

BEIS Net Zero Innovation Portfolio (NZIP):

Industrial Fuel Switching Innovation Competition Demonstration Phase

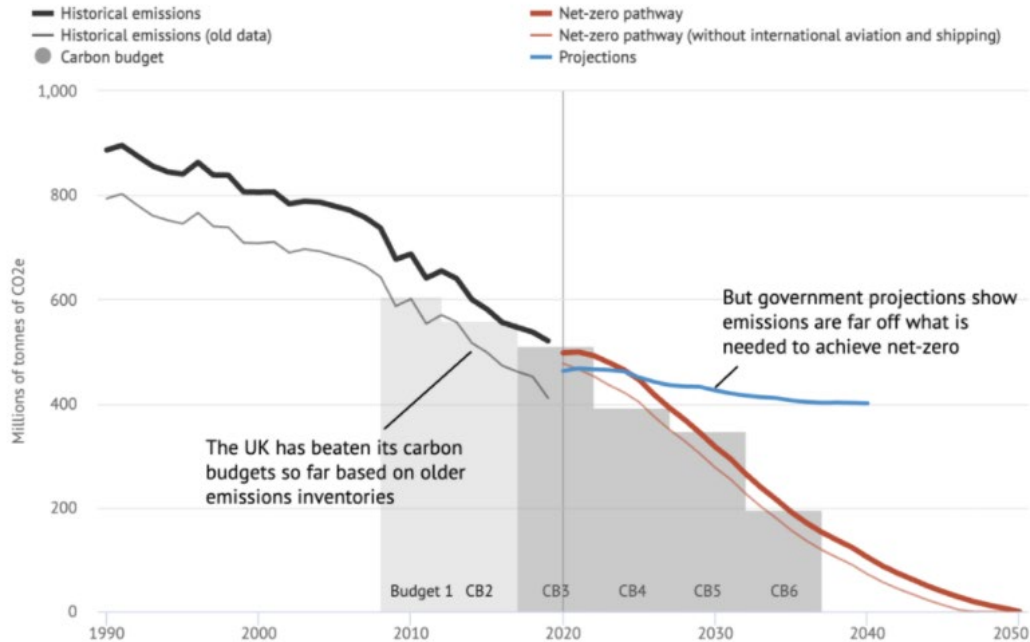
Recorded on 1 September 2022



Introduction

- Setting the context
- Overview of the programme
- Scope
- Procurement route
- Eligibility
- Timetable of projects
- Application and assessment criteria
- Case study from previous competition

Context: Industrial Decarbonisation



Source – Carbon Brief; and the CCC²

Industrial decarbonisation technologies need to be ready for large-scale deployment from the 2030s

- Industrial decarbonisation strategy is part of the government's overall strategy to achieve net zero
- Based on current projections and policies, the UK will fail to meet its future carbon budgets and will not achieve net zero¹
- **17% of greenhouse gas emissions from industry (2019), 3rd largest emitting sector in the UK²**



1. <https://www.carbonbrief.org/cc-uk-must-cut-emissions-78-by-2035-to-be-on-course-for-net-zero-goal>;

<https://www.theccc.org.uk/about/our-expertise/advice-on-reducing-the-uks-emissions/>

2. The Industrial Decarbonisation Strategy, p.16 analysis based on [Final UK Greenhouse Gas Emissions, 2019](#)

Competition Overview

Up to **£55 million** of funding available in two phases:

Phase 1 – Feasibility: £7 million, £50k – £300k per project

Phase 2 – Demonstration: ~£48 million, £1m – £6m per project



3 Lots:



Hydrogen (45% of £)



Electrification (36% of £)



Biomass/Waste/Other (19% of £)

