

BEIS Net Zero Innovation Portfolio (NZIP):

# Industrial Fuel Switching Innovation Competition Launch

12<sup>th</sup> October 2021

# Welcome, Purpose, Agenda

**Purpose:** to launch and present the design of the Industrial Fuel Switching innovation competition, and answer your questions.

## Agenda:

Time	Item
10:00 – 10:05	Background and context
10:05 – 10:35	Competition scope
10:35 – 10:40	Break
10:40 – 11:00	Procurement route and selection process
11:00 – 11:15	Timeline, how to apply, and monitoring
11:15 – 12:00	Break/ Q&A

# Today's BEIS presenters



**Tony Allen**  
Head of Industry and  
CCUS Innovation team



**Rob Byrne**  
Energy Innovation  
Project Advisor



**Yasmin Ali**  
Energy Innovation Programme  
Manager



**Rob Emmet**  
Commercial Lead

# Background and Context

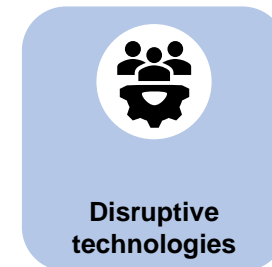
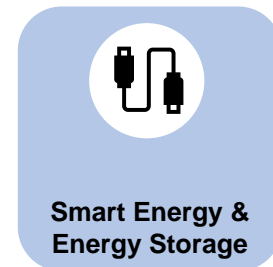
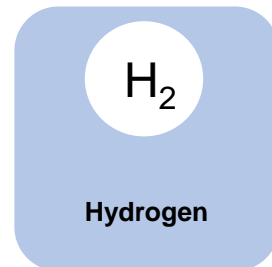
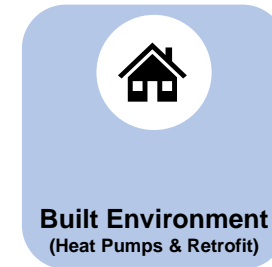
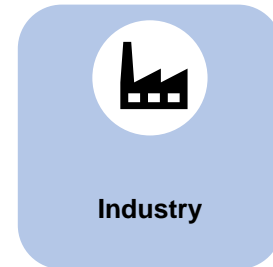
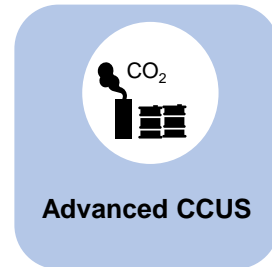
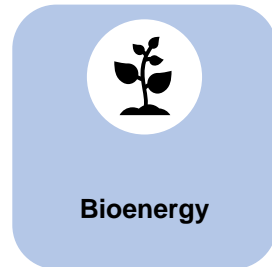
*Tony Allen, Head of Industry and CCUS Innovation team, BEIS*

# Context: Industrial Decarbonisation

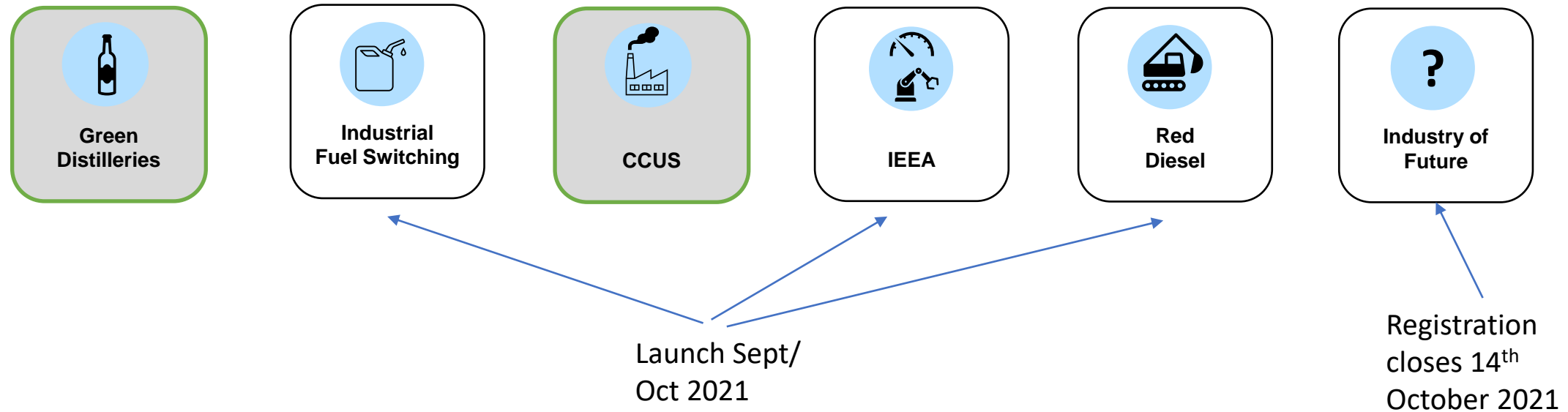
- **16% of greenhouse gas emissions from industry (2018), 3<sup>rd</sup> largest emitting sector in the UK<sup>1</sup>**
- **As Net Zero by 2050 requires near-complete industrial decarbonisation, switching industry from high to low carbon fuels will be vital**
- **Industrial decarbonisation technologies need to be ready for large-scale deployment from the 2030s**
- **Developments in Policy landscape: Industrial Decarbonisation Strategy, Hydrogen Strategy**
- **Industrial Decarbonisation Strategy sets out expectation for industrial emissions reduction of two-thirds by 2035 and at least 90% by 2050 (compared to 2018)**
- **Energy Innovation Needs Assessment work identified fuel switching is an innovation priority**

