DPS FRAMEWORK SCHEDULE 4: LETTER OF APPOINTMENT AND CONTRACT TERMS

Part 1: Letter of Appointment

Dear Sirs

Letter of Appointment

This letter of Appointment dated *Tuesday, 28th July 2020*, is issued in accordance with the provisions of the DPS Agreement (RM6018) between CCS and the Supplier.

Capitalised terms and expressions used in this letter have the same meanings as in the Contract Terms unless the context otherwise requires.

Order Number:	CR20059 - Designing an Auction to Install Energy Efficiency Measures in Small and Medium Sized (SMEs) Businesses
From:	The Department for Business, Energy & Industrial Strategy (BEIS) with offices at 1 Victoria Street, London SW1H 0ET ("Customer")
To:	Eunomia Research & Consulting Ltd, 37 Queen Square, Bristol, United Kingdom, BS1 4QS ("Supplier")

Effective Date:	Monday, 3rd August 2020
Expiry Date:	Thursday, 31st December 2020

Services required:	Set out in Section 2, Part B (Specification) of the DPS Agreement and refined by: the Customer's Project Specification attached at Annex A and the Supplier's Proposal attached at Annex B;

Contract Charges (including any applicable discount(s), but excluding VAT):	The Customer shall pay the Supplier the sum of £85,821.90 excluding VAT for delivery of these Services. For the avoidance of doubt, the Contract Charges shall be inclusive of all third-party costs. [redacted]

	 See CR20059 - RM6018-Contract-terms-v8 Annex 1 – Contract Charges for further information.
Insurance Requirements	Additional public liability insurance to cover all risks in the performance of the Contract, with a minimum limit of £5 million for each individual claim Additional employers' liability insurance with a minimum limit of £5 million indemnity Additional professional indemnity insurance adequate to cover all risks in the performance of the Contract with a minimum limit of indemnity of £2 million for each individual claim. Product liability insurance cover all risks in the provision of Deliverables under the Contract, with a minimum limit of £5 million for each individual claim
Liability Requirements	**Suppliers limitation of Liability** (Clause 18.2 of the Contract Terms);
Customer billing address for invoicing:	All invoices should be sent to should be sent to finance@services.uksbs.co.uk or Billingham (UKSBS, Queensway House, West Precinct, Billingham, TS23 2NF).

GDPR	Schedule 7 (Processing, Personal Data and Data Subjects]
Alternative and/or additional provisions (including Schedule 8(Additional clauses)):	*N/A*

FORMATION OF CONTRACT

BY SIGNING AND RETURNING THIS LETTER OF APPOINTMENT (which may be done by electronic means) the Supplier agrees to enter a Contract with the Customer to provide the Services in accordance with the terms of this letter and the Contract Terms.

The Parties hereby acknowledge and agree that they have read this letter and the Contract Terms.

The Parties hereby acknowledge and agree that this Contract shall be formed when the Customer acknowledges (which may be done by electronic means) the receipt of the signed copy of this letter from the Supplier within two Working Days from such receipt

For and on behalf of the Supplier:

Name and Title: [redacted]

Signature: [redacted]

Date: 29/07/2020

For and on behalf of the Customer:

[redacted] and Title: [redacted]

Signature: [redacted]

Date: 29/07/2020

ANNEX A

Customer Project Specification

Background

Introduction and summary of requirements

To support the delivery of the net zero legislation, the UK Government is exploring a range of policies to improve energy efficiency across business, including a small business energy efficiency scheme (SBEES). Small and medium sized enterprises (SMEs) account for just over 50% of business energy use, and nearly half of this consumption could be targeted by energy efficiency measures. However, there are multiple and persistent barriers that limit SME investment in energy efficiency so SBEES needs to be designed in a way that targets the key barriers of access to information, expertise and finance while incentivising SMEs to take action.

In order to inform the decision-making process on the policy options for SBEES, BEIS is commissioning this research project to provide evidence on options for the design and delivery of an energy efficiency auction that accelerates the uptake of energy efficiency measures in SMEs. This project will result in a report that considers the design and delivery of an auction and sets out each of the design options available and the implications associated with these. This will help inform BEIS of the validity (or otherwise) of an energy efficiency auction, as a method to incentivise SMEs to invest in measures to increase their energy efficiency.

