
Heat Pump Ready: Stream 2

Net Zero Innovation Portfolio

Wednesday 3rd November 10:00am

The presentation will start soon.

Slides and Q&A from this event will be available post-event, however no recording will be available.

Any questions you have relating to these slides should be sent to:

heatinnovation@beis.gov.uk by 12pm,
Wednesday 10th November 2021.

Agenda

Item	Topic	Presenter
1	Welcome +Agenda	Sally Fenton
2	Policy Landscape	Sarah Bailey
3	Ofgem - SIF	Kate Jones
4	Q&A	Sally Fenton / All
5	HPR Overview	Nicola Lazenby
6	BREAK	
7	Stream 2 Overview	Nicola Lazenby
8	Evaluation	Adam Stiles
9	Application Process	Pinky Hayer
10	Q&A	Sally Fenton / All
11	Next Steps/Wrap up	Sally Fenton

Why Hold an Engagement Event?

The outcome of today's pre-market engagement day is for both potential suppliers and BEIS to have a better understanding of this innovation opportunity before we go to market

What would BEIS like to achieve today?



Suppliers have further knowledge of this innovation opportunity



Suppliers can plan ahead for this opportunity and the competition process



BEIS has a better understanding of this opportunity from suppliers' perspective



Suppliers can offer innovation / previous lessons learned



The presentation and Q&A from today will be published



Opportunity for questions

Policy Landscape Overview

Delivering 600k heat pumps per year by 2028.

- We will need to **grow heat pump deployment to 600k** per year by 2028 to remain on track for net zero.
- The Heat and Buildings Strategy announced a **comprehensive policy framework** to support this transformation – including regulation, public investment and market-based policy measures as well as action on key enablers.

We are:

Consulting on ending the installation of new fossil fuel heating for non-domestic buildings and homes off the gas grid from 2024.

Consulting on a market-based mechanism for low-carbon heat to run from 2024.

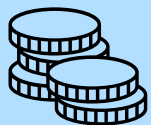
Aiming to phase out the installation of new and replacement natural gas boilers by 2035 at the latest.

Providing funding support to consumers, including Home Upgrade Grant, SHDF and a new £450m Boiler Upgrade Scheme from 2022.

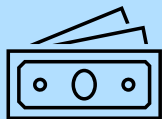


Enabling Heat Pump Deployment:

How can innovation support policy mechanisms?



