Invitation to Tender Response

Evidence Gathering – Low Carbon Heating Technologies

Reference # 1043/07/2015

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Table of Contents

INTRODUCTION

The Carbon Trust are delighted to submit this response to the Department of Energy and Climate Change's (DECC's) invitation to tender for 'Efficiency of Energy Related Products and Energy Information Requirements'.

This document details the Carbon Trust's proposal to undertake three of the four Lots detailed in the invitation to tender:

Lot 1 - Domestic High Temperature Heat Pumps

Lot 2 - Domestic Hybrid Heat Pumps

Lot 3 - Gas Driven Heat Pumps

Common aspects of our approach and experience relative to all three Lots are combined in the proposal, but we have split out the activities, costs, resourcing and key technical aspects for each Lot, so that they can be evaluated separately.

Our understanding of the project requirements

The UK is committed to achieving demanding targets for carbon reduction, and specifically to accelerate the uptake of low carbon heating technologies. To achieve these targets, the current rate of uptake will need to accelerate. According to the Committee on Climate Change heat pumps are likely to be an important part of meeting 2050 carbon targets.

DECC wishes to commission a study to understand the current status of certain heat pump and solar heating technologies, to establish their current and potential market, and in-use performance. The study will determine the current and potential future levels of technology development, market uptake, laboratory measured and in-use performance, as well as mapping the relevant regulations and standards for measuring performance. In addition a full cost breakdown is required for each technology, along with an examination of the technical, financial and other barriers to uptake.

For some areas, there will be a lack of data in the UK products market, and so the study will examine the international market and technology developments, and where gaps in information are identified, these will be highlighted. Key differences between the UK and international markets will be highlighted.

The project will result in a robust evidence base which can feed into DECC's wider low carbon heating strategy, in order to inform future policy decisions.

The research will focus on:

- **Domestic High Temperature Heat Pumps** – air and ground source products <45kWth, which can deliver a COP of 2.2 with a flow temperature of 60°C
- **Domestic Hybrid Heat Pumps** – combined heat pumps and gas boilers with intelligent controller <45kWth. Also including heat pumps designed to be retrofitted to work with existing boilers
- **Gas Driven Heat Pumps** – both gas engine driven and gas absorption/adsorption air and ground source heat pumps <45kWth

Research into Hybrid Solar Photovoltaic-Thermal Panels (PV-T) is also being commissioned, however this is not covered within this proposal.

The research will focus on products that are already available in the UK market – or at least available overseas, or are tested and proven in an operational environment (i.e. Technology Readiness Level of 9).

For each lot, DECC have specified a list of Tasks and questions to be answered, although the questions are not exhaustive, and further questions may be needed to examine issues that arise during the course of the project.

We have developed a comprehensive approach to cost-effectively collect and collate the wide range of information requested, which is laid out in Methodology section below. We have also detailed our understanding of the technology, and laid out our comprehensive approach to assurance. The detailed project activities that we will undertake are detailed in the Project Management section.

Overview of the Carbon Trust

The Carbon Trust is a not-for-dividend organisation with a mission to accelerate the move to a sustainable, low carbon economy. We provide specialist support to business and the public sector to help cut carbon emissions, save energy and commercialise low carbon technologies.

The Carbon Trust has over a decade of experience in research, analysis and reporting in the field of energy systems, products and energy regulations, as well as extensive experience of on-the-ground programme delivery.

We offer three distinct attributes:

- **Experience**: We have been working in the climate and sustainability sector for nearly 15 years. We understand what measures work and don't work in the energy efficiency arena, and most importantly why.
- **Impartiality**: As a bridge between business and government we take pride in our impartiality. This underpins the effectiveness and impact of all our work and our reputation as a trusted partner. We are "technology agnostic" having no vested interest in promoting particular technologies.
- **Rigour**: We work in a sector where much is new and unknown and open to opinion. We make the case for change and investment based on evidence and facts.

For the past 15 years our reports and insight have been widely published and distributed and have informed policy developments on key areas of energy efficiency, innovation and carbon emissions. Within the proposal we highlight several relevant case studies which highlight our experience in carrying out technology research projects, and our deep knowledge of the heat pump technology and markets.

[redacted] we believe we are uniquely placed to cost-effectively and efficiently deliver the detailed scope of work requested by DECC.

