

Bringing clean hydrogen to the world



Hydrogen in Action

Matt Williamson

Vice president, Hydrogen

Hydrogen in Action



- The changing face of bp – getting to Net Zero
- Low Carbon hydrogen – growing into a global business as big as gas
- Decarbonisation at Scale - Teesside
 - East Coast Cluster carbon capture and storage
 - H2Teesside 1GW blue hydrogen
- Hydrogen customers – making the transition

Becoming a Net Zero bp



Integrated gas

Our aims:

- 25Mtpa customer sales
- >30Mtpa LNG portfolio

Low carbon electricity

Our aims:

- 50GW developed renewables
- Position across generation and customers
- 500TWh traded¹

Bioenergy

Our aims:

- >100Kbd produced and integrated across value chain
- 20% Biojet market share
- Cost advantaged platforms across Brazil

Hydrogen and CCUS

Our aims:

- 10% hydrogen share in core markets
- Net Zero Teesside

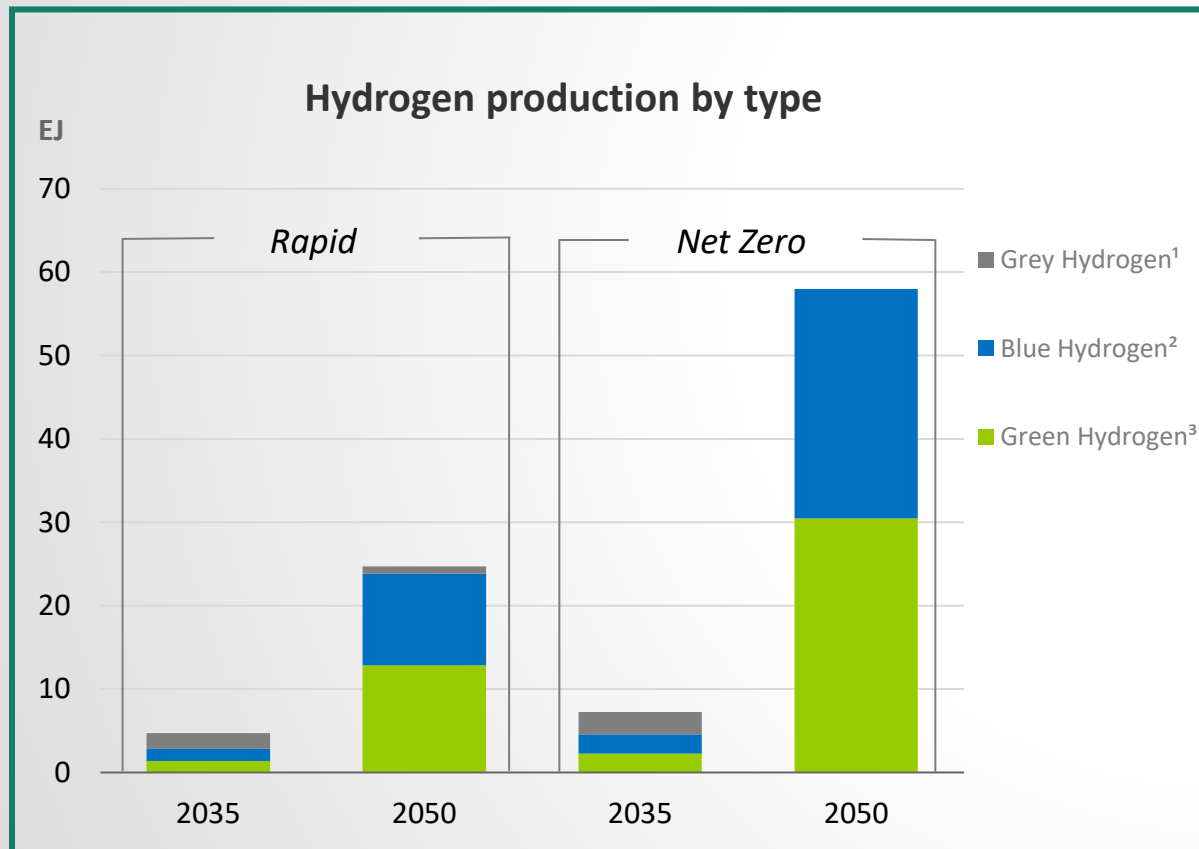
A sustainability frame linking our purpose and

Net Zero ambition

Hydrogen is a key part of a net zero world and a net zero bp



bp's projections indicate hydrogen will be a significant energy vector globally into the future

















1) produced from natural gas (or coal), without CCUS.