Reduce Upfront Costs



Reduce the Running Costs



Improve the Consumer Journey



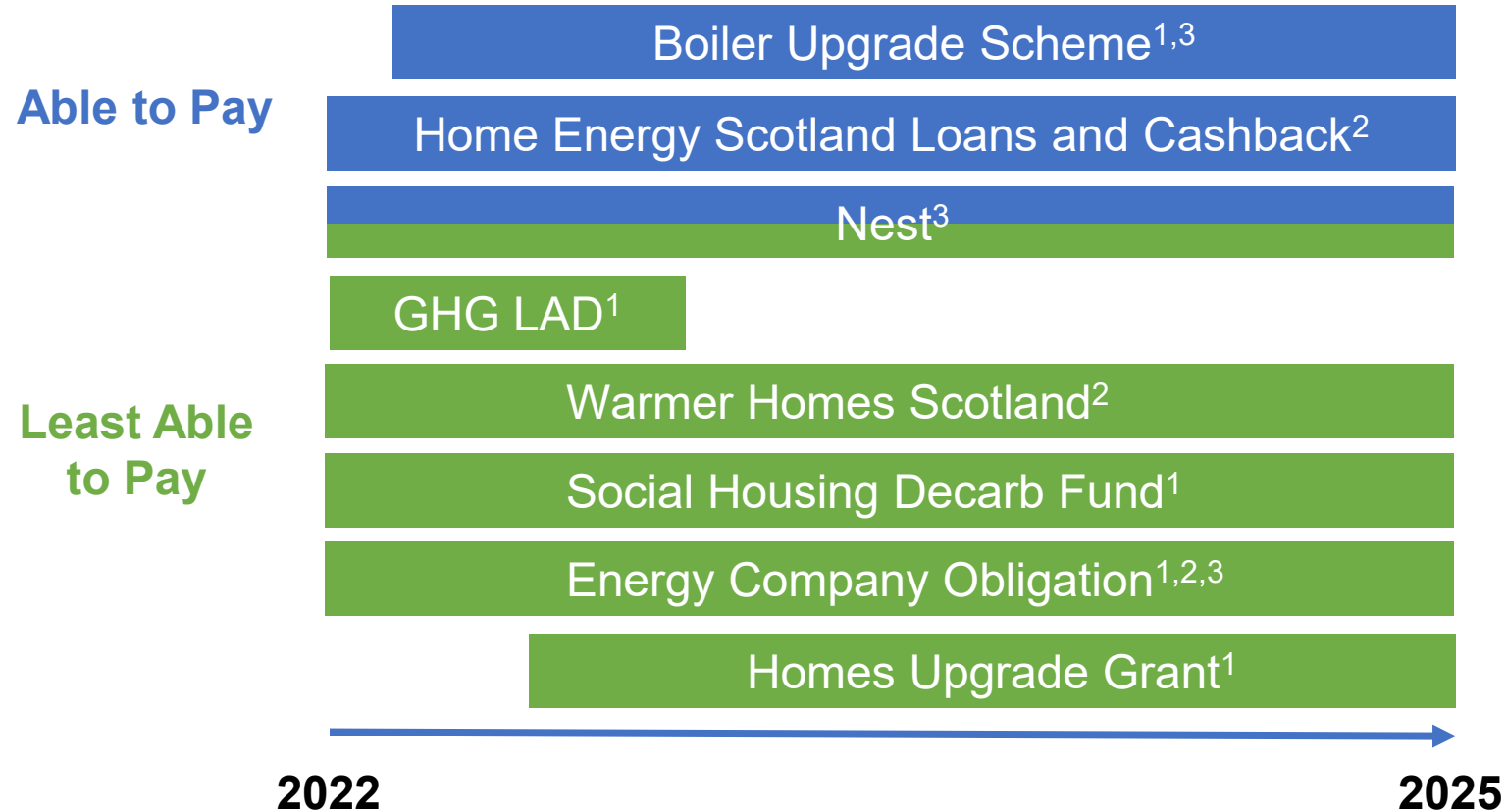
Reduce Environmental Impact



Ready the Electricity Network

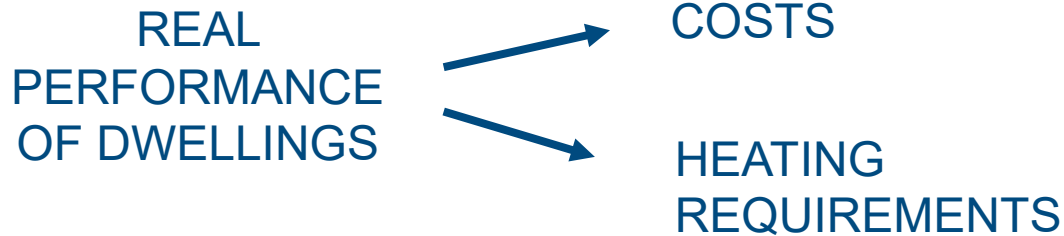


Heat Pump Funding Schemes



In-use Metrics — Emerging Policy Landscape

The [SMETER programme](#)



A 2021 BEIS stakeholder workshop gave high priority to the idea of metrics of heat pump suitability that assessed suitability for replacing existing heating for a heat pump (and indicating size specification):

- 1) based on standard assumptions.
- 2) reflecting current occupant behaviour and heating patterns.



Ofgem Strategic Innovation Fund

Kate L Jones | November 2021
Innovation Lead – Ofgem Strategic Innovation Fund

What is the Strategic Innovation Fund?

- Paid for by consumers on their energy bills
- £450m available over the next five years
- Designed to help network users and consumers
- Aimed at energy network innovation



