HYPOTHETICALLY HYDROGEN

H_2 East

NEWANGLIA
Local Enterprise Partnership
for Norfolk and Suffolk

HM Government

Department for
Business, Energy
& Industrial Strategy

TOGETHER
FOR OUR
PLANET

Greater
South East
Energy Hub

Welcome and introduction

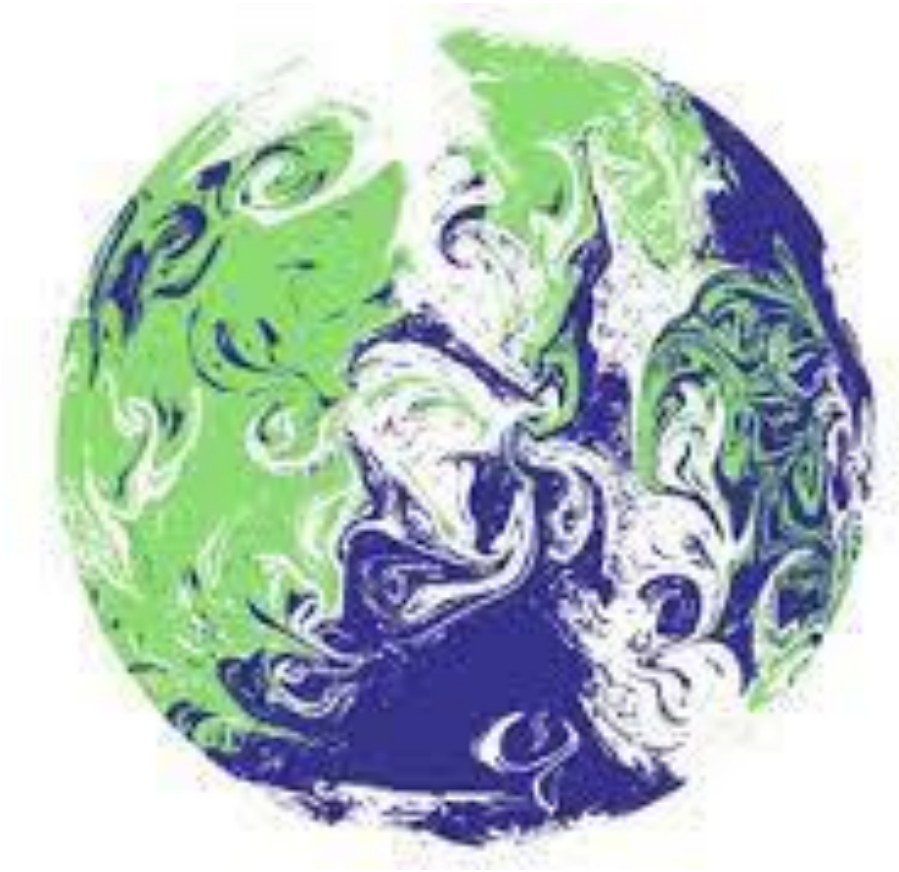
Hydrogen East

Agenda

10.00	Welcome and introduction
10.10	Hydrogen basics and the policy landscape
10.40	Hydrogen production deep dive
10.55	Interactive poll / break
11.05	Case Study 1 – Transport
11.25	Case Study 2 – Heat
11.45	Case Study 3 – Agriculture
12.05	Case Study 4 – Power and flexibility
12.25	Interactive poll / break
12.35	East Anglian Hydrogen Cluster – visions for 2030 and 2050
12.50	Wrap up and close

Why host this event alongside COP26?

- We are hosting this event in conjunction with the **New Anglia Local Enterprise Partnership** as part of the roadshows being organised by **the Greater South East Energy Hub** to coincide with COP26
- The climate conference touches on a variety of different sectors ranging from food security to habitat loss and from energy generation to behavioural change
- A range of existing and emerging technology options therefore needs to be deployed to achieve the significant emissions reductions required
- As well as securing international agreements, there is a need to educate communities on the solutions available to support the transition to Net Zero in their areas
- Clue: **its not really hypothetical**.: three key questions: (i) how big a role, (ii) in what way and where, and (iii) what can the regional contribution be?
- So we would like to talk through today how hydrogen could and should be an important solution for the energy transition in New Anglia



Who are we?

Hydrogen East's purpose and ambitions

- Our purpose is to raise awareness of existing and potential hydrogen opportunities across the East of England, to promote the technology and to support local supply chains and markets
- Research company working in partnership with regional stakeholders
- We intend to identify a viable, implementable route-map that sees East Anglia as a leading 'hydrogen region'
- Ambition to develop a broad regional network across all key sectors including power, heat, buildings, transport and business – **a different type of cluster**
- Already a full-time team of five, but growing to seven by end of year, and three major projects already done or underway

Founding members

SizewellC EDF CGN

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CPH2 CLEAN POWER HYDROGEN

New Anglia Energy

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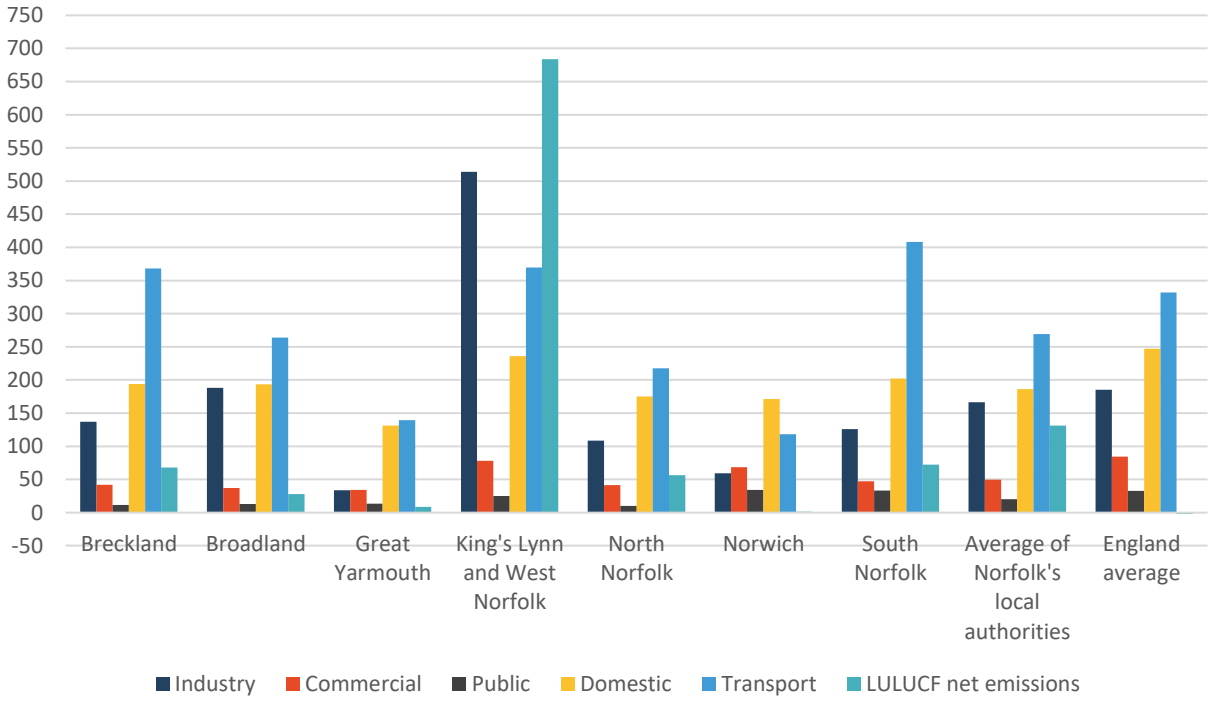
NEWANGLIA Local Enterprise Partnership for Norfolk and Suffolk