Background – the climate challenge and SMEs

In June 2019, following advice from the UK's independent climate change advisory body - the Committee on Climate Change, the UK became the first major economy in the world to pass laws to eradicate its net contribution to climate change and set a net zero emissions by 2050 target[1]. Strong frameworks to support this ambition have been established by the Clean Growth Strategy (CGS)[2], which sets out a stretching ambition to support businesses to improve their energy efficiency by at least 20% by 2030. This could deliver up to £6 billion in cost savings annually from 2030 and contribute up to 22MtCO2e of savings towards the fifth carbon budget. The UK Government's Industrial Strategy also aims to harness the opportunities of the transition towards a low carbon economy, through the Clean Growth Grand Challenge[3].

All businesses, including SMEs, have significant opportunities to reduce their own energy use and emissions, therefore contributing towards climate change and health objectives. Realising the untapped cost-effective energy saving potential in SMEs could deliver approximately £2.7bn[4] in annual cost savings and a potential 30% reduction in SME energy bills in 2030[5]. By using energy more efficiently, energy demand can be reduced, leading to lower energy bills for business, lower emissions of greenhouse gases and other pollutants, reduced need for energy infrastructure and increased energy security through a reduction in imports.

There is a range of well documented barriers that prevent business from implementing energy efficiency measures, and these are magnified for SMEs. The UK is not alone in struggling to engage SMEs with energy efficiency. Research by the International Energy Agency (IEA) shows that the most effective SME policies target 3 key barriers: information, knowledge and finance[6].

Background – the Small Business Energy Efficiency Scheme (SBEES)

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[1] https://www.gov.uk/government/news/uk-becomes-first-major-economy-to-pass-net-zero-emissions-law
[2] https://www.gov.uk/government/publications/clean-growth-strategy
[3] https://www.gov.uk/government/publications/industrial-strategy-the-grand-challenges/industrial-strategy-the-grand-challenges#clean-growth
[4] https://www.gov.uk/government/consultations/energy-efficiency-scheme-for-small-and-medium-sized-businesses-call-for-evidence
[5] Ibid
[6] https://c2e2.unepdtu.org/wp-content/uploads/sites/3/2016/03/sme-2015.pdf

BEIS published a Call for Evidence in March 2019[7] setting out options for developing a SBEES targeting SMEs and incentivising them to engage in energy efficiency. Responses overall were finely balanced, with no consensus as to whether the SBEES should be an energy efficiency auction or an energy efficiency obligation, though individual responses did offer strong views on preferences. BEIS has extensive experience of designing and delivering an energy efficiency obligation through the domestic ECO[8] but lacks similar experience of an auction aimed at SMEs. The aim of this research is to increase our understanding on how an auction could work, and to ensure an informed decision is made on how SBEES should proceed.

There are examples of energy efficiency auctions being used in other countries to provide a competitive mechanism for governments to support businesses to become more energy efficient. Participants bid for government funding and the projects providing the best energy efficiency for the best value win. Portugal, Switzerland and Germany have Government-run energy efficiency auctions, and each are designed differently. We want to understand the options available that are relevant to this country when designing the auction, and the expected implications of each option.

Aims & Objectives of the Project

The aim of this study is to understand the different options for designing and running an energy efficiency auction and the likely impact of those options on the success of the auction. This should consider evidence from energy related auctions in the UK and overseas. It should set out the options available for each stage of the auction and the potential impact of each option. The advice should take particular consideration of our target audience – SMEs as well as market actors bidding into the auction, who will be responsible for aggregating measures from SMEs. The study will increase BEIS's understanding of how similar auctions work, the range of choices in the design and scope of an auction, and their impacts.

Precise research questions to be answered

The key research questions are 'which form of auction would be most impactful in increasing energy efficiency for SMEs while supporting the expansion of the energy efficiency market in the UK?' and 'how successful is that auction likely to be' This research project will provide evidence that will assist BEIS in deciding what form SBEES will take and how best to design an energy efficiency auction with the following characteristics.