APPROACH

Our experience of technology research

The Carbon Trust has designed and implemented highly successful and cost-effective methodologies to carry out technology research projects ranging from established energy efficiency products to novel renewable energy technologies, both in the UK and overseas. Projects usually combine an investigation of the status of the technology and future innovations, a study of market and market potential, mapping of regulatory requirements, detailed cost assessments, and examination of claimed and actual performance levels. In this section we lay out our proposed methodology for the project, followed by case studies in which we have used similar methods.

Methodology for this project

The Carbon Trust's analytical and research processes are focussed upon [redacted], from small stand-alone single product reviews to multi-million pound programmes delivered for industry and governments throughout the innovation chain.

While the time frame of 3 months is reasonable to complete the project, multiple resources will need to be carefully managed to ensure quality, on-time delivery and a mix of engagement methodologies will be necessary to cover the range of stakeholder groups. This will help acquire a detailed and comprehensive analysis of the performance of the specified domestic heat pumps, and the current and potential market.

DECC have identified 8 Tasks within the ITT which will each need to be captured in the resulting reports for each Lot. Our proposed method to address these comprises five key activities:

1. **Brief review of desk-based research.** We will access information available in publicly available research reports that provide information on the technology variants, claimed performance, and market information (such as barriers to

uptake) relating to products available in the UK, but also review the international status, which may help indicate potential UK developments in the next 1-3 years. Housing stock research will also be considered. This will help to:

(i) Develop a starting point, to help guide the interviews in activity (3), to ensure that they can be focussed on gleaning valuable information that is not already in the public domain
(ii) Refine our list of experts and stakeholders to interview.

2. **Review of product literature.** We will obtain product information and performance data from manufacturer/installer sales and installation brochures and technical data sheets, either from supplier website, or from direct contact with suppliers.

[redacted]

3. **Structured interviews** with key stakeholders in the domestic heat pump supply chain. The interviews will be focused on a) verifying the initial findings coming from the desk research, and b) collecting unpublished information and opinions – in particular sensitive information on technical innovations, in-use performance, current sales and growth forecasts, and detailed cost breakdowns. These interviews are likely to take between 30-60 minutes. They will follow a structured questionnaire, but will also allow the interviewer and the interviewee to explore areas that are developed during the interview, via probing for further details of the answers given.

[redacted]

It is expected that, given the level of detail requested by DECC, that more than one person may need to be interviewed within some of the target organisations. For example our Lead Consultant may discuss detailed technology and performance analysis with the technical team, whilst another Consultant may speak with the commercial/sales team to understand the market, and business barriers to uptake.

The questionnaires will be based around the detailed questions provided by DECC in the ITT but, at the contract kick off meeting, we will seek to agree any additional questions that we feel are relevant. These may cover some the key issues mentioned in the Understanding of Technology section below, and other areas that we feel will add value. The questionnaires will be tailored for the different stakeholders detailed further below.

Should the Carbon Trust be selected for more than one Lot, we will combine interviews where more than one Lot is relevant to a stakeholder. This will lead to longer interviews, but should be more convenient for interviewees than undergoing more than one separate interview.

4. [redacted]

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5. **Analysis and Synthesis** of findings from the various data gathering exercises, **writing the report** and **presenting back to DECC** – both at the interim presentation and final report stages.

The desk based research will provide a starting point for the research findings. However, the core of the outputs will come from the depth interviews and the product data analysis. Where possible the results will be quantitative, supported by a qualitative analysis of the themes and trends to inform DECC. Variations in opinions between the different stakeholder types will be identified, and variations in performance and uptake for different product subcategories will be investigated.

[redacted]

[redacted].

For this project we will create a simple database to allow collection and storing of data in a consistent form, which will then be developed to carry out analysis, for example the impact of different market growth scenarios.

As the analysis develops we will synthesise the developing findings into an overall narrative, which will evolve over time, and be shared regularly with DECC during scheduled updates. This developing picture will help direct and inform the remaining research activity and will ultimately form the backbone of the final reporting outputs.