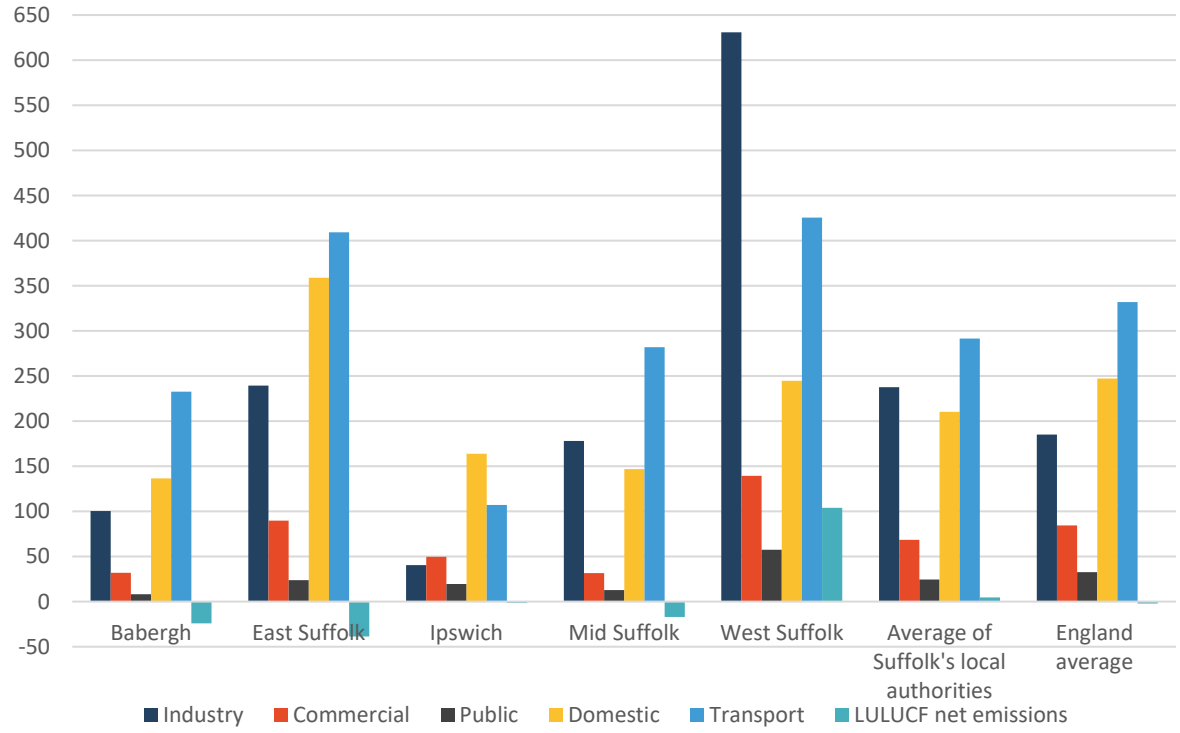
Cadent Your Gas Network

The scene in New Anglia

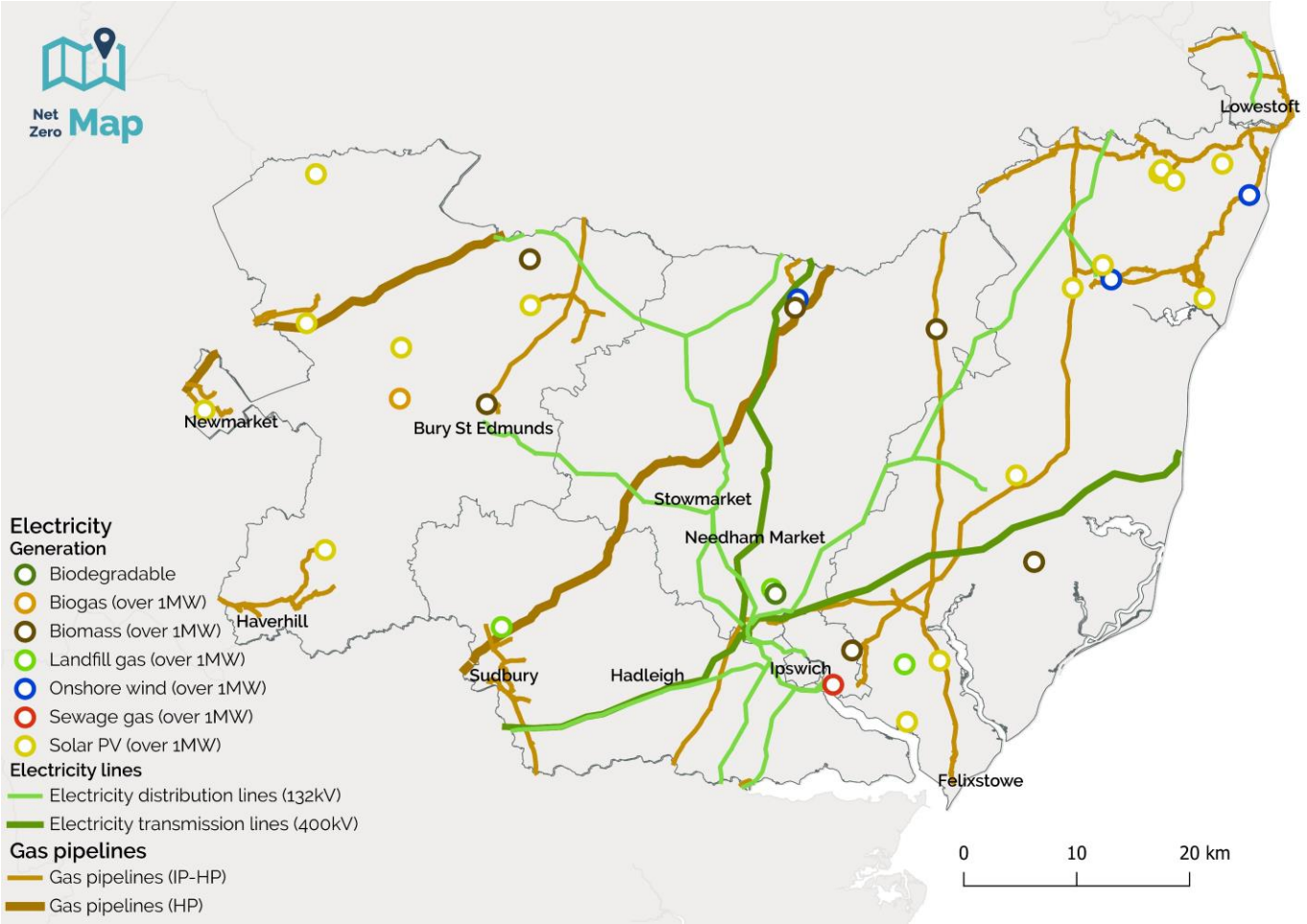
NORFOLK



The scene in New Anglia



SUFFOLK



VIDEO

Hydrogen fundamentals and policy position

Hydrogen East

Why hydrogen?

- We need to achieve net zero carbon emissions to meet legally binding climate change targets by 2050.
- Hydrogen is now recognised as having a key role to play in many key vectors:

It's a versatile chemical element

Hydrogen is one of the world's most versatile energy carriers, energy store and industrial feedstocks.

A clean source of energy

When supplied by low carbon electricity for production, the technology delivers green hydrogen with water and heat as the only by-products.

Key to our future energy needs

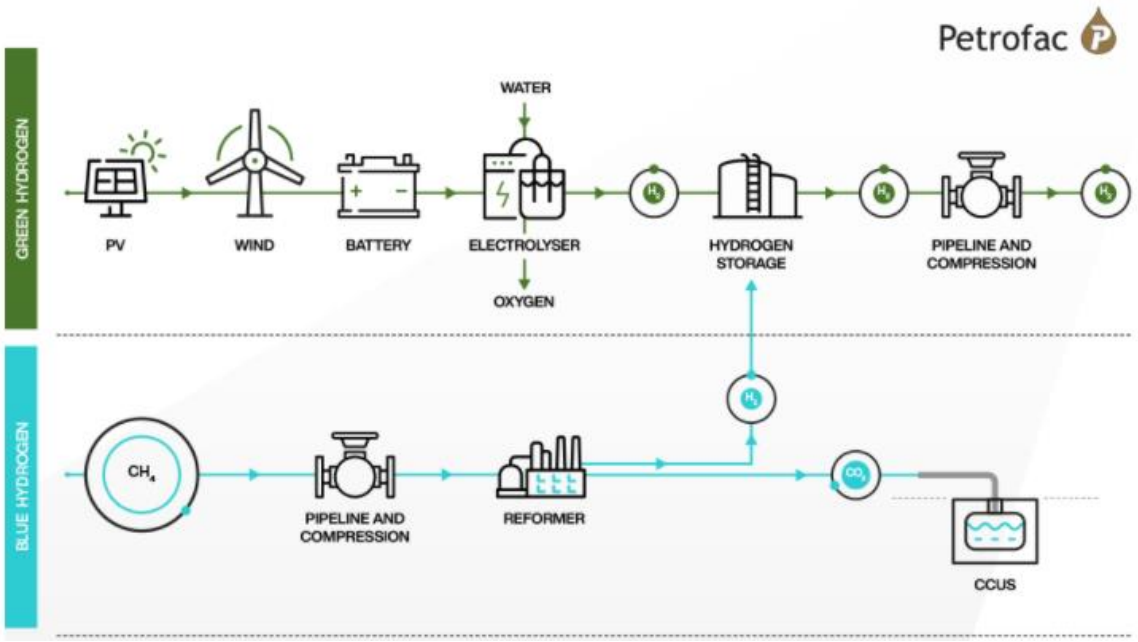
Hydrogen can be used to heat our homes and businesses, power transport as well as for industrial processes.

"Hydrogen is today enjoying unprecedented momentum. The world should not miss this unique chance to make hydrogen an important part of our clean and secure energy future."

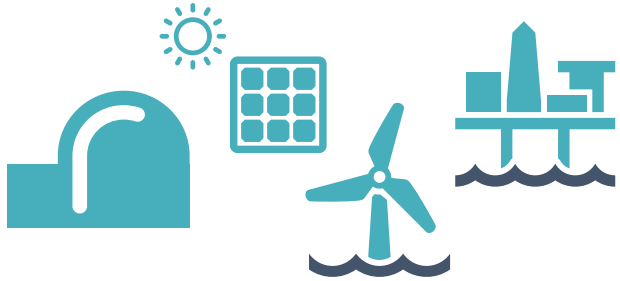
Dr. Fatih Birol,
International Energy Agency,
June 2019

Hydrogen: how is it produced?

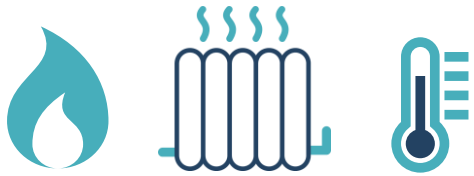
- Grey hydrogen
  - Typically produced through SMR of fossil fuels
  - CO_2 not captured and released to atmosphere
- Blue hydrogen
  - SMR of fossil fuels
  - Carbon captures - ~90-97% capture rate
- Green hydrogen
  - Typically produced through electrolysis of water
  - Output is hydrogen and oxygen (H_2 and O)
  - No direct emissions
- Others
  - Pink (nuclear); Turquoise (pyrolysis); Yellow (solar)



Hydrogen applications



Clean Power Generation



Heat Systems

Public Transport

Commercial Buildings

Marine Shipping

Passenger Cars

Homes

Energy Storage & Remote Use

HGV & Construction

What's already happening?

