Heat Pump Ready Programme

Stream 2 - Wave 2: Developing Tools & Technology

Competition Guidance Document

Contents

Section 1: Introduction

This Competition Guidance document sets out details of the Heat Pump Ready Stream 2 - Wave 2 Competition (the Competition), a new £10m grant-funding innovation support scheme which is part of the existing Heat Pump Ready (HPR) Programme.

The Competition is to support applied research and development projects focused on driving down the lifetime costs of domestic heat pump deployment and improving the domestic consumer experience and acceptability of heat pumps. The supported projects can develop and demonstrate innovative technology, tools, business models or process innovation.

Up to £10m of grant funding is available in total through the Competition. The maximum possible grant funding for a single project is £1.5m and successful project teams will be required to provide private sector funding alongside the grant funding provided from the HPR Programme. The level of private sector funding required for a project will depend on the type of research and development being carried out in the funded project and on the size and type of organisations receiving funding.

The funding will be allocated to applicants across four Competition Challenge Categories, set out below. Applicants must demonstrate that their project proposals fall into one of these four Challenge Categories:

1. Improving the ease of heat pump deployment in homes that are 'complex to decarbonise'[1] by addressing physical, material, locational, technological, regulatory, or social challenges.

2. Developing innovative solutions to enable heat pumps to be deployed in 'distress purchase' situations when a new home heating system is required urgently.

3. Improving performance and/or reducing costs of domestic heat pumps with low-GWP refrigerants (i.e. below 150 GWP), while ensuring safety.

4. Reducing the lifetime costs or improving the overall lifetime performance of domestic heat pumps or improving the consumer experience of using and living with a heat pump.

The key dates for the Competition are set out below (please note that all dates are subject to change):

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[1] Complex-to-decarbonise (CTD) homes are those with one or a combination of certain **physical, locational, occupant demographic**, or **behavioural** attributes which may **constrain the design and delivery of measures** to improve energy efficiency, decarbonise heating, and realise occupant benefits (e.g., increased comfort and affordability of domestic heat and energy). These effects may be amplified by one or a combination of numerous system-level factors including financial (e.g., feasibility and affordability of measures), economic (e.g., supply chain and materials availability), and/or organisational capacity and capability (e.g., workforce skills).

Competition launch:	23 October 2023
Deadline for submission of applications:	8 January 2024
Projects start:	March 2024
Projects end:	31 March 2025

The Department will be hosting an online event for guidance on how to apply for the Stream 2 – Wave 2 Competition on **Thursday 9th November 2023**. Please complete this form to sign up to the event.

Section 2: Heat Pump Ready Programme – Summary

Overview

The Heat Pump Ready (HPR) Programme forms part of the £1 billion Net Zero Innovation Portfolio (NZIP) delivered by the Department for Energy Security and Net Zero (the Department). NZIP aims to accelerate the commercialisation of low-carbon technologies, systems and business models in power, buildings, and industry to help enable the UK to end its contribution to climate change. As a key solution for decarbonising homes, heat pumps will be critical for meeting the UK's legally binding commitment to achieve net zero by 2050. The HPR Programme is supporting the development of innovative solutions across the heat pump sector.

The HPR Programme was formally launched in December 2021 and it has been supporting innovation projects since summer 2022. The HPR Programme is aligned with other NZIP Programmes, and Ofgem's Network Innovation Fund (NIC) and Strategic Innovation Fund (SIF).

The [Government's published Heat and Buildings Strategy](#) sets out several key commitments for helping to ensure that the transition to low carbon buildings is affordable and achievable for all, including delivering a package of measures to scale up the deployment of heat pumps to 600,000 a year by 2028 and to support industry to reduce the costs of pumps. The Heat and Buildings Strategy set out the government's ambition to work with industry to reduce the upfront costs of heat pumps by 25-50 per cent by 2025 and to parity with boilers by 2030, as well as making them as cheap to run as a gas boiler. The HPR Programme supports the delivery of these commitments, by developing innovative solutions to:

- Reduce the upfront and running costs of heat pumps.
- Improve the consumer journey.
- Reduce the environmental impact, and
- Ready the electricity network for the widescale deployment of heat pumps.

Objectives

The overarching objective of the HPR Programme is to create an enabling environment for heat pump deployment at a significantly increased density and scale than the current deployment level. This enabling environment - to stimulate and support the high-density deployment of domestic heat pumps in the UK - will be achieved through the

development and trial of innovative technology and tools to address barriers faced across the landscape, in parallel to the development and trial of innovative methodologies and solutions for local coordination of high-density heat pump deployment, consumer engagement and network upgrades.

This translates into the following primary objectives for the HPR programme:

- Reduce the lifetime costs of domestic heat pumps (including capital equipment costs, installation costs and operating costs);

- Improve the lifetime consumer experience of heat pumps (including the experiences of: learning about and choosing a heat pump and how to pay for it; having a heat pump installed in the home and living with a heat pump);

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

- Improve the interoperability of domestic heat pumps with other smart technology in the home;

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

- Develop effective approaches and products to engage stakeholders effectively on heat pump issues with homeowners and with the key players who can help to deliver high-density heat pump deployment across the UK;

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

Delivery Approach

The HPR Programme is split into three, separate delivery streams:

- ***Stream 1: Solutions for High-Density Heat Pump Deployment.***
- ***Stream 2: Developing Tools and Technology.***
- ***Stream 3: Trial Support and Learning.***

Stream 1 - Solutions for High-Density Heat Pump Deployment, is supporting the deployment of heat pumps through **the development and trial of solutions and methodologies for the optimised deployment of domestic heat pumps, at high-density**, in the UK. Stream 1 supported eleven Phase 1 (feasibility projects), which have now completed, and is currently supporting four Phase 2 demonstration projects.

Stream 2 - Developing Tools and Technology – Wave 1 is supporting **the development of tools, technology and processes to overcome specific barriers to domestic heat pump deployment** in the UK. Stream 2 – Wave 1 has supported 27 projects.

Stream 3 - Trial Support and Shared Learnings, is providing support to ensure **knowledge transfer and shared learning across the HPR Programme and with external heat pump stakeholders**. Stream 3 is being delivered by a consortium of contractors led by the Carbon Trust.

Further information about each of the three Streams, including details of the current and already completed projects in the HPR Programme, is set out in Annex 1. Annex 1 also provides details of other innovation programmes, including other NZIP programmes, that are relevant to the HPR Programme.

Thematic Evaluation: In addition to the evaluation activity carried out in *Stream 3 - Trial Support and Learning* of Heat Pump Ready, there will be a separate NZIP research project looking beyond the HPR Programme. This Thematic Evaluation work will look at the impacts which HPR Programme has had on the broader heat pump sector and at how the HPR Programme has changed the perceptions, intentions, and actions of participating and non-participating heat pump stakeholders. More information on the evaluation activities is provided in Section 6: Additional Competition Requirements .

Section 3: Competition Scope

Technology Scope

The Competition will support applied research and development projects, focused on driving down the lifetime costs of domestic heat pump deployment and improving the domestic consumer experience and acceptability of heat pumps through technology, tools, business model and process innovation.

Up to £10m of grant funding is available in total through this wave of the HPR Programme. This funding will be allocated to applicants across four Challenge Categories, set out below. Applicants are expected to demonstrate that their project proposals fall into one of the four Challenge Categories (example eligible projects are provided in the Table 1 below).

The approach for allocating funding to projects in the different Challenge Categories is set out in Section 12.

Challenge Categories

1. Improving the ease of heat pump deployment in homes that are 'complex to decarbonise'[2] by addressing physical, material, locational, technological, regulatory, or social challenges.

2. Developing innovative solutions to enable heat pumps to be deployed in 'distress purchase' situations when a new home heating system is required urgently.

3. Improving performance and/or reducing costs of domestic heat pumps with low-GWP refrigerants (i.e. below 150 GWP), while ensuring safety.

4. Reducing the lifetime costs or improving the overall lifetime performance of domestic heat pumps or improving the domestic consumer experience of using and living with a heat pump.

The Department reserves the right to reallocate applications to a different category where appropriate. This reallocation will be conducted following the Department's initial eligibility check and applicants will be notified of any re-allocation prior to commencement of technical assessment.

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[2] Complex-to-decarbonise (CTD) homes are those with one or a combination of certain **physical, locational, occupant demographic**, or **behavioural** attributes which may **constrain the design and delivery of measures** to improve energy efficiency, decarbonise heating, and realise occupant benefits (e.g., increased comfort and affordability of domestic heat and energy). These effects may be amplified by one or a combination of numerous system-level factors including financial (e.g., feasibility and affordability of measures), economic (e.g., supply chain and materials availability), and/or organisational capacity and capability (e.g., workforce skills).

Table 1: Examples of *Stream 2 - Wave 2* Project Topics

Project Category	Examples
	(*NB. Heat pump in the context of Stream 2 – Wave 2 refers to hydronic heat pumps – both air source heat pumps and ground source heat pumps.*)
1. Improving the ease of heat pump deployment in homes that are 'complex to decarbonise' by addressing physical, material, locational, technological, regulatory, or social challenges.	**Technologies** that overcome spatial limitations (e.g. height, underfloor depth, internal or external space), for example: • Developing a quieter or smaller heat pump unit. • Developing heat pumps that are more compatible with existing home infrastructure, for example with micro-bore pipes. • Heat pump systems that can be deployed more readily in high-density housing. • Novel locations or form factors for thermal storage or hot water cylinders. • Development of systems requiring smaller thermal storage units. • Development of more efficient pipework replacement processes. • Developing cheaper, easier to fit, higher performing radiators. • More efficient or cost-effective fabric efficiency measures or installation approaches for fabric efficiency measure installation to improve home suitability for heat pumps in high density or off-gas grid locations. **Scaling up approaches** that improve roll out and economies of scale, such as system, process, or business model innovations to aid installation in high density locations, or in rural locations off the gas grid. **Ongoing monitoring approaches**, such as indoor temperature data and metered consumption before and after retrofit. **Occupant-centric approaches** that improve engagement and satisfaction, or counter un-willingness, low affordability, or disruption, for example: • Developing and trialling a domestic heat pump installation, maintenance and energy efficiency finance package. • Developing a virtual reality app for in-home design of heat pump installations, to allow consumer to 'see' their home post installation. • Developing an app to support consumers through the heat pump journey from fundamental education through to finding a trusted installer and troubleshooting operational issues.

2. Developing innovative solutions to enable heat pumps to be deployed in **'distress purchase' situations** (i.e. when a new home heating system is required urgently).	• Pre-plumbed or pre-wired heat pumps to allow for quicker installation / reduce error rates. • Data analysis tools to predict location of fossil-fuel boilers nearing end of life. • System, process, or business model innovation to allow the use of temporary boilers or other temporary heating systems pending heat pump system completion. • Developing an app to support installers conducting home surveys to conduct more accurate and efficient heat loss calculations or hydraulic design.
3. Improving performance and/or reducing costs of domestic heat pumps with **low-GWP refrigerants** (i.e. below 150 GWP), while ensuring safety.	• Developing new heat pumps that incorporate refrigerants with a GWP of less than 150 without reducing measured performance. • Developing new heat pump systems using lower refrigerant charge volumes. • Developing new systems to ensure safety of heat pumps using flammable low-GWP refrigerants.
4. Reducing the lifetime costs or improving the overall lifetime performance of domestic heat pumps or improving the domestic consumer experience of using and living with a heat pump.	• Mass production, modularisation, or 3D printing of more efficient or cost-effective components such as heat exchangers or evaporators. • Cost-effective innovations to increase heat pump input temperature. • Heat pumps that achieve higher electrical efficiency for a given flow temperature without adding to cost. • Developing an app to support installers conducting home surveys to make more accurate or efficient heat loss calculations or hydraulic design. • Developing AI algorithms for optimisation, remote diagnostics & predictive maintenance of heat pumps. • Innovations to reduce capital costs by improving the efficiency or resilience of the supply chain. • Innovation for the user interface of heat pump systems to significantly improve how easy the systems are to operate, maintain, and troubleshoot. • Tools to optimise the home energy system – linking/integrating the heat pump to other technologies such as a thermal storage, PV, etc. Tools to support decision making around home energy systems e.g. sizing of a heat pump when combined with thermal storage, home battery, etc.

Types of Innovation Activity

Any project funded through the Competition must fall within one or other or a combination of the following types of innovation activity: *Industrial Research* or *Experimental Development*, as defined below.

Industrial Research involves the planned research or critical investigation aimed at the acquisition of new knowledge and skills for developing new products, processes or services or for bringing about a significant improvement in existing products, processes or services. This would include digital products, processes or services, in any technology, industry or sector.

It comprises the creation of components parts of complex systems and may include:

- the construction of prototypes in a laboratory environment or in an environment with simulated interfaces to existing systems;
- the construction of pilot lines, when necessary for the industrial research and notably for generic technology validation.

Experimental Development involves acquiring, combining, shaping and using existing scientific, technological, business and other relevant knowledge and skills with the aim of developing new or improved products, processes or services. This includes digital products, processes or services, in any technology, industry or sector.

This may also include, for example, activities aiming at the conceptual definition, planning and documentation of new products, processes or services. Experimental development may comprise prototyping, demonstrating, piloting, testing and validation of new or improved products, processes or services in environments representative of real-life operating conditions where the primary objective is to make further technical improvements on products, processes or services that are not substantially set. This may include the development of a commercially usable prototype or pilot which is necessarily the final commercial product, and which is too expensive to produce for it to be used only for demonstration and validation purposes.

Experimental development does not include routine or periodic changes made to existing products, production lines, manufacturing processes, services and other operations in progress, even if those changes may represent improvements.

Section 4: Competition Eligibility Requirements

To be eligible for funding in the Competition, projects must meet all of the following eligibility criteria:

1) Innovation and technology readiness:

The HPR Programme is funding the development of technology and tools which are expected to be nearing commercialisation by the end of their projects.

Therefore, we expect hardware projects to be at Technology Readiness Level (TRL) 5, 6 or 7 at the start of a funded project (see Annex 3 for TRL definitions). Technology supported by the Competition must not be at TRL 8 or 9 at the project start but the expectation is that technology developed through the Competition projects will reach TRL 7/8/9 by the end of the project.

In terms of software this means that projects will be in their Discovery/Alpha phases, according to [Government Phases of an Agile Project](#) (see Annex 4), at the project start but should not be at Beta or Live phase. Software is expected to reach Live phase by project completion.

Process innovations would apply the basic Technology Readiness Level scale also set out in Annex 3.

All funded projects are required to fall within the definitions of industrial research or experimental development set out in Section 3 of this document.

2) Scope:

Tools, technology, and processes developed in the Competition must support one of the four Competition challenge categories outlined below and detailed above in Section 3.

1. Improving the ease of heat pump deployment in homes that are 'complex to decarbonise' by addressing physical, material, technological, locational, regulatory, or social challenges.

2. Developing innovative solutions to enable heat pumps to be deployed in 'distress purchase' situations when a new home heating system is required urgently.

3. Improving performance and/or reducing costs of domestic heat pumps with low-GWP refrigerants (i.e. below 150 GWP), while ensuring safety.

4. Reducing the lifetime costs or improving the overall lifetime performance of domestic heat pumps or improving the domestic consumer experience of using and living with a heat pump.

3) Project Status:

The Department is unable to fund retrospective work on projects. Relevant retrospective work will, however, be considered in the assessment process (as part of Assessment Criterion 2a, applicants are asked to provide information about work already carried out to develop the proposed process, technology or product. The Department cannot fund the development of processes, technology or products which are already at commercial design stage at the start of the project, or which are already commercially or widely deployed in the UK or internationally.

4) Match-funding:

In line with subsidy control principles, only a portion of the total eligible project costs can be funded by the Department grant funding and applicants will need to provide private sector funding to cover the balance of the eligible costs. This match-funding may come from a company's own resources or external private sector investors but it may not include funding attributable to any public authority (in the UK or elsewhere).

Before the grant letter is issued, the applicant must demonstrate a credible plan to raise the match-funding required for the whole lifetime of the project. Please see Section 8 for Grant subsidy ratio requirements which show the level of match-funding required for different sizes of organisation and different types of innovation activity.

5) Additionality:

Projects can only be funded where evidence can be provided that the innovation would not be taken forwards (or would be taken forwards at a much slower rate) without public sector funding.

6) Project Location:

Any funded project activity must take place in the UK and any subsidy recipients must intend to exploit the results of the project activity in or from the UK. Enterprises do not need to be registered in the UK to be eligible, providing the project or activity is carried out in the UK and that they intend to exploit the results in or from the UK. Where an enterprise is not based in the UK or carries out activity in other countries as well as the UK, they must provide written assurances that they intend to exploit the results of the project or activity in or from the UK as part of the application process.