Stakeholders

The Carbon Trust has developed extensive networks over the last 14 years within heating technology markets (including heat pumps) and has excellent relationships with trade bodies and thousands of manufacturers and suppliers. We will engage with a large range of industry stakeholders, classified according to the groups shown in Table 1 below. The Carbon Trust and project team through their ongoing activities and client base includes contacts at many organisations and their trade bodies. We find industry is always very responsive to the Carbon Trust research and interviews. Many of the stakeholders will be UK organisations, although a number of the product manufacturers are global. Where a lack of data is available in the UK, we will seek information from European stakeholders. Our Lead Consultant has contacts throughout the European heat pump industry. Example contacts include:

[redacted]

To represent end-users we propose to interview

[redacted].

Table 1 – Stakeholders who will be intereviewed [redacted]

[redacted]

Task specific aspects

Given the range of Tasks and variety of stakeholders we will use a mix of data gathering methods. Our initial research will identify which stakeholders are the most promising so that we can focus appropriately. Whilst all stakeholders and each method will have some relevance for most Tasks, we believe it is important to prioritise the key methods and key stakeholders for each Task. We have shown this in Tables 2 and 3 below. At this stage we think that this approach is relevant to each of the three Lots, but we will refine the matrix for each one at the commencement of the project.

Table 2 – Diagram showing which research methods are particularly suited to which Tasks

[redacted]

Table 3 – Diagram showing which stakeholders are expected to provide the most relevant information for each Task

[redacted]

Key issues relating to data gathering

- **How commercially confidential information will be obtained**. Companies' appetite to share information especially in-use performance data, sales information and cost breakdowns, will vary. However, our work on numerous previous projects where the data owners have IP rich data and information indicates that companies are often happy to share information on the promise of anonymity. We will ensure all stakeholders understand how their data will be used – both in writing before interviews [redacted], and verbally at the start of each interview. In addition, [redacted]. With DECC's agreement we could offer to sign a non-disclosure agreement when that is needed to secure the information needed. We sometimes do this within research for the ETL.
  Confidential information will be restricted to the project team within the Carbon Trust, and not made accessible to other Carbon Trust staff or sub-contractors without express written permission from the data provider. All confidential information will be stored securely on the Carbon Trust network as detailed in the Data Security section.

- **Sampling approach, size of sample**. Our approach is to undertake in depth interviews [redacted].

- **Avoiding optimism bias and the possibility of respondents 'gaming' their responses in favour of specific arguments**. Over-optimism about future technology costs and speed of uptake is common in the development and roll out of new technologies. Consideration will be given to this 'optimism bias' whereby equipment manufacturers may be ambitious in their performance claims and the results will be adjusted for this bias. The team will use their expertise to verify the claims given by interviewees, for example by comparing against similar technologies or application of heat pumps in other sectors, such as small commercial.

[redacted]

[redacted]

- **Gap analysis.** Some of the technologies are at an early stage of market roll out, and there will be some areas for which robust data does not exist – particularly relating to verified in-use performance data. The Carbon Trust will identify where gaps exist in the evidence and provide short and medium term recommendations to DECC for how these information gaps could be filled.

Reporting

For each separate Lot awarded, the Carbon Trust will produce the following

- Presentation of interim evidence and results.
- Submission of draft report for review by DECC
- Submission of final Report and Presentation to DECC.

[redacted]The final reports will be substantive documents that demonstrate rigorous analysis and clearly answer each research question. The reports will include:

- A mixture of written, tabular and graphical interpretations of the data
- Details of the methods used for collating and analysing the data collected
- A clear and concise summary of the research findings
- As an appendix or attachment, anonymised raw data where appropriate, and collated data

All data and information will be referenced and the references will be clearly presented within the report.

Case studies

CASE STUDY – ENERGY TECHNOLOGY LIST (ETL)

For 14 years we have delivered the Energy Technology List (ETL) on behalf of DECC (and previously Defra). This list permits technology customers to gain accelerated tax relief (ECAs) on qualifying purchases of energy saving and renewable technologies. To date we have rigorously assessed more than 60,000 products from hundreds of suppliers and carried out ~400 technology and technology market research projects.

Our ETL management strategy has delivered impactful market wide change and development through:

- Effective market identification - we have developed diagnostic tools and research methods to identify, quantify and qualify technology markets where an ECA/ETL approach will deliver transformational change
- Challenging product innovation – through our robust research approaches we develop and maintain challenging energy efficient performance criteria that clearly differentiate top quartile products.
- Engaged supply chains – With our strong reputation throughout the product supply chain we collect information annually from hundreds of UK and global manufacturers, suppliers, trade bodies and other stakeholders.