- Debate is presently focussed around blue hydrogen in industrial clusters across the UK
  - Including NW England, Teesside, North Wales and NE Scotland
- A number of demonstrator projects completing and ongoing to test hydrogen feasibility for heat
- Also transport hubs developing in regions such as Aberdeen and Teesside
- **Growing interest from developers, utility companies and other key stakeholders on role of hydrogen now and into the future**

Utilities increasing focus

- National Grid Gas is looking to deliver Project Union
  - National hydrogen backbone connecting industrial clusters and major gas terminals
- Cadent one of leading organisations on HyNet project
  - Focus on industrial decarbonisation in North West
- Northern Gas Networks and Cadent delivering HyDeploy
  - Phase One completed (H2 blends at Keele University)
  - Phase Two underway (H2 blends in 668 Gateshead homes)
- SGN leading up H100 in Fife
  - Stage One – 300 homes on 100% hydrogen; Stage Two – 1,000 homes on 100% hydrogen
- Scottish Power and Whitelee
- Northern Ireland Water installed 1MW electrolyser
  - Exploring opportunities for using hydrogen and oxygen

The challenge for policy makers

HM Government

Department for Transport

HM Treasury

Department for Business, Energy & Industrial Strategy

- Achieving Net Zero emissions by 2050 is a complex task and requires decision makers to weigh up various factors such as cost, speed, efficiency and consumer choice
- The multitude of possible pathways means policy makers have tended to avoid making decisions that might preclude specific technologies or future innovations
- But time is running out to act and therefore focussed and clear decisions need to be made on which solutions will be deployed in which sectors
- Hydrogen had been considered as a niche option until recently, but it is rapidly rising up the political agenda
- Top down targets but bottom-up initiatives

Rapidly developing landscape

Hydrogen Strategy

- The *Hydrogen Strategy* paper was unveiled by BEIS on 17 August, confirming that hydrogen will form a crucial part of the UK's net zero economy
- **5GW of production capacity by 2030** commitment reconfirmed
- The paper recognises that **by 2050 the hydrogen sector could need to cater for around 20-35% of final energy demand**
- £900mn of funding has been confirmed through the strategy
- BEIS stating that the sector is likely to bring over £4bn in private capital and 9,000 jobs in the next decade
- **Adopts a "twin track" approach**
- Detail on a hydrogen regulatory framework remains vague
- In the early 2020s, the government will focus on loosening regulation around first-of-a-kind projects for low carbon hydrogen
- It confirmed that it is working with HSE to assess the feasibility of 20% hydrogen blending in the gas network

Summary

- Hydrogen is highly versatile and could be a useful decarbonisation option across a variety of sectors, including those considered “hard to reach”
- The Government launched a suite of consultations alongside the hydrogen strategy that should provide more clarity in 2022
- Safety testing is ongoing, driven primarily by HSE and the gas network companies
- Emerging market, lots still to learn and can expect clearer trends to emerge as technology matures and scales
- Last 18 months has seen increasing local focus in East of England, and we will continue to refine our research and advocacy work around development of a different type of cluster

Hydrogen production and partnerships

Hydrogen East

Hydrogen production in situ

- Hydrogen production methods come in a number of different shapes and sizes which could be deployed in various configurations. As multi-vector technologies it is critical to consider developments on a whole-system basis
- There will also be a variation over time in preferred technologies based on shifting capital costs, input costs and permitted carbon intensity levels
- The technology options that are preferred in any given location will depend on the space and resources available, as well as the proximity to complementary assets or hydrogen end-users. This necessitates a place-based approach
- We think that the energy landscape in East Anglia will mean a variety of different applications are deployed, but the next few slides with look at four hypothetical production partnerships

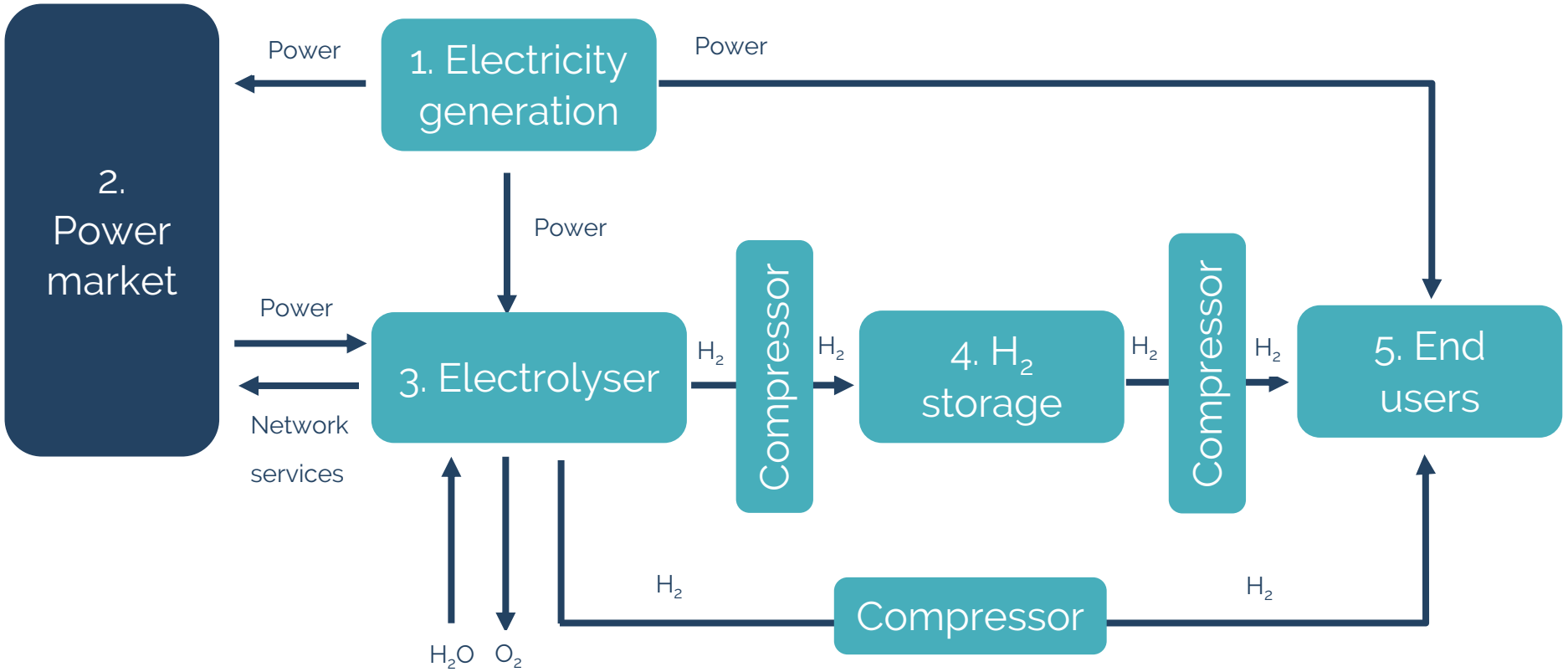
WHOLE-SYSTEM PLANNING

PLACE-BASED SOLUTIONS

Hydrogen at Bacton

- The Bacton gas terminal in North Norfolk could become a significant hydrogen hub
- The existing natural gas infrastructure and depleted offshore reservoirs lend themselves to blue hydrogen production alongside carbon capture and storage
- Large offshore wind farms land power nearby, so could be paired with large scale electrolysis to produce green hydrogen
- Hydrogen could be injected into the gas grid (either at the distribution level) or carried to London and the South East
- There would even be opportunities to export via pipelines to Europe
- Further work ongoing to establish the site potential

Electrolysis in action



Hydrogen and offshore wind

- The local fleet of offshore wind is set to grow significantly in coming years
- The intermittency of offshore wind means that there are times when production significantly outstrips supply
- Rather than turn down production at such times, the electricity could instead be diverted to large scale green hydrogen production – crucial storage medium as well as versatile feedstock
- There are also issues with how offshore wind farms connect to shore, with local communities hosting significant cabling routes and substations. Wind farms could collaborate to minimise this disruption
- Several offshore wind farm developers are already scoping the opportunity to integrate hydrogen production into their plans

Hydrogen and nuclear

- Nuclear power stations are considered a good potential partner for electrolysis
- They can provide a reliable 'baseload' electricity supply, important if you want your electrolyser running near-constantly
- But even if it is decided that the electricity supply is to come from another generator, the excess heat and steam from the reactor cooling processes offers the potential to run higher-efficiency electrolysers
- EDF Energy are looking to develop an electrolyser project which could help decarbonise Sizewell C construction
- Coastal locations of nuclear generation mean proximity to important future maritime market for hydrogen and ammonia

Hydrogen and small-scale renewables

- Stresses on the distribution network can limit renewables developments, either by requiring existing generation to 'turn-down' or by limiting the capacity available for new developments wishing to connect
- In order to maximise site potential, developers are looking at ways to use or store energy when they can't export it
- Battery storage installations have grown in recent years, but in future we could see partnerships between renewables, batteries and hydrogen production, with assets working in harmony
- This sort of development might not support large-scale hydrogen production, but could be replicated at multiple sites across the region, providing a good spread of hydrogen production
- Depending on location, it could mean the hydrogen production can occur close to potential end-users