Strategic Objectives

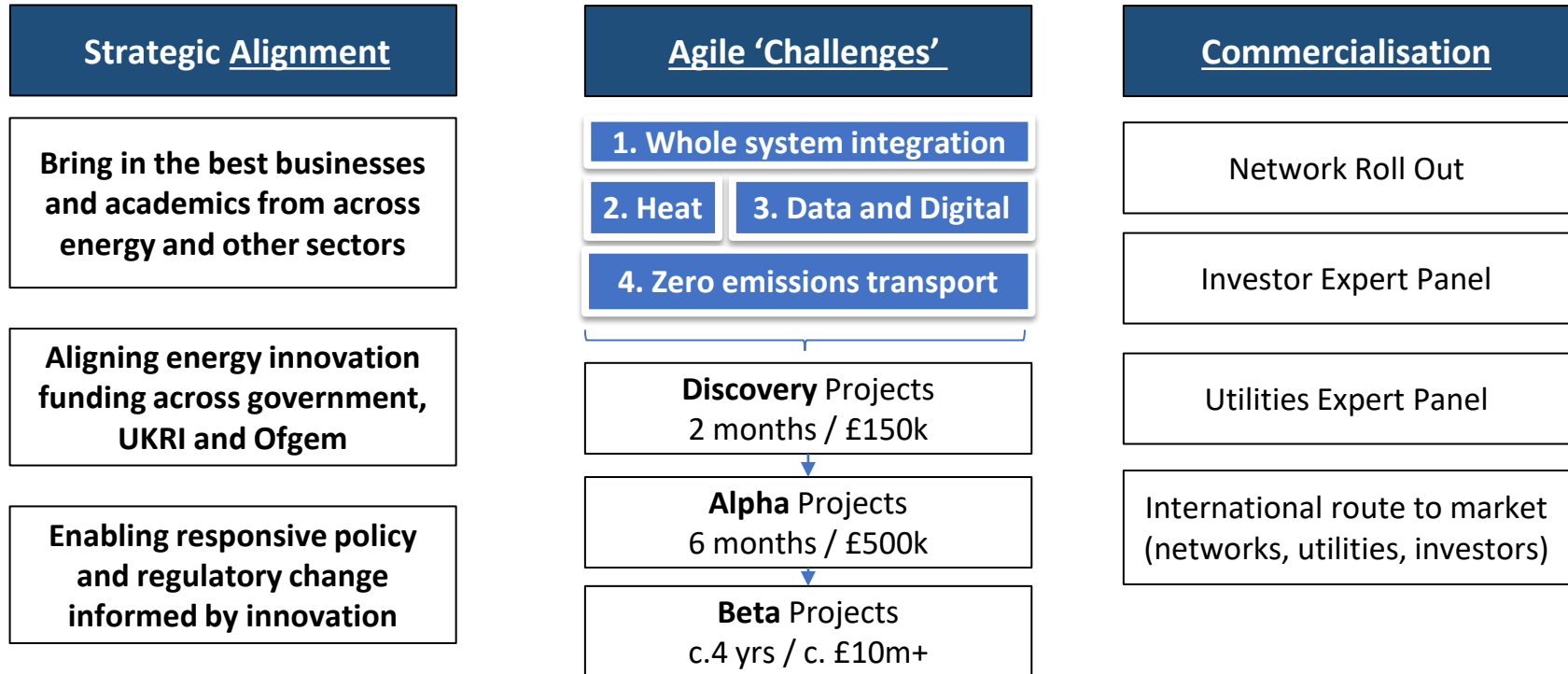
Ofgem and Innovate UK are collaborating to:

- 1. Deliver a net zero energy system at lowest costs to consumers**
- 2. Position the UK as the 'Silicon Valley' of energy systems**

We are interested in big, bold, ambitious ideas which will significantly accelerate delivery of net zero in the UK and be rolled out internationally.



The 3 pillars of the Strategic Innovation Fund



SIF and Heat Pump Ready Programme

- Coordinate energy networks to leverage greater value to both SIF and HPR.
- Define network innovation requirements





ofgem



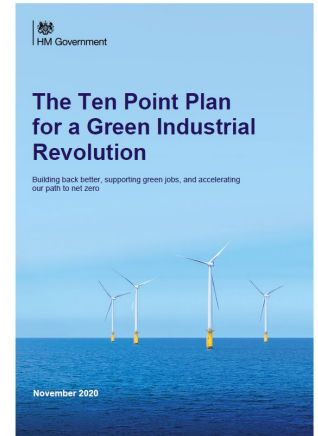
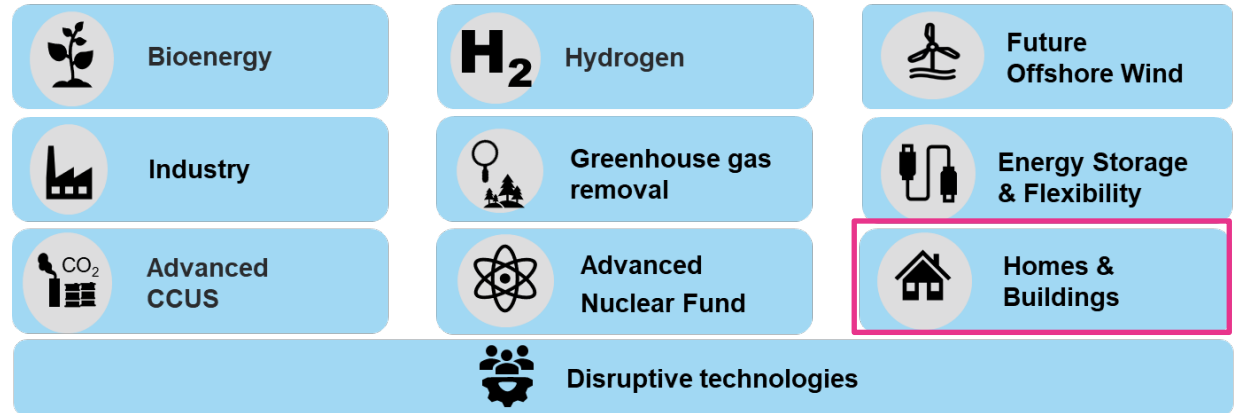
For information on the SIF visit
<https://www.ofgem.gov.uk/publications/sif-governance-document>

