



# LCR Green Hydrogen Vision

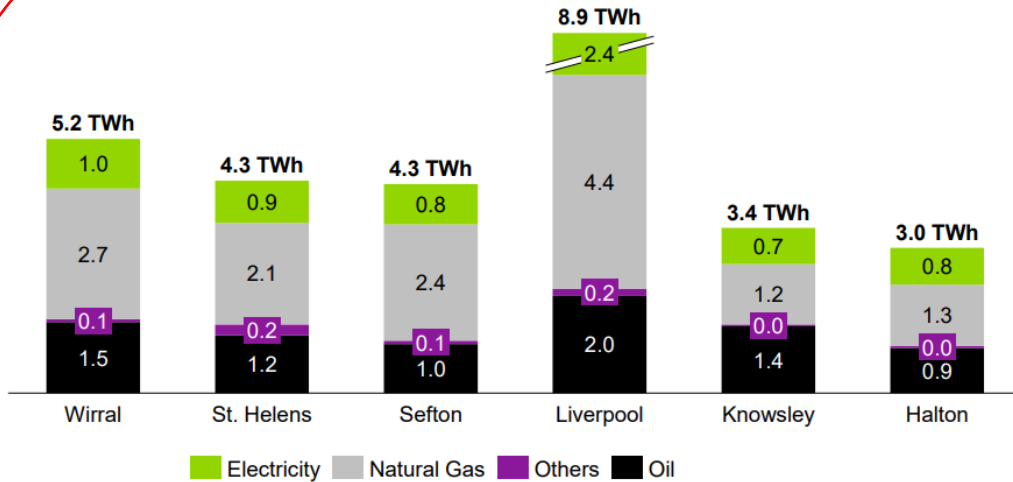
Climate Partnership Briefing – Feb 2023



# The changing energy landscape of LCR

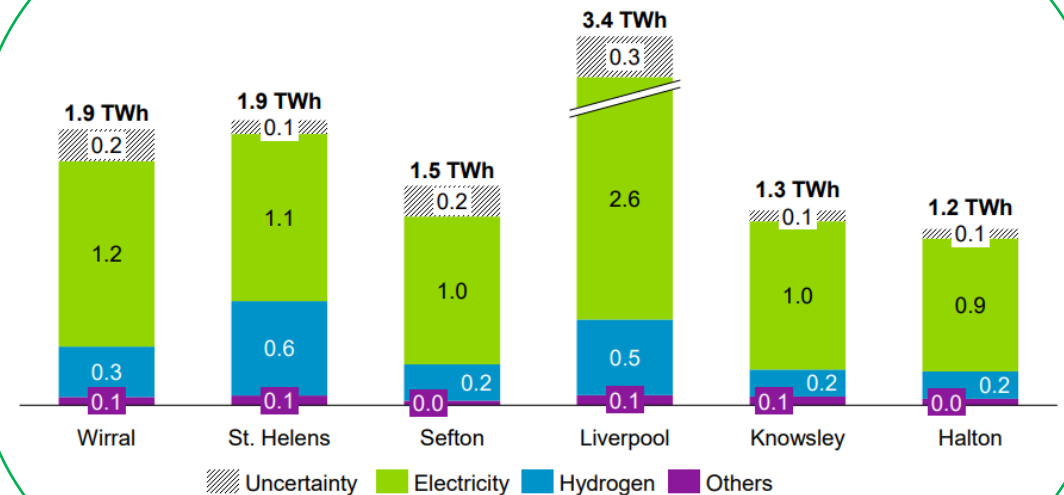
- To achieve Net Zero by 2040, Liverpool City Region must transition from using predominantly fossil fuels to using zero carbon energy carriers

2019



- Halving of overall energy demand
- Electricity becomes the dominant energy carrier
- **15% - 25% of energy demand from hydrogen**