7) Grant size:

The total expected grant size for a single project must be between a minimum of £200,000 and a maximum of £1.5m.

Details of grant intensity limits (indicating the level of private sector match funding that would be required) are set out in Section 8. Since the Department is seeking to maximise the impact

of government funding, projects looking for public funding intensities that are lower than the applicable maximum are likely to score higher in the appraisal process.

8) Terms and Conditions:

Applicants must agree to the specific published Terms and Conditions to be eligible for innovation funding.

Details of the relevant Terms and Conditions can be found on the Competition web-page: https://www.gov.uk/government/publications/heat-pump-ready-programme-stream-2-wave-2-opportunities

9) Project Duration and Timescales

Project activity must be at least 6 months duration.

Projects should start by April 2024 and **all project work must be completed by 31 March 2025.** Any spend on projects after 31 March 2025 will be at the project's own expense.

10) Project Team Composition

Projects must be delivered by individual, private sector businesses **(sole applicants)** or by a consortium of project partners led by a private sector business **(consortium applicants).** Private sector businesses of any size are eligible for funding in this Competition.

Sole applicants: Any sole applicant must be a private sector business registered with Companies House with the necessary skills, experience and capacity to effectively lead the proposed project.

Consortium applicants:

- **Consortium projects must be led by a private sector business** registered with Companies House with the necessary skills, experience and capacity to effectively lead the proposed project.

- A single project application must be submitted to the Department by the lead consortium partner.

- Apart from the lead consortium partner, the other project team members in a consortium can be:

    o private sector businesses; or

    o academic, research, public, third sector or community organisations working as part of a project consortium with private sector organisations.

- The eligible project costs incurred by all non-business partners, carrying out non-economic work (e.g. Universities, Research and Technology Organisations (RTOs),

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public sector, third sector and community organisations) in a consortium must be **less than 30% of the total eligible project costs**. See Annex 2 for more details of eligible costs.

Section 5: General Competition Conditions

Conflicts of Interest for Existing HPR Suppliers

For research and analysis, conflict of interest is defined as the presence of an interest or involvement of the contractor, subcontractor (or consortium member) which could affect the actual or perceived impartiality of the research or analysis.

Stream 3 suppliers
The Department therefore considers that there is potential for an actual or perceived conflict of interest if the *Stream 3 - Trial Support and Learning* supplier were to bid for funding in this Stream 2 – Wave 2 Competition.

Existing Heat Pump Ready Programme, Stream 1 and Stream 2 projects
Organisations who have been awarded funding for either *Stream 1 - Solutions for High Density Heat Pump Deployment* or existing *Stream 2 - Tools & Technology* projects may submit applications for this Competition but they must declare that they have already received Heat Pump Ready funding and ensure that satisfactory mitigation to any potential conflict of interest is identified in their tender responses.

Any applications for this Competition which wish to extend the scope of previous Heat Pump Ready funded project must have completed the existing, currently funded project. Applicants may not apply for funding to extend or vary any current and on-going project funded by the HPR Programme and must propose a new and significantly distinct project.

The Department 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 the Department.

You will be asked to declare any previous applications during the application process.

Other Innovation Funding

Recipients of Department or public sector innovation grant funding other than that from the HPR Programme (from the Energy Entrepreneurs Fund for example) may apply for funding for new projects in the Competition. However, any applications for funding through the Competition must extend the scope of the previously or currently funded work to substantively new products, applications or processes or extend the technology readiness significantly (in line with the Competition's eligibility criteria).

There will be no advantage in the Competition for organisations which have previously or are currently receiving funding from the Department. All applications will be treated on an equal basis in accordance with the Competition eligibility and assessment criteria. Applicants are asked to declare any previous or current Department or other relevant applications during the application process.

Multiple Applications

Individual or lead organisations or consortia are permitted to submit **no more than two applications** to the Competition.

In addition, if the Competition is over-subscribed, the Department **may further limit the funding available through the Competition to only one project submitted by any single organisation or consortium**. In this situation, the funding will be allocated to the eligible project from the organisation or consortium which scores highest overall.

In this context, an individual or lead organisation is identified at parent company level in cases where the parent company has significant (majority) control of the subsidiary company, i.e. if a company is more than 50% owned by its parent company, the parent and subsidiary are treated as the same company and are regarded as a single organisation for the purpose of any applications to the Competition.

Applicants are not permitted to apply with the same project under more than one category. It may be acceptable to submit projects involving the same technology to more than one category if the projects are sufficiently distinct and address the scope of the relevant category. In this case, the eligible project costs for the different projects cannot be shared or allocated to more than one project.

An individual or lead organisation is only permitted to submit more than one application to a single category if there is a significant difference between the scope of the projects.

Section 6: Additional Competition Requirements

Stream 3 - Trial Support and Learning

All *Stream 2 – Wave 2: Developing Tools & Technology* projects will be required to participate in *Stream 3 - Trial Support and Learning* activities. The Department views the ability to share learning within and outside of the HPR Programme, and ability to collaborate on common challenges and opportunities in deploying heat pumps in high density, as key to the success of HPR Programme. HPR *Stream 3 - Trial Support and Learning* is responsible for facilitating learning and collaboration within and outside of the HPR Programme, undertaking evaluation activities, and disseminating knowledge, evidence, and lessons to key heat pump stakeholders.

The Department expects representatives from *Stream 3 - Trial Support and Learning* to attend all *Stream 2 – Wave 2: Developing Tools & Technology* project monthly and quarterly meetings with their Project Monitoring Officer (PMO) during the lifetime of any Wave 2 projects. PMOs are the project's main point of contact with the Department during delivery and are responsible for approving invoice payments for work completed. It is in these monthly meetings that projects update on project delivery, including lessons learnt, risks and issues, and they therefore present a useful mechanism through which the *Stream 3 - Trial Support and Learning* contractor can stay up to date on project delivery and build relationships with the projects.

Each Wave 2 project will be evaluated by the *Stream 3 - Trial Support and Learning* contractor, in order to understand project delivery and impact so that the Department can learn lessons to improve current and future programme delivery and provide accountability for public spend.

The *Stream 3 - Trial Support and Learning* contractor will develop an evaluation and data collection plan for your project, setting out the delivery processes and expected impacts, and the data required to evidence these. This will be based on your application form and consultations with the project team, and projects will be required to review the evaluation and data collection plan to ensure accuracy. At a minimum, the *Stream 3 - Trial Support and Learning* contractors will evaluate each project based on project reporting, KPI returns, and qualitative data collection with key stakeholders involved in the delivery of, or participating in, each *Stream 2 – Wave 2: Developing Tools & Technology* project. Lead organisations will be required to share contact details of these key stakeholders to allow the *Stream 3 - Trial Support and Learning* contractor to contact individuals about participating in their evaluation and research activities. Where consortiums are involved in the delivery of *Stream 2 - Wave 2: Developing Tools & Technology* projects, the lead consortium partner must ensure that other consortium partners are aware of this requirement.

Where project teams intend to engage a large number of stakeholders outside of the immediate consortia, and/or recruit consumers in the development or trialling of the

technology, a more formal data sharing approach is required. These stakeholders, where engaged, represent a valuable evidence source, and would be key in an evaluation of the project. If applicable, project teams are expected to share names and contact details (phone number and email address) of consenting stakeholders and consumers with the *Stream 3 - Trial Support and Learning* contractor, so that they can contact these individuals about participating in their evaluation and research activities. Project teams should build the necessary consent processes into their recruitment and engagement approach, which the *Stream 3 - Trial Support and Learning* contractor can support with. In line with Information Commissioner's Office guidance, the Department expects the sharing of these contact details between the project and the *Stream 3 – Trial Support and Learning* contractor to be underpinned by a Data Sharing Agreement (DSA), a template of which is included in Annex 13 (available on the Competition web page)

As part of the overall HPR Programme, all funded project teams will be required to participate fully in *Stream 3 - Trial Support and Learning*'s knowledge sharing and dissemination activities, which support the sharing of learnings across project teams in both *Stream 1 - Solutions for High-Density Heat Pump Deployment* and *Stream 2 - Developing Tools & Technology*. Table 2 below sets out the activities, timings and the required attendees for the activities.

Competition applicants can include, as part of the eligible project costs, the associated day rate for the required project staff to participate in the required *Stream 3 - Trial Support and Learning* activities, in addition to travel and subsistence costs. All travel and subsistence for the activities associated with *Stream 3 - Trial Support and Learning* interactions must be in line with the Department policy on travel and subsistence (details of this are set out in Annex 2).

Table 2: Indicative overview of *Stream 3 - Trial Support and Learning* requirements for *Stream 2 – Wave 2* project teams

Activity	Objective	Frequency	Required Stream 2 – Wave 2 Participant	Travel & Subsidence is Eligible Cost (for required participants only)?
Attend Data Sharing Agreement (DSA) workshop with Stream 3 provider	A session to support *Stream 2 – Wave 2 Developing Tools & Technology* project leads to ensure they have a full understanding of the consent and processes required as part of the DSA requirements for participating in *Stream 3 - Trial Support and Learning* evaluation.	Once	Project Lead	Yes
Attend *Stream 2 – Wave 2 Developing Tools & Technology* Learning Workshop	The project lead will attend quarterly learning workshops between all *Stream 2 – Wave 2 Developing Tools & Technology* projects to allow project leads to share challenges they face in developing their technology and working in the heat pump sector. Please note, each project will be expected to prepare and present at 1 of these sessions.	Quarterly	Project Lead	No – online event
Attend HPR Programme Annual Conference	The conference is focused on the sharing of progress and lessons learnt from the programme and	Annually	Project Lead	Yes

	attended by all *Heat Pump Ready Stream 1 & Stream 2 Project Leads.*			
Attend industry conference	The Project lead will attend industry conferences (organised by the Stream 3 provider) as a member of the Heat Pump Ready Cohort. The Project Lead may be required to host a stand space to disseminate the progress and findings to day from the project and/or speak on panel sessions or similar.	1 in total lifetime of project.	Project Lead	Yes
Support the development of case studies	Assist in the production of a case studies, including allowing access to shoot videos on project site for video case studies.	2 days in total lifetime of project	Project Lead	No – will be filmed at project location.
Support the production of information and learning materials	Support the development of useful project summaries, including sections for the Department's website and Heat Pump Ready website. Contribute towards the production of bitesize learnings to be shared with the Heat Pump Ready online community. Be an active member of the Heat Pump Ready online community by sharing lessons learnt during their HPR project	A day in total over lifetime of project	Project Lead	No - online

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	and supporting and signposting information from other projects.			
Attend and present a HPR Programme podcast and a webinar	The project lead will take part in a podcast and facilitate a relevant event or webinar.	2 in total lifetime of project	Project Lead	No - online

Participation in NZIP Built Environment Thematic Evaluation

The Department is committed to undertaking comprehensive evaluations across all policies and programmes in order to support programme improvements through learning and provide accountability of public spend. Evaluation activity on Stream 2 – Wave 2 projects supported by the HPR Programme will occur in two ways. The first is through Stream 3, as outlined above, where evaluation will support programme learning and dissemination activity.

Secondly, all HPR Programme projects, including Stream 2 – Wave 2 projects, will also be subject to a separate thematic evaluation project that identifies how the HPR Programme and other programmes operating in the same sector, such as Green Home Finance Accelerator, have impacted the broader sector. The focus will be on understanding whether and how these programmes have influenced the perspectives, intentions and actions of key stakeholders, and the importance of this in the context of Net Zero targets. This includes assessing the impact of the activities delivered under Stream 3 which will disseminate the evidence, lessons and achievements of Stream 2 – Wave 2 projects. Though funded through this HPR Programme, the procurements of this project will be a separate activity to the procurement of the three Heat Pump Ready streams.

All HPR Programme participants, including Stream 2 - Wave 2 projects, will be required to support and participate in the thematic evaluation. This may be through the provision of monitoring data, ensuring relevant data sharing and GDPR-compliant agreements are in place and through participating in workshops and interviews. Where possible, the Department will seek to minimise the burden for Stream 2 - Wave 2 projects, and use evidence already provided through Stream 3 activities.

Monitoring and Reporting

Project Monitoring Officer

Successful applicants will be assigned a Department-appointed Project Monitoring Officer (PMO) who will be their main point of contact with the Department during delivery of the project. Projects will meet with their PMO at the project start, potentially before grant award, to agree the delivery plan, the milestones, and the specific outputs that will be delivered, as well as an invoicing schedule. PMOs will be responsible for reviewing evidence submitted as part of an invoicing claim before the invoice payment is approved.

Regular Reporting Requirements

In addition to participation in the learning and evaluation requirements co-ordinated by the *Stream 3 – Trial Support and Learning* contractor, any *Stream 2 – Wave 2: Developing Tools & Technology* projects will be required to submit monthly written progress reports to their PMO, and to meet with them monthly to discuss project progress. The *Stream 3 - Trial Support and Learning* contractor will also attend these meetings to allow them to stay up to date on project progress, capture lessons and support in overcoming risks and issues.

Projects should raise risks and issues promptly with their PMO as they arise, within and outside of these meetings. The PMO will report to and meet with the Department regularly and will escalate project issues to the Department as necessary.

Projects will also be required to report on the NZIP Key Performance Indicators, a set of portfolio-level indicators that help the Department consistently track, measure, and report on results and progress achieved by NZIP. Templates for reporting KPIs and project progress will be provided to each project. More information can be found in Annex 5.

Publicity

Applicants will be informed by email whether their application has been successful, subject to compliance with the terms and conditions of the Conditional Offer that will be received.

The Department may wish to publicise the results of the scheme which would include engagement with the media. At the end of the application and assessment process, the Department may issue a press release or publish a notice on its website. These may, for example, outline the overall results of competitions and describe some of the projects to be funded.

Some organisations may want their activities to remain confidential prior to grant award and you will be given a chance to opt out of pre-award media relations activity, should you see this as being necessary. However, the public description of the project you provide in your

application will be made available in the public domain if your application is successful, and you are not able to opt out of the project description being published.

In addition, all successful Competition project teams are required to work with the *Stream 3 - Trial Support and Learning* supplier and to take part in significant knowledge sharing and dissemination activity during their project (as outlined above).

Any organisation that wishes to publicise its project, at any stage, must contact the Heat Pump Ready Programme team at the Department before doing so.

Confidentiality and Freedom of Information

Where any request is made to the Department under the Freedom of Information Act 2000 ("FOIA") for the release of information relating to any project or applicant, which would otherwise be reasonably regarded as confidential information, then the Department will notify you of the request as soon as we become aware of it. An applicant must acknowledge that any lists or schedules provided by it outlining information it deems confidential or commercially sensitive are of indicative value only and that the Department may nevertheless be obliged to disclose information which the applicant considers confidential.

As part of the application process for the Competition, all applicants are asked to submit a public description of the project. This should be a public facing form of words that adequately describes the project but that does not disclose any information that may impact on Intellectual Property (IP), is confidential or commercially sensitive. The titles of successful projects, names of organisations, amounts awarded, and the description of the project may be published once the award is confirmed as final.

All assessors used during the assessment of applications will be subject to a confidentiality agreement.

Section 7: Acceleration Support

Small or medium enterprises which are lead organisations or partners within projects funded under the *Stream 2 – Wave 2: Developing Tools & Technology Competition* may be eligible to receive Acceleration Support through the Net Zero Innovation Portfolio (NZIP) Acceleration Support Services, subject to availability of Acceleration Support funding and the outcome of the Needs Assessment described below.

NZIP Acceleration Support Services are delivered by The Carbon Trust and their consortium partners on behalf of the Department.

Any Acceleration Support would be allocated on a case-by-case basis to successful applicants. The aim of Acceleration Support is to help the applicant to prepare commercial plans and actions that will increase the chance of successfully bringing the innovation to market or reduce the time to market. Companies selected to receive Acceleration Support must participate in a Needs Assessment Meeting to identify Acceleration Support requirements.

Capabilities which would be considered in the Needs Assessment include:

- Market engagement and customer value proposition

- Strategy and Sales

- Business processes and controls

- Product-service design, development and launch

- Team and Board

- Funding and investment readiness

The outputs of the needs assessment will inform the development of a bespoke Acceleration Plan. This may include but will not be limited to services such as:

- Tailored support, including coaching and specialist support across the six focus areas listed above;
- Group training and learning resources, including sector specific masterclasses and techno-market workshops;
- Access to industry and finance networks, providing companies with investor engagement opportunities, pitch training sessions, facilitated market engagement and networking opportunities.