Competition Objectives

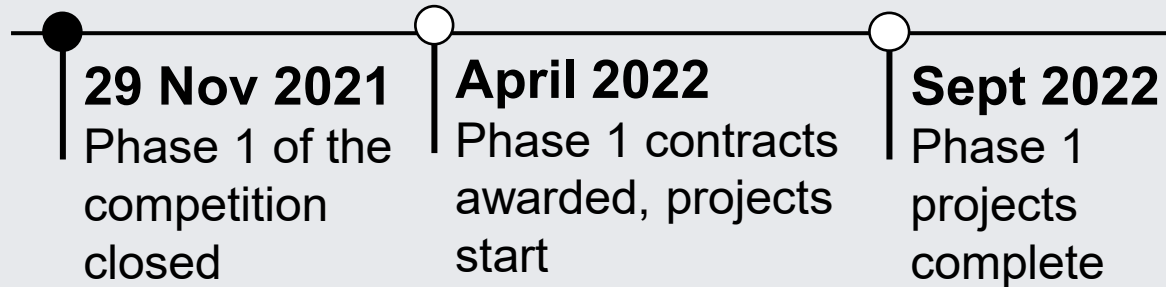
- Demonstrate potential
- Demonstrate commercial viability
- Increase awareness
- Strengthen supply chains
- Strengthen skills
- Gather evidence

Timetable

£55m in grant funding to support the development of fuel switching and enabling technologies for UK industry from high-C fuels to hydrogen, electricity, biomass, and other low-C fuels

Phase 1 (£6.6m, 6 months)

Feasibility Studies



Note: All timings are subject to change

Phase 2 (£48m, 2 years)

Demonstrations



Phase 2

£49.4 million available in 3 Lots:

 H₂ Hydrogen (approx. 50% of projects expected)

 Electrification (approx. 30% of projects expected)

 Biomass/Waste/Other (approx. 20% of projects expected)

Department for
Business, Energy
& Industrial Strategy

£1m – £6m available per project (£5m average expected)

Projects run from Feb 2023 – March 2025

Scope – Lot 1 Hydrogen

- Any project that can demonstrate a switch to hydrogen, or can demonstrate a technology that will enable others to make a switch to hydrogen
- **Engage early with hydrogen suppliers**
 - A non-exhaustive list of hydrogen suppliers is given in the ITT
- Any supply of hydrogen will be considered for this competition
 - This includes electrolytic hydrogen or that produced via methane reformation with or without CCUS,
 - Please set out a path to acquiring low-carbon hydrogen in future as part of your application

Scope – Lot 2 Electrification

- Provide evidence that any potential constraints (i.e. grid capacity) on electricity supply have been considered and can be overcome by the project team
- Energy storage and/or renewable supply will be considered as part of a project proposal for this competition, where it enables a fuel switch and is not the focus of the project
- BEIS will consider non-grid or non-renewable sources of electricity for the purposes of demonstration, as long as the applicant can show a long-term plan for connecting to the grid or sourcing low carbon electricity

Scope – Lot 3 Biomass, Waste, Other

- Applicants must prove that the option they select is compatible with the UK's Net Zero by 2050 target
- Applicants must also justify the reasons for choosing these options over other low carbon sources (e.g. no access to local gas or electricity grid)
- The source of the biofuel must be sustainable, or there must be no other option for the waste (including minimisation)
- The fuel meets relevant health, safety, environment, planning, and air quality criteria

Scope - examples

Lot	Examples (not exhaustive)
<p>1: Hydrogen</p> <p>Industrial fuel switch to hydrogen, or technology to enable this.</p>	<ul style="list-style-type: none"> • Develop and test innovative industrial hydrogen appliances (e.g., hydrogen boilers, kilns, furnaces, CHP, dryers). • Direct reduction with hydrogen (steel manufacturing). • Develop and test hydrogen fuel switch enabling technologies for industrial sites, such as storage solutions and fuel delivery/distribution and/or control systems.
<p>2: Electrification</p> <p>Industrial fuel switch to electricity (grid or local renewable), or technology to enable this.</p>	<ul style="list-style-type: none"> • Develop and test industrial electric technologies (e.g., electric boilers, kilns, furnaces). • Develop and test microwave, infrared or induction heating systems. • Storage systems or other infrastructure that supports fuel switching to renewable electricity. • Develop and trial innovative industrial heat pumps.
<p>3: Biomass, Waste, Other</p> <p>Industrial fuel switch to biomass or waste fuel, or technology to enable this. Fuel switch to another fuel not listed, which must be compatible with Net Zero, or the technology to enable this.</p>	<ul style="list-style-type: none"> • Direct reduction using sustainably sourced biomass/waste materials. • Sustainably sourced biomass or waste combustion, compatible with CCUS in future (where other low carbon options are not viable). • Use of other fuels such as ammonia or e-fuels to power industrial processes.