Interactive poll

‘What if’ Case Studies

Hydrogen East

TRANSPORT

Hydrogen East

Context

Transport Decarbonisation Plan, July 2021

- The transport sector is the highest polluting sector in the UK, even excluding international aviation and shipping
- The Transport Decarbonisation Plan was published on 14 July 2021 by DfT, setting out some ambitions and pathways
- The government has established bans for new petrol and diesel vehicles between 2030 and 2040
- New technologies must be adopted alongside reduced travelling habits and adoption of more 'active travel'
- Electric vehicles are likely to dominate the lighter end of the transport market, but heavier duty vehicles will require alternative options, including hydrogen
- This is likely to be through fuel-cell electric vehicles (FCEVs). The next few slides will look at the different options available

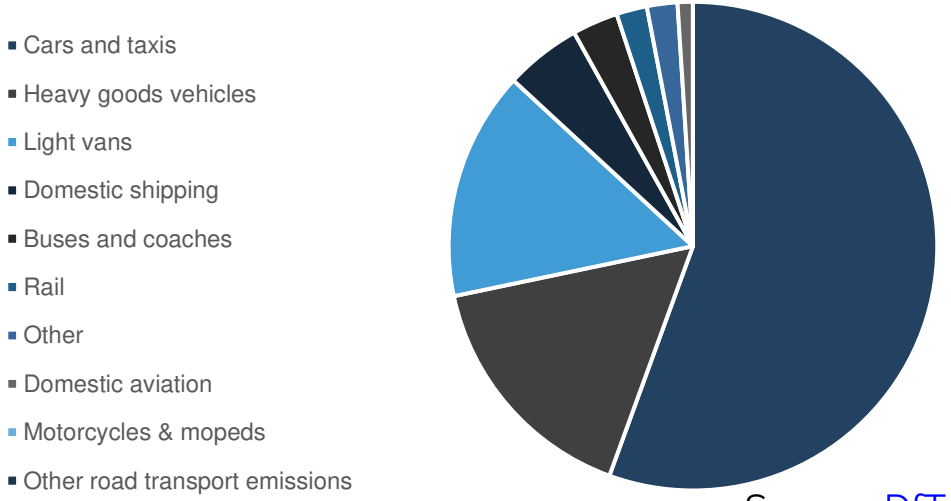
Background

Regional emissions by sector (kt CO_2)

	Transport emissions	Total emissions	Transport (%)
Norfolk & Suffolk	3,535	9,306	38.0%
East of England	14,305	32,446	44.1%
UK	126,801	344,824	36.8%

Source: BEIS, 2018

CO_2 emissions by transport type in the UK



Source: DfT, 2017

- Nationally, cars, vans, and HGVs are the biggest emitters of CO_2
- Given the above average per capita usage of these vehicles in Norfolk and Suffolk, there are significant emissions savings to target
- Equally, journey distances in Norfolk and Suffolk are longer on average
- Assuming that EVs will predominate at the lighter end of the market, this immediately flags HGVs as a primary concern
- Opportunities to decarbonise domestic shipping, buses and rail also need to be explored

Hydrogen options (1)

Cars and vans

- EVs likely to predominate
- Biomethane and hydrogen would suit some vehicles travelling longer distances
- Two models currently available in the UK from Toyota and Hyundai
- Need to evaluate relative costs

HGVs

- High concentration at ports e.g. Felixstowe
- Ideal for biomethane adoption in near-term
- Convenience of fast refuelling is essential
- Need to consider both back-to-base refuelling and cross-country

Buses

- Hydrogen buses are most technologically mature
- Suit long-distance journeys
- Ideal opportunity to reduce inner-city air pollution
- Major demonstrator examples from around the UK which we could emulate

Municipal

- Varied vehicles in municipal fleets including gritters, bin lorries etc.
- Mixture of ownership, leasing and third-party service provision
- Activity spread across multiple local authority stakeholders
- Funding of council initiatives elsewhere

Agricultural

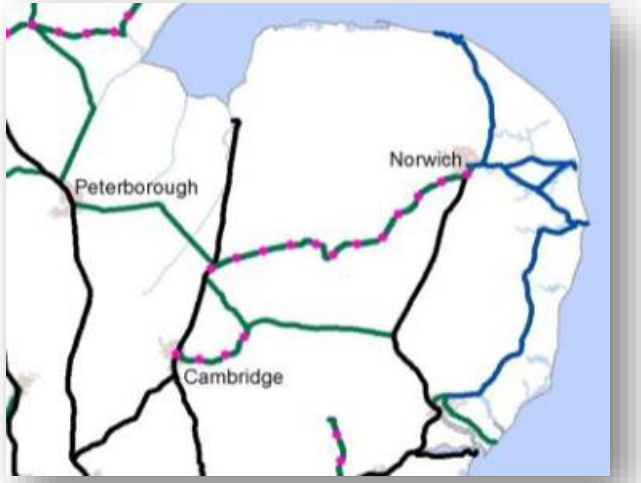
- Large agricultural sector in Norfolk and Suffolk
- Opportunities for new vehicles and retrofitted dual-fuel
- Fuel delivery aspects need to be carefully considered
- Explore opportunities for on-site production of biomethane or hydrogen

Hydrogen options (2)

- Rail network sees heavy usage, especially routes towards London
- Local geography and infrastructure mean the Norfolk and Suffolk branch lines aren't necessarily suitable for electrification
- Middle-distance trains moving at under 100mph ideal for conversion to hydrogen
- Traction Decarbonisation Network Strategy by Network Rail flags Norfolk and Suffolk Coast line as prime for hydrogen

- Major opportunities to decarbonise shipping through hydrogen-based fuels (e.g. ammonia)
- At the smaller scale using fuel cells, but potentially as a combustible fuel at the larger scale
- Confluence of road, rail and shipping at the ports
- Good opportunities for development of storage and refuelling on port-owned land

Network Rail view for track conversion



Six principal ports in East Anglia

How might they be deployed?

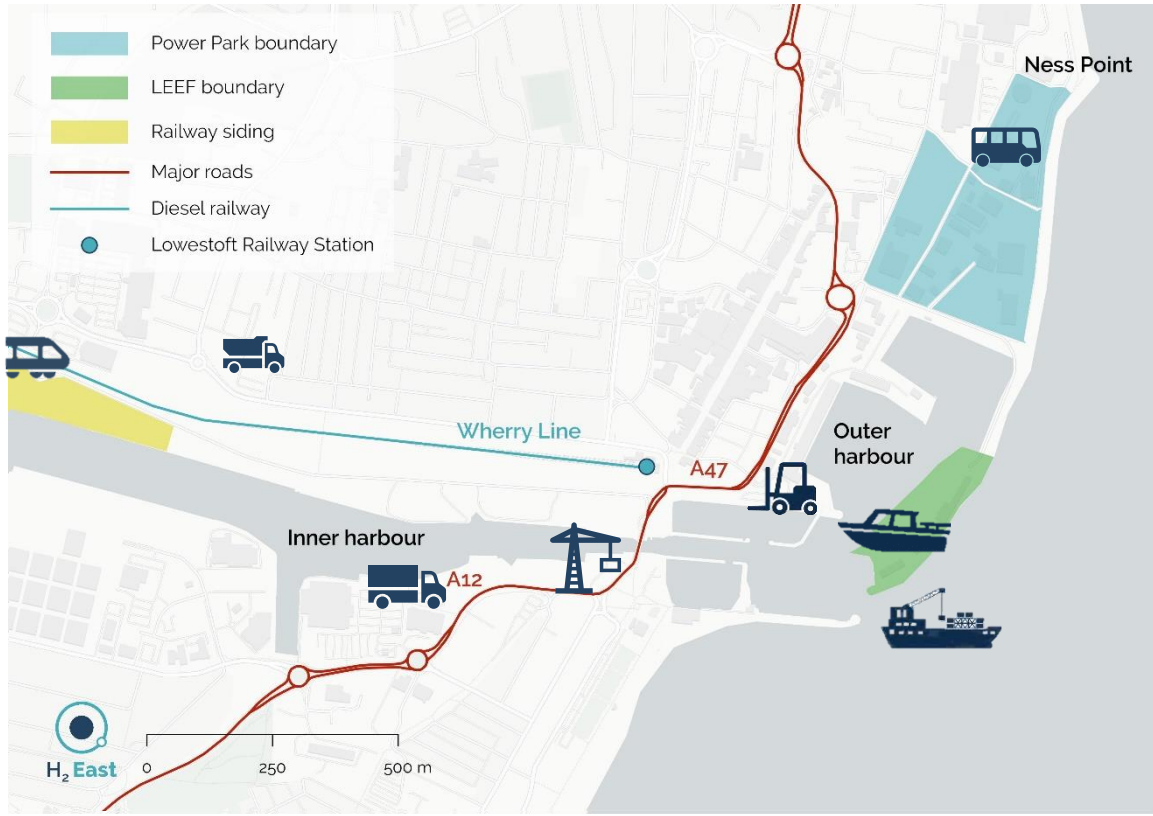
- Place-based opportunities where transport demand is aggregated
- East of England has number of ports ideal for stimulating demand given range of transport modes (e.g. rail, road, shipping)
- Looking at cross-overs outside of transport will create further opportunity for aggregating demand (e.g. agriculture, power, stationary machinery etc.)
- Government funding can support early-stage trials
- UK Hydrogen Strategy: 'The first movers in the early 2020s are likely to be relatively small (up to 20MW) electrolytic hydrogen projects that can be deployed at pace, with production and end use closely linked, for example, at a transport depot or industrial site.'