# Net Zero Innovation Portfolio (NZIP)

- £1bn of funding for innovation over 4 years (2021 – 2025)
- As described in “Ten Point Plan for a Green Industrial Revolution”



# NZIP: Industry and CCUS



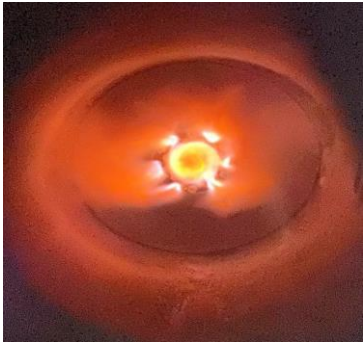
# Industrial Fuel Switching Competition Scope

*Yasmin Ali, Energy Innovation Programme Manager, BEIS*

*Rob Byrne, Energy Innovation Project Advisor, BEIS*



# Previous Industrial Fuel Switching Competition (2015 -2021)

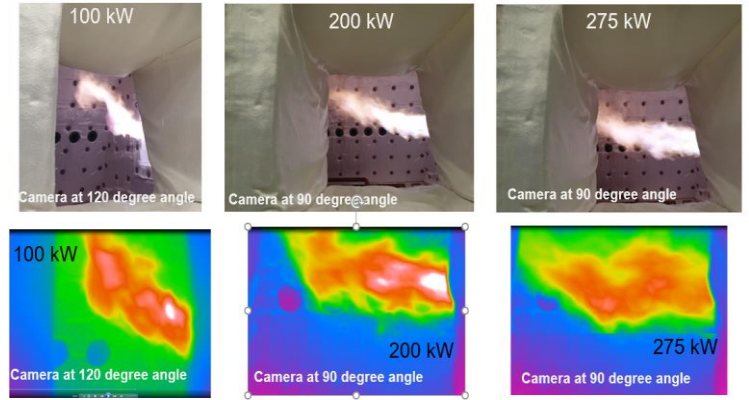


**HyNet**

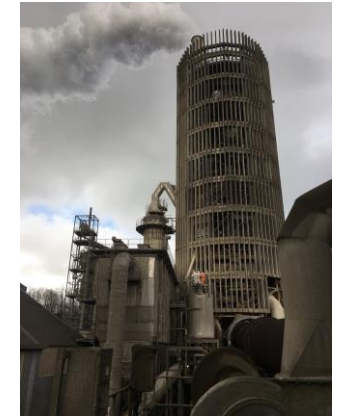


**BLA**

**£20m:** Testing the potential of industry to switch to low carbon fuels. Supporting:  
7 Feasibility Studies  
4 Demonstrations



**Glass Futures**



**MPA**

# View from Industry

*Adam Baddeley, Progressive Energy*

# HyNet North West

## Industrial Fuel Switching Programme

12<sup>th</sup> October 2021

Adam Baddeley, Progressive Energy

# HyNet: Objectives of IFS Programme

- To enable **participating and wider sites** to switch to H<sub>2</sub> as soon as it is available
- To determine the **costs of switching** relevant industrial sites to H<sub>2</sub>
- To prove that there is **no detrimental impact** on existing plant and product quality
- To demonstrate that sites can operate in conformance with all **safety regulations**
- To prove that H<sub>2</sub> can be fired in compliance with **environmental permitting** standards



