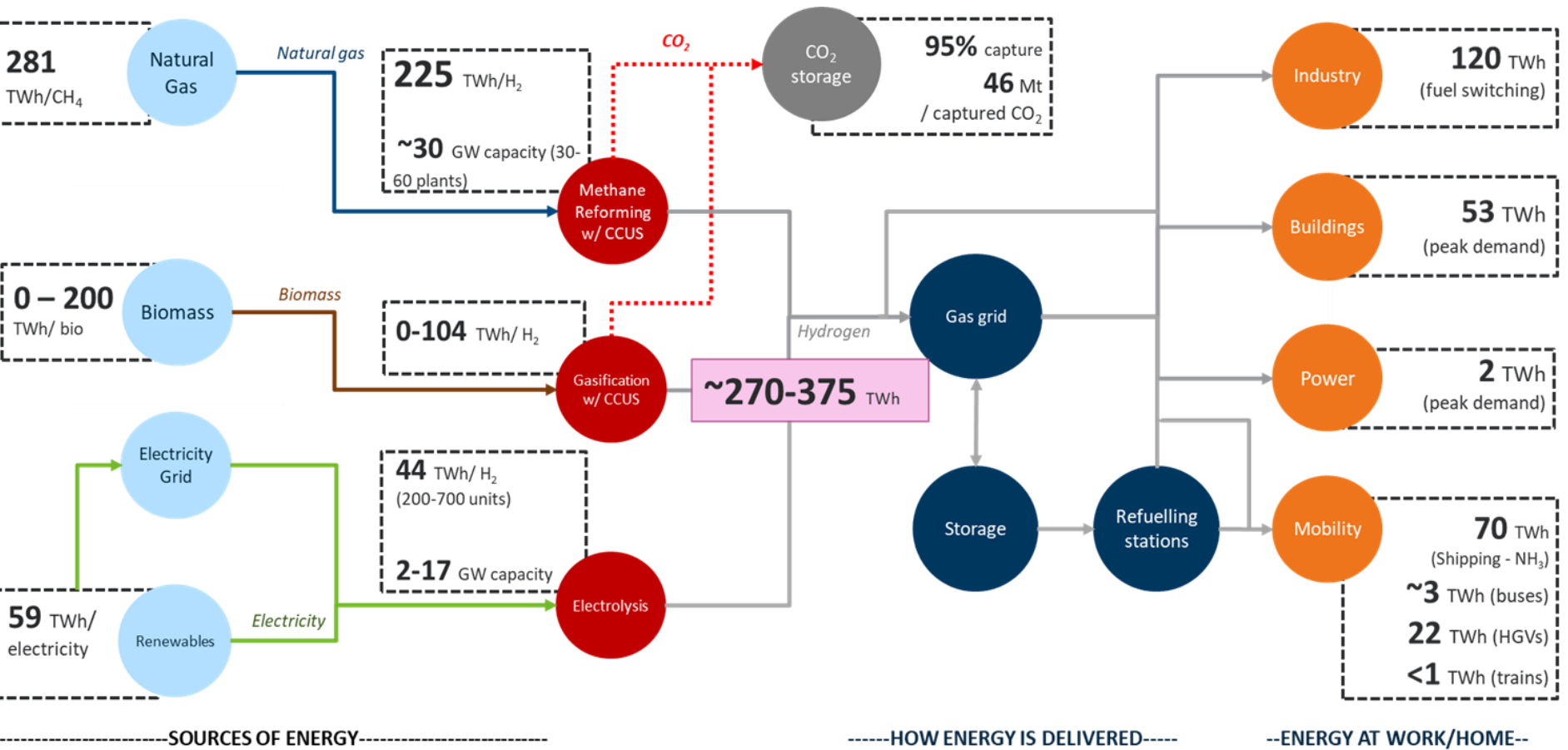


UK – CEM update

CIEP webinar
Friday 3 July

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CCC vision of potential H2 economy in 2050: 10-fold increase on current production and use, and complete switch to low/zero carbon



Source: CCC's "Future Ambition" scenario – CCC (May 2019) Net Zero Technical Report (Chapter 2: Power and H2 production)

Challenges: wide ranging across the value chain

Emissions	<ul style="list-style-type: none"> • Reduction potential - demonstrate CCUS capture rates, quantify upstream and residual emissions, establish global warming potential, assess potential for negative emissions.
Production	<ul style="list-style-type: none"> • Primary energy inputs - cost projections, risk/issues, energy security, efficiency • Costs – innovation, build rates, commercialisation, sustainable business model(s) • Dependencies: CCUS infrastructure, availability of low cost renewable electricity
Distribution	<ul style="list-style-type: none"> • Innovation and demonstration to support cost effective, safe distribution • Decision on role of gas grid, but also dedicated (e.g. on cluster) and non-pipeline distribution
Storage	<ul style="list-style-type: none"> • Innovation in storage at scale over longer time periods, incl. H2 compounds • Establish role of storage – volumes required under different end use scenarios • Develop cost-effective storage – including pressure, contamination, centralised (caverns) vs decentralised (pressure vessels)
End use	<ul style="list-style-type: none"> • Full assessment of near-term demand potential in low regrets applications • Development and demonstration of equipment that uses H2 across end uses • Assurance on safety case – in novel, expanded end uses • Understanding consumers - readiness, impacts, awareness • Creating incentives to switch to low carbon H2
Cross cutting	<ul style="list-style-type: none"> • Sequencing of support - from innovation to commercialisation • Coordination – matching supply and demand, sequencing, industry engagement

Priority activity to support deployment through 2020s

Strategy	<ul style="list-style-type: none">• Developing strategic approach - focus on action in the 2020s, scaling up low carbon hydrogen production and near term end use• Mainstreaming consideration of hydrogen across energy strategy, and Covid-19 response• Identifying opportunities for international collaboration
Policy frameworks	<ul style="list-style-type: none">• Business models for low carbon H2 production – to drive investment and deployment• Low carbon hydrogen production standards – working with international partners• Reviewing wider market and regulatory framework
Funding	<ul style="list-style-type: none">• £100m Low Carbon Hydrogen Production Fund, alongside enabling £800m CCS Infrastructure Fund (CCUS ambition at least 2 clusters by 2030; with one by the 2020s)• Share of UKRI Industrial Clusters Decarbonisation Challenge (£170m), Industrial Energy Transformation Fund (£350m), Clean Steel Fund (£250m)• Government investment up to £121m for hydrogen innovation in this spending period; hydrogen a priority for £1bn Energy Innovation Programme announced in March 2020• Thinking ahead to future spending review ...
Sector development	<ul style="list-style-type: none">• Assessing potential to preserve and expand employment & skills (including evolution of the oil and gas sector); develop UK supply chain; potential for exports across value chain. In support of clean growth and Covid economic recovery