An auction that:

- Minimises market or price distortion
- Maximises participation by 3rd parties such as aggregators as well as the target SMEs
- Maximises value for money
- Balances simplicity with the option to target specific technologies or sectors
- Ensures liquidity
- Targets SMEs effectively, considering the well documented barriers[9] to take-up of energy efficiency measures by SMEs, in particular business disruption

Therefore, we are commissioning research to understand how similar auctions work and design and test the feasibility of potential auction models. Specific questions we expect the research to answer (which should take the above characteristics into account) are:

A. What is likely to be the most effective auction process for UK SMEs?

[7] ibid
[8] https://www.ofgem.gov.uk/environmental-programmes/eco
[9] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/392908/Barriers_to_Energy_Efficiency_FINAL_2014-12-10.pdf

- What are the potential models for the auction process that bidders would follow when participating in an auction e.g. is there a role for pre-qualification/verification, what are the options around different methods for bidding, what, if any appeal mechanisms should be in place?
- What are the advantages/disadvantages of using the different bidding mechanisms e.g. pay as clear/pay as bid?
- What are the advantages/disadvantages of various timescales for successful bidders to install measures?
- What is ideal frequency of the auction, setting out the pros and cons of single versus multiple auction rounds?

B. How can we encourage and maximise participation in the auction?

- Which steps can be taken to attract bidders? And how successful are these likely to be?
- How can the auction design strike a balance between encouraging participation (particularly as we are targeting SMEs) and VfM? This is partially about considering the amount of administration that a SME will be willing to participate in to engage with an auction, as well as our obligations to protect the public purse.
- What are the pros and cons of restricting the auction to third party bidders or allowing both third party bidders and SMEs to bid?
- To what extent would expanding initial audits beyond energy efficiency to consider other low carbon measures such as smart energy/ solar PV / EV charging etc encourage participation? While funding would be targeted at energy efficiency measures only.

C. What is the best funding model?

- What is the minimum viable amount of funding required to run a successful auction for year 1, explaining the rationale?
- Suggest potential trajectories for funding the auction in subsequent years.
- Recommend the overall scheme size to ensure that energy efficiency becomes recognised and important to SMEs, and there is a market able to respond to demand.

D. How can we ensure cost effectiveness?

- Recommend ways to minimise search costs and administrative overheads while maximising the cost effectiveness of the auction administration – for both government and participants
- Recommend ways to maximise cost effectiveness, that is increase efficiency of allocated budget, incentivise submission of minimum viable bids, reduce the risk of high failure rate
- To what extent, if any, should the auction require any initial energy audits to include advice on wider energy measures such as smart energy, battery storage, EV charging and renewables?

E. How can we best monitor and evaluate the auction?

- What are the options for measurement and verification of the auction process and measures delivered – that balances the volume of administration that SMEs are willing to undertake with the need to protect public funds?
- Could monitoring and verification be assisted by requiring benefiting SMEs to install smart meters?
- How could an auction be designed to facilitate quality monitoring and a future evaluation?
- What methods are there to ensure quality standards? Please note that BEIS currently has a contract with BSI to deliver a new Publicly Available Specification (PAS) for the installation of energy efficiency measures in non-domestic buildings[10].
- What options are there to deal with non-delivery by participants?

F. Other

[10] https://www.delta-esourcing.com/delta/respondToList.html?noticeId=427135813

- What other risks and mitigations should be considered when designing and delivering an energy efficiency auction?
- How do we ensure the auction is compliant with state aid rules?
- What are the critical success factors for an auction targeting SMEs?

Suggested Methodology

To answer the research questions in section 2 above, the researchers will make recommendations about the design and delivery of the auction, using evidence gathered from a variety of sources. The proposed designs will be concept tested with key market actors/players and SMEs to ensure feasibility in the SME sector across the UK.

We envisage the project to comprise of 2 distinct phases:

1. Auction option design. Evidence gathering on (i) auction theory, (ii) learnings from relevant energy-related auctions in the UK and overseas and (iii) evidence from programmes for SMEs engaging in energy efficiency and other energy related measures such as storage and solar PV. This evidence will be used to formulate a number of potential auction designs.
2. Concept testing research with potential bidders to include key market actors/players and SMEs to test the feasibility of the model options designed in Phase 1.

Phase one will review the existing evidence base in order to devise a number of options for the SBEES auction, explaining the pros and cons of the scheme for all of the areas highlighted in the research questions above and setting out the key decision-making stages in auction design.

We expect the contractor to draw on a range of existing information including; academic reports on auction theory; academic and market intelligence reports on driving change in SMEs and research studies and evaluations of existing auction schemes, both in the UK and internationally. We will provide the contractor with BEIS evidence detailing the design of current auction schemes, where available.

Depending on the quality of available evidence, the contractor may wish to conduct interviews with previous auction designers, key market players, and SMEs at this point to gain clarification on outstanding questions not covered in the evidence.

The contractor will be required to reference the quality and robustness of evidence reviewed and the basis for including / excluding evidence. The contractor will map the eligible studies against the research questions so that we can assess how well each question is answered in the available evidence.