Aberdeen provides a good example of hydrogen transport adoption

Case study 1: Lowestoft PowerPark

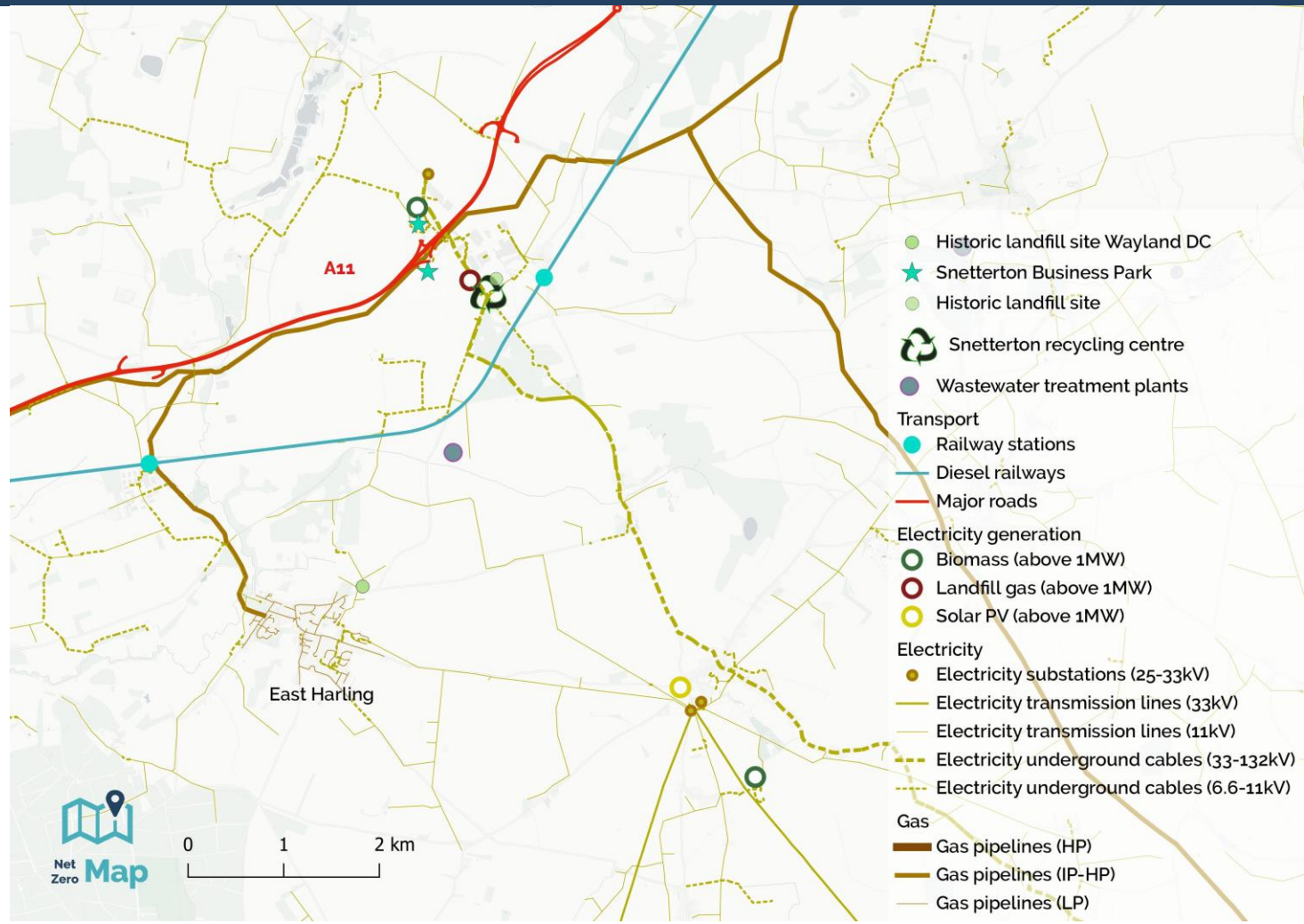
- One of the First Bus depots is based in the northern section of the PowerPark. First Bus is interested in transitioning their fleet away from fossil fuels
- There are other small bus companies that provide specific local routes and school bus routes
- East Suffolk Council have a vehicle depot, both EV and hydrogen options could be considered for new vehicles depending on replacement cycles
- Suffolk Highways host a fleet of gritters. Highways England may also have vehicles in the vicinity for treating the A47 and A12
- The Port of Lowestoft is undergoing a suite of redevelopments to retain and attract offshore wind companies to operate out of the port. There is a significant and growing fleet of crew transfer vessels (CTVs) that could be hydrogen-powered in future

Lowestoft PowerPark and Port of Lowestoft



Case study 2: Snetterton

- The area around the Snetterton landfill site and recycling centre become a multi-modal transport refuelling hub
- The waste site hydrogen production alongside installation of new renewable generation assets such as solar PV
- An electrolyser in the order of 1-2MW and solar PV 30-70MW could be achieved
- Snetterton is bisected by the A11 (the Norwich-Cambridge Tech corridor) and offers an important refuelling location on that route
- The area includes a number of haulage and logistics companies that could be early adopters

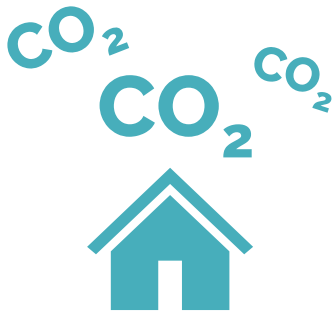


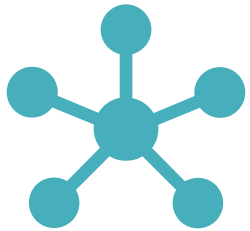
HEAT

Hydrogen East

Context

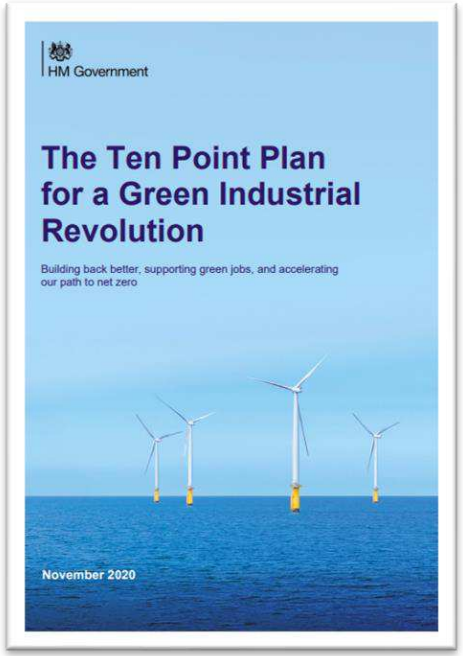
Challenges

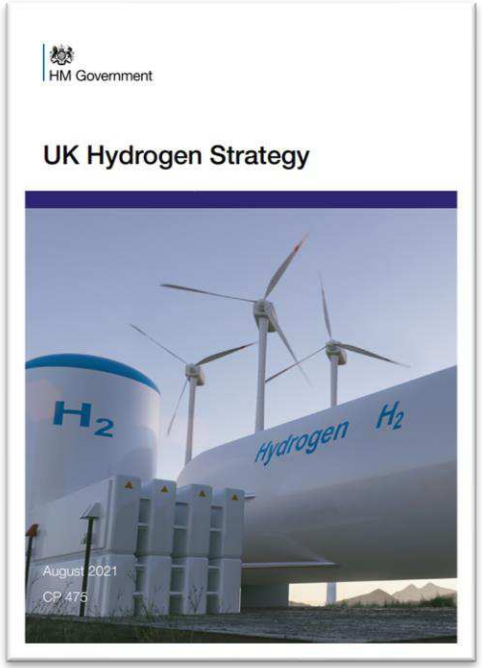




Infrastructure

Latest policy





Hydrogen for heat

- Hydrogen's role in heat is not yet clear, but demonstration activities continue to test technical feasibility
- Government has so far announced intentions to:
  - support a Hydrogen Neighbourhood trial by 2023, and a large Hydrogen Village trial by 2025,
  - continue to work with HSE to enable up to 20% hydrogen blending on the network by 2023
  - launch a call for evidence in 2022 to seek views on mandating hydrogen-ready appliances, and
  - Consultation launching in 2021 on the Future of the Gas System