The technology research programme is led by [redacted]. Each year he identifies, defines, oversees and quality assures 20-30 new research activities. Every study is focused upon establishing a critically reasoned and evidenced case outlining current market and technology impacts driven by the policy. For each one we examine: the energy efficient characteristics of the technology, near term (e.g. 2 to 5 years) technology innovations, market dynamics (e.g. factory gate sales, supply chain structure, market influencers), impact of regulation

and standards (particularly ErP and Building Regulations), and laboratory and in-use product performance. We then determine the cost-effectiveness for Government, and for industrial customers, of supporting this technology. Nine of the 58 technology categories on the ETL relate to heat pumps.

A combination of qualitative and quantitative collection, analysis and synthesis of data from desk research, interviews and stakeholder workshops is used to develop a comprehensive assessment of each product market, and inform annual recommendations to DECC and HMRC.

FURTHER CASE STUDY

Micro-CHP Accelerator

The Carbon Trust's Micro-CHP Accelerator carried out a wide range of activities to better understand the benefits of different micro-CHP technologies and the barriers to their adoption. The aims of this project were to obtain robust, independently monitored performance data from a range of micro-CHP units in real operating conditions; assess the carbon performance relative to alternative heating technologies; and provide insights to inform future policy decisions.

The project involved a major field trial of micro-CHP units in both domestic and small commercial applications, and a corresponding trial of A-rated condensing boilers to provide a baseline for comparison. The performance of the systems was monitored to collect thermal efficiency, electrical efficiency and carbon benefit data. The market analysis determined the sectors with the highest potential, the window of opportunity and the UK market as a whole.

UNDERSTANDING OF THE TECHNOLOGY

Key considerations for the technologies being studied

[redacted]

LOT 1 – DOMESTIC HIGH TEMPERATURE HEAT PUMPS

[redacted]

LOT 2 – DOMESTIC HYBRID HEAT PUMPS

[redacted]

[redacted].

LOT 3 – GAS DRIVEN HEAT PUMPS

[redacted].

Case studies which demonstrate technology knowledge, experience and contacts

ETL Heat pump technology review

[redacted] recently carried out a detailed review across the full range of ETL listed heat pump technologies to assess whether coverage is appropriate and how the need for support might change over the next five years. Through the study unique knowledge of the whole UK heat pump market, current product performance and relevant standards was gained. The study was carried out in consultation with suppliers and the Heat Pump Association. The work included an assessment of the size, value and profile of the market and factors that might affect future growth, and particularly sought feedback from industry about the (limited) effect of RHI on the air to water heat pump market.

Typical energy, cost and carbon savings versus other solutions (conventional, biomass, solar thermal), factors that could affect these and possible competition from other alternative solutions were examined. The ETL coverage of heat pump technologies was found to represent the market but recommendations were made to revise two product categories to include additional product types. Analysis showed that the performance of air source heat pumps ≤ 12 kW has increased significantly since the ErP Legislation came into force. Increasing interest was identified in some heat products not currently on the ETL including sorption heat pumps.

Heat TINA Refresh

The Technology Innovation Needs Assessment (TINA) programme is a collaborative effort of the Low Carbon Innovation Co-ordination Group (LCICG) comprising major public sector backed bodies for low carbon innovation. Each TINA involves a detailed assessment of the carbon reduction potential of the technology, the economic benefit to the UK, the required innovation needed to overcome the barriers to uptake. The Carbon Trust has led the creation of each TINA document.

For the 2012 Heat TINA, we carried out a detailed investigation on heat pumps, heat networks and heat storage to help realise the potential of these technologies. The analysis focussed on novel heat pumps technologies and improvements to existing technologies. Areas of analysis included the most attractive markets for deployment, the most suitable environment for each heat pump technology type and the inconsistencies between heat supply and demand. The Carbon Trust has recently been commissioned by DECC to update this study.

Carbon Trust Incubation Support

The Carbon trust has run a number of activities to support innovation and development of promising low carbon technologies. Within our incubation support activities we provide a customised package of expert commercial advice, networking opportunities and grant funding to small enterprises.