The contractor will then devise a number of auction models, using the reviewed evidence and economic theory to ensure feasibility. The output of this phase will be an interim report setting out the results of the evidence review and detailing potential models for the auction with explanations of how they will perform against the criteria set out in the research questions above.

Phase 2 will test the auction options developed in phase 1 with key market players. This will take the form of qualitative focus groups or interviews with trade bodies (such as the Federation of Small Businesses), a small number of SMEs, and potential aggregators (such as larger businesses with supply chains, energy service companies and local authorities). The aim will be to concept test the proposals and provide evidence about the pros and cons of the proposed combination of options as well as an assessment of whether they are feasible.

We expect this research to enable us to better understand stakeholder views on how a potential auction scheme could work, and what would motivate them to get involved e.g. would potential SMEs want initial audits to go wider than energy efficiency to consider smart energy, battery

storage, EV charging and renewables? Or, what is the maximum administrative burden SMEs would bear as part of participation?

Direct research with a full range of market players would also ensure the UK and SME context is central to the evidence gathering phase and fill any gaps in the evidence from the desk research. We expect approximately 6 focus groups or 35 interviews (or a combination of both) will be adequate. Due to current social distancing, we expect these groups/interviews will be remote rather than face to face. Potential contractors should provide details of how they will conduct the research remotely. SMEs are generally hard to reach, so we expect the bid to highlight how the research will successfully engage this group.

The final product would be a report which expands on the interim evidence and describes in detail the pros and cons of the proposed auction models with reference to how these were revised following the qualitative research. We ask for each decision that needs to be made on the design of the auction be set out individually alongside their respective pros and cons. We also request that for each phase of the auction where elements of the design are heavily interrelated, for example, how and when to bid into an auction, that a recommended model be set out.

Deliverables

The following outputs are required within the project, irrespective of whether the proposed methodologies are used or whether alternatives are proposed. Alternative reporting approaches or timing may be proposed so long as they exceed the requirements set out below and the reasons are fully explained. All outputs will be owned by BEIS.

The outputs of this research project are expected to include:

Phase 1

By September 2020

Interim report on auction models
The interim report should set out the results of the evidence review and detail potential models for the auction with explanations of how they will perform against the criteria set out in research questions A-F in the methodology section above.

Presentation on Phase 1
The research team should provide a face-to-face (or virtual, if necessary due to social distancing) presentation of the interim findings for policy and analytical colleagues at BEIS.

Phase 2

By December 2020

Final synthesis report of Phases 1 and 2
The final synthesis report will expand on the interim evidence, summarise the work undertaken, and methodology used, and describe in detail proposed auction models with reference to how these were revised following the qualitative research. It will also make recommendations on the proposed auction models.

It must be written to a sufficiently high standard for publication. Our experience shows that this may require 3-4 drafts, and this should be taken into account when considering timelines and costs.

Slide Pack
A slide pack will present the key findings in an easily accessible form. This should help ensure that relevant findings of the report can be easily selected and presented for/by the various

cross Whitehall teams. This slide pack should focus on the auction options rather than the methodology or underpinning evidence.

Final Phase 2 Presentation
The research team should provide a face-to-face presentation (or virtual, if necessary) of the final findings for policy and analytical colleagues at BEIS and potentially other Government Departments at the end of Phase 2.

Other reporting requirements or deliverables
Where relevant, outputs should include suitable technical annexes and datasets. Technical annexes should provide sufficient detail such that the methodology is replicable.

We would welcome suggestions as to any further outputs and would expect to agree a final set of deliverables at the inception stage.

It is desirable to also have transcripts of qualitative interviews or other records of discussions with stakeholders, for internal BEIS use. However, if it is not possible to include these, bidders are asked to specify how they will record and analyse their qualitative research and to propose alternative outputs which could be used more widely by BEIS.

It is assumed that most reports will be published to provide a transparent evidence base for ongoing policy making decisions. To demonstrate relevant experience in producing high quality reporting, bids must:

- specify who in the project team will be responsible for drafting the report;
- specify who will be responsible for quality assurance before it comes to BEIS.

Ownership and Publication

All outputs will be owned by BEIS.

