

INEOS

Grangemouth & Hydrogen Demand

Hydrogen Industry Leaders

26th November 2024



CO₂ emission history – Grangemouth Complex

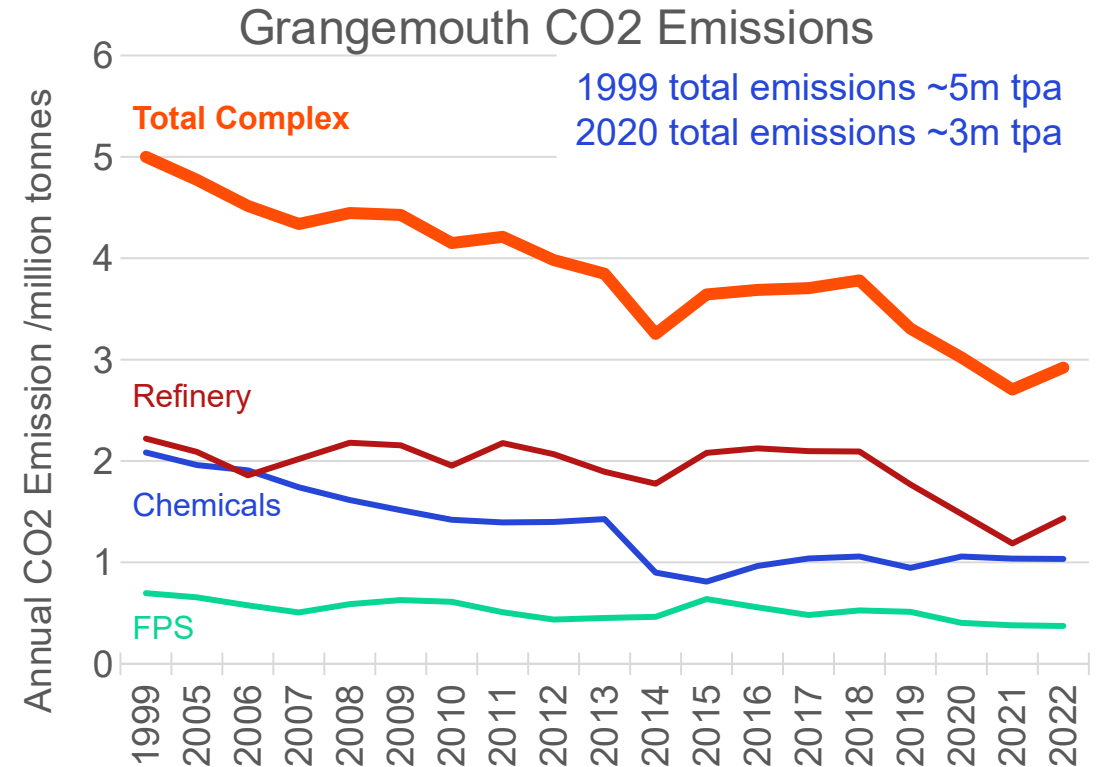
CO₂ emissions have reduced by 37% since 2005

2005 – establishment of EU-ETS

- Audited emissions reporting
- Projected back to 1999 using engineering “first principles”

Improvements since 2005 driven by:

- Investment
- Fuel switching
- Optimisation
- Asset Optimisation



Creating our Net Zero Roadmap


Identified hydrogen fuel switching as next key step in journey to net zero

CO₂ emissions (kt)