We have supported a number of projects involving heat pumps, and competing technologies, in which detailed examination of the competitive marketplace and product performance have been key aspects. These have included market analyses for: ICAX (with an innovative inter-seasonal heat storage technology); SASIE (commercialising a "Mono-Energy" solution which includes a hybrid heat pump); IE-CHP (with a thermal management system focused on micro CHP, which competes with heat pumps); and a gas powered adsorption heat pump supplier.

APPROACH TO QUALITY ASSURANCE

The Carbon Trust has a corporate wide commitment to quality, articulated in our policy which aims to provide our customers with high quality services which meet their requirements and are fit for their purpose. To this end we:

- Operate the business to the systems required by ISO 9001:2008
- Rigorously control the completion to programme of all projects
- Promote the quality management systems and ensure implementation is achieved by internal auditing, management review, corrective and preventive action
- In this project will ensure we comply with the QA requirements of the DECC Code of Practice for Research

Our approach focuses on effective planning, quality control, implementation and delivery. Our procedures require that all projects are quality assured at appropriate milestones to ensure they meet the requirements and remain aligned to the agreed objectives and specification laid out and agreed at the start of the project.

Quality assurance starts with the skills and experience of our project team. They are all trained and experienced in using a structured approach to information collection, collation, analysis and reporting. They challenge results that look unexpected, and triangulate data from multiple sources in order to ensure consistency. Our Lead Consultant has many years' experience in the field, and will double check analysis carried out by other members of the team.

[redacted].

For this project, the Project Manager will first create a formal project definition to ensure that all team members know exactly what research questions they are answering and how to go about this. The Project Manager will check all deliverables against the agreed definition to ensure that they meet the original objectives and DECC's requirements. The Project Manager will also hold regular update meetings with the team to review the findings, and unfolding narrative. This will include querying and challenging the quality of data collected and the analysis and conclusions from this.

The Project Manager will also ensure the quality of the draft and final reports and presentations. [redacted] Quality assurance takes time, and at the outset of the project the timescales will be structured to ensure outputs are delivered in good time for quality assurance and review – to allow for any necessary revisions to be completed before the delivery deadline.

Finally, to ensure a "second pair of eyes", all deliverables for DECC will additionally be reviewed and signed off by the Project Director, who is highly experienced in Programme Management and quality control.

Throughout this process, we learn from our quality assurance checks and adjust our quality management and project plan accordingly to minimise any divergence from quality targets. For example if trends were found indicating suspect

data, additional checks could be added at the data collection and checking stages to ensure robustness is reinforced. We will keep DECC informed of our quality checks within regular reporting, and will seek DECC's feedback on all deliverables to ensure that the outputs meet or exceed your expectations.

As a result of our commitment to quality, we have built a reputation for robust analysis and well-articulated reports that can withstand scrutiny by the harshest of critics. For the past 10 years our reports have been widely published and distributed and have informed policy developments on key areas of energy, innovation and carbon policy.

Figure 1 – Diagram of our Quality Assurance approach

EXPERIENCE AND CAPABILITIES

Capabilities to deliver project

From our experience and the information provided in the ITT we feel there are essentially four capabilities required to successfully deliver the services:

The Carbon Trust has developed leading in-house expertise in providing technical and evidence-based advice and services to Government over the last 14 years. We have managed technical programmes supporting policy, technology and market development with a focus on carbon saving and environmental impacts throughout the supply chain.

We have extensive expertise in critical technical analysis, providing advice to policy makers, and combining technical, market and econometric understanding to design, implement and evaluate effective interventions. We specialise in making the outputs of complex analysis accessible and understandable to a non-technical audience.

Key capabilities that we bring to this project are:

In a project such as this one, the experience,

knowledge and ability of the delivery team are absolutely key. That is why the Carbon Trust is putting forward a highly skilled and experienced team, who will be able to hit the ground running.

Team structure

We propose a team led by a Programme and Project Manager, [redacted], with detailed experience of research and advice provision – [redacted]. The Project Manager will be responsible to DECC for ensuring service delivery excellence, and meeting DECC's requirements and expectations. He will maintain tight control on the project internally to ensure the quality and timeliness of deliverables. [redacted] has developed a streamlined research process [redacted] including strong governance controls, frequent reviews and a staged development process, to ensure quality and timeliness of delivery from the team. [redacted] will ensure that the final report is high quality and of a good standard for publication.