2) produced from natural gas (or coal) with CCUS

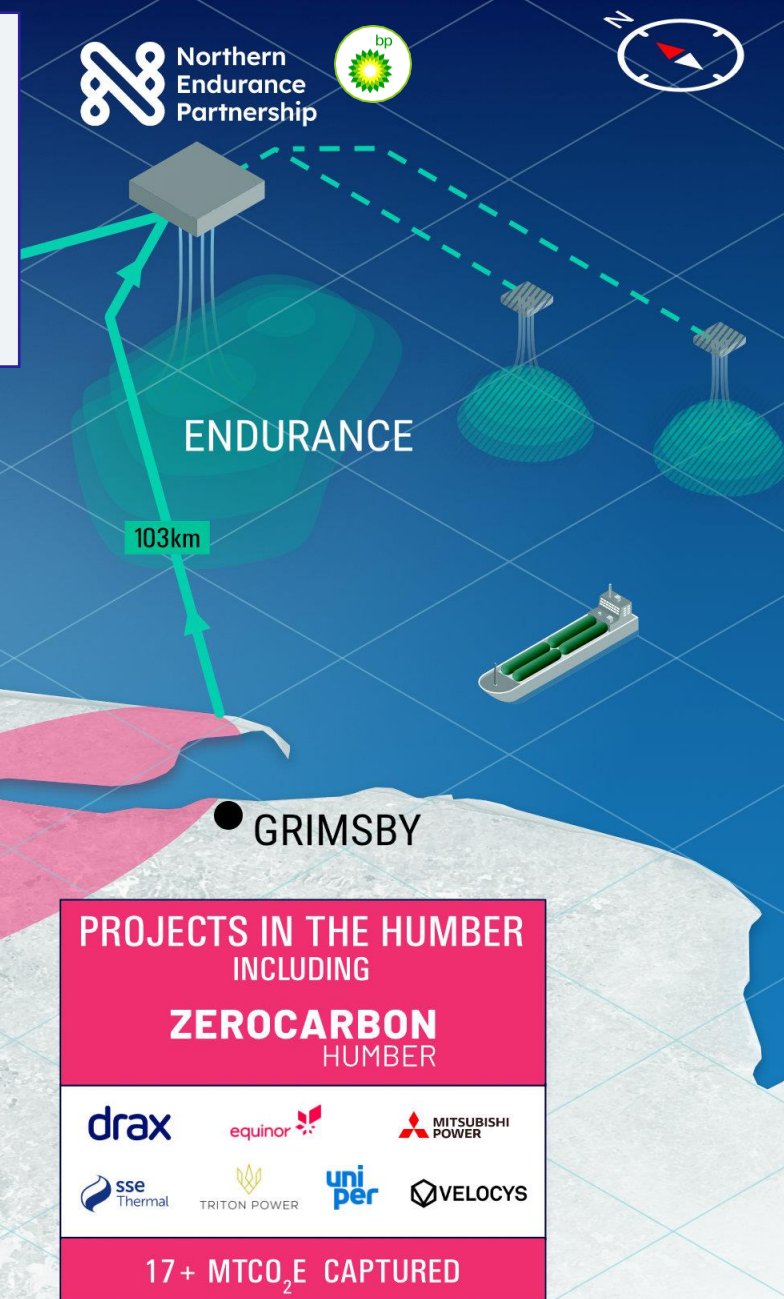
3) made by electrolysis, using renewable power

Source: bp Energy Outlook 2020

Country	bp Projects	Size (MW)
	 H2Teesside	1000 MW
	 Lingen Green H2 project	50MW
	 GetH2	100-300MW
	 H2-Fifty Rotterdam	250MW
	 H-vision	1500MW
	 Castellón refinery	20-115MW
	 Geraldton	1500MW