The Department has designed the Net Zero Acceleration Support Services to help ensure that grant recipients achieve maximum commercial impact from the grant. Therefore, receiving the identified Acceleration Support is a condition of the grant award and grant recipients may be required to co-operate with both the Acceleration Planning Sessions and the Acceleration

Manager who will oversee the delivery of the acceleration support. Any failure or refusal to support this element of the programme will result in termination of the grant.

To support the delivery of any agreed acceleration support, a Memorandum of Understanding (MOU) would be put in place between the project team and the Acceleration Support provider Carbon Trust and their delivery partners.

Section 8: Potential Funding Levels and Subsidy Requirements

Overview of Subsidy Control

DISCLAIMER*: The Department may decide to offer lower levels of funding than the maximum permitted under the rules of the Competition and may not allocate all the funding available. Additionally, the funding rules set out in this Guidance Document are specific to this Competition only.*

Subsidy Control

The Competition will support successful applicants through subsidies awarded in the form of grants towards the eligible costs of the proposal.

Since 4 January 2023, public authorities must comply with the UK's subsidy control regime.[3] The Subsidy Control Act provides the framework for the regime including the transparency requirements.[4] The UK has also introduced Streamlined Routes that have been assessed by the government to be compliant with the requirements of the subsidy control regime, including the Research, Development and Innovation (RD&I) Streamlined Route (also known as the RD&I Streamlined Subsidy Scheme[5]).

The Department will use Category 2 of the RD&I Streamlined Route to award subsidies to businesses and other organisations in the Competition. Category 2 of the RD&I Streamlined Route allows the award of subsidies for industrial research and experimental development projects.

The Windsor Framework applies the EU State aid rules to measures affecting the trade in goods and wholesale electricity between Northern Ireland and the EU.[6]

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[3] https://www.gov.uk/government/collections/subsidy-control-regime
[4] https://www.legislation.gov.uk/ukpga/2022/23/enacted
[5] https://www.gov.uk/government/publications/subsidy-control-act-2022-streamlined-routes
[6] https://www.gov.uk/government/publications/complying-with-the-uks-international-obligations-on-subsidy-control-guidance-for-public-authorities/guidance-on-the-scope-and-application-of-article-10-of-the-windsor-framework

Subsidy for Industrial Research and Experimental Development Projects

Within the Competition, funding can be provided to:

- All private sector businesses irrespective of size (see Business Definition below); and
- Research and knowledge-dissemination organisations as defined below. However, research and knowledge-dissemination organisations cannot be the sole or lead applicant for a project in the Competition – see Eligibility Criterion 10 (Section 4) for details.

Business Definition

A business is defined as an organisation undertaking economic activities. Businesses are categorised as small, medium, or large determined by both their:

- staff headcount; and,
- either turnover or balance sheet total.

The businesses that fall into the categories defined by Table 3 are classed as Small and Medium Enterprises (SMEs). A large business in this context means any enterprise which is not a SME.

Table 3: Categories for business definitions[7]

Qualifying criteria	Small enterprises	Medium-sized enterprises
Turnover	Not more than £10.2m	Not more than £36m
Balance Sheet Total	Not more than £5.1m	Not more than £18m
Number of Employees	Not more than 50	Not more than 250

Research and Knowledge-Dissemination Organisation Definition

In line with the RD&I Streamlined route, within this competition, a research and knowledge-dissemination organisation is defined as follows:

A "research and knowledge-dissemination organisation" means an entity such as universities or research institutes, technology transfer agencies, innovation intermediaries, research-oriented physical or virtual collaborative entities, the primary goal of which is to conduct fundamental research, industrial research or experimental development independently or to disseminate widely the results of such activities by way of teaching, publication or knowledge transfer.

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[7] https://www.gov.uk/government/publications/subsidy-control-act-2022-streamlined-routes

Within the Competition, Research and Knowledge-Dissemination Organisations can include:

- Universities (higher education institutions);
- Non-profit research and technology organisations (RTOs), including Catapults;
- Public sector organisations (PSO);
- Public sector research establishments (PSRE);
- Research council institutes;
- Research organisations (RO); and,
- Charities.

This list is not comprehensive and is subject to change and exceptions.

Maximum Subsidy Levels

The Competition will only provide grant support for industrial research and experimental development innovation activity (defined in Section 3). Projects supported must fall completely within one or both types of the eligible RD&I: industrial research or experimental development.

The maximum level of subsidy that any member of a project team is eligible to receive in the Competition will depend upon the size and organisation type of the project team member and on the type of innovation activity that is undertaken in the project.

Table 4 indicates the maximum level of public funding that can be provided in the Competition, as a percentage of total eligible project costs incurred by businesses and other project team members delivering economic activities for the project. The remaining eligible project costs must be funded by private sector funding.

Please note that these maximum subsidy levels are applicable to individual project team members, <u>not</u> to the project overall.

Table 4: Maximum subsidy level for Industrial Research and Experimental Development projects

Type of Innovation Activity	Organisation Size	Maximum amount of public subsidy as a percentage of total eligible project costs
Industrial Research – Single Companies	Small	70%
	Medium	60%
	Large	50%

Industrial Research – Collaborations: can be Business to Business where at least one Business is an SME; or Business and Research Organisation(s).	Small	80%
	Medium	75%
	Large	65%
Experimental Development – Single Companies	Small	45%
	Medium	35%
	Large	25%
Experimental Development – Collaborations: can be Business to Business where at least one Business is an SME; or Business and Research Organisation(s).	Small	60%
	Medium	50%
	Large	40%

Research and Knowledge-Dissemination Organisations

Research and knowledge-dissemination organisation applicants may be entitled to receive higher levels of funding for eligible project costs **if, for the project, they are <u>not</u> undertaking economic activities** (economic activities entail offering the goods or services on a market). Universities cannot claim more than 80% of their full economic costs calculated using the Transparent Approach to Costing (TRAC) methodology.

Multiple Innovation Activity Projects

Where a project involves a mixture of experimental development and industrial research activity, the project team must identify in their application the proportion of total eligible project costs which falls into each of the innovation types. They must also provide a clear summary of the proposed division of project activity between the two innovation types and demonstrate that the activities align with the proposed innovation type.

For such projects the maximum grant funding available for the innovation activities will be based on the individual thresholds for the different activities.

For example, consider a small enterprise conducting a project by itself, whose costs includes 40% industrial research and 60% experimental development. The maximum subsidy level, as a percentage of total eligible project costs, would be as given in Table 5.

Table 5: Maximum subsidy levels for projects involving a mixture of research categories

Innovation Activity	Maximum Subsidy Level (as a % of total eligible project costs)	Percentage of Project for Each Research Category	Effective Subsidy Level
Industrial Research	70%	40%	28%
Experimental Development	45%	60%	27%
Maximum Overall Project Subsidy Rate			55%

Consortium Applications

For collaborations containing different sized enterprises or Research and Knowledge-Dissemination Organisations, the subsidy ratio is applicable to each of the individual consortium partners receiving the subsidy; not to the project overall.

For example, for a collaborative Industrial Research project: a large enterprise consortium member can only be reimbursed up to 65% of its total eligible costs, whereas a small enterprise consortium partner can be reimbursed up to 80% of its total eligible costs.

Similarly, for a collaborative Experimental Development project: a large enterprise consortium member can only be reimbursed up to 40% of its total eligible costs, whereas a small enterprise consortium member can be reimbursed up to 60% of its total eligible costs.

Public Funding

When considering levels of subsidy (described above), public funding includes the grant and all other funding from, or which is attributable to, other government departments, UK public bodies, other Governments or Government organisations. Such funding includes grants or other subsidies made available by those bodies or their agents or intermediaries (such as grant funded bodies).

In applying to any future competition, you must state if you are applying for, or expect to receive, any funding for your project from public authorities (in the UK or elsewhere). Any other public funding would be cumulated with the Department's funding to ensure that the public funding limit and the subsidy intensity levels are not exceeded for the project.

Whilst the Department would check the information provided to try and ensure that applicants meet the requirements of the subsidy categories, it is the responsibility of applicants to establish that they fall within the competition rules before submitting applications. The Department requires applicants to notify them of any change to their situation or circumstance during the project.

It is essential to ensure that the total grant funding for a project from public sources does not exceed the permitted percentages stated for the relevant subsidy category.

Grant recipients must adhere to all relevant Subsidy Control obligations (which are set out in detailed grant agreements); failure to do so could result in termination and clawback of funding.

As part of the assessment process for the Competition, the added value and additionality of public funding will be tested. Applicants will need to demonstrate why public funding is required to deliver this project.

Adherence to Subsidy Control Requirements

Whilst the Department will check the information provided to try and ensure that applicants meet the requirements of the RD&I Streamlined Scheme requirements, applicants are responsible for establishing that they fall within the relevant subsidy level limits before submitting applications and during the lifetime of any project funded in this Competition.

The Department requires applicants to notify them of any material change to situation or circumstance during the application process or during the project which could affect subsidy levels.

It is the responsibility of applicants to ensure that they are in line with subsidy levels and any other relevant subsidy control requirements. If there is a breach of subsidy control requirements, for whatever reason, the Department will require repayment of any grant received, including interest, above that which was due.

Section 9: Competition Timetable and Process Overview

Competition Timetable

The indicative timetable of key dates for *Stream 2 - Wave 2: Developing Tools and Technology* Competition of the HPR Programme is set out below. **Please note that all dates are subject to change.**

Stream 2 - Wave 2: Developing Tools & Technology Tools **Key Competition Timings**

Application
- Competition opens on 23 October 2023
- Submit application online no later than **14:00 GMT 8 January 2024**

Assessment
- Eligibility check, technical assessment, moderation and applicants informed of the outcome of their application by 23 February 2024 (this date may be revised, depending on the number of applications)

Grant Award
- Grants conditionally awarded and projects able to commence (dependent on time taken for due diligence) by 25 March 2024

Completion
- Final approved project milestones completed and final project reports and dissemination completed and submitted to the Department monitoring officer for approval by **31 March 2025**

Competition Process Overview

As outlined in the diagram above, the Competition process will be undertaken in three key stages comprising application, assessment, and grant award. Please note that all dates listed here are subject to change.

Stage 1: Application

Bidders are asked to submit a competition application form, with supporting information by **14:00 GMT, 8 January 2024**. The notes below explain the details of the application process:

How to apply to Stream 2 – Wave 2 Competition: The Department will be hosting an online event for guidance on how to apply for the Stream 2 – Wave 2 Competition on Thursday 9 November. Please complete this [form](#) to sign up to the event.

Questions about the Competition: If you have any questions on the competition process after reading these guidance notes, please submit them to heatinnovation@beis.gov.uk by **14:00 GMT, 27 November 2023**. Depending on the number of questions received, we expect to publish these questions and our responses to them periodically from 6 November until 7 December 2023 - we will publish all the questions received and responses to them by close 7 December 2023. You will find the list of published Q&A on the following webpage: https://www.gov.uk/government/publications/heat-pump-ready-programme-stream-2-wave-2-opportunities

All applicants should take these replies into consideration when preparing their own applications and we will evaluate applications on the assumption that they have done so.

Submission of Application: The full application for the competition must be submitted [online](#) by the deadline: **14:00 GMT, 8 January 2024**. The online application form will be closed for submissions after this time.

Application documents: All application documents must be submitted via the online application form. In the form there are opportunities to upload relevant supporting documents. In some sections we specify the supporting information we would like to see uploaded. We **will not accept** any other format of the application.

Submission Content: Each online application must include the following documents:

- Completed Application Form ([the online application form can be found here)](#).

- Completed Project Cost Breakdown Form (to be uploaded in the Finance Section of the assessed criteria in the application form).

- Completed detailed Project Plan (to be uploaded in the Project Plans section of the assessed criteria in the application form).

- Completed Risk Register (to be uploaded in the Project Success Factors, Risks, and Management section of the assessed criteria in the application form).

- For applications from consortia: Draft copy of Collaboration Agreement

- Optional: additional letters of support or other supporting information can also be submitted in the final section before you submit your online application form. Supporting documents should provide substantive information to the proposal. **However, you should not assume that any additional information will be cross-referenced or reviewed as part of the application assessment process**.

You should answer all the questions on the application, some questions will be 'required fields' in the form and you will not be able to proceed to the next section until these questions are complete. Incomplete applications and any containing incorrect information may be rejected. However, the Department may, at its discretion, request clarification before making a final decision. **Any applications submitted after the application deadline will not be considered**.

Submission Costs: You will not be entitled to claim from the Department any costs or expenses that you may incur in preparing your bid, whether or not your proposal is successful.

Stage 2: Assessment and Funding Allocation

Applications will initially be assessed against the Eligibility Criteria detailed in Section 4. 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 then be further assessed against the assessment criteria described in Section 11, by three technical reviewers. The technical reviewers may include both internal, Department experts and external heat pump technology experts appointed by the Department, and the assessments will be quality assured by the Department. In addition, an internal commercial specialist from the Department will review commercial aspects of each application and carry out due diligence checks, as outlined in Section 10.

Following the assessment by the technical reviewers, the scores from all the assessors will then be moderated to determine the final Moderated Scores for each application. Section 11 provides details of the minimum scoring thresholds for each assessment criteria and the process for calculating the Final Score for each application.

The guidance notes set out in Section 11 and Section 13 are designed to inform you about the types of information you should provide to the Department for your proposal to be assessed.

The total moderated, weighted score for each application will be used by the Department to allocate the funding for the Competition. If the total funding required for all the applications which are assessed as eligible for funding exceeds the level of funding available in the Competition, then some projects will not be allocated funding, even if they are assessed as eligible for funding. Section 12 provides details of the funding allocation process.

After the assessment and funding allocation stage, all applicants will receive notification of whether their bid has been successful or unsuccessful in being allocated funding in the Competition. Applicants will also receive a short summary of key feedback regarding their

applications irrespective of whether they are successful or not. The Department aims to provide this feedback when issuing the successful/unsuccessful notification letters to applicants.

Stage 3: Grant Award

For successful applicants, following notification of a successful application, the eligible costs of proposals will be checked, and the company's financial viability confirmed (See Section 10 for more detail). Any funding pre-requisites identified will be conditions of the grant. It will be a requirement before issuing the grant that a clear credible plan exists to raise the required company contribution to the work. Where due diligence checks identify any issues with the applicant's project which were not clear from the application documents or which may impact on the successful delivery of the project, the Department reserves the right not to proceed to the Grant Award stage.

Successful applicants will be given the opportunity to discuss the Grant documents with an official from the Department to explain the detailed terms and conditions of the grant award and respond to any queries which the applicant may have at this stage.

Acceleration Planning

If acceleration support is agreed for a *Stream 2 – Wave 2: Developing Tools & Technology* project, the Acceleration Planning meeting will be organised and held as close to the formal project start date as possible. A meeting will be set up with the applicant, the acceleration co-ordinator and manager, and the project monitoring officer. Take up of any identified acceleration support is a condition of the grant.

Section 10: Grant Award Processes

Consortium Projects

Lead Partner Role

The Department specifies that there should only be **one lead company assigned to each project proposal**. Grant Offer Letters for successful applicants will be made out to the delegated lead company and as such the Department is only responsible for making claim payments to the delegated project lead. Payments to collaboration partners or sub-contracts are the responsibility of the lead company.

Consortium Agreement

The Department require that all partners in a collaborative application have signed a Collaboration Agreement (CA) prior to any funding being provided by the Department.

The CA should, as a minimum, specify the division of project work, intellectual property arrangements and a dispute rectification process. The Department will, in event of a dispute between partners, look for that dispute to be resolved within the terms of the CA.

If you are applying as a collaboration, you will be asked to submit a draft copy or heads of terms of the collaboration agreement which has been agreed by your consortium with your application to ensure that the proposed collaboration is viable and robust. A copy of the final signed collaboration agreement must be submitted to the Department before any funding can be provided to project teams – this will be specified as a condition in the Grant Offer Letter.

Financial Checks and Due Diligence

Project Cost Information

As part of their application, all applicants must complete the HPR Programme [Cost Breakdown Form](#) detailing their expected expenditure and spending profile for the project on a quarterly basis. You should complete a single form covering your entire project and, for consortium projects, including all of your partners, clearly identifying which costs relate to which partner.

During the assessment of applications, the project costs and plans that are submitted as part of the application process will be assessed along with the answers to the questions on the application form to ensure they are what might be reasonably expected.

The eligibility of all costs under subsidy rules and the financial viability of your organisation may be checked following the assessment and moderation process but before a formal grant offer is made. Being contacted for this information does not indicate either success or failure in the assessment process.

While the Department understands that project costs are subject to change prior to agreeing a Grant award and throughout the course of the project, we do expect the final version of the Cost Breakdown Form to be our guide to project expenditure through delivery and costs should not vary significantly from this without prior agreement of the Department.