The final report will be published in line with GSR standards, potentially alongside the public consultation on SBEES. The final report must be formatted according to BEIS publication guidelines, therefore within the Research paper series template and adhering to BEIS accessibility requirements for all publications on GOV.UK. The publication template will be provided by the project manager. Please ensure you note the following in terms of accessibility:

Checklist for Word accessibility
Word documents supplied to BEIS will be assessed for accessibility upon receipt. Documents which do not meet one or more of the following checkpoints will be returned to you for re-working at your own cost:

1. document reads logically when reflowed or rendered by text-to-speech software
2. language is set to English (in File > Properties > Advanced)
3. structural elements of document are properly tagged (headings, titles, lists etc.)
4. all images/figures have either alternative text or an appropriate caption
5. tables are correctly tagged to represent the table structure
6. text is left aligned, not justified
7. document avoids excessive use of capitalised, underlined or italicised text
8. hyperlinks are spelt out (e.g. in a footnote or endnote)
9. Please see Annex 6 for BEIS Social Research Report Writing Guidelines.

Quality Assurance

Bidders must set out their approach to quality assurance (QA) in their response to this ITT with a QA plan.

Sign-off for quality assurance must be done by someone of sufficient seniority within the contractor organisation to be able to take responsibility for the work done. Acceptance of the

work by BEIS will take this into consideration. BEIS reserves the right to refuse to sign off outputs which do not meet the required standard specified in this ITT and/or the contractor's QA plan. QA should cover all aspects of the project undertaken by the contractors, including data collection, data analysis and reporting.

To demonstrate an effective process to produce high quality reporting, the contactor/s must ensure that quality assurance is done by individuals who were not directly involved in that particular research or analysis.

Bidders should note that BEIS may appoint its own peer reviewer(s) to QA publishable outputs. Consideration should be given to how the external peer reviewer (s) will be included in the QA process.

Where complex or innovative methods are proposed, bidders should specify how additional quality assurance will be provided. Where necessary, this should include the use of external experts. A BEIS appointed peer reviewer will not be expected to provide detailed quality assurance, their role will be focused on higher level peer review.

Outputs will be subject to BEIS internal approvals, the more substantive the output the longer the approval time required. Published reports will require three rounds of comments, which should be factored into the timelines.

The successful bidder will be responsible for any work supplied by sub-contractors. For primary research, contractors should be willing to facilitate BEIS research staff to attend interviews or listen in to telephone surveys as part of the quality assurance process.
Other useful sources of guidance and advice that will help bids and the resulting work be of the highest quality include:

- The Government Social Research Code (Annex 1 & Annex 2), in particular those that relate to GSR Products;
- UK Statistics Authority Code of Practice (Annex 3) / or an equivalent standard;
- Quality in Qualitative Research: A Framework for assessing research evidence (Annex 4 & 5) provides a Framework for appraising the quality of qualitative research.

Challenges

There may be a number of challenges in conducting this research; some are set out below. Bidders must consider how these and any other challenges will be addressed through the research design and delivery.

Contacting and engaging potential SME participants
Experience has shown, it is always difficult to find SMEs willing to discuss energy efficiency measures with policy makers. Barriers to energy efficiency are also well documented in academic papers. BEIS interviews with SMEs for a digital project in 2018[11], found an extremely low level of awareness of the benefit of energy efficiency among SMEs.

There are no reliable records of which buildings are occupied by SMEs, which may make it difficult to directly contact and engage with potential SME research participants. Bidders should outline their approach to engaging with SME participants, especially in light of the challenges resulting from the COVID-19 pandemic.

Language capacity
A potential challenge is likely to be identifying and accessing material. In particular, some of the content may be in different languages and may not be possible to review in detail, for instance energy efficiency auctions exist in Switzerland, Germany and Portugal. Bidders should outline their approach to overcoming the language barrier and source translators where necessary.

Timing of outputs

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Bidders should consider what robust evidence can be gathered and how they can meet the requirement to deliver a final report to the tight timetable. Bidders are welcome to propose innovative methods and outline a delivery plan which splits activities in stages over this timescale to meet this requirement.

Working Arrangements

The successful contractor will be expected to identify one named point of contract through whom all enquiries can be filtered. A BEIS project manager will be assigned to the project and will be the central point of contact.

Where a consortium or sub-contractors are in place, BEIS expect that they are included in relevant meetings, workshops and review points to ensure their full engagement in the project. All contractors and sub-contractors are responsible for the delivery of outputs to the appropriate time and quality. It is expected that the lead contractor takes an active role in oversight of all workstreams and bears the overall responsibility for the delivery of the evaluation activities and outputs.