The Project Manager will be supported by a small team of technical experts and analysts who bring both breadth and depth of expertise covering not only heat pumps but a range of related and competing products. The team will comprise [redacted] as the Lead Consultant on the project, two further experienced Consultants ([redacted]) to assist with interviewing and report writing, and two Analysts ([redacted]) to assist with the product and market research, backed up by the wider team of energy efficiency, renewable energy and low carbon expertise within the Carbon Trust.

The project will also benefit from [redacted] taking the role of Project Director. With his extensive knowledge of energy efficient technologies and heat pumps, [redacted] he will bring a deep understanding of current technological developments and research processes and an extra level of quality assurance to the project outputs and conclusions. The Project Director will have overall responsibility for Quality Assurance, as he will be independent of direct involvement in analysis, synthesis or drafting of information.

Figure 2 – Diagram of proposed team structure

[redacted]

Expertise and experience of team members

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

MANAGEMENT AND DELIVERY

Project management

Our reputation is built upon our ability to manage, direct and ensure coherency of our experts' inputs on all of our assignments. We apply the **highest project management standards** to our work by:

- Maintaining an open and transparent relationships with our clients and partners
- Quality assuring all of our deliverables
- Delivering project outputs on-time or ahead of schedule

- Utilising a flexible range of formal project management approaches, drawing on elements of the PRINCE 2 project management methodology and our own practical project experience
- Maintaining a robust financial management system that ensures accuracy and timeliness in financial reporting to clients, and rapid payments to partners
- Following the ISO 9001 2008 standards in quality assurance and project management

Our approach on this project will be to use a core of skilled team members for project delivery, supported by a range of technical specialists who can be called upon as required to input on particular technical aspects, and provide access to a range of contacts. The team will be managed by [redacted]. The team structure and experience of the full project team are described in the Experience and Capabilities section above. The allocation of team members to specific activities is shown below, along with an outline project plan, which will be confirmed with DECC at the start of the project.

All of the named team are Carbon Trust employees, with the exception of [redacted] A draft project plan is shown below, for discussion with DECC at the commencement of the project. The timing of activities is expected to be the same for each of the three lots, however the resourcing varies between them.

Figure 3 – Proposed project activity plan – for Lots 1, 2 and 3. Full size version in Appendix 4

[redacted]

Figure 4 – Proposed team activity chart and cost breakdown – Lot 1 Full size version in Appendix 4

	Role	Project Director	Project Manager	Lead Consultant	Consultants	Analysts		
LOT 1	Team members	[redacted]						
Activity		Number of days					Total days by activity	
Preparation	[redacted]							
Desk study & product literature/data review								
Interviews [redacted}								
Analysis, Synthesis and Reporting								
Project Management and QA								
Total days by role								
Maximum T&S (at cost)								

Figure 5– Proposed team activity chart and cost breakdown – Lot 2 Full size version in Appendix 4

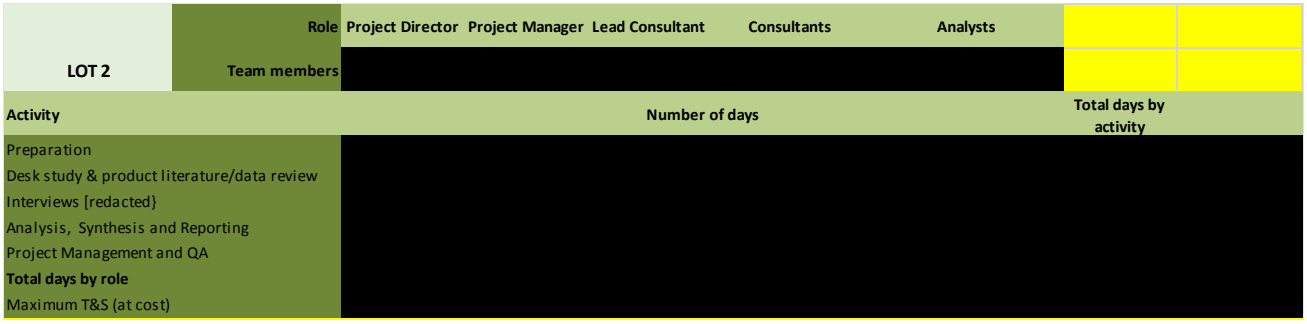
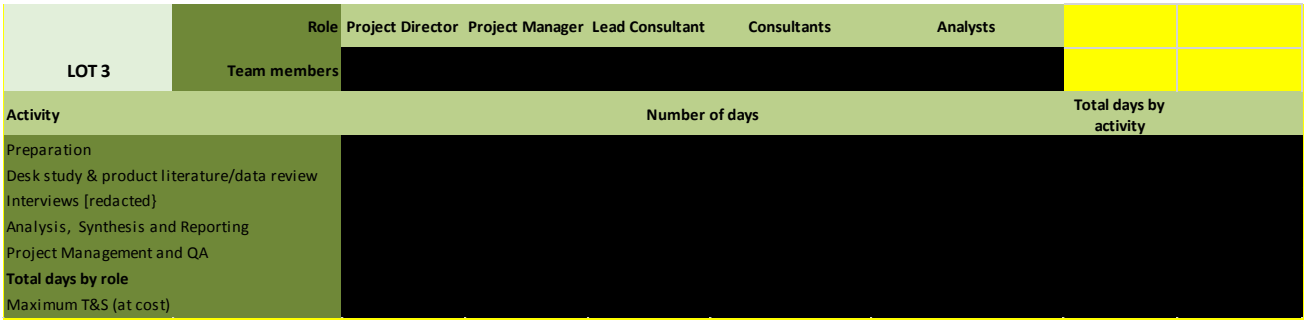