Sub-Contract Use

You will be expected to state and justify in your project application the amount of sub-contract funding (if any) within the expected spend of the project. You will be expected to explain the necessity for this spend as opposed to the addition of collaboration partners within the project proposal.

Overhead Rates

The overhead rate must be agreed with the Department before the Grant award documents are issued and cannot be changed during the work. See Annex 2 for further guidance on overhead rates.

Financial viability checks

The Department will undertake financial viability checks on all successful applicants, which may also include consortium member and sub-contractors responsible for carrying out significant aspects of the project. These will include looking at the latest independently audited accounts filed on the Companies House database.

Where a business is not required to file accounts with Companies House, other financial information may be requested to enable an appropriate financial viability review to be undertaken. We will be looking for evidence of your ability to resource the project appropriately, so the information we request will be focused on understanding how your business operates in this respect.

Before your project starts, the Department will ask for credible evidence that you have the funding mechanisms in place to manage your cash flow across the life of your project. This could include letters of credit, letters of intent to invest from individuals or organisations or other such mechanisms. We do not expect you to have cash deposits to cover the entirety of your project at the start but if you do not complete your project due to cash flow problems that you could have anticipated and managed, we may request repayment of any grant already issued to you.

The Department will not make payments in advance of need. The Department understands, however, the difficulties which small businesses may face when financing this type of project. The Department will explore cash flow issues with the applicant as part of

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developing the financial and milestone profile within the Grant Offer Letter. The Department may offer flexibility in terms of profiles and payments, within the confines of the requirements for use of public money within which it operates.

Grant Use

Companies should note that the grant may not be used to subsidise commercial activities.

Section 11: Assessment Criteria

Assessment Process

Step 1: Assess against Eligibility Criteria

All applications will be considered initially against all the competition Eligibility Criteria (detailed in Section 4.

Applications that do not meet all the Eligibility Criteria will be excluded at this stage.

Step 2: Assess against Assessment Criteria

There are seven Assessment Criteria, listed below:

1. Assessment Criterion 1: Business Proposition
2. Assessment Criterion 2: Innovation Impact
3. Assessment Criterion 3: Net Zero and Energy Security Impact
4. Assessment Criterion 4: Deliverability
5. Assessment Criterion 5: Finance
6. Assessment Criterion 6: Social Value
7. Assessment Criterion 7: HPR Programme Additionality

Some of these Assessment Criteria are broken down into Sub-Criteria.

Eligible projects will be scored against each of the seven Assessment Criteria, and, where applicable, their sub-criteria (described in the Assessment Criteria and Scoring Guidance sub-section below). Each assessment criterion or sub-criterion in the application will be scored independently by the three assessors and will be given a score between 1 and 5. Further information on this scoring range is provided later in this Section (see Scoring Assessment Guidance).

Step 3: Moderate the Scores

The assessor scores will be moderated - by discussion between the three assessors, overseen by a commercial expert and an independent chair - and a **Moderated Score** will be agreed for each criterion or sub-criterion (where a criterion is broken down into sub-criteria).

Step 4: Review Scores against Minimum Scores

For Assessment Criteria 1 to 6 (and where applicable, their sub-criteria) there are individual **Minimum Scores**. The Moderated Scores for each application will be compared to the Minimum Scores.

Applications that do not meet the Minimum Score for any single Assessment Criterion or Sub-Criterion will be excluded at this stage.

The Minimum Scores for the Assessment Criteria are set out in Table 6 below.

Step 5: Apply Weightings

For Assessment Criteria 1 to 6 (and where applicable, their Sub-Criteria), there are also specific **Weightings**. For each project application where the Moderated Scores pass all the Minimum Scores (i.e. those projects that pass Step 4), a **Total Weighted Moderated Score** will be calculated by multiplying the Moderated Scores for each Assessment Criterion or Sub-Criterion by their relevant Weightings and summing the total of those, as set out in the formula below.

Total Weighted Moderated Score	=	(Moderated Score 1a x 0.10) + (Moderated Score 1b x 0.10) +
		(Moderated Score 2a x 0.075) + (Moderated Score 2b x 0.075) +
		(Moderated Score 3a x 0.15) + (Moderated Score 3b x 0.05) +
		(Moderated Score 4a x 0.15) + (Moderated Score 4b x 0.05) +
		(Moderated Score 4c x 0.05) +
		(Moderated Score 5a x 0.075) + (Moderated Score 5b x 0.075) +
		(Moderated Score 6 x 0.05)

The Weightings for the Assessment Criteria are set out in Table 6 below.

Table 6: Weighting and Minimum Scores for Assessment Criteria

Criteria	Weighting	Minimum Score
Criterion 1: Business Proposition (20%)		
1a Business proposition – market opportunities and challenges	10%	3 out of 5
1b Business proposition – commercial exploitation of innovation	10%	3 out of 5
Criterion 2: Innovation Impact (15%)		
2a Innovation – status of technology/tool	7.5%	3 out of 5
2b Innovation – impact of innovation in terms of cost and performance	7.5%	3 out of 5
Criterion 3: Net Zero and Energy Security Impact (20%)		
3a Net Zero and Energy Security Impact – Supporting 600,000 heat pumps being deployed per year by 2028 and overall climate targets	15%	3 out of 5
3b Net Zero and Energy Security Impact – Working with end-users and the supply chain	5%	3 out of 5
Criterion 4: Deliverability (25%)		
4a Deliverability – Project Plans	15%	4 out of 5
4b Deliverability – Project Management Structure	5%	4 out of 5
4c Deliverability – Project success factors and risk management	5%	4 out of 5
Criterion 5: Project Financing (15%)		
5a Project Financing – Project costs	7.5%	4 out of 5
5b Project Financing - Justification for Public Funding	7.5%	4 out of 5
Criterion 6: Social Value (5%)		
6 Social value	5%	3 out of 5

Step 6: Apply Scaling Factor

The Moderated Score for Assessment Criterion 7 will be converted to a **Scaling Factor** using the conversion factors set out in Table 7 below. The Total Weighted Moderated Score is multiplied by the Scaling Factor to produce the **Final Score** for each application.

Final Score = Total Weighted Moderated Score x Scaling Factor

Examples of how Scaling Factors are applied to reach a Final Score are provided in Table 8 below.

Table 7: Scaling factor for Criterion 7

Criterion 7 Moderated Score	Scaling Factor
1	0.6
2	0.7
3	0.8
4	0.9
5	1.0

Table 8: Examples showing application of the Scaling Factor

Example #	Total Weighted Moderated Score from Criteria 1 – 6	Criterion 7 Moderated Score	Criteria 7 Scaling Factor	Final Score for application
1	75	2	0.7	52.5 (i.e. 75 x 0.7)
2	75	4	0.9	67.5
3	80	3	0.8	64
4	93	2	0.7	65.1

Step 7: Rank Projects

All projects that reach Step 7 will be ranked in order of their Final Score to create a **Ranked List for all the projects** that are eligible for funding. The process of allocating funding using the Ranked List is described in Section 12.

Note: Nothing in this funding call requires the Department to award any applicant a grant of any particular amount or on any particular terms. The Department reserves the right not to award any grants in the Competition, in particular if the Department is not satisfied by the applications received or if the funding assigned to the Competition is required for other, unforeseen, purposes. The Department will not, under any circumstances, make any contribution to the costs of preparing applications and applicants accept the risk that they may not be awarded a grant.

Assessment Criteria and Scoring Guidance

The seven assessment criteria and scoring guidance for the Competition are described in the boxes below. The guidance notes in the following boxes and the additional guidance in Section 13 are designed to inform you about the types of information you should provide to the Department for your application to be assessed.

Please note: a maximum word count is provided for each of the assessment criterion or sub-criterion. This is the **maximum** word count which you may use, and projects are encouraged to be **concise with their responses** and do not need to fill this word count unnecessarily. High word count limits have been set to enable applicants to provide relevant supporting evidence within their response and to remove or reduce the need for applicants to provide separate 'Supporting Information'.

For the avoidance of doubt, the individual bullet points listed under the questions and headings below do not constitute assessment sub-criteria but are an indication of the factors that will be considered in assessing each aspect of an application.

Criterion 1a	Business proposition – market opportunities and challenges
Weighting	10% (minimum moderated, unweighted score of 3 or more from 5 required to be eligible for funding)
Guidance (Maximum 1000 words)	This criterion will be used to assess the market opportunities and challenges which the innovation project addresses. **What are the business opportunities/market problems that this innovation and project address?** • Describe the first addressable market for your innovation, including the size of this market. • Describe the specific market sub-sectors that will be the initial target markets for your innovation in the first three years of commercialisation. • Describe the problem that your innovation overcomes for this target market(s) and the customer value proposition. • Describe the competing solutions/technologies to your innovation. • Describe the Unique Selling Point of your innovation that enables you to differentiate it from the competition.

- Describe what independent justification/market research you have to substantiate all the above information.

Highest marks will be award to applications which:

- Outline the business opportunity and technical solution that you have identified.

- Describe the size of the market opportunities that this project might open up, including details of:

  o Current nature of the specific market(s) at which the project is targeted (e.g., is it characterised by price competition amongst commoditised suppliers? Is it dominated by a single leading firm? Is it a UK market or a global one?).

  o The dynamics of this market including quantifying its current size, value, actual and predicted growth rates.

  o For highly innovative projects, where the market may be unexplored, you should explain what its size might be, (national/global), how the project will seek to explore the market potential and what sources you have used to reassure yourself that sufficient demand exists to justify the investment.

- Describe the particular problem or issue that is facing your business, marketplace or customers that your innovation addresses. For example you should be setting out the current Heat Pump Deployment barriers and how the project addresses it.

- Explain what the competing solutions to the problem are and what differentiates your innovation from these and why this would be a more attractive solution.

- Provide evidence for your statements, including any independent corroboration, about the addressable market for project outcomes and set out any assumptions you have made.

Criterion 1b	Business proposition - Commercial exploitation of innovation
Weighting	10% (minimum moderated, unweighted score of 3 or more from 5 required to be eligible for funding)
Guidance	This criterion will be used to assess how the outcome for the project will be commercially exploited and the business opportunity for the proposed innovation beyond the end of the project grant funding period.

(Maximum 1000 words)	**How will the outcomes for the project be commercially exploited?**
	• Describe the business model that your company will use to generate value from the innovation (i.e. how will you generate revenue?).
	• Describe the likely route to market for your innovation and the evidence as to how your project will lead you to a product the market wants.
	• Describe and quantify the potential sales pipeline for your business based on the target markets described
	Highest marks will be award to applications which:
	• Describe the business model and route to market and how this will generate value / revenue by the end of this project. You should explain what you will be doing to address the market described in the previous question successfully, within the desired timeframe and cost.
	• Applicants should list the potential exploitable outcomes of the project such as:
	◦ Products or services
	◦ Processes
	◦ Applications
	• Describe how these outcomes will be exploited including where applicable protection of intellectual property rights, changes to business models and business processes and other methods of exploitation and protection.
	• Explain your anticipated routes to market, highlighting the initial one(s) and outline your strategy for developing market share with evidence. You should explain the projected market share for the project outcome, with justification in the light of any potential competitors.
	• If you have customers or potential customers already in place these should be identified and evidence of their support provided, including any market research carries out.
	• In addition to the immediate practical exploitation of the outcomes, you should identify and quantify the likely impacts of a successful

| | project on your business and indicate the timelines over which these impacts will be realised.

• Provide a potential sales forecast based on the target markets identified previously, showing both sales and revenues.

• For highly innovative projects, where the market may be unexplored, you should explain what the route to market could or might be using previously gathered evidence.

• Provide evidence for your statements, including any independent corroboration, about the route to market for project outcomes and set out any assumptions you have made. |

Criteria 2a	Innovation Impact – current status of technology/tool
Weighting	7.5% (minimum moderated, unweighted score of 3 or more from 5 required to be eligible for funding)

Guidance
 	
(Maximum 750 words)
	This criterion will be used to assess the degree of innovation in your proposed project, the current and anticipated technical readiness level (any funded projects would be required to develop their solutions to a point at which they are ready to enter the market, i.e. TRL 7/8TRL level) and the software phase.
	
	Is your project predominantly software or hardware?
	
	    a) Hardware
	
	    b) Software
	
	    c) Equal
	
	[If answered a…] What is the current status of your technology and what has been completed or proven to date?
	
	• Describe how your technology is innovative compared to existing/competing solutions. If appropriate, please include a photograph and/or schematic as a separate attachment.
	
	• Describe the probability of overcoming the technical risks on delivering the stated aims of the project.
	
	[If answered b…] What is the current status of your software and what has been completed or proven to date?

- Describe how your software is innovative compared to existing/competing solutions. If appropriate, please include a photograph and/or schematic as a separate attachment.

- Describe the probability of overcoming the technical risks on delivering the stated aims of the project.

- Describe, if conducted, any discovery phase testing that has taken place.

[If answered c…] What is the current status of your technology/software and what has been completed or proven to date?

- Describe how your technology/software is innovative compared to existing/competing solutions. If appropriate, please include a photograph and/or schematic as a separate attachment.

- Describe the probability of overcoming the technical risks on delivering the stated aims of the project.

Highest marks will be award to applications which:

- Describe the stage of your technology/software and choose a TRL number if the project is predominantly technology. TRL levels indicate the level of maturity of the product or process. Using the guidance in Annex 3 in this document, you should choose the TRL you feel most appropriate to the current state of your technology.   The TRL chosen should be supported by the information provided.

- If predominantly software, please indicate the phase of the software. This should be reflected in the Project Plan

- Detail what has been done to date, (lab or bench demos, component tests, development prototypes, engineering or operational prototypes) and over what timescale.

- Describe any break downs of assumptions and definitions you may have. This includes any legal restraints that may arise.

- Outline any results that you have had to date and any sources of technology/software you have used. You should demonstrate the level of reliability and current effective run time (if appropriate) of your innovation. You should justify credibility of the approach with relevant pilot/demo data.

- Describe the evidence you have which substantiates your belief that the intended work is innovative – this should not be based on your

	opinion alone. Evidence could include the results of patent searches, competitor analyses, literature surveys etc.
	• If applicable, you also should briefly outline your own background IPR, as related to the project. You should also include any data that you may already have collected that demonstrates the performance of the innovation.
	• Describe the probability (low/medium/high) of overcoming the known technical risks associated with successfully delivery the aims of the project. Describe the approach taken to known technical risks and how you intend to overcome them.
	• Provide evidence for your statements, including any independent corroboration, and set out any assumptions you have made
Criterion 2b	**Innovation Impact: Impact of innovation activity in terms of cost and performance**
Weighting	7.5% (minimum moderated, unweighted score of 3 or more from 5 required to be eligible for funding)
Guidance (Maximum 750 words)	In response to this criterion, applicants must complete and submit the attached table. **What is the expected impact of the innovation activity in terms of cost & performance?** This criterion will use the responses provided within the table submitted to demonstrate the costs and performance of your technology and quantify the expected improvements in the cost and performance as a result of undertaking this project. • Complete the table to describe the current cost and performance of your technology; the expected cost and performance of your technology at the end of the project; and the target costs and performance for your technology within 5 years of commercialisation. Provide evidence for your statements, including any independent corroboration, and set out any assumptions you have made regarding sales forecast and overheads. You should demonstrate that your margin is sufficient to cover your overheads, i.e. that the business is viable. The cost and performance benefits offered by your innovation must

directly address one of the four Competition Challenge Categories:

- o Improving the ease of heat pump deployment in homes that are 'complex to decarbonise' by addressing physical, material, locational, technological, regulatory, or social challenges

- o Developing innovative solutions to enable heat pumps to be deployed in 'distress purchase' situations when a new home heating system is required urgently

- o Improving performance and/or reducing costs of domestic heat pumps with low-GWP refrigerants (i.e. below 150 GWP), while ensuring safety

- o Reducing the lifetime costs or improving the overall lifetime performance of domestic heat pumps or improving the domestic consumer experience of using and living with a heat pump

In the table, specify applicable cost and performance elements such as:
- o The unit size of the innovation at each stage

- o The estimated cost and performance of the innovation at this size, using industry standard metrics, for example:

- o Conversion ratio

- o Cost per kWh

- o Efficiency factor

- o Operating level

- o Operating temperatures

- o Refrigerant type

- o Levelised Cost of Energy (LCOE)

- o The estimated cost of each unit of the innovation at that size

- o The estimated capital price to consumer per unit

- o The estimated operating price to consumer

- o The estimated sales volume of units

- o The estimated gross profit margin per unit as a percentage

- o System installation time or labour costs

- o Other performance measures – please add and describe as appropriate

- Set out a comparison of your innovation's costs and performance against incumbent / competing technologies and identify the source of your comparator data.