Email: Ofgem_SIF@Innovateuk.ukri.org

Q&A

NZIP Overview

- Announced in the Prime Minister's 10 Point Plan, the **£1 billion Net Zero Innovation Portfolio (NZIP)** will accelerate the commercialisation of innovative low-carbon technologies, systems and processes in the power, buildings and industrial sectors.
- NZIP will focus on technologies, business models and consumer innovation most needed for future Net Zero ambitions.
- The portfolio will focus on ten priority areas:



Heat Pump Ready Overview

- The Heat Pump Ready Programme forms part of **BEIS' £1 billion Net Zero Innovation Portfolio (NZIP)**.
- The Programme is aligned with other BEIS NZIP Programmes, and Ofgem's Network Innovation Fund (NIC) and Strategic Innovation Fund (SIF).
- The aim for the Heat Pump Ready Programme is to help facilitate large-scale, high-density heat pump deployment across the UK.



Heat Pump Ready Objectives



Reduce lifetime costs of domestic heat pumps



Improve lifetime consumer experience of heat pumps



Stimulate innovative research and solutions to address the impact of domestic heat pumps on the electricity system.



Develop and strengthen partnerships between the many players involved in the domestic heat pump sector

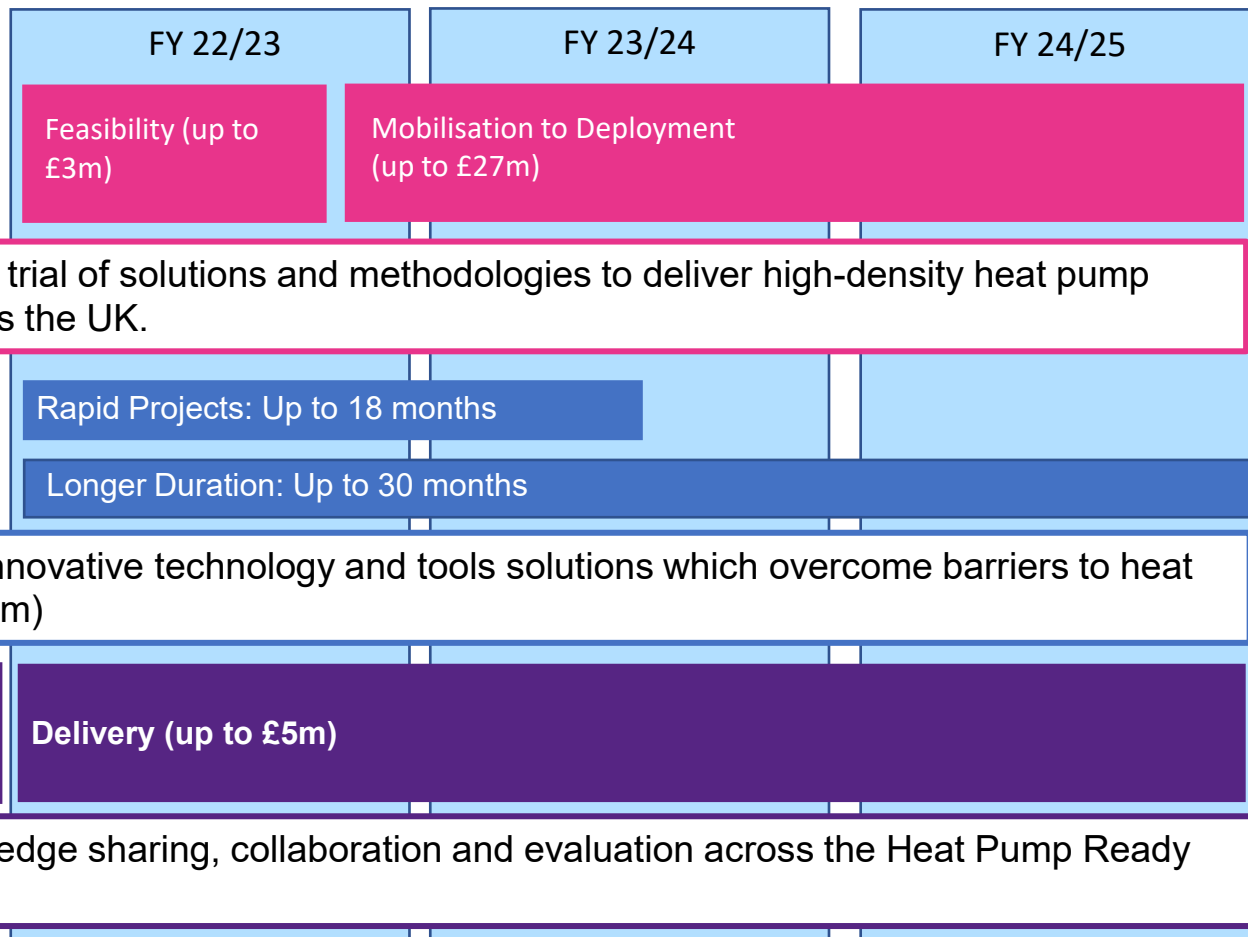


Develop effective approaches and products to engage effectively on heat pump issues with homeowners and with the key players .



Establish an evidence base to enable effective design and development of future heat pump policy and regulation

Workstreams



Related Workstreams

	FY 22/23	FY 23/24	FY 24/25
Ofgem Funded Programmes	Network Innovation Competition (NIC)		
	Strategic Innovation Fund (SIF)		
Programmes outside of Heat Pump Ready, which support innovation across the electricity grid required for the high density deployment of heat pumps.			
NZIP Green Home Finance Accelerator	Funded by Net Zero Innovation Programme		
Outside of Heat Pump Ready, NZIP Green Finance programme supports the development of innovative green financial products to homeowners			

Conflict of Interest - Applying to Multiple Streams

- The appointed supplier for the Heat Pump Ready Stream 3 will be partly responsible for **assessing effectiveness and impact of Stream 1 and Stream 2 projects and disseminating the work of these Streams.**
- BEIS therefore considers that there is potential for an actual or perceived conflict of interest if companies who bid for this work were to bid for other work in this programme, i.e. the Stream 1 or 2 roles or the Evaluation Contractor competitions. In their tender response, all tenderers (regardless of which competition they are bidding for) are required to ensure that any actual or perceived conflict is declared and satisfactorily mitigated.