Figure 6 – Proposed team activity chart and cost breakdown – Lot 3 Full size version in Appendix 4



Approach to contract management

The Project Manager will be responsible for overseeing the delivery of the project in accordance with the contract, and the Carbon Trust's project management procedures.

Following an initial kick off meeting, we shall update and submit the project plan for approval before commencing work. The single point of contact with the Carbon Trust for this work will be [redacted].

We will ensure that DECC are informed of contract and service performance. Our proposed approach will be to utilise management meetings and email updates. A weekly email update will be sent to the DECC project manager detailing project progress, completed interviews and any issues arising. We will keep the risk and issues log updated and include this in the weekly update email. The information will allow DECC to monitor delivery of agreed programme outcomes. The updates should also reassure DECC that quality assurance of the deliverables is being closely monitored.

We are flexible on the nature and frequency of face to face meetings, and the format of reporting.

Data security and data protection

The Carbon Trust is registered as a Data Controller with the UK Information Commissioner's Office on the Data Protection Public Register, managing all data in accordance with the Data Protection Act (DPA) 1998.

Much of the intended survey work involves the collection and management of personal level data from large scale surveys. We take the issues of data protection and information security very seriously and have excellent security controls that integrate our data and network security policies and procedures with the security requirements of our clients. In some services we deliver (e.g. the ETL) we already operate to government's information security standards.

We have policies and systems in place that cover all of DECC's requirements which are detailed in appendix 3.

Intellectual property

The Arising IP from this project will be in the form of Word reports, PowerPoint presentations and Excel analysis and models. This Arising IP will also include information gathered from the interview programme which forms part of our proposed methodology for this project. We confirm that all Arising IP from this project will belong to DECC. We also understand that DECC will be entitled to a license to use any pre-existing IP contained in the deliverables.

Conflict of interest

We are not aware of any potential conflict of interest in the Carbon Trust carrying out this work.

Ethical issues

We confirm that we would adhere to the GSR Principles required by DECC of: Sound application and conduct of social research methods and appropriate dissemination and utilisation of findings; participation based on valid consent; enabling participation; avoidance of personal harm; non-disclosure of identity and personal information.

We would bring to DECC's attention any instances of concern that we thought would breach an ethical code of conduct, paying particular attention to the rights of individuals being interviewed to be treated respectfully, fairly, honestly and transparently. We would respect any request for confidentiality of information provided and for the delivery of these services to DECC.

In the Project initiation stage we will arrange for the HR team to carry out short training to ensure that all project team members are fully briefed on the non-disclosure act and equal rights act. Similarly the project team will be briefed by the Project Manager on appropriate conduct in social research such as ensuring valid consent, confidentiality, impartiality and equal participation.

Code of practice

We confirm that we would adhere to the DECC code of practice for research, and will ensure that all members of the project team are briefed on the requirements.

Terms and conditions

The Carbon Trust confirms that it would sign the contract including the current terms and conditions as set out in the Invitation to Tender.