- Describe any infrastructure your innovation may require, including information on how these may change over time or with scale, for example:

  - o Geographical location

  - o Site co-location

  - o System integration, inputs or conditions

- Describe any environmental impacts directly or indirectly resulting from your innovation. Include how these may vary over time, for example:

  - o Emissions

  - o Noise or vibration

  - o Visual intrusion

- Describe any regulatory requirements critical to the success of commercialising the innovation, including how these may vary over time, for example:

  - o Planning consents

  - o Environmental permitting

  - o Other industry specific requirements

- Describe how the innovation is measured, including details of any robust method for evaluation performance relative to competitors/incumbents that has been established.

Criteria 3a	Net Zero and Energy Security Impact: Supporting 600,000 heat pumps being deployed per year by 2028 and overall climate targets.
Weighting	15% (minimum moderated, unweighted score of 3 or more from 5 required to be eligible for funding)

Guidance
 	
(Maximum 1000 words)
	This criterion will be used to assess the impact on climate targets that you believe your innovation will have including the target of 600,000 heat pumps deployed per year by 2028.
	
	What impact will the innovation have on supporting 600,000 heat pumps being deployed per year by 2028? How will the innovation impact carbon targets and/or security of supply and over what timescale?
	
	• For a single unit of your product or service, quantify the tonnes of carbon saved and compare this against the estimated unit costs to give a price/tonne of carbon saved (state all assumptions).
	
	• Please state the carbon/greenhouse gas emissions savings that your product/service could enable once it is established in the marketplace and over what timescale.
	
	• Please state the market penetration and sales volume assumptions you have used.
	
	• Explain how the innovation will support the aim of deploying 600,000 heat pumps per year by 2028.
	
	Highest marks will be award to applications which:
	
	• Highlight how your innovation will make an impact on climate change targets and/or security of supply, including the aim of deploying 600,000 heat pumps per year by 2028. For example:
	
	    o Is it through change in user behavior resulting in reduced energy usage?
	
	    o Does the innovation reduce the cost of installation and/or maintenance for existing equipment?
	
	    o Is it through improved performance characteristics of a component or a material leading to greater efficiency?
	
	• Quantify the potential impacts on greenhouse gas / CO_2 emissions. Using data provided in previous sections around market size, share

any assumptions around market penetration and highlight the potential for carbon or energy savings.

- Where impacts are around cost reductions and savings, the size and scale of these should be estimated.

- Use the cost information provided to calculate the cost per tonne of CO_2 saved. You should describe to what extent the proposed level of grant from the Department represents value for money in terms of the future installed system cost per tonne of CO_2 saved by that system or product. You should justify this, for example explaining where the product / technology would sit on the Vattenfall/McKinsey abatement curve.

- Identify the timescales over which the impact will take place taking into account when the innovation would expect to reach market and its uptake within the marketplace.

- Consider whether any technologies that are currently being developed will supersede your innovation. These technologies should be highlighted and the potential impact on the timescales considered.

- Where possible, you should also provide relative data against existing technologies, products or processes to highlight the comparative carbon or energy savings.

Outline your methodology and provide evidence for your statements, including any independent corroboration, and set out any assumptions you have made.

- Applicants may also wish to consider calculating the payback period for the innovation to demonstrate the benefits of their innovation.

- Applicants may also wish to consult Department for Energy, Security and Net Zero guidance for valuation of energy use and greenhouse gas emissions at the link below. This provides data and information and a toolkit for calculating the impact of changes in energy usage.

    o https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

Criterion 3b	**Net Zero and Energy Security Impact: Working with end-users and the supply chain**

Weighting	5% (minimum moderated, unweighted score of 3 or more from 5 required to be eligible for funding)
Guidance (Maximum 750 words)	**How will the project work with end users/ the supply chain to codesign the technology/tool?** This criterion will be used to assess the responses provided within the table submitted to understand the impact on security of supply that you believe your innovation will have. Highest marks will be award to applications which: • Demonstrate how you will collaborate with end users/ throughout the supply chain, and a fair and responsible approach to working with supply chain partners/ end users in design of the technology/tool. • Provide evidence to demonstrate how you will influence staff, suppliers, customers and communities through the delivery of the contract to support resilience and capacity in the supply chain.

Criteria 4a	Deliverability: Project Plans
Weighting	15% (minimum moderated, unweighted score of 4 or more from 5 required to be eligible for funding)
Guidance (Maximum 1000 words)	This criterion will be used to assess the feasibility of the submitted project plans to successfully deliver the grant funded project within the allocated competition timeframes. **What are the project work packages, milestones, deliverables and dependencies and project delivery plan?** • Describe the over-arching technical and methodological approach which is being taken to meet the needs of the project, including a justification as to why this is the most suitable approach and how the innovative steps are achievable through this approach. • Describe the key work packages, project milestones and deliverables for the project. Provide a detailed, robust and realistic delivery plan with associated timelines (including a Gantt chart) which identifies key activities, milestones, intended duration of the project and any stages within that. Provide details of the resources (for example, total person days) allocated to key activities. Include a justification as to how the project can be successfully delivered within the stated timeframes.

- Describe the key dependencies within the project plan.

- Demonstrate sufficient resource commitment and capability to undertake the project.

In response to this criterion, applications must submit within a separate file (pdf or excel) a Gantt chart (or similar) detailing:

- Key activities and milestones
- The critical path for project delivery (week by week basis)
- Interdependencies between work packages

Highest marks will be award to applications which:

- Describe the programme of work you intend to undertake with the funding.

- Provide an overview of the technical approach you propose to take including the main objectives including an estimate of the minimum level of technical or cost performance that the proposed project needs to demonstrate. You should state the relevance to the competition objectives.

- Include any alternate R&D strategies that could be used and explain why the approach you have chosen will provide better outcomes.

- The timeliness and novelty of the research aspects of the project should be highlighted and explained in an industrial/business context. If your project includes software, you should confirm that you are able to complete the software in the timelines set out.

- Identify the key milestones of the project and any interdependencies between the various work packages. Applicants should also outline the key deliverables for the project.

- Provide a clear delivery plan, including Gantt chart

- Identify any go/no-go decision points in the project (e.g., dependencies on achieving particular performance milestones or component solutions).

- Identify who will be carrying activities out (including any collaborators, customers, suppliers, subcontractors, research organisations, certifying bodies, etc.) and outlining the resource and management requirements and highlighting any sub-contracted work and how you

	propose to manage the project. This includes demonstrating sufficient resource commitment and capability/experience to undertake the project, with clear management reporting lines identified.
	• Using the guidance in Annex 3 you should choose the TRL you feel will be most appropriate to your innovation at the end of the proposed project. You should justify the TRL which you have selected. If using predominantly software, please choose the phase you feel most appropriate to the innovation at the end of the project as outlined in Annex 4.
	• You should demonstrate the expected level of reliability and effective run time (if appropriate) of your innovation by the end of the project.
	• If you were showing the innovation to us at the end of the project, what would we see?
	• You should provide evidence for your statements, including any independent corroboration, and set out any assumptions you have made.
Criterion 4b	**Deliverability: Project Management structure**
Weighting	5% (minimum moderated, unweighted score of 4 or more from 5 required to be eligible for funding)
Guidance (Maximum 1000 words)	This criterion will be used to assess the project management structure including, the experience and skills of the business and its personnel to deliver the target outcomes in the competition timeframe. **What is your proposed project management structure and how will roles and responsibilities be divided between the lead organisation, any consortia members, subcontractors, and key stakeholders?** • Provide an organogram outlining the project management structure you are proposing. • Describe how roles and responsibilities will be assigned between the lead organisation, consortia members, subcontractors, and key stakeholders (as applicable). • In reference to the organogram, describe the role each organisation and/or key project team members would play during the project.

	- Provide a description of your intended project management approach, explaining how it will effectively enable you to deliver the project to the identified timescales. - If any necessary partner, sub-contractor, stakeholder or supply chain relationships are not already in place, please identify them and outline the steps for effectively establishing these within reasonable timescales during the project. Highest marks will be award to applications which give the highest level of confidence that the project can successfully achieve its target outcomes in the competition timeframe.
Criterion 4c	**Deliverability: Project Success factors and risk management**
Weighting	5% (minimum moderated, unweighted score of 4 or more from 5 required to be eligible for funding)
Guidance (Maximum 1000 words)	This criterion will be used to assess the key successful factors that will measure the project outcomes and the challenges that could impact those targeted outcomes. **What are the project success factors, target outcomes and risks?** - Describe the top three project critical success factors and outline why they are critical to the success of the project. Describe how each success factor will be measured. - Outline key targets for measuring project outcomes, how they will be achieved, how they will be measured, and why they are appropriate. - Identify the key risks associated with the project and how these will be mitigated. Describe the processes to ensure project risks will be effectively monitored and managed. - Provide a detailed risk register. - Identify any outstanding and potentially emerging external factors (such as legislative frameworks) that may impact your ability to deliver the project by March 2025. Please include details of any necessary mitigating actions within your response. Highest marks will be award to applications which: - Describe the critical success factors for your project. You should explain why these are important, how you will measure them and how

they will be managed during the project in an appropriate project work plan.

- Describe the main challenges to delivering the project, which should link to the risk assessment description.

- Identify key project management tools and mechanisms that will be implemented to provide confidence that sufficient control will be in place to minimise operational risk and, therefore, promote successful project delivery. This should include the arrangements for managing any significant sub-contractors.

- In the risk register template provided in the application form, you should consider risks and issues of the following types:

  - Commercial

  - Technical

  - Health and Safety

  - Legal and Regulatory

  - Financial

  - Project Management

  - Resource Management

  - Operational

- The Department recognises that projects of this type are inherently risky. However, it seeks assurance that the projects it funds have adequate arrangements for managing this risk.

- In the risk register, describe the main risks, and then rate as Crisis, Critical, Moderate, Marginal or Negligible for impact and Very unlikely, Unlikely, Possible, Likely and Unlikely for probability.

- Describe whether each described risk can be accepted, transferred or mitigated. Assign the residual risk to the project as Red/Amber/Green.

Criteria 5a	Project Financing: Project costs

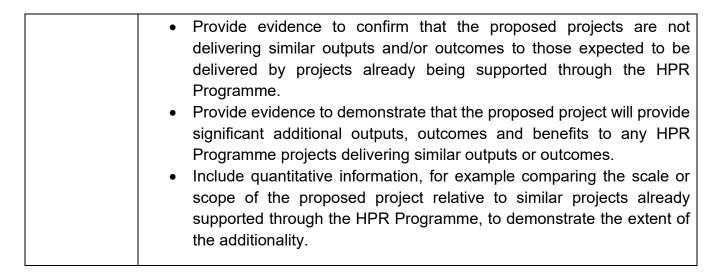| Weighting	7.5% (minimum moderated, unweighted score of 4 or more from 5 required to be eligible for funding)

Guidance
 	
(Maximum 1000 words)
	This criterion will assess the finances of the project and the justification for the funding that your project requires.
	
	What are the anticipated project costs?
	
	• Complete the project cost breakdown form, which should include
	• A description of the anticipated project costs
	• Describe how your costs have been calculated with reference to the delivery of the milestones and justify them, providing evidence where possible.
	• Describe or explain the steps you have taken to minimise these costs to ensure that your proposal costs are proportionate and represent value for money.
	
	Further guidance on the project cost breakdown form can be found in Section 13.
	
	Highest marks will be award to applications which:
	
	• Provide a clear a narrative description of the anticipated project costs, making clear the level of contribution from the business and the level of funding required from the Department.
	
	• This should match the details provided at the start of the application form as well as within the HPR Programme Project Cost Breakdown Form, with any supporting information and explanation provided in this section of the application form. This is the section where you can describe the breakdown of costs between your organization and any partners / collaborators.
	
	• An attempt to demonstrate that:
	
	    o The budget you are proposing is realistic for the scale and complexity of the project.
	
	    o If applicable financial commitment from other sources is demonstrated for the balance of the project costs.
	
	    o The budget breakdown is realistic and consistent with what is being proposed.
	
	    o The spend profile matches the work packages and project plan.

	- State the amount of sub-contract funding (if any) within the expected spend of the project and justify the necessity for this spend as opposed to the addition of collaboration partners. - State the amount of funding requested for academic partners (if any) and justify this spending using the Transparent Approach to Costing (TRAC) methodology to calculate 80% full economic costs. Please note, the numbers provided in the Project Cost Breakdown Form must match those provided throughout the application form. Definitions of any terms used within the Project Cost Breakdown Form are provided in Section 13.
Criteria 5b	**Project Financing: Justification for Public Funding**
Weighting	7.5% (minimum moderated, unweighted score of 4 or more from 5 required to be eligible for funding)
Guidance (Maximum 1000 words)	This criterion will assess the finances of the project and the added value of public funding for your proposed project. **Please provide a summary of your funding and spending history on the innovation to date and explain why public funding is needed to develop the proposed innovation.** - Provide the total invested in the innovation to date, itemised by category e.g.: Grant funding, own cash invested, external funding received/invested, non-cash investment i.e. personnel resource etc. - Provide a high-level breakdown of how funds have been spent to date. - Describe the other sources that you have approached for funding support. - Describe the benefits to be secured from public funding for the proposed innovation and explain what would happen to the innovation without public funding. Highest marks will be award to applications which: - Provide a clear breakdown and full details of previous funding and spend to date in relation to this or related projects, including any public funding that has been received, for example, but not limited to, grants and investments. Related projects mean any projects using resources or assets (including intellectual property) which are being used by this project.

- Include details of any grants that have been used to reach this point in the development process and are now completed or close to completion and any for which an application is underway or in progress.
- Describe other sources of funding that have been explored to fund this project and the outcome of these funding discussions. Public funding should not be the first option for the project.
- Demonstrate the added value of public funding for the proposed project. This should be demonstrated by evidencing that:
  - There will be an increase in total Research & Development spend on low carbon technologies in the UK; and either:
  - Why the project is not able to be wholly funded from within the business's own resources; or
  - How the Department funding would allow the project to be undertaken differently or more quickly and why this would be beneficial to the UK.

Criteria 6	Social Value
Weighting	5% (minimum moderated, unweighted score of 3 or more from 5 required to be eligible for funding)
Guidance (Maximum 1000 words)	This criterion will assess the plans for the social value to be gained from the proposed project. **How will the project contribute towards achieving the Government social value policy objective of: Increasing supply chain resilience and capacity ?** - Provide a 'Method Statement' stating how you will ensure opportunities under this grant will deliver the desired social value policy outcome: increase supply chain resilience and capacity. Highest marks will be award to applications which: - Demonstrate collaboration throughout the supply chain, and a fair and responsible approach to working with supply chain partners in delivery of the grant). - Provide a timed project plan and process, including how you will implement your social value commitment and by when. - Define how you will monitor, measure and report on your commitments/the impact of your proposals. Your answer should include but not be limited to: use of metrics, timed action plan,

	tools/processes used to gather data, reporting, feedback and improvement, transparency. • Explain how you will influence staff, suppliers, customers and communities through the delivery of the grant to support the Policy Outcome, e.g. engagement, co-design/creation, training and education, partnering/collaborating, volunteering. • Analyse and describe how the delivery of the technology/tool will support social value.

Criterion 7	HPR Programme Additionality
Weighting	No weighting: The Moderated Scores for Criterion 7 will be converted to a Scaling Factor. This will be multiplied by the Total Moderated Weighted Score to produce the Final Score for each application (see Section 11, Assessment Process sub-section for further information).
Guidance (Maximum 1000 words)	This criterion will assess the additional benefits to be secured from the proposed project over and above those expected to be delivered from innovation projects already being supported through the HPR Programme – that is, the projects set out in Table 12 (Annex 1). **How does your proposed innovation differ from innovations already being supported through the HPR Programme?** • Identify any Stream 2 projects already being supported through the HPR Programme which have similar expected outputs and/or outcomes to the proposed project. To identify any similar projects, you should use the summary information provided about Stream 2 projects in Table 12 (Annex 1) as well as the longer Stream 2 project information and the pdf project descriptions available on the HPR Programme website, which can be found using the weblinks provided in Table 12 (Annex 1). • If any Stream 2 projects already supported through the HPR programme do have similar expected outputs and/or outcomes to the proposed project, explain why the proposed project will deliver additional outputs, outcomes and overall benefits in addition to those expected to be delivered by the projects already being supported through the HPR Programme. • Include a comparison of any similar projects setting out the additional outputs, outcomes or benefits to be secured from the proposed project. Highest marks will be award to applications which:

	• Provide evidence to confirm that the proposed projects are not delivering similar outputs and/or outcomes to those expected to be delivered by projects already being supported through the HPR Programme. • Provide evidence to demonstrate that the proposed project will provide significant additional outputs, outcomes and benefits to any HPR Programme projects delivering similar outputs or outcomes. • Include quantitative information, for example comparing the scale or scope of the proposed project relative to similar projects already supported through the HPR Programme, to demonstrate the extent of the additionality.