Scope – Exclusions

- Energy and resource efficiency projects without a fuel switch (including waste heat recovery).
 - A fuel switch that results in energy efficiency is encouraged.
- Fuel switches that are not compatible with achieving Net Zero by 2050.
- Fuel switches which involve the gasification or use of fossil fuels.
- Fuel switches to unsustainable biomass sources.
- Fuel switches to biomass that are incompatible with future CCUS, unless it can be proved that no other low carbon alternatives are available.
- Switching of feedstocks, except where feedstock provides chemical energy to drive the process (e.g., reduction of iron).
- Fuel switches to biomethane and/or synthetic methane, where the site is on the current gas grid and little or no innovation is needed for end users.
- Projects that convert biomass to biofuels for later uses that are not part of a fuel switch.
- Projects to upgrade to biomethane for injection into the gas grid.
- Fuel production for the fuel switch, unless this is innovative, enables the fuel switch, and fits within the competition budget without being the main focus of the project.
- Carbon capture, utilisation, storage (CCUS), unless this enables the fuel switch and fits within the competition budget.
- Fuel switches that do not power an industrial process, such as for transportation, domestic heating, or lighting.

Procurement Route

- **SBRI – Small Business Research Initiative**
 - Medium and large businesses are eligible, and it doesn't necessarily have to be for research
- Focused on pre-commercial procurements
- In general IP is owned by the bidder, not the funder (see the terms and conditions for specific details)
- Project outputs must be publicly available
 - This does not include commercially sensitive information
- Projects are 100% funded by BEIS
 - No in-kind contributions
 - No match-funding

Eligibility

- Eligibility criteria are laid out in full in the ITT
- As a precis:
 - The project must conform to one of the lots (if multiple are applicable, select the most appropriate one)
 - TRL must be between 4 and 7
 - 50% of project funding must be in the UK
 - No retrospective funding is available
 - Project would not go forward without public sector funding
 - Between £1m and £6m
 - End date by 31 March 2025
 - Three projects max per lead
 - No Russian Involvement
 - No ineligible costs

Eligibility – Costs

Eligible Costs

- Directly incurred costs
 - E.g. labour, materials, capital equipment costs, sub-contractor costs, T&S
- Indirectly incurred costs
 - In proportion to the amount of effort on the project, and applicants must document the methodology used to calculate it
 - E.g. office and laboratory consumables, library resources, overheads (up to 20%)

Ineligible Costs

- The full list is available in the ITT but as a precis:
 - Commercialisation activities
 - Profit
 - Protection of IPR
 - Religious/Political activities
 - Gifts/Entertaining

Timetable – Phase 2

Application

- Publication of Phase 2 Competition Guidance: 23 September 2022
- Prospective applicants must register by 14:00 GMT 11 November 2022
- Application for competition to be submitted by: 14:00 GMT 25 November 2022

Assessment

- Eligibility check and technical assessment and moderation complete by February 2023
- Inform Applicants of the outcome of their application: February/March 2023

Contract Award

- Successful projects awarded conditional contracts in February/March 2023 and under contract, ready to kick-off in March 2023

Contract End

- All demonstration projects to be completed no later than 31 March 2025, with final reports submitted to BEIS for review by 28 February 2025.

Application

Questions and Answers

- Questions must be in by **14:00 4 November**
- Questions asked after this date may not be answered, though we may answer them if we believe them to be of material significance
- Questions using the online form, link is available in the ITT

Register online

- Deadline is **14:00 11 November**
- Companies that do not register will not be eligible to apply
- Registration does not obligate you to apply
- Link is available in the ITT

Application form

- Application deadline is **14:00 25 November**
- Apply using the online form, link is available in the ITT
- It will not be possible to submit an application after the deadline, so allow time for files to upload etc

Application – costs and consortia

Costs and expenses associated with preparing the application are not eligible for reimbursement, regardless of success