[redacted]

ADDRESSING CHALLENGES AND RISK MANAGEMENT

Risks and issues log

The Carbon Trust takes a proactive approach to risk management and will create and maintain a risk and issues log. We take a best practice approach to assessing risk by considering likelihood of an issue occurring and its potential impact, prioritising the results with a red/amber/green rating system. For this project, we will record strategic (e.g. reputational, commercial, financial, stakeholder support) and operational risks (e.g. project delivery, deliverable quality etc.) and on bi-weekly basis these will be reviewed with the Project Director, who has specialist training and operational experience in risk, crisis and continuity management. Mitigation actions will be determined and any issues or causes for concern

communicated to DECC. Below are some of the potential challenges/risks to the project that we have identified and mitigating actions that we would propose to take.

Table 4 – Initial Risk Log – to be updated at the commencement of project

Risk	Probability (L/M/H)	Impact (L/M/H)	Carbon Trust Mitigating actions
Key personnel do not have timeslots for interviews within required time.	M	H	[redacted]
Respondents are reluctant to partake in interviews affecting timelines	L	H	[redacted]
Lack of available market and product data	M	H	[redacted]
Outcome of project not credible to DECC or key stakeholders	M	L	[redacted]
Quality assurance shows methodology needs adapting	L	M	[redacted]

ANNEX A – PRICING SCHEDULE

PRICING SCHEDULE FOR 1043/07/2015 - Evidence Gathering – Low Carbon Heating Technologies

Prices offered below will be valid for 60 calendar days from the date of submission.
The costs shown for the Lead Consultant will be subcontracted

Pricing schedule for Lot 1

Part A – Staff/project team charges

Set up Costs – please specify	None
Expenses	[redacted]

*Grade/level of staff	Daily rate (ex VAT)	No. days offered over course of contract	Tasks to be undertaken on this project	Total price offered per staff member
REDACTED				

[*Suppliers should also include sub-contractors]

Part B – Non-staff/project team charges

Item	No. of items	Price per item (ex VAT)	Total price per offered
Expenses			
Sub-total			

Part C – Full price offered

Sub-total (Part A + Part B)	
VAT	
TOTAL (Sub-total + VAT)	

Pricing schedule for Lot 2

Part A – Staff/project team charges

Set up Costs – please specify	None
Expenses	

*Grade/level of staff	Daily rate (ex VAT)	No. days offered over course of contract	Tasks to be undertaken on this project	Total price offered per staff member
REDACTED				
Sub-total				

[*Suppliers should also include sub-contractors]

Part B – Non-staff/project team charges

Item	No. of items	Price per item (ex VAT)	Total price per offered
Expenses	1		
Sub-total			

Part C – Full price offered

Sub-total (Part A + Part B)	
VAT	
TOTAL (Sub-total + VAT)	

Pricing schedule for Lot 3

Set up Costs – please specify	None
Expenses	

*Grade/level of staff	Daily rate (ex VAT)	No. days offered over course of contract	Tasks to be undertaken on this project	Total price offered per staff member
REDACTED				
Sub-total				

[*Suppliers should also include sub-contractors]

Part B – Non-staff/project team charges

Item	No. of items	Price per item (ex VAT)	Total price per offered
Expenses	1		
		£	£
		£	£
		£	£
		£	£
Sub-total			

Part C – Full price offered

Sub-total (Part A + Part B)	
VAT	
TOTAL (Sub-total + VAT)	

[redacted]

APPENDIX 1 – SIGNED DECLARATIONS

- Declaration 1: Statement of non-collusion
- Declaration 2: Form of Tender
- Declaration 3: Conflict of Interest
- Declaration 4: Questions for tenderers
- Declaration 5: Code of Practice

Please see attached file for Signed declarations

APPENDIX 2 – CVS OF CORE STAFF

CVs REDACTED

APPENDIX 4 – FIGURES, DIAGRAMS AND TABLES

Figure 3 – Proposed project activity plan – for Lots 1, 2 and 3

REDACTED

Figure 4 – Proposed team activity chart and cost breakdown – Lot 1

REDACTED

Figure 5 – Proposed team activity chart and cost breakdown – Lot 2

REDACTED

Figure 6 – Proposed team activity chart and cost breakdown – Lot 3

REDACTED