Hydrogen blending into the gas network

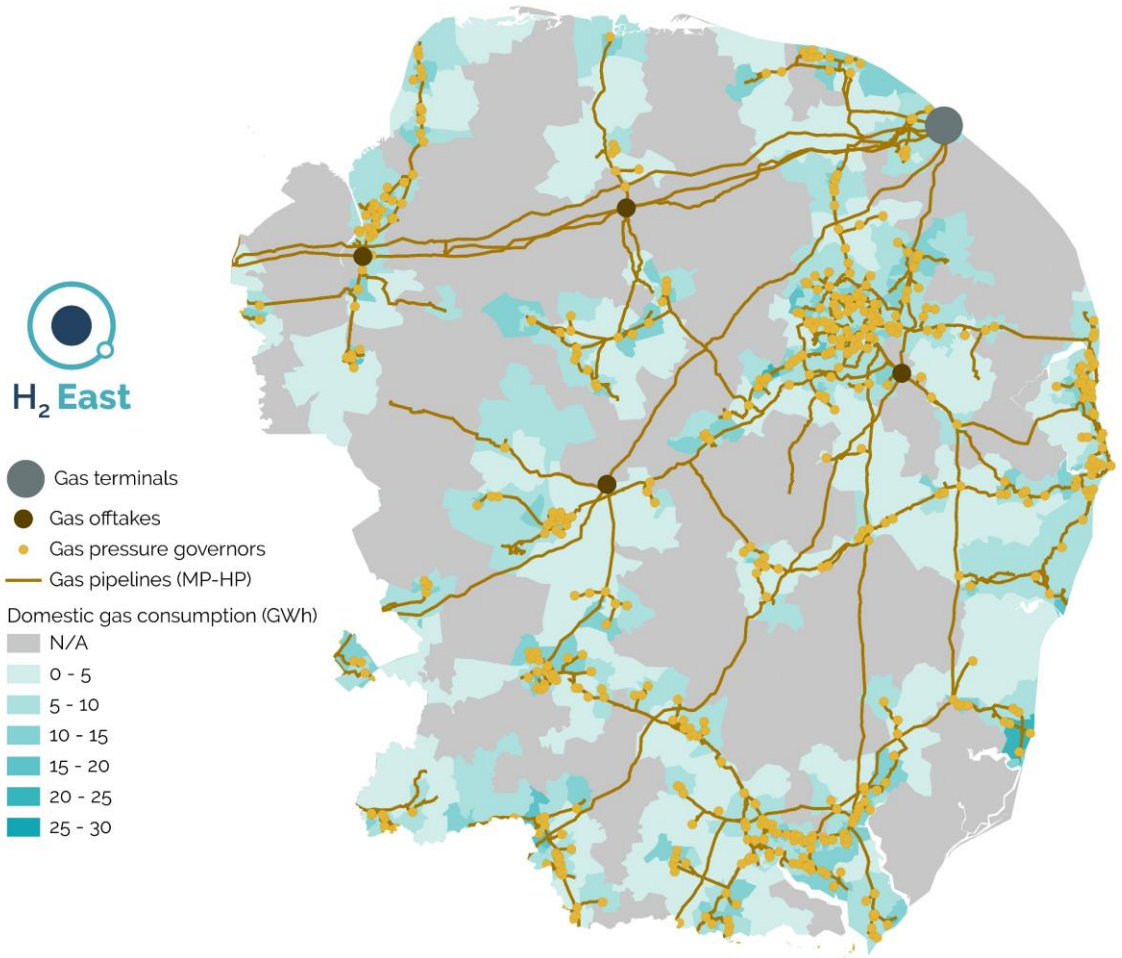
~0.1% → 2% → 20% → 100%

Hydrogen heat technology options

Hydrogen-ready boilers	Hybrid heat-pumps	Hydrogen-powered CHP

State of play: New Anglia

- Homes and businesses across Norfolk and Suffolk do not have universal access to the gas grid
- 66% of domestic and small business premises and 7% of large non-domestic premises have a gas supply, but this varies significantly by local authority
- This has important implications for when and where alternative heating technologies should be deployed
- Hydrogen for heat in the New Anglia region could benefit urban areas with gas grid connections
- Off-gas-grid communities will need to find alternative solutions

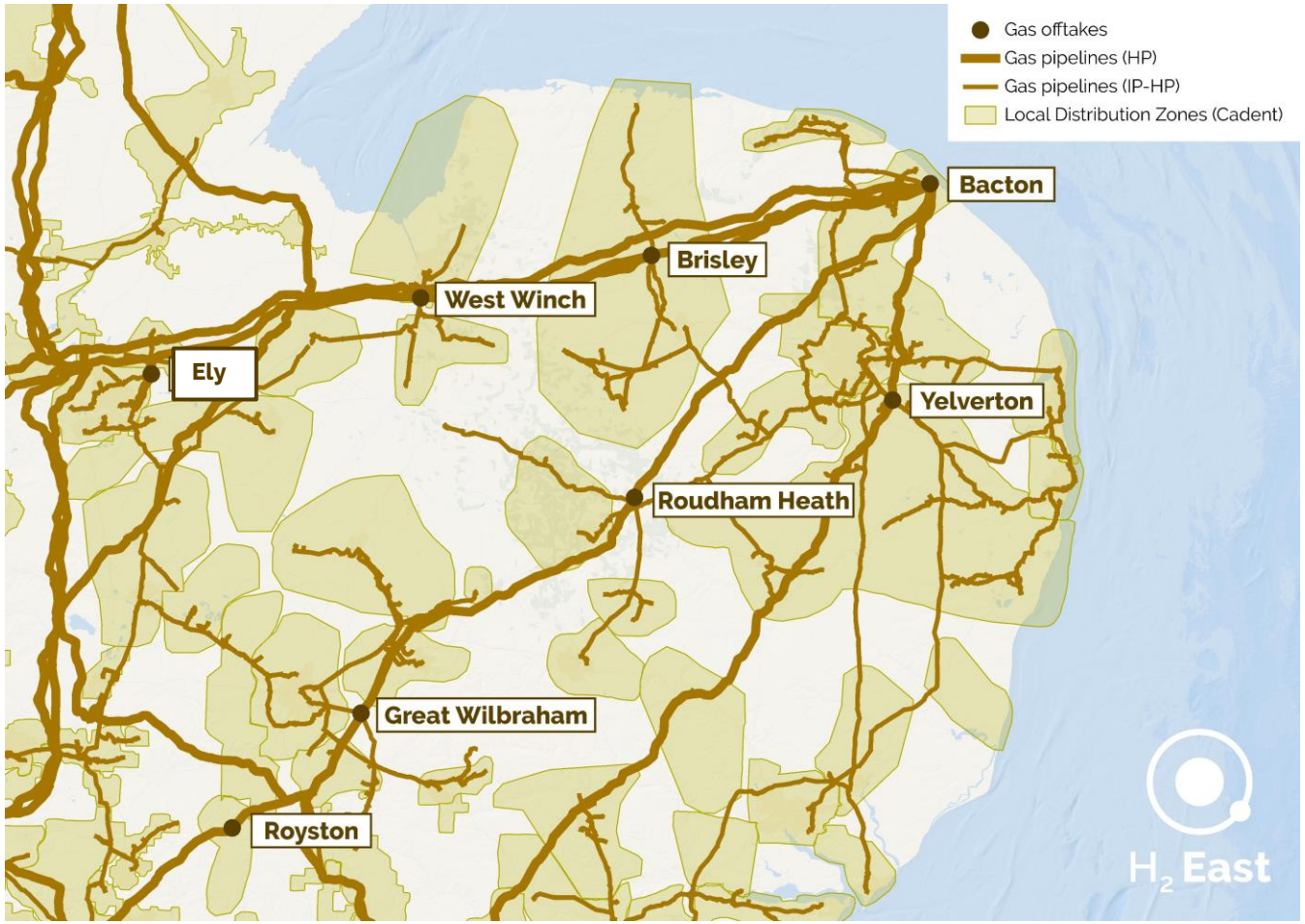


Potential demand

- Volumes demanded for heat are intrinsically tied the level of hydrogen blending permitted in the gas network
- Hydrogen blends of up to 20% would provide some carbon savings, but is only an interim step
- Based on energy density at standard pipeline pressures, extremely large volumes of hydrogen would be required to offer a like-for-like swap for gas. This leaves a number of questions to be addressed in the coming years on the scale of production required to support 100% hydrogen heating
- Actual uptake will depend on:
    - Timing of 100% hydrogen conversion
    - Adoption rate of electric heating
    - Comparative costs
    - Changes to annual consumption based on improved energy efficiency measures
    - Policy directives on which heating solutions to prioritise or support

How might they be deployed?

- An obvious opportunity for Hydrogen blending in the New Anglia region is across the five gas offtake points in Norfolk where the Cadent distribution network connects into the National Transmission System for gas
- Trials of 100% hydrogen could be initiated in sections of the network that could be safely segregated
- Industrial users with high-grade heat requirements may look at hydrogen as the alternative to natural gas, whether produced on site or delivered by pipeline



Case Study - Yelverton

- Yelverton hosts one of the gas offtake points from the National Transmission System into the Cadent distribution network
- Poringland could potentially serve as a hydrogen village trial given its proximity to Yelverton and its self-contained and isolated nature allowing for easier control
- There are a number of similar branches that could be investigated. Equally, some former RAF sites have self-contained gas grids that can be isolated from the network

AGRICULTURE

Hydrogen East

Context

Challenges

- Farms come in all shapes, sizes and specialisms
- The bulk of emissions are not tied to direct energy use, but rather from land management and ruminant livestock
- By their nature, farms are dispersed and rely on rural infrastructure, making some collaborations harder than in urban environments