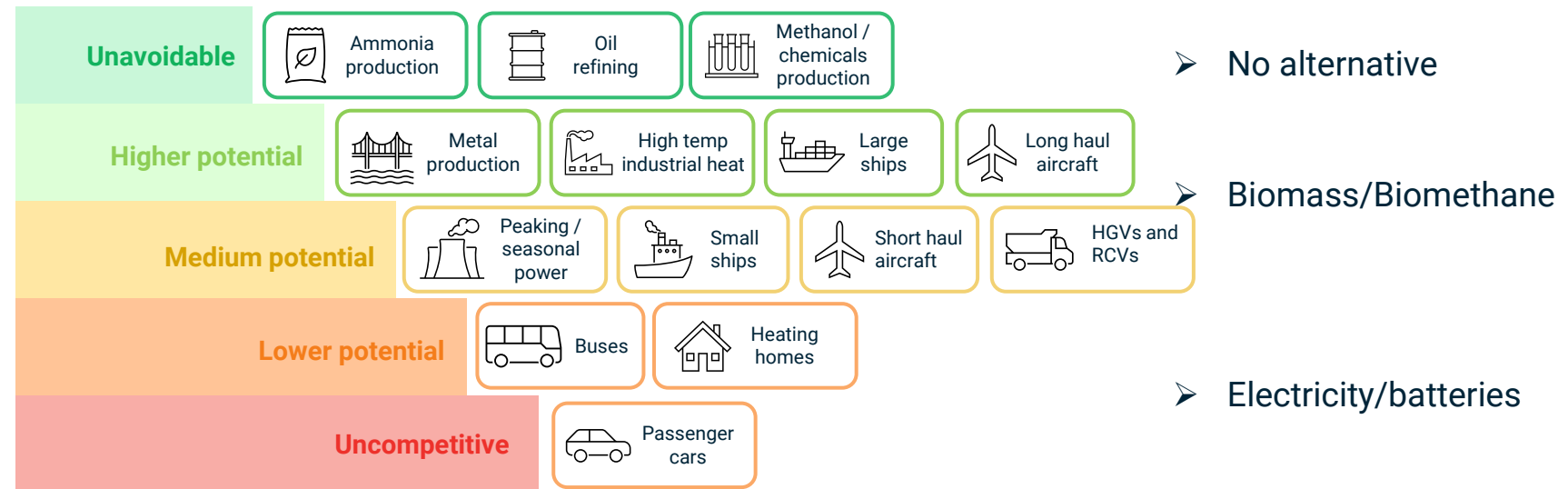
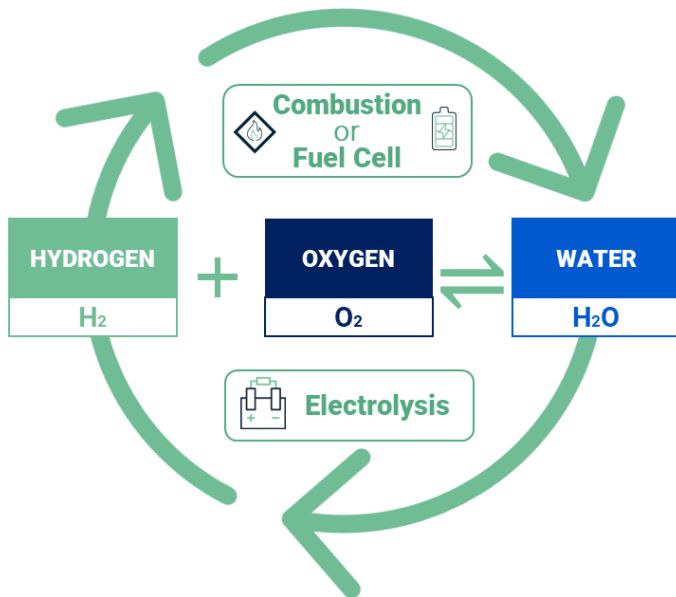
2040



- The LCR Green Hydrogen Vision will examine the role of hydrogen in LCR to 2030

# Maximising the societal benefit from hydrogen use

- Producing hydrogen is resource intensive and energy inefficient
- Hydrogen is valuable and should be directed to use cases which deliver the greatest overall benefit to society



\*\*\* This is a simplistic view and subject to much debate. The changing technoeconomic landscape and local factors must be considered for each individual project \*\*\*

# The different colours of hydrogen

- Colours are often used to denote how hydrogen can be produced
- Grey, blue and green hydrogen are currently the dominant colours

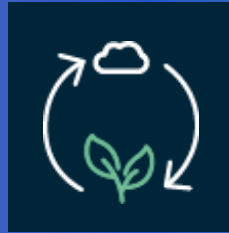


**Grey hydrogen** is produced by splitting fossil fuels like methane into hydrogen and carbon

Emissions: 9 - 11kg CO<sub>2</sub>e

Purity: 95 – 99%

Ranking: does not meet Low Carbon Hydrogen Standard

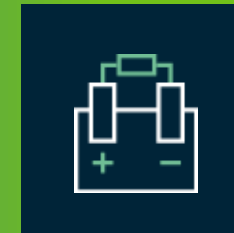


**Blue hydrogen** is produced in the same manner as grey, however the majority of the carbon is captured in the process

Emissions: 1 - 4kg CO<sub>2</sub>e

Purity: 95 – 99%

Ranking: meets Low Carbon Hydrogen Standard if upstream emissions from fossil fuel extraction are low enough