- BEIS reserves the right to exclude any proposals where the bidder has an actual or perceived conflict of interest that cannot be mitigated to the satisfaction of BEIS.

BREAK

Stream 2: Objectives

The **Developing Tools and Technology Stream** aims to support applied research and development projects, focused on driving down the lifetime costs of domestic heat pump deployment, improving the domestic consumer experience and acceptability of heat pumps through technology and process innovation and improving the home suitability and interoperability of heat pumps with other smart technology and within the wider electricity system.



The delivery of innovative tools and technologies which address remaining heat pump deployment barriers.



Innovations that lead to heat pump systems which are suited to the majority of the UK building stock, based on standard archetypes.

Stream 2: Delivery Overview

Project Duration	Maximum BEIS funding per project	Estimated Number of projects	Total Funding
Rapid: Up to 18 months	Up to £2m	10-15	£15m
Standard: Up to 30 months	Up to £2m	5-10	£10m
Total		~ 20 to 25	£25m

Successful Stream 2 projects will receive acceleration support through the Net Zero Innovation Portfolio (NZIP) Acceleration Support Services. Further details will be provided in the Competition Guidance.

Tools and Technology Areas

Heat Pump Ready – Stream 2a: Developing Tools and Technology will **support ~20-25 applied research and development projects**



1. Reducing lifetime cost and increasing performance of domestic heat pumps



2. Minimising home disruption whilst providing high quality installation



3. Financial models to support heat pump deployment



4. Improving the customer journey



5. Smart and flexible home energy system

Department for
Business, Energy
& Industrial Strategy

Tools and Technology Areas



1. Reducing lifetime cost and increasing performance of domestic heat pumps

This category supports innovation on the **heat pump hardware**. This could include:

- technology innovation for heat pumps themselves, such as improving the performance of heat pumps with natural/low greenhouse gas refrigerants
- improving their form factor, reducing size, minimising noise, improving the aesthetics
- works with existing home heating systems (e.g. micro-bore pipes)
- improving their efficiency to provide consumers with reduced lifetime costs.
- heat pump monitoring systems which allow optimisation of the heat pump system including any element of the heating system which could cause inefficiencies.