Latest policy

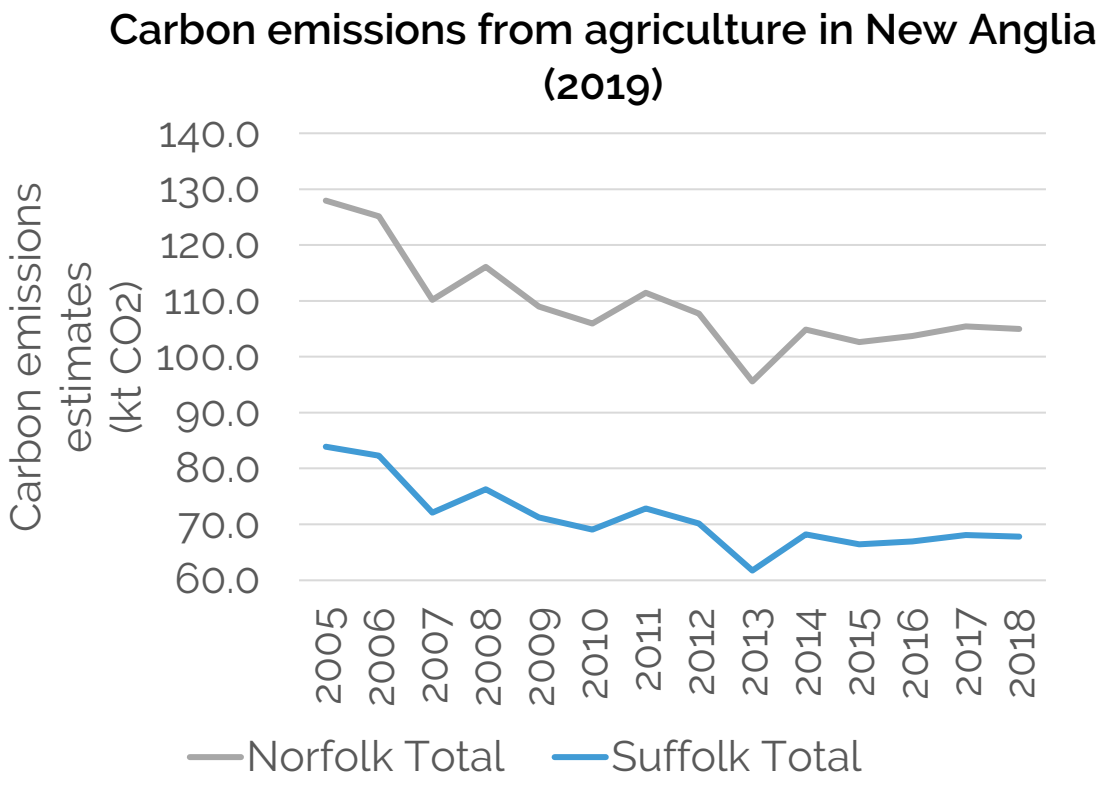
- NFU announced a goal for the agriculture sector to achieve Net Zero by 2040
- Agriculture Bill 2020 has created a new framework of environment measures and rewarding farmers for public goods (7 year transition)
- Red Diesel rebate will end, requiring a replacement fuel

COP26

- Agriculture is very sensitive to climate change globally
- The sector has touchpoints in several fields including; transport, sustainable food, land-use management, biodiversity and flood resilience
- While the agriculture sector is presently a source of emissions, some farms could deliver negative emissions in time

Background

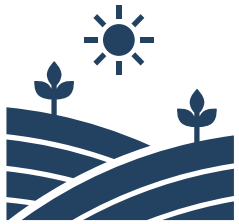
- In the UK, agriculture accounts for 10% of total greenhouse gas emissions
- The sector is the primary source of both nitrous oxide (68%) and methane (47%) emissions, but only a minor contributor to carbon dioxide emissions (2%).
- Carbon emissions are associated with both shed heating and vehicles, as well as soil 'liming'
- 73% of New Anglia land area is classed a agricultural, though this varies by local authority
- Reductions in carbon emissions in Norfolk and Suffolk have plateaued in recent years



How hydrogen could help?

- Hydrogen vehicles and stationary machinery ranging from forklifts to tractors
- Battery electric vehicles may suit some use cases, but large vehicles that have heavy duty-cycles (e.g., combine harvesters) need to be able to run long shifts with minimal stoppages and often at short notice
- Potential obstacles around fuel deliveries to overcome

- Heating for livestock sheds or processing plant may benefit from hydrogen boilers
- Lots of poultry farms in our area with heating requirements
- Competes against electricity and heat pump options



- Ammonia-based fertilisers are currently derived from carbon-intensive processes
- Green hydrogen could be converted to ammonia to remove the indirect carbon emissions
- Leaves complexity of the NOx emissions

Hydrogen vehicles coming soon?

- To establish a farm serviced by a fleet of hydrogen vehicles a number of steps need to be completed:
  - Prototype vehicles need to be commercialised
  - A range of different vehicle sizes and ratings need to be offered
  - Refuelling infrastructure needs to be in place
    - Delivery processes or onsite production
    - On site storage and dispensing
    - Refuelling options for third-party haulage that visit farms
- The agriculture sector will be required to adapt in a range of ways, meaning a higher cost and administrative burden. Financial support options or collective purchasing schemes would need to be in place for high-cost investments such as new vehicles

Further research

- The opportunity for hydrogen in this sector is perhaps the least well understood
- Given the significance of agriculture to our region, more research is needed, including:
  - Developing a method to assess market size and sub-categorisation of existing agricultural vehicles
  - Assessing the potential to create ammonia from locally produced green hydrogen
  - Evaluating the emissions from farm haulage and options for encouraging conversion
  - Establishing whether some larger farms with renewable generation might benefit from hosting hydrogen production

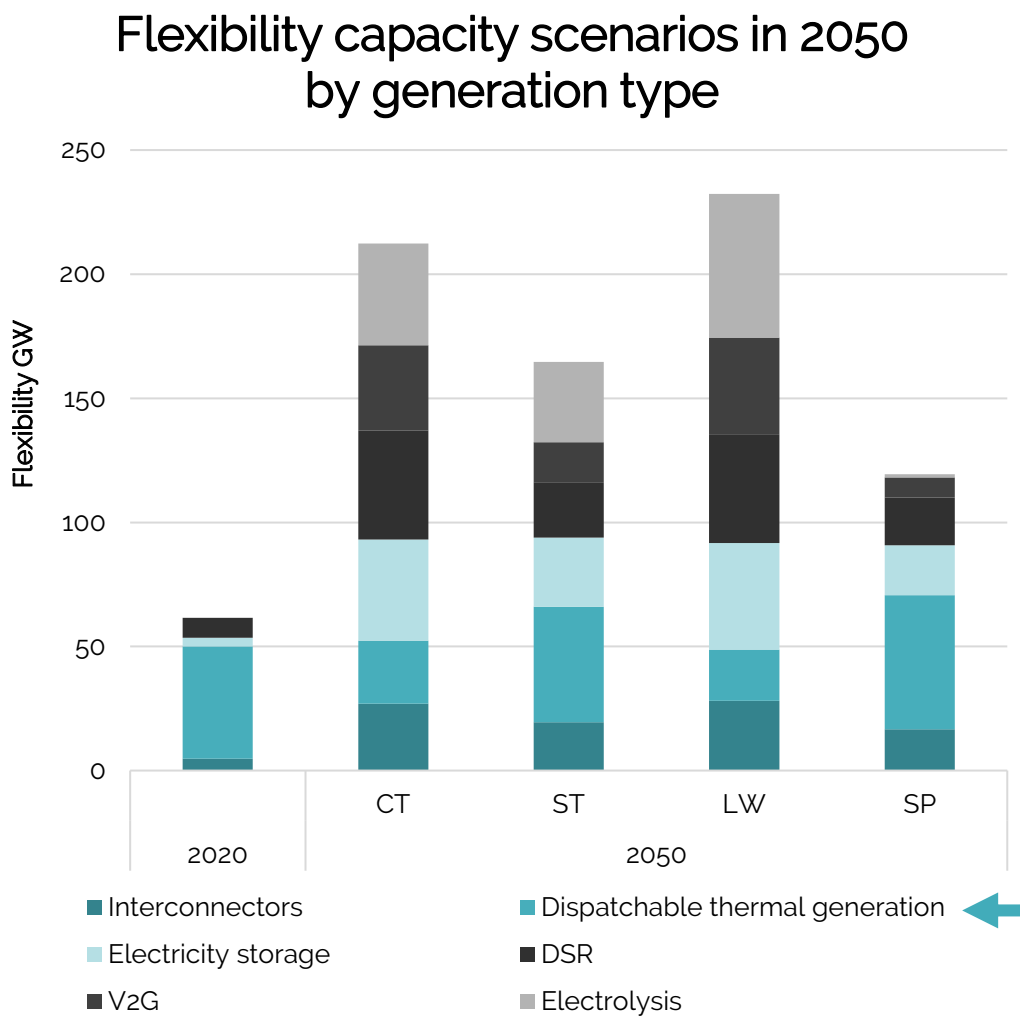
POWER AND FLEXIBILITY

Hydrogen East

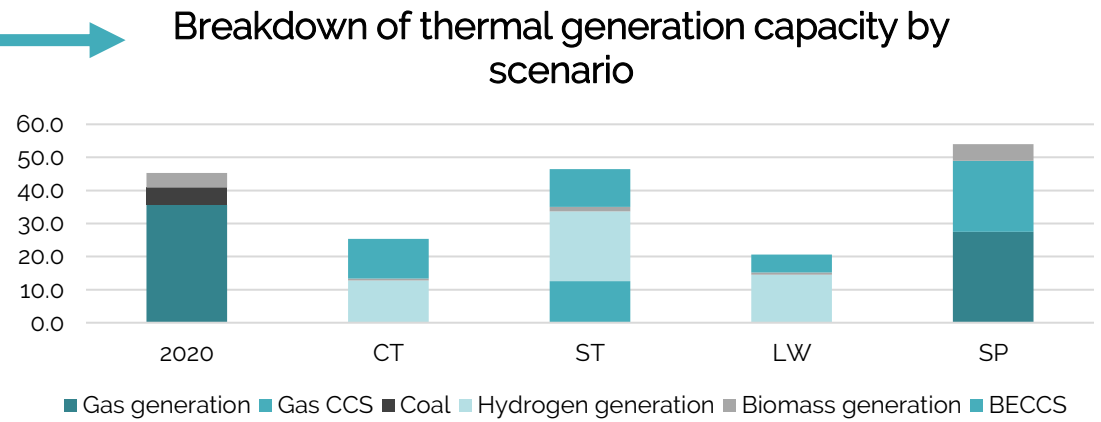
Context

- Two main ways that hydrogen could interact with power sector:
  - Providing fuel for combustion in gas or diesel turbines that generate electricity
  - Electrolysers or fuel cells responding to market signals to provide flexibility to the grid
- The sector has made significant strides to increase renewable generation, but the system requires constant monitoring and management to ensure it remains balanced
- When balancing actions are required, the National Grid ESO (or increasingly the electricity distribution networks) will call on generators (or flexible demand users) to respond
- Likewise as DSOs develop local flexibility markets
- How we maintain this flexibility in a Net Zero scenario whereby gas-powered generation is phased out is key to ensuring a robust electricity network