100 

300 

500+ 

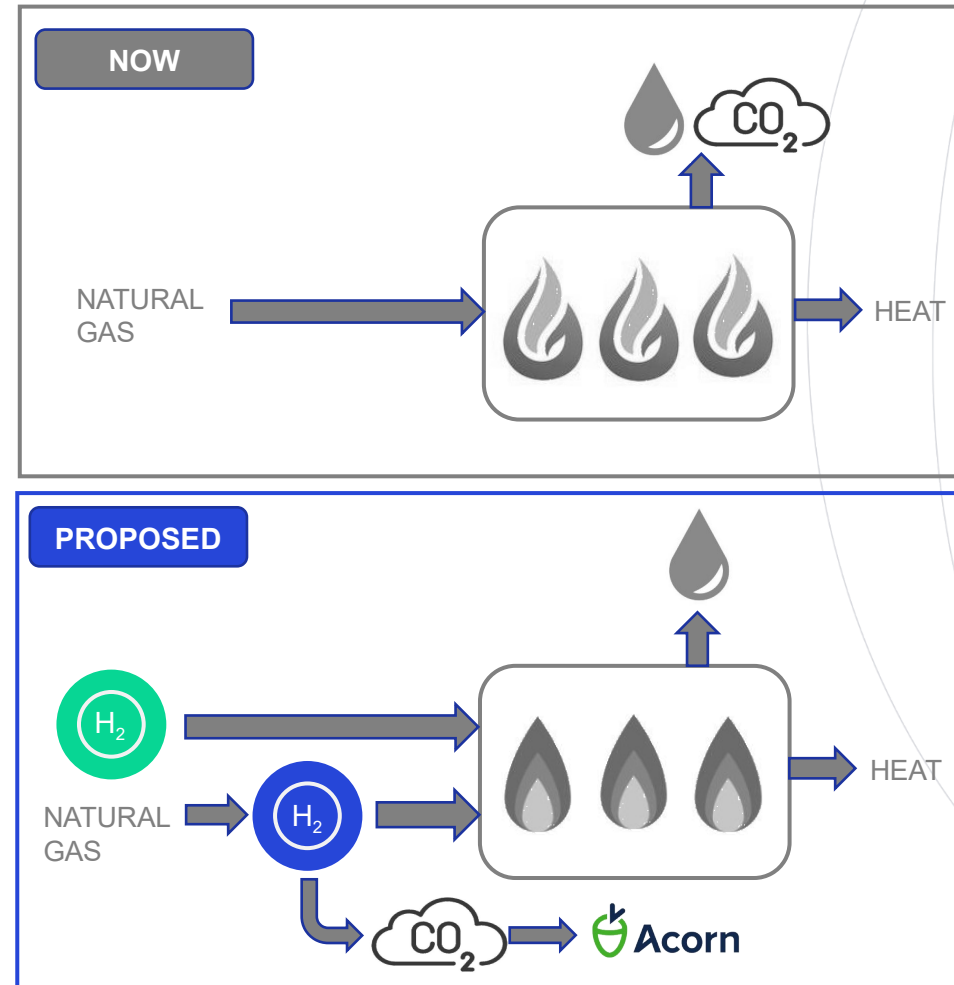
(More Concentrated >50%) 