# Structure of HyNet IFS Programme



Department for  
Business, Energy  
& Industrial Strategy



WP1: Project  
Management

WP2: H<sub>2</sub> Supply

WP3: Direct Firing

WP4/5: Boilers

WP6: Refinery

Lead /  
Partner



PILKINGTON



Unilever



Main  
Contractors



DUNPHY

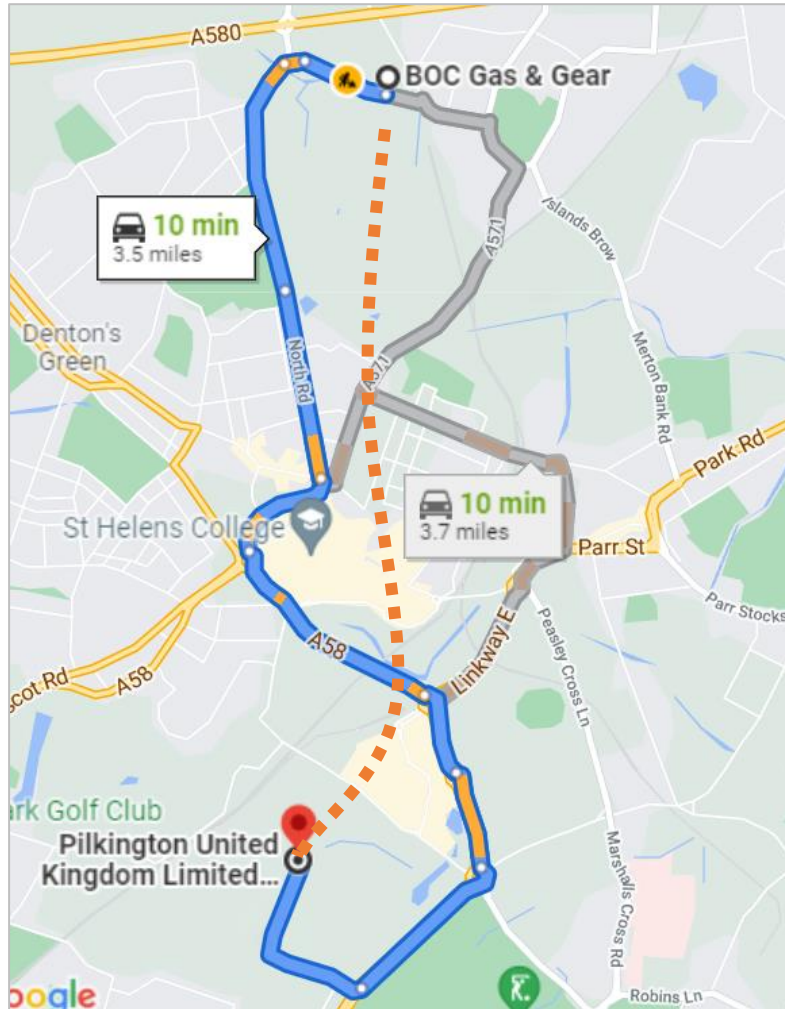
COSTAIN



# HyNet IFS Programme

## Key Challenges

# Hydrogen Supply



# Wider Supply Chain

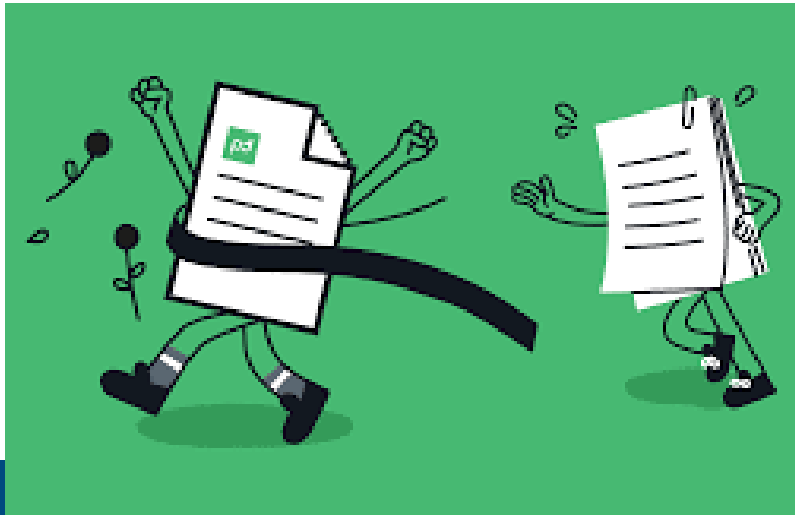




# Application and Contracts



- BEIS Terms and Conditions
- Collaboration Agreements
- Multiple sub-contracts



# HyNet North West



# Industrial Fuel Switching Competition Scope

*Yasmin Ali, Energy Innovation Programme Manager, BEIS*

*Rob Byrne, Energy Innovation Project Advisor, BEIS*

# Competition Overview

- Aim: **support innovation in development of pre-commercial fuel switch and fuel switch enabling technology**, to help industry switch **from high to lower carbon fuels**.
- Up to **£55 million** of funding available in two phases:
  - **Phase 1 – Feasibility** (Open Now): ~£7 million, £50 – 300k per project
  - **Phase 2 – Demonstration** (Open Autumn 2022): ~£48 million, £1 – 6 million per project
- Fuel switches to **hydrogen, electrification** and **biomass/waste/other** targeted
- Competition design based on:
  - Industrial Decarbonisation Strategy, Hydrogen Strategy, Energy Innovation Needs Assessment
  - Stakeholder feedback from July Competition Scoping Event
  - Previous EIP Industrial Fuel Switching Competition
- **Hydrogen suppliers:** email [industry.innovation@beis.gov.uk](mailto:industry.innovation@beis.gov.uk) to be listed in the Guidance Document (changes cannot be made after 5 November 2021)

# Competition Objectives

- **Demonstrate** potential for **industrial GHG emission reductions** via fuel switching technologies, to contribute to Net Zero by 2050.
- **Demonstrate** the potential **commercial viability** of industrial fuel switching solutions.
- **Increase awareness of** potential **industrial fuel switching solutions** and technologies, by collecting and disseminating findings to industry and investors.
- **Strengthen supply chains and skills** for industrial decarbonisation around the UK.
- Gather evidence to **inform future industrial decarbonisation policy making**.

# Technology & Lots (1)

- We will look for **innovative fuel switching and fuel switch enabling solutions** that are at **TRL 4 to 7** at the start of the projects.