**Green hydrogen** is produced by splitting water into oxygen and hydrogen through a process called electrolysis

Emissions: 0kg CO<sub>2</sub>e

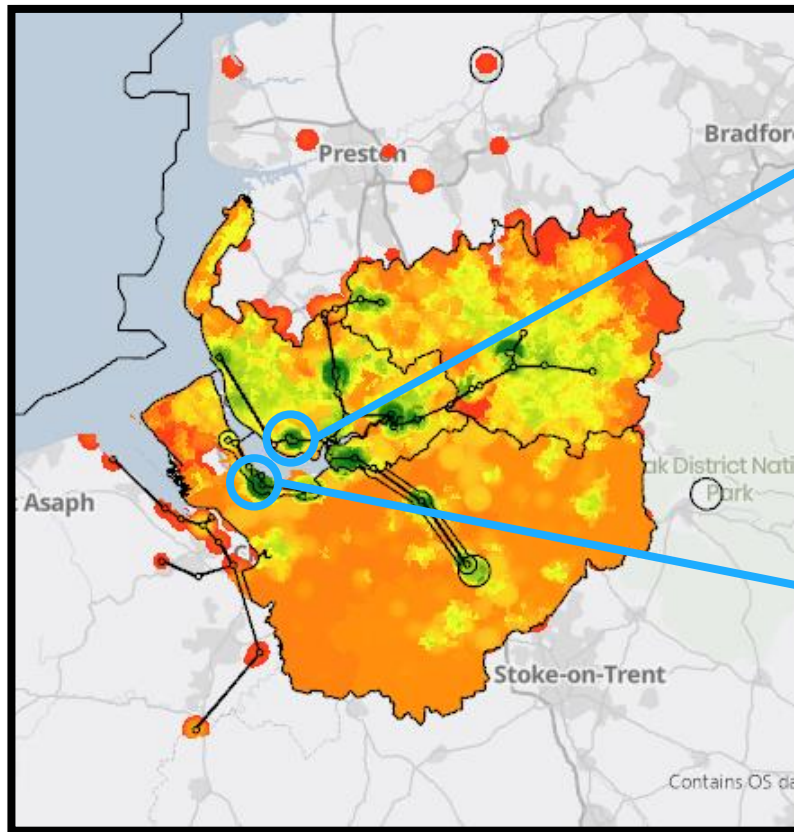
Purity: 99 – 99.99%

Ranking: meets Low Carbon Hydrogen Standard so long as the electricity that powers the electrolyser is renewable



# Hydrogen demand & hydrogen hubs

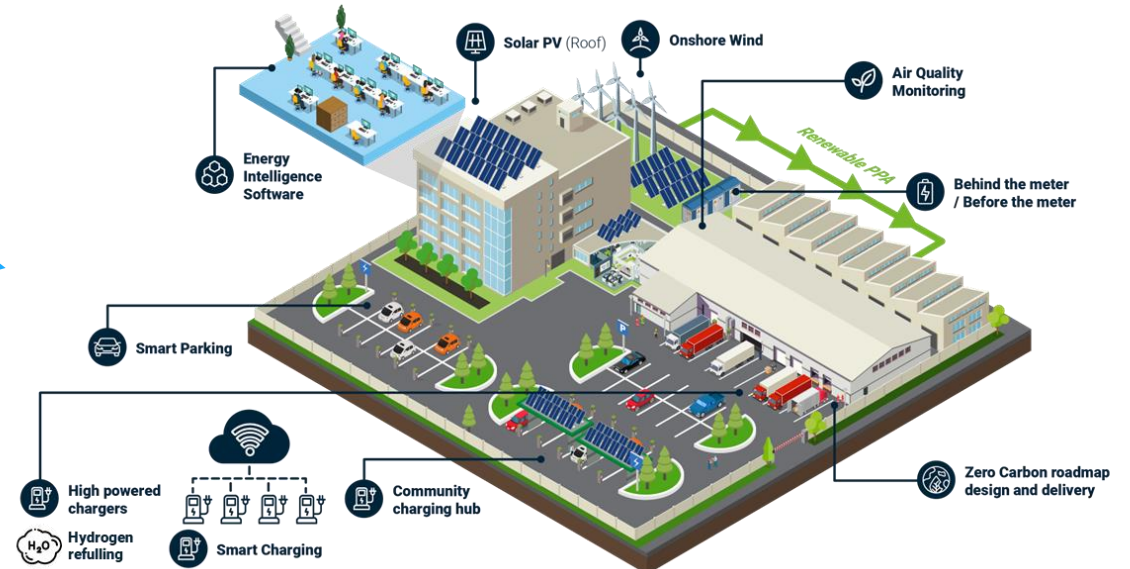
- We will forecast hydrogen demand across LCR and identify hydrogen demand hubs
- These demand hubs will act as catalysts for wider placemaking projects



