10 Feasibility    Union 1-10 Pre-FEED    Union 1-10 FEED    Union 1-10 Pre-Construction    Union 1-10 Construction

**Phasing Strategy**

**2 x Pre-FEEDs**

**Enabling Activities**  
(Commercial & market frameworks, workforce planning, policies & standards, system operation etc...)

## Sli.do question

**What factors should we prioritise when deciding the order to transition our pipelines?**

- Customers' needs
- Production location
- Resilience of the existing natural gas network
- Readiness of our assets
- Cost

**Is there anything we've missed?**

# Customer & Stakeholder Engagement





# Customer and Stakeholder Engagement



We have a robust understanding of our customers decarbonisation strategies



Able to build an evidence base to inform policy decisions



All stakeholders are engaged and informed



Create advocacy



Sectors across the value chain are able to shape our approach to decarbonisation



Webinars and events



Social media



Regional groups



1-1s at all levels

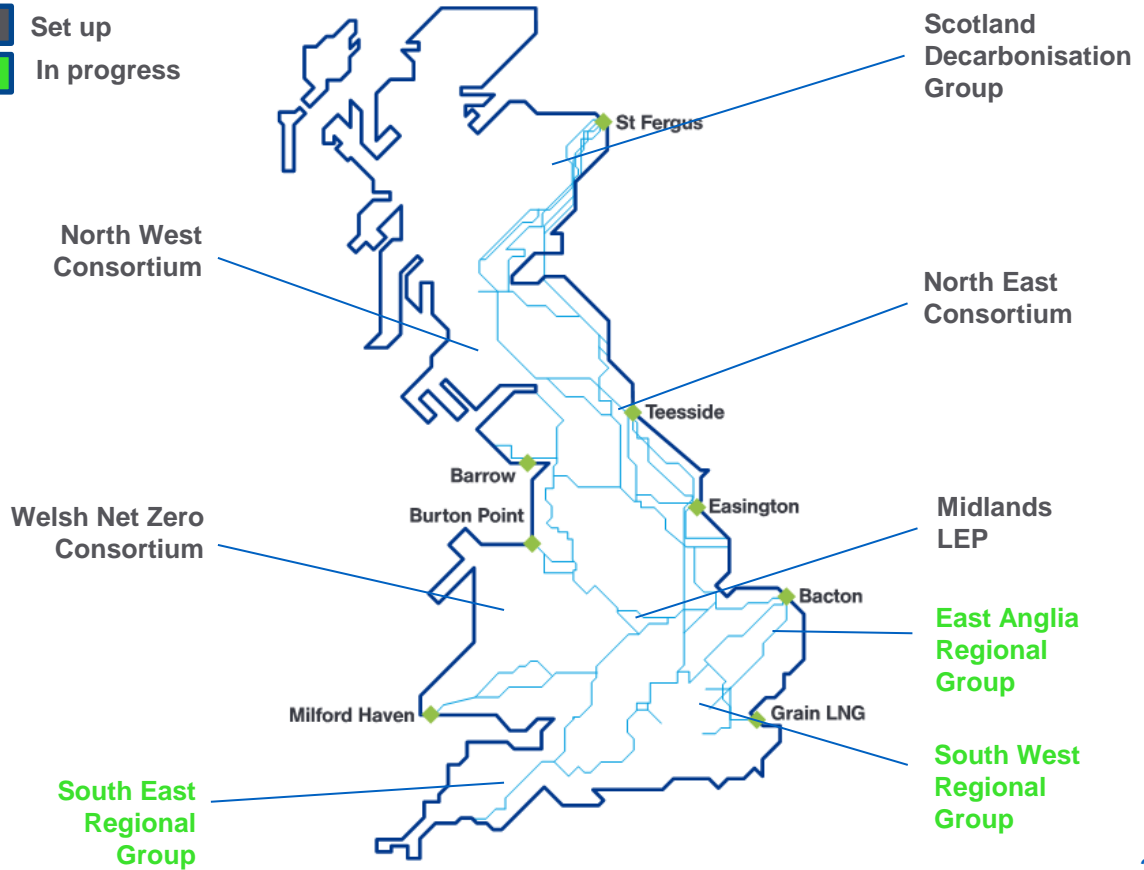
# Regional Groups

- Set up
- In progress

The regional groups have been set up **based on your feedback\***

Their purpose is to understand and **align deliverables, inter-dependencies** and **assumptions** between regional Net Zero projects to create a roadmap ensuring a safe and efficient transition to Net Zero.

\* Some regions already have a consortium in place which we are a member of



## What have we heard so far?....

- A number of directly connected customers to our gas transmission system could accept a blend of up to around 5% without major cost implications
- There are some concerns around timing of policy decisions
- Consumers priorities remain the same, with a shift towards affordability and energy security over decarbonisation
- Ministers are in support of our plans and are keen to understand more about the role hydrogen can play in the transition to net zero.



# Customer and Stakeholder Engagement

Would you like to be more involved or know more about our future engagement activities? If so, please contact:



[michelle.hocknull@nationalgrid.com](mailto:michelle.hocknull@nationalgrid.com)

# Questions



# What next?



You will receive the recording and material from today's session



If you have any further questions or would like to discuss anything specific please get in touch with [michelle.hocknull@nationalgrid.com](mailto:michelle.hocknull@nationalgrid.com)



Feedback is important to us, therefore if you have not already taken part, we would like to put you forward for a survey

**Keynote speech**

[Watch again](#)

**Operating the network**

[Watch again](#)

**Digital strategy and  
information provision**

[Watch again](#)

**Future regulatory  
framework**

[Watch again](#)

Thank you for joining us





**Gas**

**Transmission**