- Competition open to **industrial sectors/industrial fuel switching technology developers**.
- Funding divided into **3 Lots to increase diversity** of funded solutions:
  - Lot 1: Hydrogen
  - Lot 2: Electrification
  - Lot 3: Biomass/Waste/Other
- Lots are soft ringfenced, so funding can be shifted, depending on volume/quality of applications.

# Technology & Lots (2)

Lot	Examples (not exhaustive)	% of funding
<p><b>1: Hydrogen</b> Industrial fuel switch to hydrogen, or technology to enable this.</p>	<p><b>Examples (non-exhaustive) may include:</b></p> <ul style="list-style-type: none"> <li>• Develop and test innovative industrial hydrogen appliances (e.g., hydrogen boilers, kilns, furnaces, CHP, dryers).</li> <li>• Direct reduction with hydrogen (steel manufacturing).</li> <li>• Develop and test hydrogen fuel switch enabling technologies for industrial sites, such as storage solutions and fuel delivery/distribution and/or control systems.</li> </ul>	<p>£25 million (~45% of total budget)</p>
<p><b>2: Electrification</b> Industrial fuel switch to electricity (grid or local renewable), or technology to enable this.</p>	<p><b>Examples (non-exhaustive) may include:</b></p> <ul style="list-style-type: none"> <li>• Develop and test industrial electric technologies (e.g., electric boilers, kilns, furnaces).</li> <li>• Develop and test microwave, infrared or induction heating systems.</li> <li>• Storage systems or other infrastructure that supports fuel switching to renewable electricity.</li> <li>• Develop and trial innovative industrial heat pumps.</li> </ul>	<p>£20 million (~36% of total budget)</p>
<p><b>3: Biomass, Waste, Other</b> 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>	<p><b>Examples (non-exhaustive) may include:</b></p> <ul style="list-style-type: none"> <li>• Direct reduction using sustainably sourced biomass/waste materials.</li> <li>• Sustainably sourced biomass or waste combustion, which is preferably compatible with CCUS in future (where other low carbon options are not viable).</li> <li>• Use of other fuels such as ammonia or e-fuels to power industrial processes.</li> </ul>	<p>£10 million (~19% of total budget)</p>

# Technology 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).



# Technology Exclusions

- 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 or is part of a feasibility study (for example, to investigate biomass eligibility).
- Fuel switches that do not power an industrial process, such as for transportation, domestic heating, or lighting.