2. Minimising home disruption whilst providing high quality installation

This category supports innovation on **auxiliary equipment**:

- Cost reduction / increased performance of auxiliary equipment (such as radiators)

And innovation aimed at **supporting personnel involved in installation**, including innovative tools & technology for:

- those conducting home surveys / specifying heat pumps
- Installation process
- maintenance for heat pumps

Tools and Technology Areas



3. Financial models to support heat pump deployment

This category supports innovation in business models (such as heat or comfort as a service) which provide a 'bundle' of heat products and services in return for a regular charge. At a minimum, the services developed for this category must include the installation and maintenance of domestic heat pumps and necessary home energy efficiency measures. Project teams will be expected to develop and test (at small scale) novel business models which are applicable to a range of homeowners or householders.



4. Improving the customer journey

This category supports innovation for consumer facing tools and platforms to:

- help create a more seamless consumer experience,
- reduce barriers such as understanding different heat pump options, finding trusted installers and installation configurations
- make it less time-intensive for homeowners to adopt heat pumps
- help post-install performance monitoring and fault detection systems and ensure systems continue to operate at an optimum performance through continuous optimisation.

Tools and Technology Areas



5. Smart and flexible home energy system

This category supports innovation to demonstrate in practice how smart heat pump deployment can:

- optimise running costs and reduce carbon for consumers through operation at times of clean and cheap electricity generation
- provide reliable local, in home, flexibility services through load shifting and demand side response services
- to help manage distribution networks, at times of peak and prolonged heating, and as wider sectors also electrify towards net zero, for example transport.

Projects in this category will require an element of coordination across devices and can help support the deployment of Home Energy Management Systems (HEMS) to optimise demand across assets beyond heat pumps.

Stream 2: Eligibility Criteria

NB. Key eligibility criteria are outlined in these slides; full details of the criteria will be provided in the published Competition Guidance which may include additional criteria (not listed in these slides).

1. Innovation and Technology Readiness:

Project Start
Technology
Readiness Level

TRL 5 to 7

Project End
Technology
Readiness Level

Must reach TRL 8 to
9 by end of project

Heat Pump Ready cannot fund TRL less than 5

Project activity must fall within the definitions of industrial research or experimental development and be eligible under the subsidy requirements.

Stream 2: Eligibility Criteria

2. Scope

Tools, technology and processes developed in this Stream must support one of the five challenge areas (categories) listed below:

- Reducing lifetime cost and increasing performance of domestic heat pumps;
- Minimising home disruption whilst providing high quality installation;
- Financial models to support heat pump deployment;
- Improving the customer journey;
- Smart and flexible home energy system.

Organisations cannot not apply with the same technology/project under more than one category.

Stream 2: Eligibility Criteria

3. Project Status:

Any **retrospective work** on a Stream 2 project (i.e. work completed before the formal project start) **cannot be funded by BEIS**.

BEIS cannot fund the development of products which are already at commercial design (TRL 8 or 9) at the start of the project or which are already commercially or widely deployed in the UK or internationally.

4. 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.

Stream 2: Eligibility Criteria

5. Project End Dates:

Project activity must be completed by the dates listed below.

NB. All dates below are based on the current timeline and are subject to change.

Rapid projects – **31st October 2023.**

Standard projects – **31st October 2024.**

6. Trial or Demonstration Location:

Trials or demonstrations of tools, technology or processes developed in this Competition should take place in Great Britain to ensure they address the requirements of the British energy market and energy system, as well as being tailored to British climate and housing stock.

Stream 2: Eligibility Criteria

7. Knowledge Sharing and Dissemination:

All Stream 2 project teams will be required to work effectively with the Stream 3 supplier and through their own activities to ensure that the results, outcomes, knowledge and wider learnings from their project are widely disseminated. This could be through a combination of conferences, publication, use of open access repositories, or free or open source software.

(Further information about engagement with Stream 3 is provided in the programme evaluation section below.)

Stream 2: Eligibility Criteria

8. Project Team Composition

- Projects may be delivered by **individual UK-based, private sector businesses** or by a **consortium of UK-based project partners**.
- If the project is delivered by a project team or consortium a single project application must be submitted to BEIS by the lead project member – the project co-ordinator.
- Any **sole applicant or consortium project co-ordinator must be a private sector business** registered with Companies House with the necessary skills, experience and capacity to effectively lead the proposed project.
- Project team members in a consortium can be:
 - UK-based private sector companies;
 - UK academic, research, public, third sector or community organisations working as part of a project consortium with private sector organisations.

(NB. UK-based means the organisation must have an establishment or subsidiary registered in the UK.)