Assessment Scoring Guidance

We will select projects that offer the best value for money overall based on their assessment against the criteria outlined above. The projects will be scored using the scoring guidance set out in Table 9: Scoring Guidance. Projects must score a minimum of 65% (based on total weighted moderated score) to be eligible for funding.

Table 9: Scoring guidance.

Scoring Guidance Score	Description
1	Not Satisfactory: There is no evidence to very little evidence that the question has been satisfactorily answered and major omissions are evident.
2	Partially Satisfactory: There is little evidence that the question has been satisfactorily answered and some omissions are evident. Much more clarification is needed.
3	Satisfactory: There is reasonable evidence that the question has been satisfactorily addressed but some omissions are still evident and further clarification is needed.
4	Good: The question has been well addressed with a good evidence base, with only minor omissions or lack of clarity
5	Excellent: There is clear evidence that the question has been completely addressed in all aspects, with question answered clearly, concisely with a strong evidence base.

Feedback and right of appeal

A short summary of key feedback regarding the applications will be provided to all applicants, this feedback will be based on the summary comments of the Assessment Stage. The feedback from the assessors is intended to be constructive. No additional feedback will be provided and there will be no further discussion on the application.

There is no right of appeal - the moderated scores are final - so it is important that you make any points you wish to make clearly and concisely in the application form.

Section 12: Funding Allocation Process

The funding allocation process is set out below:

1. After assessment and moderation, each project will be allocated a Final Score using the assessment scoring process set out in Section 11.

2. The Final Score will be used to prepare a ranked list of projects. Projects across all four Challenge Categories will be placed on the same ranked list, with their position on the list based on their Final Score.

3. The Department will review the ranked list of projects that are eligible to be funded against the total available budget and if the budget is over-subscribed, it may limit the funding available through the Competition to only one project submitted by any single organisation or consortium. In this situation, the funding will be allocated to the eligible project from the organisation or consortium which has the highest final score.

4. Grant funding will be allocated to projects in the order of the ranked list, until the available funding for the Competition has been allocated or until there are no further projects eligible for funding.

5. In the event that projects have identical final scores, Criterion 4a (Deliverability – Project Plans) will be used to determine the order in which funding is allocated, with the project with the highest score for Criterion 4a being allocated funding first, and so on. In the event that projects have identical scores for Criterion 4a; Criterion 4c and then Criterion 4b will be used to determine the order in which funding is allocated.

6. The Department reserves the right not to award any grants in the Competition or to award less than the stated budget for the Competition, in particular if the Department is not satisfied by the applications received or if the funding assigned to the Competition is required for other, unforeseen, purposes.

Section 13: Guidance on Completing the Competition Application and Finance Forms

Application Form

This section aims to guide you through the completion of the online Competition Application Form. It is important that a response is provided to every question. This guidance is intended to explain what type of information applicants should consider providing to the Department to enable it to assess their application effectively.

Applications will be judged based on the information provided in the application form and any supporting information provided. There will not be the opportunity to enter into discussion about your project with the assessors or the Department. These guidance notes are not intended to be exhaustive; applicants are expected to develop their own responses based on your own skills, knowledge and experience. You are encouraged to be concise and to the point whilst providing all the necessary and relevant information.

Throughout the form there are boxes, in order to answer the question or provide information you should simply click on the box and begin typing or select from the drop-down menu. Questions do have word limits and when the text has reached the word limit you will not be able to add any further information and the text must be edited to fit within the word limit. Please ensure that when you are copying and pasting text into the online application form from any planning documents, that all text has copied across correctly and is within the word count set out.

Any graphs, diagrams or supporting evidence that you are providing to support your application should be uploaded to your submission.

We advise applicants to familiarise themselves with the online application form ahead of time to ensure any technical issues can be resolved ahead of the deadline. Applications will only be accepted on the online application form, any other formats such as Word, will not be accepted. Any applications or any additional material submitted post deadline will not be considered.

Summary Information, Contact Details and Business Information

The initial section of the application asks you to provide details about your organisation.

Section/Field	Guidance
Names of Applicant Organisation	Provide the name of the lead applicant business
Project Title	A brief title that can be used to summarise the project
Tools and Technology Category to which you are applying	Most applicable category for your technology (only one category per technology)
Confirm Start Date	Please confirm March 2024 to start work assuming successful funding
Stream 2 - Wave 2 Project duration	Enter the expected duration in months, taking into consideration the maximum project length of 12 months
Location of Main Project Activity	Give the location and postcode in the UK where the majority of the project activity will be taking place.
Total Project Costs	This figure should match the figure calculated in the Department Project Cost Breakdown Form. It should be the total value of the project including all eligible costs.
Company contribution	This is the amount of total eligible project costs that you will be paying from your own resources/private sector investment into the project.
Department for Energy Security and Net Zero Grant Applied for	This is the amount you will be asking for from the Department. You should ensure that you do not request a grant higher than the maximum allowed, taking into account all public-sector funding for the project.
Grant Funding requested as percentage of total funding	This is the percentage of total costs that the grant makes up. It cannot be more than you are eligible for as set out in Section 4.

TRL at start of project	Select the TRL from the drop-down menu that most accurately represents your technology at the start of the project. A list of TRL definitions are provided at Annex 3.
TRL at end of project	Select the TRL from the drop-down menu that most accurately represents where your technology will be at the end of the project. A list of TRL definitions are provided at Annex 3.
Delivery Phase for software at the start of project	Select the phase from the drop-down menu that most accurately represents your software at the start of the project. A list of software definitions can be found in Annex 4.
Delivery Phase for software at the end of project	Select the phase from the drop-down menu that most accurately represents your software at the end of the project. A list of software definitions can be found in Annex 4.
Contact Details	Name and details of the person who will be the main point of contact for the application process
Organisation Name	Provide the full registered name of the organisation applying for funding
Business Type	Please select from the drop-down menu
Number of employees (including directors)	Number of staff in your organisation (this will help us confirm the nature of your company)
Number of employees that will be directly involved in the proposed project	State the number of employees from your company that you expect to be directly involved in the project you are proposing.
Business Registration Number	Your business registration number as listed by Companies House.

Turnover (in most recent annual accounts)	Please provide your most recent turnover figure from annual accounts and the date of those accounts
Balance Sheet Total (total assets net of depreciation)	Please provide your most recent balance sheet total (total assets net of depreciation) and the date of the calculation.
Business maturity	Please enter the age of the business since its formal formation, this includes any periods of dormancy with Companies House.
Does the business have a parent company?	We need to understand if there any significant shareholders in your business. The parent company details should be provided in the Parent Company details section.
How has the business been funded?	Please select all the types of funding that your company has received to date.
Which grant support category are you applying under?	You must select one of the subsidy categories from the drop-down list. The options are: Support for Research and Development projects – Industrial Research Support for Research and Development projects – Experimental Development For more details on the subsidy requirements, see Section 8 of these Guidance Notes. You must indicate that you comply with the financial obligation rules by providing the relevant information.
Is this a collaborative project?	If you are applying collaboratively, please provide details of the partner organisations in the HPR Programme Application Form. If you are applying as a collaboration you must also submit a copy of formal Heads of Terms agreed between all the collaborators. Prior to the issuing of a Grant Offer Letter, you will have to submit to the Department a copy of the collaboration or

	joint venture agreement that you propose to work under. You should be aware that the Department will not issue a Grant Offer Letter until they have seen, reviewed and approved a final draft of this agreement. Sub-contracting work to a third party does not classify as a collaboration.
Parent Company Details	If you have a parent company, or are more than 25% owned by another enterprise, you must provide the details of that enterprise here.

Project Description and Company Status

This section of the application asks you to provide an initial summary of your project and company as an introduction for the assessors.

Section/Field	Guidance
Company Status	This should be a summary description of your company which should set the scene for the assessors and introduce your company. This question is not scored but will be used by assessors to gain a high-level understanding of the company before they start their detailed assessment.

Section/Field	Guidance
Project Description	This should be a summary description of the project which should set the scene for the assessors and introduce your proposed project. You should use language that can be understood by people without specialist knowledge or expertise. This question is not scored but will be used by assessors to gain a high-level understanding of the project before they start their detailed assessment.

Public Statement

This section provides a public statement that the Department for Energy Security and Net Zero can use for publicity purposes.

Section/Field	Guidance
Public statement	This should be a brief summary of the project which should describe your company and project. This summary should focus on the specific details of the project, not describe the benefits of heat pumps more generally. You should use language that can be understood by people without specialist knowledge or expertise. It should explain why the project is innovative and describe the key aims and objectives. The Department reserves the right to amend the description before publication if necessary but will consult you about any changes. This should not contain reference to any intellectual property as this description will be made available in the public domain if the application is successful. This question is not scored.

Additional information

Any data or references that might help to support your answers that cannot be included in the application form should be provided to the Department as a separate attachment within the additional information section of your application. These may include tables of data, diagrams.

Project Cost Breakdown Form

Within Assessment Criteria 5, you will need to complete the financial details in the Financial Summary section of the application form and also complete the Project Cost Breakdown Form. The information in both sections should be consistent, and match any figures provided within the body of your application.

You should only submit one project cost breakdown form for the project, which should combine the costs of all project partners. Within the project cost breakdown form and the application, you should make clear how funds will be split between partners.

The Department Cost Breakdown Form consists of 9 worksheets:

- Summary
- Project Location
- Labour and Overhead costs
- Material costs
- Capital equipment costs
- Stream 3 - Trial Support and Learning Participation costs
- Sub-contract costs
- Travel and subsistence costs
- Other costs

Each of these sheets can be accessed by using the scroll bar at the bottom of the worksheets.

Within the spreadsheet there are grey cells which are auto-calculating based on data in the manual entry cells, information should not be entered into these. All blue cells are manual entry boxes or drop down boxes into which data can be input; Each tab provides example in the first row on how to fill out the form. Additional guidance on exactly what information should be input often be found by clicking into cells.

Guidance on eligible costs is provided in Annex 2 of these guidance notes.

Guidance on what needs to be entered in some fields is provided within the sheet when you click on the box.

Worksheets only need to be completed if you have costs in those categories, so for example, if your project has no planned capital equipment or sub-contract costs, the form will assume these entries are £0 and calculate without them.

Project Funding Definitions

The table below provides an overview of terms used within the Project Cost Breakdown form. Applicants should refer to the Assessment Criteria which will be used to assess your Project Cost Breakdown Form in Section 0 of this Competition Guidance.

Section/Field	Guidance
Total company contribution	This is the amount of total eligible project costs that you (and any partners / collaborators) will be paying from your own resources/private sector investment into the project.
Source of company contribution	Please state the source of your company contribution to the total costs (your match funding). If you have partners / collaborators, include their contributions here as well.
Amount of the Department grant applied for	This is the amount you will be asking for from the Department. You should ensure that you do not request a grant higher than the maximum allowed, taking into account all public sector funding for the project.
Other Public sector funding applied for	Please provide full details of other funding that you are currently applying for or have already applied for or received in relation to this particular project. This data is important as other public sector support is counted as part of the grant you can receive for the project and total subsidy contribution. Do not include grants that have been used to reach this point in the development process and are now completed.
Total project value	Please add total company contribution, amount of the Department grant applied for and other public sector funding applied for to give the total value of the project
Grant funding requested as a percentage of total funding	Input percentage calculated in the Project Cost Breakdown Form. N.B. This figure must be compliant with the relevant subsidy category under which you are complying.
Project Start Date and End Date	Please indicate when (subject to approval) you would expect to be able to start your project, and when you expect it to complete. Please be aware that there are restrictions on project length and make sure your project completes within the maximum time allowed.

	The start date should only be considered as an indication. Should you start your project before final approval any costs will be incurred at your own risk, will not be eligible for grant, and will not be included in project costs you can claim against.

Project Quarterly Breakdown Worksheet

This worksheet provides the breakdown of all costs across the duration of the project. It represents the spending profile you expect for your project. In entering this information you should ensure that the profile is consistent with the timings of the various work packages you are proposing within the project plan.

You must ensure that the total, in the spreadsheet, for each category matches the total that has been calculated on the individual worksheets.

Annex 1 – Heat Pump Ready Programme Details

Stream 1

Stream 1 - Solutions for High-Density Heat Pump Deployment, is supporting the deployment of heat pumps through **the development and trial of solutions and methodologies for the optimised deployment of domestic heat pumps, at high-density**, in the UK. Projects supported in this stream are expected to demonstrate cost savings that are secured from the optimised deployment solutions and how the approaches can be sustainable beyond the lifetime of the HPR Programme. A Small Business Research Initiative (SBRI) pre-commercial procurement process is being used to *deliver Stream 1 - Solutions for High Density Heat Pump Deployment*.

Stream 1 has supported eleven Phase 1 (feasibility projects), now completed, and is currently supporting four Phase 2 demonstration projects. Summary information for the Stream 1 projects (Phase 1 and Phase 2) and links to more detailed information about them are set out below.

Stream 1, Phase 1 Projects

Details of the completed Stream 1, Phase 1 projects are available here: https://www.gov.uk/government/publications/heat-pump-ready-programme-successful-projects/heat-pump-ready-programme-stream-1-phase-1-projects

Stream 1, Phase 1 feasibility reports are available here: https://www.heatpumpready.org.uk/knowledge-sharing/

Table 10: Summary of HPR Programme, Stream 1: Phase 1 projects

Location	Project title	Lead organisation
Newcastle, Tyne and Wear	Heat Pump Ready Newcastle	Eon
Sunderland, Tyne and Wear	Utilita Energy Heat Pump Ready Programme	Utilita Energy
Leeds, Yorkshire	Renewable Heat Infrastructure Network Operating System (RHINOS) Leeds	Leeds City Council

Oxford, Oxfordshire	Clean Heat Streets	Samsung
Greenwich, Greater London	Greenwich Thermal Infrastructure Motivating Electrification (Greenwich TIME)	Element Energy Limited
Bristol	Bristol Heat Pump Ready	Buro Happold
Teignbridge, Devon	Project Gaia	EDF
Fenland, Oxfordshire	PACE Financing for Heat Pumps in Rural Cambridgeshire	City Science
Blairgowrie, Perth & Kinross	SAPPHIRE Solo	Power Circle Projects
Cherwell, Cambridgeshire	Prosumer Model for Heat Pump Deployment in Cherwell	City Science
Bridgend	Heat Pump Ready - Bridgend	Buro Happold

Stream 1, Phase 2 Projects

Details of the current funded Stream 1, Phase 2 projects are available here:
https://www.gov.uk/government/publications/heat-pump-ready-programme-successful-projects/heat-pump-ready-programme-stream-1-phase-2-projects

Table 11: Summary of HPR Programme, Stream 1: Phase 2 projects

Location	Project title	Lead organisation
Oxford, Oxfordshire	Clean Heat Streets	Samsung Electronics UK limited
Bristol	Bristol Heat Pump Ready	Bristol City Council
Fenland, Oxfordshire	Heat pumps for Friday Bridge, Cambridgeshire	City Science Corporation Limited
Cherwell, Cambridgeshire	Home Efficiency Hub – Heat Pumps in Cherwell, Oxfordshire	City Science Corporation Limited

Stream 2

Stream 2 - Wave 1 (projects started 2022), Developing Tools and Technology is supporting **the development of tools, technology and processes to overcome specific barriers to domestic heat pump deployment** in the UK. Projects supported under this stream are developing innovation to reduce the lifetime cost and increase the performance of domestic heat pumps, minimise home disruption whilst providing high quality installations, develop and trial financial models to support heat pump deployment, improve the heat pump consumer journey and provide a smart and flexible home energy system. The solutions supported in this Stream were required to be at Technology Readiness Levels 5 to 7 at the start of their funded projects. *Stream 2 – Wave 1* is supporting development of these innovative tools and technology using grant funding.

Summary information for the active Stream 2 – Wave 1 projects and links to more detailed information about them are set out below.

Funded Stream 2 – Wave 1 Projects

The Stream 2 - Wave 1 projects are outlined in Table 12 below; the projects are grouped in categories used for the Stream 2 – Wave 1 Competition.