**Break – 5 minutes**

# Procurement route and selection process

*Rob Emmett, Commercial Lead, BEIS*

# Procurement Route: SBRI

## What is an SBRI?

- Small Business Research Initiative (it is open to organisations of any size)
- Pre-commercial procurement – aimed at solutions which are not yet ready for the commercial market
- Projects must be 100% funded by BEIS
- Sharing of risks and benefits – suppliers receive financial support and retain arising IP (certain rights of use retained by BEIS). SBRI contracts are therefore expected to be priced below market rates, reflecting these benefits to the supplier

# Procurement Route

- 2-Phase SBRI, funding 100% of eligible project costs:
  - Phase 1: feasibility studies, minimum £50k, maximum £300k per study.
  - Phase 2: demonstration projects, minimum £1m, maximum £6m project.
- Standard practice for SBRI contracts is to have Phase 2 applications closed to those successful in Phase 1.
- **However**, following stakeholder feedback, Phase 2 will remain open to the market, including applicants that did not participate in Phase 1, who have projects ready for demonstration.

# Terms & Conditions

- Read T&Cs, Appendix 6 of the guidance notes. Raise any concerns as part of the Q&A process by **22<sup>nd</sup> October**.
- For this contract (Phase 1), clause 18.7 of the terms and conditions stipulates that liability is limited to twice the contract value, for Phase 2 this will be increased to £4m or twice contract value, whichever is greater.
- Intellectual property arrangements set out in clauses 27.3 and 28.5 of the T&Cs. Applicants will retain ownership of the intellectual property generated from the project, and are required to identify and record any such intellectual property and to protect patentable knowledge. If within five years of its creation applicants have not commercially exploited intellectual property generated from the work, BEIS may request the Arising Intellectual Property be assigned to BEIS.

# Eligibility and Assessment Criteria

*Rob Byrne, Energy Innovation Project Advisor, BEIS*

# Eligibility for Funding (1 of 3)

Item	Subject	Eligibility
1.	Technology Lots	The technology must be in scope for the Lot applied for. If the project falls under multiple Lots, applicants should select the Lot which is most applicable to the majority of the project work.
2.	Innovation and technology readiness	TRL 4-7 at the start of the project, targeting increase in TRL by the end of project.
3.	Technology scope	Confirmation that the project fits with the scope, and does not fall under the exclusions list.
4.	Project Status	BEIS is unable to fund retrospective work on projects



# Eligibility for Funding (2 of 3)

Item	Subject	Eligibility
5.	UK Requirements	Projects can work with international partners, but they must be led by a UK-based company and over 50% of the project funded must be conducted in the UK.
6.	Additionality	Projects can only be funded where evidence can be provided that innovation would not be taken forwards (or would be taken forwards at a much slower rate) without public sector funding.
7.	Contract size	Aligns with min/ max funding amounts
8.	Eligible project costs	Projects requesting funding for commercialisation activities are not eligible. SBRI funding only available for R&D activities of an innovative process, material, device, product, or service prior to commercialisation

# Eligibility for Funding (3 of 3)

Item	Subject	Eligibility
9.	Project end date	Completion by December 2024
10.	Risk benefit sharing	Projects receive financial support and retain any intellectual property generated, with certain rights of use retained by BEIS. Project outputs are also expected to be shared widely and publicly and project teams are not permitted to include profit in the eligible project costs
11.	Delivering multiple projects	If project consortium member(s) are part of multiple successful applications they must be able to deliver on them
12.	Multiple applications	If the intention is to submit multiple applications, lead organisations may only enter up to a maximum of <b>three</b> applications as the project lead, across all Lots. Technology providers/OEMs are limited to one application for a particular technology/solution requiring development per Lot.