Stream 2: Eligibility Criteria

9. Grant Intensity Limit (Match Funding):

- Subsidy control principles permit a proportion of eligible costs to be funded by BEIS, so applicants are therefore required to have non-public sector (match) funding in place to cover the balance of the eligible project costs.
- Match funding may come from a company's own resources or external private sector investors, but it must not include funding attributable to any public authority or EU institution.

Maximum public sector funding levels are outlined in the grant intensity slide below.

Stream 2: Grant Intensity

Maximum grant intensity

(i.e. maximum proportion of eligible project costs which can be funded by public sector innovation support)

Size of organisation	Type of innovation activity	
	Experimental Development	Industrial Research
Small	60%	80%
Medium	50%	75%
Large	40%	65%

Universities, research or third sector organisations who are consortium partners may be entitled to receive higher levels of funding for eligible project costs if they are not undertaking economic activities in the project.

Further details and relevant definitions will be provided in the Programme Engagement Document to be circulated for feedback before issue of the final Competition Guidance.

Assessment Criteria



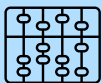
1. Business Proposition



2. Innovation



3. Impact on Climate Change targets and/or security of supply



4. Project Details



5. Project Funding



6. Experience and Skills

Stream 2: Bid Assessment Approach

Applications will initially be assessed against the Eligibility Criteria. Applications which fail the Eligibility Criteria will not be assessed further, so it is essential to ensure that your project meets these criteria before you submit your application.

The eligible projects will be further assessed against the Assessment Criteria by 4 reviewers, these scores will then be moderated to determine an overall ranking list that will be used to allocate the funding for the Competition.

To be eligible to receive funding, a project must also be allocated a minimum total score against these assessment criteria – the threshold will be published in the competition guidance.

Funding Allocation Method

- Each project will fall into one of the five application categories and each of these categories will be assigned a **maximum budget, which varies across the categories**.
- Within each of the categories, funding will be assigned to projects which score above the threshold score in order of merit.
- If there is any remaining budget within either Categories, (due to insufficient applications or applications failing to score above the minimum threshold score), this will be transferred to central pool of funding
- All remaining project (scoring above threshold) will be merged into one group with funding from the central pool allocated in merit order to these projects until funding runs out.

Monitoring & Evaluation

Monitoring and Evaluation plays a strong role in the implementation of BEIS programmes.

Monitoring – the collection of quantitative (and qualitative data) that helps track progress of programme delivery.

Evaluation – the systematic *assessment of the design, implementation, impact and value for money* of a programme (or group of programmes) in order to *learn lessons* about delivery and how to maximise impact, and provide *accountability* of public spend.

Project Monitoring & Reporting

Successful applicants will be assigned a Project Monitoring Officer (PMO) and all projects will be expected to reach milestones or deliver specific outputs agreed at the start of the project.

The PMO will:

- Be the project's main point of contact with BEIS
- Be responsible for reviewing and approving evidence at milestone claims

The Projects will:

- Have regular contact with their PMO
- Report project progress
- Report on NZIP Key Performance Indicators
- Raise risks and issues promptly with their PMO



NZIP Key Performance Indicators

- Used to **consistently** track, measure and report on key outputs, outcomes and impacts at **NZIP portfolio level**
- Synthesised and reported at NZIP level, but **relies on data from project level**
- Projects will be required to report on KPIs:
 - At the **start of the project**
 - **Annually**
 - At **project closure**
 - For **three years** after project closure.
- Project will receive a **reporting template** to complete at each intervals, to be returned to PMOs.

Types of Evaluation

- **Process evaluation** – how is a programme being delivered, and where can we improve. This is often through collecting and analysing stakeholder perceptions and administrative data.
- **Impact evaluations** - what changes have occurred, what difference has the programme made and why? Have objectives been achieved? How has impact varied across the programme?
- **Value for Money evaluations** – how do programme benefits compare to costs? Has the programme been an economic, efficient, and effective use of resources?

Evaluation in HPR

Stream 3

Some evaluation activity will take place under Stream 3, including:

- Data collection with project leads to understand and learn from delivery.
- Understanding perspectives of those involved in Stream 1 deployments.
- Understanding what can make high-density deployment a success.
- Assessing impact of heat pumps on energy use and bills.

Thematic evaluation

A separate research project looking beyond the programme:

- What impacts, positive and negative, has HPR had on the broader heat pump sector?
- How has HPR changed the perceptions, intentions and actions of participating and non-participating heat pump stakeholders?

ALL funding recipients are required to engage in, and collaborate with, evaluation activity. This may include, but is not limited to: providing KPI return, completing questionnaires or surveys, participating in interviews and workshops, communicating the learnings from projects, facilitating access to relevant stakeholders, and providing data beyond KPIs.