Summary details of the current funded Stream 2 – Wave 1 projects are available here: https://www.gov.uk/government/publications/heat-pump-ready-programme-successful-projects/heat-pump-ready-programme-stream-2-projects

More detailed information about the current funded Stream 2 – Wave 1 projects is available here: https://www.heatpumpready.org.uk/projects/

Table 12: Heat Pump Ready Stream 2 - Wave 1 projects

Lead Organisation and Link to Project Description on HPR Programme website	Project Title	Project Summary
Stream 1 – Wave 1 Category 1:	**Reduce the lifetime cost and increase the performance of domestic heat pumps**	
Guru Systems Ltd https://www.heatpumpready.org.uk/projects/optimised-solutions-development/guru-smart-	Guru Smart Heat Pumps: developing tools for social housing landlords to enable heat pump	This modular mobile app & web platform will verify heat pump system outcomes and store heat pump settings for future maintenance, also providing a training resource for new heat pump engineers.

heat-pumps-developing-tools-for-social-housing-landlords-to-enable-heat-pump-installation-at-scale-across-the-uk/	installation at scale across the UK	
ICAX Ltd https://www.heatpumpready.org.uk/projects/optimised-solutions-development/heat-pump-manufacturing-automation-for-scale-and-cost/	Heat Pump Manufacturing Automation for Scale and Cost	This project aims to redesign the residential heat pump assembly process and build a trial manufacturing assembly line, using state of the art analytical and physical tools to offer a systemic approach to optimised manufacturing.
Kensa Heat Pumps Limited https://www.heatpumpready.org.uk/projects/optimised-solutions-development/highly-flexible-storage-heat-pump-hfshp/	Highly Flexible Storage Heat Pump (HFSHP)	This project aims to combine electrically driven heat pumps with heat storing batteries to shift heat production from times of peak electrical demand on the grid, enabling consumers to charge heating systems during off-peak periods.
Mixergy Ltd https://www.heatpumpready.org.uk/projects/optimised-solutions-development/making-efficient-systems-around-heat-pumps-mesh/	Making Efficient Systems around Heat-pumps (MESH)	Project MESH aims to reduce heat pump installation complexity and deliver higher system efficiency throughout the year by exploiting aggregated thermal inertia in a novel system design and thermal storage solution.
Ventive Ltd https://www.heatpumpready.org.uk/projects/optimised-solutions-development/modular-heat-pumps-for-cell-	Modular Heat Pumps for Cell Based Microfactory Assembly	Ventive are designing a modular heat pump which will integrate with home sensors to assess the home and adapt the system performance, optimising operations for improvements in energy efficiency, energy storage and flexibility.

based-microfactory-assembly/		
Stream 1 – Wave 1 Category 2:	**Minimise home disruption while providing high quality installations**	
Build Test Solutions https://www.heatpumpready.org.uk/projects/optimised-solutions-development/measured-the-role-of-measured-building-performance-in-heat-pump/	MEASURED: The role of measured building performance in heat pump specification, system design and management	This project aims to optimise heat pump specification, design and management by using smart meters, low cost sensors and innovative new techniques to measure on site building key performance parameters.
Hoare Lea https://www.heatpumpready.org.uk/projects/optimised-solutions-development/right-sizing-heat-pumps/	Right sizing heat pumps	The right sizing heat pumps project aims to reduce capital, operational and grid infrastructure upgrade costs through developing a tool to assess heating requirements, properly size, and optimise heat pump performance.
Q-Bot Ltd https://www.heatpumpready.org.uk/projects/optimised-solutions-development/free-heat-pump-home-survey-and-design-tool/	Free Heat Pump Home Survey and Design Tool	Q-Bot's simple and free-to-use app will help homeowners confidently match a heat pump to the thermal demand and other specific house needs. This can then be used by contractors to de-risk the installation process.
RJ Barwick Ltd https://www.heatpumpready.org.uk/projects/optimised-solutions-development/archetypal-heat-pump-retrofit-for-175000-non-trads/	Archetypal Heat Pump Retrofit for 175,000 Non-Trads	This project will utilise the Energiesprong approach to develop optimum standardised whole house retrofit solutions for four of the most challenging and/or common non-traditional home archetypes across sites in West Kent.

Thormer Solutions Limited https://www.heatpumpready.org.uk/projects/optimised-solutions-development/total-heat-pump-installation-solution-this/	Total Heat pump Installation Solution (THIS)	THIS is an all-encompassing integrated software package and app for installers to streamline the survey, installation and commissioning processes required when installing a heat pump.
Stream 1 – Wave 1 Category 3:	**Develop and trial financial models to support heat pump deployment**	
City Science Corporation Limited https://www.heatpumpready.org.uk/projects/optimised-solutions-development/advanced-modelling-for-heat-as-a-service/	Advanced Modelling for Heat as a Service	This project aims to provide a scalable approach to heat pump financing and deployment via a Heat as a Service (HaaS) modelling solution, providing decarbonisation pathways and financing models for households.
Energiesprong UK Ltd https://www.heatpumpready.org.uk/projects/optimised-solutions-development/integrated-comfort-and-billing-service/	Integrated Comfort and Billing Service	This project will allow Energiesprong to offer a seamless end to end comfort plan management service, which provides guaranteed heating outcomes for occupants in return for a fee which is no more than the total savings.
Home Infrastructure Technology Limited (Add to my mortgage) https://www.heatpumpready.org.uk/projects/optimised-solutions-development/green-homeowner-loans/	Green Homeowner Loans	The aim of this project is to develop a green homeowner loan to pave the way for mass adoption of green home improvements, by developing a fintech platform specifically designed to fund heat pumps and other green measures.

Parity Projects Ltd https://www.heatpumpready.org.uk/projects/optimised-solutions-development/performance/	Performance	This project aims to create a software solution to deliver a cost-effective property retrofit options analysis and verification protocol, enabling the offer of a financially insurable performance guarantee to homeowners and landlords.
Stream 1 – Wave 1 Category 4:	**Improve the heat pump consumer journey**	
EDF https://www.heatpumpready.org.uk/projects/optimised-solutions-development/accelerating-the-heat-pump-journey/	Catalyst – Accelerating the heat pump journey	This project will deliver a digital solution to streamline heat pump pre-installation steps into one self serve remote survey, which will identify innovative heat pump solutions tailored to customer profiles.
Green Energy Options (geo) https://www.heatpumpready.org.uk/projects/optimised-solutions-development/ai-smart-heat-pathway/	AI Smart Heat Pathway	This project will reduce survey costs by supporting heat pump sizing, providing homes with a personal net zero smart heat pathway using AI tech integrated with smart meter & thermostat data.
Hildebrand Technology Ltd https://www.heatpumpready.org.uk/projects/optimised-solutions-development/glow-heat-pump-community/	Glow Heat Pump Community	The Glow Heat Pump Community project will provide a data driven solution to reduce complexity and uncertainty for consumers whilst providing data, tools and resources for peer to peer installer support on decision making and upskilling.
Switchee Ltd. https://www.heatpumpready.org.uk/projects/optimised-solutions-	Digitising the Customer Journey of Heat Pumps in Social Housing	This project aims to provide digital tools and monitoring to support optimal heat pump performance, reduce maintenance visits and simplify heating operation for residents in social housing.

development/digitising-the-customer-journey-of-heat-pumps-in-social-housing/		
The MCS Service Company Limited https://www.heatpumpready.org.uk/projects/optimised-solutions-development/est-mcs-heat-pump-consumer-journey/	EST MCS Heat Pump Consumer Journey	This project will develop a tool to assess property suitability for a heat pump and allow consumers to request installation quotes from installers, who will be able to accurately quote without site surveys, whilst still complying with MCS standards.
VIA Analytics Limited https://www.heatpumpready.org.uk/projects/optimised-solutions-development/thermly/	Heat Pathway	Thermly is an online property-level analytics platform, empowering customers with property-specific data to identify suitable opportunities for heat pumps, connect them with the supply chain and assist in installation.
Stream 1 – Wave 1 Category 5:	**Provide a smart and flexible home energy system**	
GenGame Ltd https://www.heatpumpready.org.uk/projects/optimised-solutions-development/total-home-optimisation-management-thom/	Total Home Optimisation Management (THOM)	GenGame are creating a full package Home Energy Management System (HEMS), using household data to identify heat pump potential, and support the sizing and optimisation of heat pumps.
Thermoelectric Conversion Systems Ltd https://www.heatpumpready.org.uk/projects/optimised-solutions-development/two-stage-heat-pump-with-	Two stage heat pump with greywater energy recovery	This project aims to utilise energy from greywater in a novel heat pump for retrofit in existing homes and new build properties, dramatically improving energy efficiency and cutting operational costs.

greywater-energy-recovery/		
Wondrwall Limited https://www.heatpumpready.org.uk/projects/optimised-solutions-development/intelligent-airsourcing-to-net-zero/	Wondrwall: Intelligent air-sourcing to net zero	This project aims to deliver a data-driven digital platform that optimises the energy performance of heat pump systems, using AI software and sensing technologies, to enable automated control of heat pumps.

Stream 3

Stream 3 - Trial Support and Shared Learnings, **provides support to ensure knowledge transfer and shared learning across the HPR Programme and with external heat pump stakeholders**. This stream, delivered by a consortium of contractors led by the Carbon Trust, captures and share progress, evidence, knowledge, and lessons between *Stream 1 - Solutions for High Density Heat Pump Deployment* projects, coordinates interactions between *Stream 1 - Solutions for High Density Heat Pump Deployment* projects and special interest working groups in support of areas of common delivery, and brokers relationships between *Stream 1 - Solutions for High Density Heat Pump Deployment* project and the solutions being developed in *Stream 2 - Tools & Technology* as well as other NZIP programmes such as the NZIP-Green Home Finance Accelerator programme.

Three work packages are being delivered in Stream 3: the first is activity related to programme and project learning and collaboration; the second is research and evaluation activity; and the third is focused on knowledge and evidence dissemination to external audiences throughout the lifetime of the programme.

Further HPR Programme information can be found online, as detailed below:

- Details of successful projects, funded by the programme, can be found online at: *https://www.gov.uk/government/publications/heat-pump-ready-programme-successful-projects*
- Heat Pump Ready Gov.UK website: https://www.gov.uk/government/publications/heat-pump-ready-programme
- Heat Pump Ready Dissemination and Learning website: *https://www.heatpumpready.org.uk/*

Related Programmes

The HPR Programme also has strong links with other innovation programmes, including:

Ofgem Strategic Innovation Fund: the purpose of Ofgem's Strategic Innovation Fund, which is delivered in partnership with Innovate UK, is to support network innovation that will contribute to achieving Net Zero rapidly and at lowest cost; to deliver real net benefits to network companies, energy users and consumers.

https://www.ofgem.gov.uk/strategic-innovation-fund-sif

NZIP- Green Home Finance Accelerator (GHFA): The GHFA is providing up to £20million grant funding to support UK retail lenders to design, develop and pilot a range of finance propositions which encourage domestic energy efficiency and low carbon heating retrofits. The Green Home Finance Accelerator is intended to drive innovation in the green lending market and support the establishment of a diverse range of green finance products which incentivise domestic energy performance improvements for both owner occupiers and private landlords.

https://www.gov.uk/government/publications/green-home-finance-accelerator

NZIP- Alternative Energy Markets (AEM) Programme: The Alternative Energy Markets (AEM) Programme is exploring what an alternative system of network and policy price signals might look like, whether those signals could be trialled in a real-world environment, how to undertake any potential trial, and how energy suppliers and consumers may respond within a trial.

https://www.gov.uk/government/publications/alternative-energy-markets-aem-early-market-engagement

NZIP- Longer Duration Energy Storage Demonstration (LODES): The Longer Duration Energy Storage Demonstration competition (closed to applications) is an innovation competition aiming to accelerate commercialisation of innovative longer duration energy storage projects.

https://www.gov.uk/government/collections/longer-duration-energy-storage-demonstration-lodes-competition

Annex 2 – Eligible Costs

General Guidance on Eligible Costs

The Department will only provide the grant to cover eligible project costs incurred and defrayed in the period between acceptance of the Department grant and the deadline specified in the grant offer letter for completion of the project.

The definition of eligible costs includes the applicant's own costs, eligible costs incurred by consortium members and eligible costs incurred by companies connected to any of these incurred in delivery of the agreed *Stream 2 - Wave 2: Developing Tools & Technology* project. The cost of work contracted to connected companies, to consortium members or to companies connected to consortium members should be on the basis of eligible costs.

Costs must be denominated in GB pounds. Applicants should indicate where conversion has been made to GB pounds from other currencies and indicate the rate and assumptions used.

List of Eligible Costs

Eligible costs are defined as the following:

- Personnel costs: researchers, technicians and other supporting staff to the extent employed on the project, including participation in required dissemination and knowledge sharing activity (co-ordinated by the HPR *Stream 3 - Trial Support and Learning* contractor);

- Costs of instruments and equipment to the extent and for the period used for the project. Where such instruments and equipment are not used for their full life for the project, only the depreciation costs corresponding to the life of the project, as calculated on the basis of generally accepted accounting principles are considered as eligible;

- Costs for buildings and land, to the extent and for the duration period used for the project. With regard to buildings, only the depreciation costs corresponding to the life of the project, as calculated on the basis of generally accepted accounting principles are considered as eligible. For land, costs of commercial transfer or actually incurred capital costs are eligible;

- Costs of contractual research, knowledge and patents bought or licensed from outside sources at arm's length conditions, as well as costs of consultancy and equivalent services used exclusively for the project;

- Additional overheads and other operating expenses, including costs of materials, supplies and similar products, incurred directly as a result of the project.

Travel and Subsistence Costs

All travel and subsistence for the activities associated with the delivery of the project and participation in *Stream 3 - Trial Support and Learning* interactions must be in line with the Department staff policy which is summarised below (full policy available on request):

Accommodation: When required as part of attending *Stream 3 - Trial Support and Learning* activities to stay overnight prior to or after an event that is a significant distance from your home or work, accommodation may be claimed at the following rates:

- London: £140 per night – including breakfast

- Elsewhere (UK): £100 – including breakfast

Travel:
Rail travel is the preferred method of transport due to the options available for cheap, advanced tickets, journey comfort and having a relatively low environmental impact compared to other forms of transport. Any Air travel must be limited and for special reasons only. This must be approved by the Department ahead of travel.

Rail travel must be booked at standard class however by exception, first class travel may be permitted where the Department is satisfied that:

- it would constitute a "reasonable adjustment" under the Equality Act;

- a temporary "reasonable adjustment" is required e.g. due to injury or pregnancy related, or a condition where it will impact safety or cause a worsening or adverse effect on the condition;

First class travel must be approved by the Department ahead of travel.

Car travel is not a favoured form of transport for the Department unless travelling as part of a group. Where travelling as a group, mileage is claimable at a rate pf 45p per mile for up to 10,000 miles per year, with a 5p mile supplement per passenger. It is the responsibility of the driver to ensure car is in good working order of their car, compliance with MOT regulations, and suitable insurance for work purpose; the associated cost of these are not eligible under the Department policy.

Taxis are permissible where:

- staff travelling alone or in small groups feel more secure than taking public transport;

- this is an appropriate reasonable adjustment (this includes journeys to work where agreed with HR); and/or

- it is the most economical transport available considering journey time or number of travellers.

Subsistence:

Breakfast (early start from home) – rather than staying overnight ahead of *Stream 3 - Trial Support and Learning* activities, attendees may claim £5 for breakfast where they leave their home 90 minutes earlier than usual to attend the event

- Lunch - where lunch is not provided at the event, £5 may be claimed.

- Evening meals: dinner, or evening meal may be claimed when staying overnight, with an expense of £15 per night, which includes a soft drink only.

For each of the above, project teams should retain their receipts to be reviewed by their Monitoring Officer.

Guidance on Rates for University Consortium Partners

University partners can be part of a *Stream 2 - Developing Tools & Technology* consortium where they are needed to add value to a project. Where higher education institutions are carrying out non-economic activities, they can claim 80% of the Full Economic Costs (FEC) of their project work, calculated using the Transparent Approach to Costing (TRAC) methodology. This is in line with the approach taken by other Government funding bodies which are funding higher education institutions. If higher education institutions are carrying out economic activities on a *Stream 2 - Developing Tools & Technology* project, they will be allocated grant funding at the relevant grant intensity level for the size of the organisation and the type of innovation activity undertaken (see Section 8 guidance on grant intensity levels).

Guidance on Overhead Rates

Overheads are additional, indirectly incurred costs that are necessarily incurred by the applicant in undertaking the work. The Department normally calculate overheads as a fixed percentage of all direct labour costs at 20%, but in exceptional circumstances, that must be fully detailed in the application, the Department will generally pay overhead rates between 10% and 40% of labour rates. The overhead rate is agreed with the Department before the Grant award documents are issued and cannot be changed during the work.