Reducing 50% of UK Industrial Cluster emissions

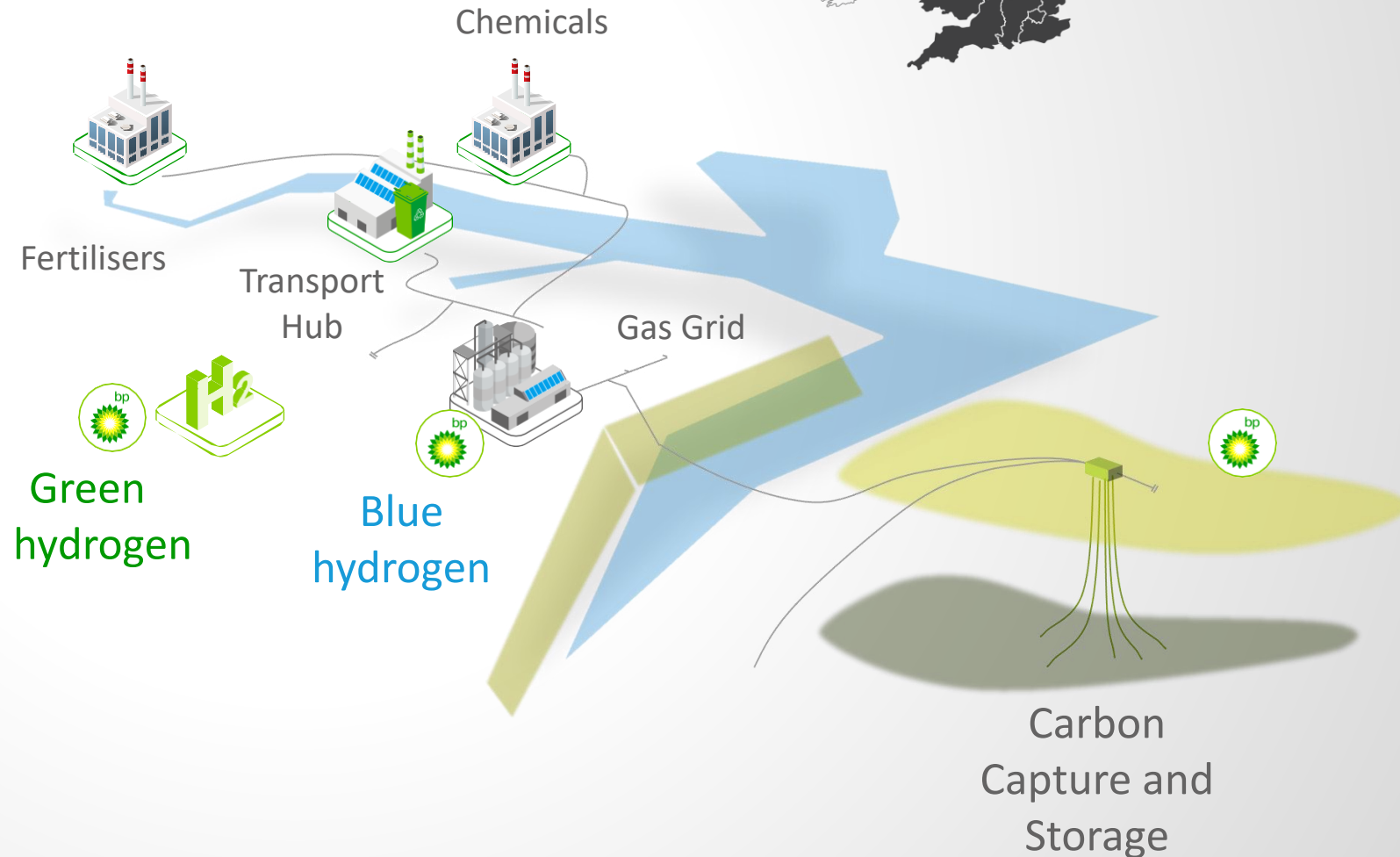
Reducing 50% of UK Industrial Cluster emissions



Decarbonisation at Scale: H2Teesside, UK



- **Investment:** c.£1bn, **bp** and partners
- **Scale:**
 - 1 Gigawatt
 - 20% of UK target (5 GW by 2030)
- **Decarbonisation impact:**
 - 2 million tonnes per year of CO₂ removal
 - 1 million homes equivalent
- **Broader impact**
 - Future-proof existing jobs by creating sustainable low carbon industry
 - New industry development
 - Low carbon hydrogen for households



Hydrogen Customers – making the transition



Industry



High Temperature heating

Furnaces

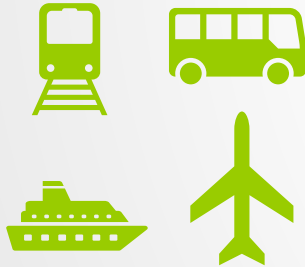
Boilers

Clean Power

Chemical input

Clean Fuels manufacture

Transport



**Trucks, Trains, +
Shipping**

Port Applications

Ammonia for marine fuel

Airfuel

Bio waste + clean hydrogen = zero carbon fuel

CO2 capture + clean hydrogen = zero carbon fuel

Buildings



Near term: hydrogen blending up to c.20% in natural gas pipelines

Long term: 100% hydrogen village, town, city

Hydrogen in Action



- It's going to be big
- It's happening now
- bp is in action
 - Production
 - Customers
 - Globally
- Teesside a great example of what can be done at scale
 - CCUS
 - H2Teesside