Consortium applications are welcome

- Only one submission should be submitted for each separate project application
- All consortium partners are required to sign the completed application form for their project
- A lead partner **must** be nominated
 - They will be the entity to whom all monies are paid and will be responsible for distributing funds to their consortium partners
 - Lead organisations may enter up to a maximum of three applications as the lead, across all Lots.
- Project partners should draft a Consortium Agreement as early as possible
 - These will need to be in place and signed within one calendar month of contract signature

Application - checklist

- Project Finance/Cost Breakdown Form
- Organogram outlining the key roles of each partner and of team members
- CV package
- Project plan including
 - a. The technologies being demonstrated
 - b. How the project will be delivered
 - c. Who is involved in the delivery
 - d. Project schedule and key milestones
- Gantt chart
- Risk Register
- Development, commercialisation, and exploitation plan
- Signed declarations
- Letters of support from OEMs/ fuel suppliers/ sub-contractors/ project partners (preferred)
- Supporting information, e.g. academic papers, calculations, technical diagrams (optional)

Assessment

Bids will be assessed by three independent assessors

- This may include assessors who are not BEIS staff members

ALL assessors will be carefully selected to avoid conflicts of interest

Assessors will score bids against the assessment criteria

Scores are awarded on a 1-5 scale

- Any criterion scoring a 1 will automatically fail the whole bid
- A minimum score of 60% is required for success

Successful bids in each lot will be ranked from highest score to lowest score, and will be funded in rank order until money in that lot is exhausted

- Any money from undersubscribed lots will be put into a central pot. Money from that pot will be used to fund remaining bids from any lot in rank order until all monies are used, or eligible bids end

Assessment criteria

Criteria	Weighting
1. Idea	25
1a) Concept and innovation	10
1b) Technical feasibility/performance and emissions savings	10
1c) Safety and regulatory feasibility	5
2. Team and Resources	20
2a) Skills and experience	10
2b) Project team structure and resource	10
3. Delivery	25
3a) Delivery plan	15
3b) Development plan	5
3c) Risk	5
4. Cost and value for money	20
4a) Justification of costs	10
4b) Value for money	10
5. Social value and Dissemination	10
5a) Dissemination	5
5b) Social Value	5

Assessment scores

Score	Description
1	<p>Not Satisfactory:</p> <p>There is no evidence to very little evidence that the question has been satisfactorily answered and major omissions are evident. Any bid which scores a 1 in any sub-criteria will not be eligible for funding.</p>
2	<p>Partially Satisfactory:</p> <p>There is little evidence that the question has been satisfactorily answered and some omissions are evident. Much more clarification is needed.</p>
3	<p>Satisfactory:</p> <p>There is reasonable evidence that the question has been satisfactorily addressed but some omissions are still evident and further clarification is needed.</p>
4	<p>Good:</p> <p>The question has been well addressed with a good evidence base, with only minor omissions or lack of clarity.</p>
5	<p>Excellent:</p> <p>There is clear evidence that the question has been completely addressed in all aspects, with the question answered clearly, concisely and with a strong evidence base.</p>

Contract Award

Contracts are expected to start in March 2023, and will run until March 2025

- Deliverables are expected to be complete by February 2023 and final invoices submitted before the end of March 2025
- **This is a hard end date as projects cannot extend beyond the spending round in March 2025**

Contracts are expected to conform to the terms and conditions which are outlined in the ITT

- In particular, we recommend you ensure you are happy with clauses 27 and 28 as these relate to any intellectual property which arises from the projects

The lead partner of any consortium agreements will be the recipient of the contract, and will be expected to manage payment of their project partners

HyNet Industrial Fuel Switching project

- £5.2m funding to demonstrate feasibility of switching key industrial processes from natural gas to hydrogen, including:
 - Direct firing of hydrogen into NSG Pilkington Greengate Works glass manufacturing kiln demonstration
 - Hydrogen CHP FEED study for Essar's Stanlow Refinery
 - Boiler hydrogen firing at Unilever's Port Sunlight manufacturing plant demonstration



Industrial Fuel Switching

- For further info, go to the ITT
- Keep an eye on gov.uk for updates
- Don't forget to register using the link in the ITT!