## Zero Emission Refuelling Centre



## Local Authority Hub

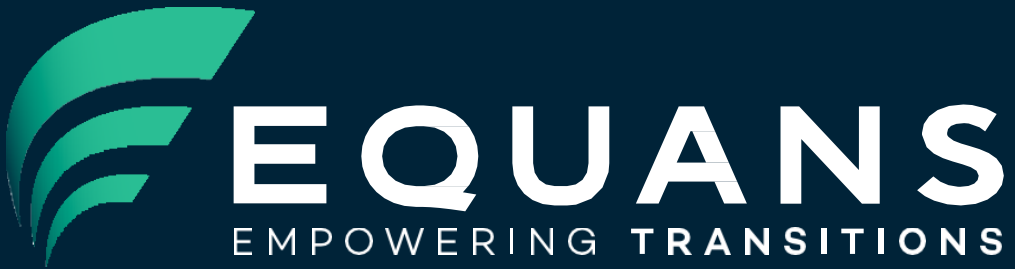


# Developing an inclusive vision for LCR

- We are keen that the Mersey Green Hydrogen Vision reflects the collective ambitions of the CA, LAs, NGOs and other local stakeholders
- This project will involve extensive consultation with key local stakeholders



Theme / Subject	Description	Audience	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
			02-Jan	09-Jan	16-Jan	23-Jan	30-Jan	06-Feb	13-Feb	20-Feb	27-Feb	06-Mar	13-Mar	20-Mar	27-Mar	03-Apr	10-Apr	17-Apr	24-Apr	01-May	08-May	15-May	22-May	29-May
Project Kick Off Meeting	KO and alignment call	LCRCA Project Team	1x																					
Weekly Progress Meeting	Weekly Progress Updates	LCRCA Project Team		1x	1x	1x	1x	1x	1x	1x	1x	1x	1x	1x	1x	1x	1x	1x	1x	1x	1x	1x	1x	1x
Net Zero Board Intro	Introduction to project	Net Zero Delivery Board		1x																				
Climate Emergency Workshop Intro	Introduction to project	Climate Emergency Workshop			1x																			
Hydrogen Market Briefing (Recorded)	Summary of hydrogen key themes	LAs CA sectors				1x																		
Planning and Reflection Workshop	Initial findings & workshop overview	LCRCA Project Team					1x																	
CA Sectors Assumptions (4x)	Disucssion on assumptions and data requirements	LCRCA Setor Teams							4x															
Climate Partnership Intro	Introduction to project	Climate Partnership							1x															
LA Workshops (3x)	Stakeholder workshop to shape vision	6 x LAs									3x													
Sector Workshops (5x)	Stakeholder workshop to shape vision	Municipal Fleets Freight & Logistics Industry & Buildings Skills & Jobs Innovation												3x	3x									
Developer Workshops (1x)	Stakeholder workshop to shape vision	RES Developers H2 Developers												1x										
NGO Workshop	Stakeholder workshop to shape vision	Climate Partnership										1x		1x										
Intermediate Report Board Discussion	Summary of intermediate findings	Net Zero Delivery Board Climate & Renewable Portfolio Board															1x							
Intermediate Report CA/LA Briefing	Summary of intermediate findings	LAs CA sectors															1x							
Placemaking & Investment Workshop	Final Workshop focussed on delivery	6 x LAs																	1x					
Draft Report Discussion	Summary of draft report	LCRCA Project Team																		1x				
Final Report Discussion (2x)	Disucssion on final report	Net Zero Delivery Board Climate & Renewable Portfolio Board																						2x



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