Stream 3 Engagement

Stream 3 will deliver activities and outputs under three work packages

1. Programme and project learning and collaboration

- Driving and facilitating collaborations within Stream 1 and Stream 2, and between Stream 1, Stream 2, Ofgem's SIF, other NZIP programme and external experts

2. Research and evaluation

- Exploring and understanding areas of programme delivery

3. Knowledge and evidence dissemination

- Sharing of learnings, knowledge, evidence, results and impacts from the programme to all key stakeholder



Stream 3 engagement

A key to the success of the Heat Pump Ready programme is the ability to share learnings and collaborate on common challenges and opportunities across the heat pump landscape when targeting high density deployment of heat pumps in a defined location.

The programmes' Stream 3 (Trial Support & Shared Learning) is the vehicle for this and participation in Stream 3 activities will be a condition of the grant award and grant recipients will be required to support evaluation work. An example of this is collection of patent data and cost reduction data to understand the development of heat pump technology within the project lifestyle.

Any failure or refusal to support this element of the programme will result in termination of the grant.

Grant Terms & Conditions

We will provide a representative version of the **Grant Funding Agreement (GFA)**, **setting out the detailed Terms and Conditions**, when we publish the Programme Engagement document later in November

Any applications submitted on condition that the GFA is amended will be submitting a non-compliant application

If you have questions about the GFA you can **ask them today or during the Q&A window** (questions should be submitted by **10/11/21**) or as **feedback on the Programme Engagement document**

All Q&A raised while the Competition is open for applications will be **anonymised and published on the competition website**

Please note that these timelines are indicative and subject to change

Competition Timeline

Stream 2: Developing Tools and Technology	
Questions to Programme Team	10-Nov 2021
Questions are Published with responses	19-Nov 2021
Competition Guidance advertised – Stream 2 open for applications	Early December 2021
Competition Deadline (approx. 8 weeks from publication of Guidance)	Early February 2022
Suppliers alerted of outcome	April 2022
Grant Offer Letters and Funding Agreements issued	April 2022
Projects start	May 2022

Online Application Process

Applicants will be asked to submit an online competition application form, with supporting information by the Stream 2 closing date (which will be confirmed when the competition guidance is published).

Applications and any new material submitted after the allocated deadline **WILL NOT** be considered.

- The Application form will be hosted on an online platform.
- There will be an accessible word document which can be used to plan answers only. Make sure to thoroughly read guidance before starting your application.
- There are formatting features such as mandatory questions, word count limits, file uploads and "Save and Continue" which you should be aware of.

Programme Questions

- Please submit any additional questions, that haven't been asked during this presentation to heatinnovation@beis.gov.uk. These must be submitted **by 12 noon GMT, 10th Nov 2021**. Questions submitted after this date may not be answered.
- Questions raised at this session or submitted via email before 10th November, which are of material significance in BEIS's judgement, will be addressed and published on the competition website. BEIS aims to publish responses to these questions by **19th November 2021**.

Programme Engagement Document

- Following the Supplier Engagement Events we will be sending out a **Programme Engagement document** with a summary of all Heat Pump Ready Streams.
- You will have an opportunity to provide feedback on this document - the feedback will not be published but BEIS may use it to inform the Heat Pump Ready Competitions.
- BEIS are aiming to circulate w/c 15th November – with 2 weeks available for suppliers to review and provide feedback.

Later this week:

- Thursday at 2pm - Stream 3: Trial Support and Learning
 - <https://www.eventbrite.co.uk/e/heat-pump-ready-learning-and-trial-support-stream-3-tickets-192385629597>
- Friday at 9am – Sign up for 1:1 Session (Sessions held 8th November)
 - <https://forms.office.com/r/61tk4CpBFX>
- Stream 1: Solutions at High Density Deployment
 - Slides will be available post supplier engagement events on the Heat Pump Ready gov.uk page

Q&A

Please note that these timelines are indicative and subject to change

Next steps: timeline

Stream 2: Developing Tools and Technology

Deadline for question from Suppliers to Programme Team	10-Nov 2021
Deadline for responses to questions to be issued	19-Nov 2021
Programme Engagement Document Circulated to Suppliers	w/c 15 th November 2021
Deadline for feedback on Programme Engagement Document	w/c 29 th November 2021
Competition opens to Applicants	Early December 2021
Competition closes	Early February 2022
Competition awarded and signed grant documents returned to BEIS	April 2022
Project delivery begins	May 2022

Thanks for listening!

After this event, please submit any questions on the Heat Pump Ready programme to:
heatinnovation@beis.gov.uk