List of Ineligible Costs

Under no circumstances can the grant be claimed or used:

- For activities of a political or exclusively religious nature;

- In respect of costs reimbursed or to be reimbursed by funding from other public authorities or from the private sector;

- In connection with the receipt of contributions in kind (a contribution in goods or services as opposed to money);

- To cover interest payments (including service charge payments for finance leases);

- For the giving of gifts to individuals, other than promotional items with a value no more than £10 a year to any one individual;

- For entertaining (entertaining for this purpose means anything that would be a taxable benefit to the person being entertained, according to current UK tax regulations);

- To pay statutory fines, criminal fines or penalties; or

- In respect of VAT that you able to claim from HM Revenue and Customs.

Guidance on Costs of Key Senior Staff

The Department would not normally expect to see staff in key, most senior positions, e.g. CEO, FD, etc, included in applications as core project staff. Exceptionally, where the Department is willing to provide a grant which covers the cost of staff in key senior positions, the day rate attributed to each member of key staff within the project must be agreed with the Department at the outset and cannot be varied without written agreement.

Annex 3 – Technology Readiness Levels (TRLs)

Technology Readiness Levels are an indication of the maturity stage of development of particular technology on its way to being developed for a particular application or product. Below are some broad definitions of the TRLs.

Research	
TRL 1 – Basic Research	Scientific research begins to be translated into applied research and development.
TRL 2 – Applied Research	Basic physical principles are observed, practical applications of those characteristics can be 'invented' or identified. At this level, the application is still speculative: there is not experimental proof or detailed analysis to support the conjecture.
Industrial Research (guideline)	
TRL 3 – Proof of technical concept	Experimental proof of critical technical functions and validation of feasibility for application. Active research and development is initiated. This includes analytical studies and laboratory studies to physically validate analytical predictions of separate elements of the technology. Examples include showing the performance of critical technical features or components are feasible (even if not yet integrated or representative of real-life environment).
	This stage is beyond "discovery science" (TRL1) and applied research (TRL2) and investigates a novel technological or scientific advance with some category of application in mind. The scientific principles of the novel or innovative aspect are already characterised with hard experimental data points that enable prediction of performance, but the science is not necessarily in the final engineered format. In this stage, analytical and experimental studies measure parameters of interest, characterise properties and performance, and validate the theoretical predictions. For example, with new materials or combinations of

	materials, a range of formulations or combinations may be tested to explore the boundaries of performance and to select a combination with the necessary properties for commercial exploitation. System components are not yet fully integrated e.g. the lab demonstration of a new photovoltaic material may show desired properties in a controlled atmosphere but applications will require a suitable encapsulation method. Technology principles may be demonstrated in computer models and computer simulated environments where appropriate. A key output from this stage is to identify how results differ from the expected or necessary performance for future applications and where improvement is necessary.
TRL 4 – Lab and Test Bench Demonstrations	Lab and Test Bench Demos of sub-systems & key components. Modelling & experimentation with parameters representing future conditions. Application proof-of-concept. Modelling and experimentation with data or parameters that represent future conditions (cf. TRL4). "Bench" demonstrators' show that the core technology components or subsystems based on the lab research could be engineered in practice, behave as predicted, and results indicate that the performance needed for a future application is achievable albeit with further optimisation. Bench demonstrations may focus on the key innovative component of the proposed system/product or demonstrate an entire system with simulated inputs or use of substitute subsystems. For large scale technologies the "bench" demonstration may be at smaller scale and would include tests of scale models in tanks and tunnels. If new manufacturing methods will be required, the feasibility of these will be investigated at this stage.
TRL 5 – Development Prototypes	The system, sub-system, components, or sub-scale units are integrated with reasonably realistic supporting elements so they can be tested in a simulated or representative environment. Critical cost assumptions are carefully investigated and the feasibility of the proposed manufacturing process is tested. A new manufacturing step may require a separate

	"product development" process for the manufacturing equipment. Prototype components and sub-systems are developed and improved to show that all the proposed technical components can provide the performance which will be required for future application (including: longevity, reliability, energy efficiency). Representative hardware and software components are tested in way that realistically simulates anticipated operating conditions or allows realistic predictions to be made. A relevant environment may be: laboratory test rigs with simulated use conditions, a controlled operational environment, or basic field tests. A test rig for new component technologies may be a version of the end-product. Intended functionality, size/form factor, and performance features are known at this stage. Successful development prototypes (components) become the basis for a demonstration prototype for full field tests.
Experimental Development (guideline)	
TRL 6 – Engineering or Demonstration Prototype	Full-scale system in representative conditions - Engineering Prototype. Representative full-scale prototype system is tested in a relevant environment. Proof-of-application.
	Critical cost factors and new manufacturing capability are refined at this stage e.g. use of cost effective materials, demonstration that new components can be manufactured, demonstration of any new manufacturing steps or processes. Not all secondary interfaces or user features are (necessarily) available yet. Representative prototype is demonstrated in a relevant environment to prove engineering feasibility. The component/sub-system designs selected at previous stage are validated. Demonstration prototypes are typically fitted with a range of monitoring/measurement systems and operated in real-life systems and conditions with continual adjustment to confirm or optimise performance claims. Core functionality, size/form factor, and benefits of the proposed product should all be demonstrable but not all end-user features or interfaces are necessarily available at this stage. Some third part measurement validation or

	tests are usually best done at this stage (particularly to validate improved performance over other technologies or to confirm any necessary certification and approvals that need to be obtained).
TRL 7 – Operational Prototype (Alpha Product)	Near or at planned operational system, requiring demonstration of an actual system prototype in an operational environment. Prototype for prolonged use at "tame" client or user site. All planned functions, interfaces integrated for monitored trials under the developer's control.
	Alpha product prototypes are at or close to the proposed final product configuration which can be fully tested in an "in-house" trial in operational or client-like environments with integration to all systems or interfaces which will be experienced in-use. Alpha trials should validate in-use performance and also test the following: integration to all other relevant systems, features needed to support proposed installation and maintenance procedures, exposure to all other influences likely to be experienced in the "user-environment" etc.
	All the manufacturing steps will be tested at this stage and repeatable samples provided. Third party specialist tests would be done at this stage if not possible earlier. Prototypes may have minor re-designs following alpha tests but should not be subject to major re-designs if earlier stages have been completed properly. "In-house" means the developer runs and the trial and has access to the system(s) during the trial. Performance is not public but Alpha tests could be at "tame client" sites. Companies would not typically expect to sell prototypes at this stage.
TRL 8 – Production Prototype (saleable Beta product)	System Incorporated in Commercial Design - Production Prototype (or process). Development is complete, final design and feature set, limited release to appropriate number of clients, all fulfilment procedures trialled and documented. Trials under client / users control and operation. Technology is proven to work - technology design for production or roll-out is completed and qualified through test and demonstration.

	Development complete, final design and feature set, limited market release to appropriate number of clients, all fulfilment procedures trialled and user documentation complete. Saleable product. (cf. TRL 8 / 9) A beta or pre-production prototype is the configuration which the venture expects to sell repeatedly. These designs are finalised to a product specification and ready for repeat production. Client trial would validate: all the features and functions of the system perform as needed under expected conditions. A full product beta test includes trialling sales processed (to some extent by signing up "beta-clients"), delivery and installation procedures, integration and commissioning procedures, instructions for use, monitoring, support and maintenance procedures. Suppliers will provide short-runs of components or assembled product. There needs to be a sufficient number of beta-sites to validate the product or solution is repeatable and reliable. At the end of a successful beta test the company should be in a position to sell the product to a client for reliable on-going use. Repeated sales may be measured in 10's or 1000's depending on the technology and the cost of making iterations or improvements to the product design. However, by the above staged process, when the "beta" product prototype is prepared the venture has confidence that they could make repeated sales which will not require a re-call or levels of remedial support that would hamper the company's future progress.
TRL 9 – Marketable Product	Marketable Product: proven in repeated use - Product being sold in market, scaling up sales volumes. Actual application of technology is in its final form - Technology proven through successful operations.

Annex 4 - Agile Phases for Software Development

The table below provides a summary of the software development phases in agile delivery. Please see https://www.gov.uk/service-manual/agile-delivery for full descriptions.

Phase	Definition	Duration	Stages
Discovery Phase	Before you commit to building a service, you need to understand the problem that needs to be solved. That means learning about: - your users and what they're trying to achieve - any constraints you'd face making changes to how the service is run - for example because of technology or legislation - the underlying policy intent you've been set up to address - this is the thing that government wants to change or make happen - opportunities to improve things - by sharing data with other teams, for example What you learn during discovery should help you work out whether you want to move forward to the alpha	There's no set time period for a discovery, but around 4 to 8 weeks is typical. If you're working on a problem that no one's researched before, you might need a bit longer.	Set your goal for delivery Define the Problem Focus on learning: - Understanding users and their context - Understanding constraints - Identify Improvements you might be able to make - Consider how to measure success Consider how to share learnings

	phase. Running an alpha means you've decided that the benefits of looking further into the problem outweigh the cost.		
Alpha Phase	Alpha is where you try out different solutions to the problems you learnt about during discovery. Spend alpha building prototypes and testing different ideas. With any online solutions you try out, build things that are just complex enough to let you test different ideas, not production quality code. Expect to throw away any code - and lots of the ideas you test - at the end of alpha. By the end of alpha, you should be in a position to decide which of the ideas you've tested are worth taking forward to beta.	Alphas tend to last between 6 and 8 weeks.	A crucial part of alpha is identifying your riskiest assumptions and testing them. What these are will depend on the service you're building. You need to work towards solving a whole problem for users. Your service needs to work well across all the channels a user might use to access it. Test Accessibility Alpha is finished when you've got a prototype that's substantial enough to help you make a decision about whether to move on to the beta phase or not.
Beta Phase	The beta phase is where you take your best idea from alpha and start building it for real. It also involves thinking about how your service will integrate with (or start to replace) existing services, and preparing for the transition to live.	Dependent on project	During beta, focus on making sure that the solution you've chosen works as well as possible by carrying out user research and starting to gather data on how successful the service is based on the success metrics you identified in alpha.

	Structure your beta phase so you can roll out the service to real users - while minimising risk and maximising the potential to learn and iterate the service. You'll start out in 'private beta'. This involves inviting a limited number of people to use your service so you can get feedback and improve it. Once you've improved the service and are confident you can run it at scale, you take an assessment to move into 'public beta'. This involves opening up your service to anyone who needs it. If you're replacing a legacy service, keep the legacy service running until your new service moves into its live phase.		Iterate the service based on what you learn. You need to work towards solving a whole problem for users. You should work towards providing a service that works well across all the channels a user might use to access it. You'll need to show that you're making reasonable progress in improving the user's experience in different channels. As part of providing a service that everyone can use, at your beta assessment you'll need to show how you've run regular accessibility testing on your service and run research sessions with disabled people.

Live Phase	The live phase is about supporting the service in a sustainable way, and continuing to iterate and make improvements. You'll also:
	
	   - continue to address any constraints you identified at beta
	   - continue to develop the
		Dependant on Project	You'll need to work out how to run your service sustainably during live. This does not necessarily mean having an agile team on the service 100% of the time. Spend time during public beta working out what level of continuous improvement it makes

	service and work with other organisations providing services that are part of the same journey, so that you're iterating towards solving a whole problem for users - transition or integrate any existing transactions that meet a similar need to yours - making sure that what you end up with has a scope that makes sense to users		sense to support, and who you'll need on the team.

Annex 5 – Net Zero Innovation Portfolio Key Performance Indicators

The Department requires all funded projects under the Net Zero Innovation Portfolio (NZIP) to report on key performance indicators (referred to as NZIP KPIs) to provide a consistent approach to reporting evidence, and to track and measure key outputs, outcomes and impacts. The evidence collected is used to demonstrate the impact of the NZIP on achieving the government's Net Zero ambitions and is necessary to be able to run future competitions.[8]

Project lead organisations will be required to report on KPIs at various intervals for each project, including at the start of the project, during project delivery, at project closure and for three years after project closure. The Department will supply funded projects with a reporting template to complete at set intervals, and recipients are expected to return the template to their Monitoring Officer upon completion, who will review and quality assure it. At project start, your Department Monitoring Officer will provide further details about the calculation of these KPIs and assist with the initial completion and measurement.

Please note that it may at times be necessary to make changes to the NZIP KPIs, data collection modes or frequencies. We will endeavour to keep all changes to a minimum and communicate any implications to you via the Monitoring Officers in advance of collection.

Beyond these NZIP KPIs, the Department conducts independent evaluations of many of its programmes. The funded project organisation will be required to collaborate in reasonable evaluation activities, including, but not limited to, providing programme-specific KPIs, completing questionnaires or surveys, participating in interviews and workshops, communicating the learnings from the project, providing costs/sales data and elaboration of any of the measures covered in the NZIP KPIs.

The Departmentwill be collecting the following KPIs, with data provided by Monitoring Officers marked in *italics*. Not all data will be collected annually.

KPI	KPI description	Metrics
KPI 1	*Number of NZIP projects supported*	• *Project start and completion.*
KPI 2	*Number of NZIP projects that have met objectives*	• *Extent to which project objectives have been met to date* • *Change in objectives and reasons for change*

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[8] However KPIs are not used as a project management tool and the KPI collection process is not designed to have a bearing on project delivery decisions (such as invoice payments).

KPI 3	*Number of organisations supported to deliver the project*	• *Lead partner delivering the project: name, organisation size and number of jobs supported within the organisation to deliver the project.* • *Other partner organisations involved in delivering the project as named on the Contract or Grant: name, organisation size and number of jobs supported within the organisation(s) to deliver the project.*
KPI 4	Number of active contractual and non-contractual business relationships supported	• Number of contractual relationships: name and type of contractual relationship. • Number of formal non-contractual business relationships: name and type of non-contractual relationship • Extent to which your organisation expanded its network of business relationships as a result of the project
KPI 5	Technology Advancement	• Technology Readiness Levels (current and anticipated) • Other technology improvement indicators: patents applied for or granted; academic, technical or non-technical publications generated and knowledge exchange events attended (such as conferences)
KPI 6i	*Initial Financial Leverage to deliver project*	• *Project funding structure: Amount in £m of the Department, Other Public Sector and Private Funding.*
6ii	Follow-on Funding secured	• Amount of follow-on funding raised and the source (public or private).
KPI 7i	Reduction in energy costs	• Scope and scale of impact on reducing energy costs • Route to reducing energy costs
7ii	Increased energy efficiency/ Reduced energy demand	• Scope and scale of impact on reducing energy demand/ increasing energy efficiency
7iii	Increase in energy system flexibility	• Scope and scale of impact on energy system flexibility • Route to increasing energy system flexibility

KPI 8	Commercialisation advancement	• Commercial readiness levels (current and anticipated) • Steps towards commercialisation incl. licensing agreements, commercial partnerships, product certifications etc.; national/ international standards passed • UK and International sales secured and their value (£m)
KPI 9	CO2 emissions reductions	• Scope and scale of project impact on carbon emissions • Route to achieving carbon emissions reductions
KPI 10	Policy impact	• Whether, how, and to what effect evidence from the project has informed policy development • Whether projects have engaged in activities with industry or civil society

Annex 6 – Declaration 1: Form of bid

This annex can be found on the HPR Programme Stream 2 – Wave 2 Competition webpage .

Please note that you will need to upload the completed version of this Declaration to the relevant section of the online application form.

Annex 7 – Declaration 2: Conflict of Interest

This annex can be found on the HPR Programme Stream 2 – Wave 2 Competition [webpage](#) .

Please note that you will need to upload the completed version of this Declaration to the relevant section of the online application form.

Annex 8 – Declaration 3: Standard Selection Questionnaire

This annex can be found on the HPR Programme Stream 2 – Wave 2 Competition webpage .

Please note that you will need to upload the completed version of this Declaration to the relevant section of the online application form.

Annex 9 – Declaration 4: The General Data Protection Regulation Assurance Questionnaire for Contractors

This annex can be found on the HPR Programme Stream 2 – Wave 2 Competition webpage .

Please note that you will need to upload the completed version of this Declaration to the relevant section of the online application form.

Annex 10 – Declaration 5: Statement of non-collusion

This annex can be found on the HPR Programme Stream 2 – Wave 2 Competition webpage.

Please note that you will need to upload the completed version of this Declaration to the relevant section of the online application form.

Annex 11 – Declaration 6: Modern Slavery Statement

This annex can be found on the HPR Programme Stream 2 – Wave 2 Competition webpage.

Please note that you will need to upload the completed version of this Declaration to the relevant section of the online application form.

Annex 12 – Model Grant Funding Agreement (Grant Terms and Conditions)

This annex can be found on the HPR Programme Stream 2 – Wave 2 Competition webpage.

Annex 13 – Data Sharing Agreement Template

This annex can be found on the HPR Programme Stream 2 – Wave 2 Competition webpage.

This publication is available from: www.gov.uk/government/publications/heat-pump-ready-programme-stream-2-wave-2-opportunities

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