# Assessment Criteria

Criteria	Weighting
<b>1 Technical and regulatory feasibility, performance of fuel switching solution, and emissions saving potential</b> – theoretical technical & regulatory feasibility, novelty, TRL, performance, emissions savings & environmental impacts, fit with Net Zero, lifetime costs, technical barriers.	<b>25%</b>
<b>2 Dissemination and Development plan</b> – plans for further development, commercialisation, exploitation, dissemination.	<b>15%</b>
<b>3 Social Value</b> – strengthening supply chain, job creation and training or educational opportunities.	<b>10%</b>
<b>4 Project financing</b> – project costs, value for money, additionality.	<b>25%</b>
<b>5 Project delivery</b> – Team, project plan and risks.	<b>25%</b>

**Minimum score of 60% in application to be eligible for funding**

# Assessment and Funding Allocation

## Assessment:

- Applications initially considered against eligibility criteria.
- 3 assessors per application, independently score each criterion from 1 (Not Satisfactory) to 5 (Excellent).
- Final scores per criterion determined via moderation panel and converted to percentage (60% overall required to be considered for funding).

## Allocation of Funding:

- Applications scoring over 60% are ranked, overall and per Lot.
- Funding allocated per Lot until funding, or successful applications, run out.
- After Lot funding is allocated, if budget remains in any Lot, this is transferred to a central pot and awarded to the next ranked project overall.

# Timeline, how to apply, monitoring

*Yasmin Ali, Energy Innovation Programme Manager, BEIS*

# Timeline – Phase 1 (subject to change)

	Activity	Date	
Phase 1 (Feasibility Study)	Registration for applications opens	5 Oct 2021	
	Applications open	11 Oct 2021	
	Launch Event	12 Oct 2021	
	<b>Deadline to submit questions</b>	<b>22 Oct 2021</b>	
	Q&A document published	5 Nov 2021	
	<b>Deadline to register for applications</b>	<b>22 Nov 2021</b>	
	<b>Applications close</b>	<b>29 Nov 2021</b>	
	Projects Start	Mar 2022	
	Projects Complete	Aug 2022	

**7 weeks to complete applications**

**~6 months to complete Phase 1 projects**

# Indicative Timeline – Phase 2

Activity		Date
Phase 2 (Demonstration)	Open to Applicants	Sept 2022
	Closes to Applicants	Oct 2022
	Projects Start	Feb 2023
	Projects Complete	Dec 2024
Programme close		Mar 2025

**~22 months to complete  
Phase 2 projects**

# How to Apply

1. Go to the [NZIP Industrial Fuel Switching webpage](#)
2. Read through the Guidance Document on the webpage
  - Submit any questions by **22<sup>nd</sup> October 2022** – Q&A published by 5<sup>th</sup> November
3. Complete and submit an online **registration form** (via SmartSurvey link) by **14:00, 22<sup>nd</sup> November 2021** to receive a password to access the application form
4. Complete and submit an online **application form** (via SmartSurvey link) by **14:00, 29<sup>th</sup> November 2021**.
  - Word version of application form available to prepare offline (but must submit online).
  - Pay attention to attachment limits and word counts.
  - Use Guidance Document to support application preparation.

**Submissions after the deadlines will not be accepted,  
please allow enough time for document uploads and IT issues.**



# Project Monitoring

If your application is successful, BEIS will:

- Carry out due diligence, attempt resolve any issues that arise, then award a contract
- Introduce you to your project monitoring officer, agree a milestones/ payment schedule with you and explain the reporting process. All reporting will be in confidence to BEIS and its technical advisers
- Explain evaluation/KPI reporting. This helps BEIS to assess the impact of the programme
- Discuss your knowledge sharing plans, and requirements for a publishable report
- Agree on a schedule of meetings/reporting for the duration of the project

# Break – 10 minutes

We will collate the written questions and answer as many as possible after the break.

# Questions & Answers



# Thank you for attending

- NZIP IFS website (including registration, application forms and guidance): <https://www.gov.uk/government/publications/industrial-fuel-switching-competition>
- Examples of projects from previous competition: <https://www.gov.uk/government/publications/industrial-fuel-switching-to-low-carbon-alternatives>
- Team contact: [industry.innovation@beis.gov.uk](mailto:industry.innovation@beis.gov.uk), use subject “NZIP Industrial Fuel Switching”