Fuel Switching Net Zero Project

INEOS proposes to use fuel switching to enable net zero at Grangemouth

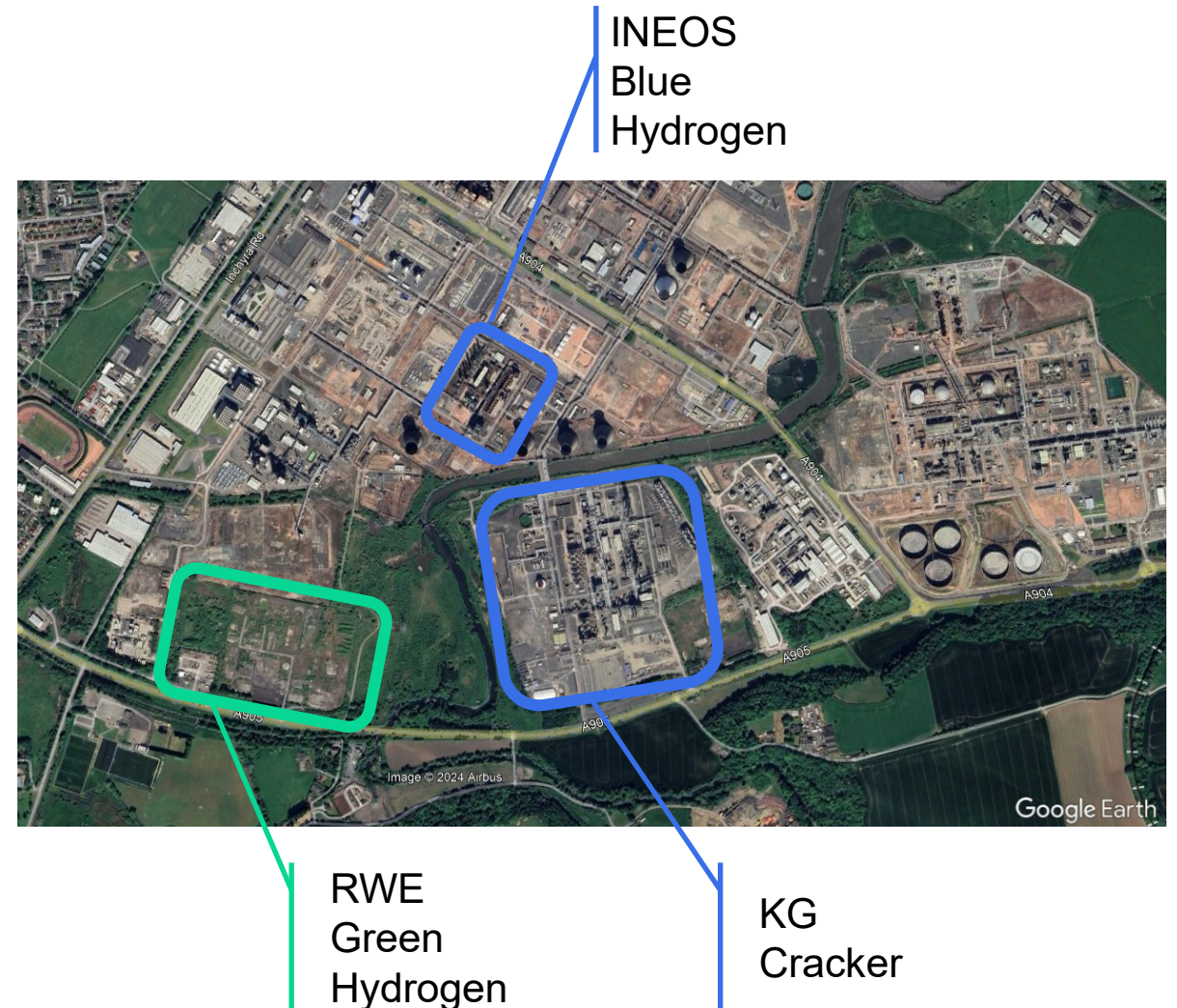
- Conversion of heaters, boilers and furnaces to use hydrogen as fuel
- Installation of hydrogen distribution system
- Hydrogen supply:
 - ④ Production of low-carbon “blue” hydrogen by INEOS (at Grangemouth)
 - ④ Purchase of green hydrogen from RWE (co-located at Grangemouth)
- Export of CO₂ produced by blue hydrogen production facility to Acorn Transportation and Storage System



Grangemouth – Fuel Switching & Hydrogen Supplies

Approach to use blue & green hydrogen

- Blue hydrogen
 - In Pre-FEED, scheduled to complete 2H26
 - Requirement for clear UK Government Support
 - Needs clear signal on Acorn T&S
 - Operational - likely early 2030's
- Green hydrogen
 - Located on INEOS land, near consuming plant



Project Willow

Potential options assessed against seven lenses

Technical



What are the viable solutions to transform Grangemouth into a low-carbon fuel centre?

Economic



What economic constructs need to be created?

Commercial



What is the size / commerciality of the market for low-carbon products and new feedstocks required?

Regulatory



What regulatory frameworks are required?

Climate/ Environmental



What are the benefits and impacts on the environment?

Community



How can Willow make a positive community impact?

Skills



What is the profile of the workforce and implications to skills in the community?

Project Willow

Focus on Advantaged Feedstocks, Infrastructure / Assets and Demand

Emerging Themes:

- Maximising bio-feedstocks
- Maximising local waste value
- Conduit for Scottish (Offshore) Wind
 - Green hydrogen
 - Hydrogen Derivatives

Potential to establish Scottish / UK Hydrogen Value Chain