The need for flexibility



- The National Grid Future Energy Scenarios (FES 2021) model different potential scenarios for hydrogen uptake in flexibility
- One scenario sees nearly 58GW of electrolyser capacity with the potential to operate flexibly
- Flexible thermal generation remains, with hydrogen-fired turbines the leading option in all three Net Zero compliant scenarios



Flexible gas-fired generation

- There are multiple assets across Norfolk and Suffolk that currently burn natural gas to generate electricity (and heat)
- In future such assets might be required to be zero-emission from the outset, but there are also options for existing assets to adopt hydrogen blends to reduce carbon dioxide emissions
- These include the two large CCGTs at Great Yarmouth (398MW) and King's Lynn (382MW), as well as a range of smaller units across the region
- Units would have the option to site hydrogen generation nearby or take a blend from the gas grid. 'De-blending' technology could increase the 20% hydrogen concentration available from the grid to 40-50%
- Newer, smaller units could deploy a blend of hydrogen and ammonia fuel from a local supply
- Hydrogen storage nearby would allow for fast response to market signals

Flexibility from hydrogen assets

- As well as the flexible gas-fired assets, which can be used to respond to market signals for balancing services, there are other avenues in which hydrogen could be used as a source of flexibility
- Demand-side response from the electrolyser:
  - Electrolyser developments are usually sized assuming less than 100% run time. Provided that there is adequate supporting storage, this means the electrolyser can ramp-up and ramp-down production, reacting to price signals sent by network operators
- Rapid response from static fuel cells:
  - We have suggested that the primary use case for a fuel cells is in vehicles but they can also be standalone installations that generate electricity when needed, such as for off-grid EV charging
  - Fuel cells can quickly create electrical current, meaning they can participate in a number of balancing services in the same way that batteries can
- Storage of hydrogen and use in other markets or at different times
- We believe that this potential use case of the hydrogen market has been understated and should be evaluated in greater detail in its own project

Interactive poll

Hydrogen in East Anglia: 2030 and 2050

Hydrogen East

Key influencing dates

2022

- Launch of Net Zero Hydrogen Fund (£240mn)
- Outcome on future of the gas system
- Decision on blending on grid beginning in 2023

2025

- Mandating hydrogen-ready boilers from 2026
- Completion of gas distribution pipeline network upgrade to hydrogen-ready by 2026

2030

- Ban on sale of new petrol and diesel cars
- UK 78% emissions reduction by 2035

2040

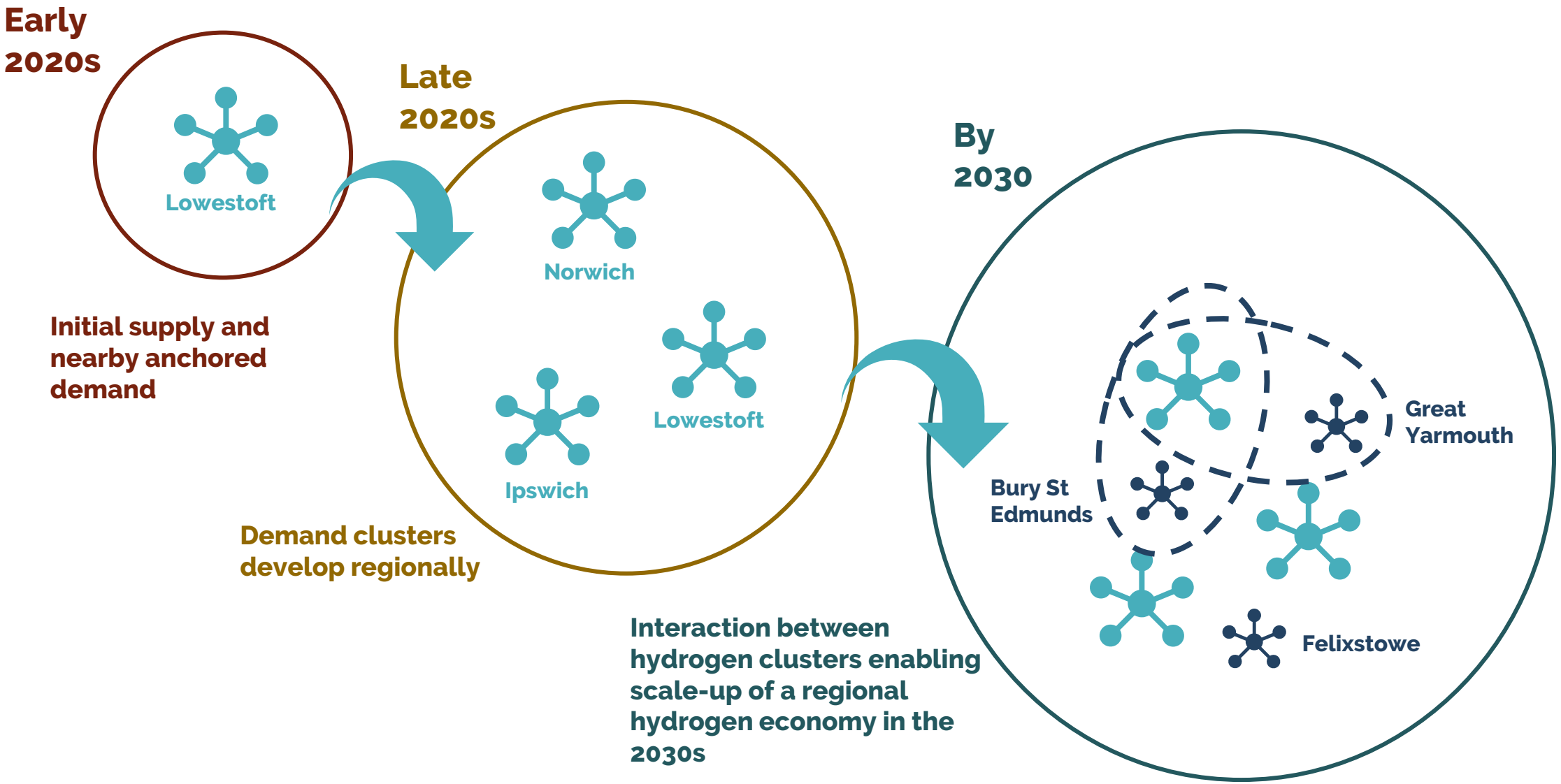
- Ban on sale of new non-renewable HGVs

2050

- UK Net Zero target date
- Hydrogen equivalent to 1/3 of final energy usage

There is therefore a need for us to set out a clear transition pathway as soon as possible.

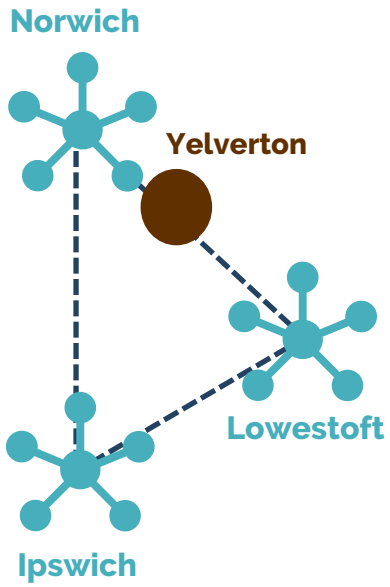
A roadmap to 2050



2030

Supply opportunities

Varying applications



Demand clusters

- Availability of both blue and green hydrogen
  - Blue hydrogen will be largely driven by development of CCUS and grid injection at the Bacton Gas Terminal
  - Green hydrogen can be two-fold; large-scale production from high capacity offshore wind and nuclear and distributed renewable co-location across the region
- Injection and blending into gas system will occur at region's main gas offtake points
- Demand clusters forming across applications, primarily in transport markets
- Electrolysers offering flexibility benefits to constrained electricity grid

2050

- Availability of both **blue and green hydrogen** at scale
  - Continued aggressive build-out of offshore wind generation on East Anglian coast in addition to solar deployment onshore and existing and new nuclear development
- Bacton will act as a **key national and international facility** for hydrogen production and transportation
- **Injection and blending** into gas system will occur **across the region**
- Demand clusters merging to form **cross-vectoral hydrogen economy** across entire region with driving markets including transport, heat, flexibility and agriculture
- Electrolysers and hydrogen storage enable **avoidance of significant costs** in otherwise upgrading the electricity network

Next steps

- Develop a **New Anglia Hydrogen Strategy** in partnership with the New Anglia LEP, local councils and key regional stakeholders
- Will help to make the case for hydrogen development in the East of England

- Taking forward **Lowestoft PowerPark** project under e.g. the new Strategic Innovation Fund
- Development of the **Snetterton Clean Transport Hub** concept in Breckland
- Support **Freeport East** and **Bacton Energy Hub** developments

- Launch of online spatial mapping tool '**Net Zero Map**' by end-2021
- Support site identification and assessment of potential for regional hydrogen development. Notably around landfill gas and waste management sites

- Ensure New Anglia region is well-placed to participate in **Net Zero Hydrogen Fund** when launched in 2022
- Collaborate with local councils and stakeholders to see on-the-ground development in the East of England

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Thank you for listening
For more information, visit:

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