Bids should assume that BEIS take an active role in review and quality assurance of research materials, analysis and outputs, beyond external peer review. It should be expected that research materials and outputs go through at least three iterations (i.e. two rounds of comments from BEIS), dependent on the complexity of the product. Additional amendments may be required for published outputs.

Note that bidders must be available to attend an inception meeting in the week commencing 3rd August 2020

We envisage the need for close interaction between the BEIS Project Manager and contractor throughout the process, to ensure that emerging issues are dealt with promptly and that BEIS fully understand the assumptions and approach taken. Bidders should assume that engagement with BEIS will include weekly project management phone calls, weekly progress update reports, steering group meetings (frequency to be confirmed), and face to face meetings (virtual meetings if necessary) as required to design, and deliver the chosen methods. Throughout the research, BEIS will be required to review and sign off all final data collection instruments, analytical approaches (including key assumptions) and outputs.

Timetable

We anticipate the contract will last for a maximum of 5 months.

Contractors must demonstrate that they can meet the following provisional timetable for the research:

Kick-off meeting to agree and finalise approach to the study	w/c 3 August 2020
Phase 1	
Review of existing evidence base	August 2020
Fieldwork with key market players	August 2020
Mapping of eligible evidence against research questions	August 2020
Devise auction models	August 2020
Interim report	September 2020
Phase 1 presentation	September 2020
Phase 2	
Fieldwork with key market players and SMEs to test auction models	September-October 2020
Analysis and QA of findings	November-December 2020
Final synthesis report of research and findings	December 2020

Slide pack presenting the key findings in an easily accessible form	December 2020
Full set of options researched on auction models accompanied by implications of each option	December 2020
Full set of any datasets and interviews	December 2020
Final presentation	December 2020

ANNEX B

Supplier Proposal

PROJ1.1 Methodology

1.1 Project Mobilisation

Task 1: Project Inception & Workshop with BEIS (Objectives of Auction) - We start all assignments with a client inception meeting. The purpose is to develop a common understanding of the overall services to be provided, agree on the scope of work and methodology to follow, and decide the structure of communication.

We propose that this initial meeting is expanded to become a workshop with key BEIS staff to ensure we get a clear understanding of the objectives of the research. The workshop is likely to include a detailed discussion of the auction design principles. We understand that BEIS has outlined an initial list of characteristics within the ITQ, however, we feel that detailed discussion and potentially priority ranking of these may be useful. For example, the principle of maximising value for money may, in some cases, prove to be contradictory to maximising participation by SMEs and we would need to understand any preferences.
Furthermore, it may also be relevant to discuss the responses to the call of evidence within the workshop. After reviewing the summary of responses it's clear that there are different points of view to some of the questions.[1] It would be useful to gain further insight into these responses so to inform the research. The workshop will be attended by our Project Director, Project Manager and auction expert. Following the workshop, we will produce minutes that outline the key outcomes, conclusions and action points, as well as an overall programme for providing our services. This provides the basis for a subsequent internal inception meeting to align the team on agreed research priorities, team responsibilities and approach to the tasks.

1.2 Phase 1 – Auction Option Design

In alignment with the ITQ we have designed our method in two distinct phases. The first is to consider the options for the design of the auction. This phase of the research will seek to answer the research questions A-F and commence evidence gathering on:

- auction theory;
- learnings from relevant energy-related auctions in the UK and overseas; and
- evidence from programmes for SMEs engaging in energy efficiency and other energy related measures such as storage and solar PV.

In addition to these aspects, we feel that it would also be beneficial to characterise the energy efficiency market in the UK.
Task 2: Rapid Evidence Assessment (REA) - There is a large amount of literature that will inform each of the research questions. We suggest that we conduct an REA to gather and organise the data. Key priorities of the REA will include:

1) **Auction theory & design:** We will look at literature with a focus on auction theory and auction design. Initially we will focus on papers written for an audience in the energy sector, but we will not restrict our search only to this area. Example papers may include Renewable Energy Auctions: A Guide to Design, published by IRENA and CEM. Daniel Marszalec, will provide guidance in terms of the most significant/cutting edge research on auction design, and we will ensure this is included in our sample.
2) **Learnings from relevant energy-efficiency support in the UK:** We will gather evidence from programmes for SMEs engaging in energy efficiency and other energy related measures (e.g. storage and solar PV) to help understand how to encourage and maximise SME participation in the auction and reduce barriers to entry. Useful reports include research by UCL Energy Institute and BEIS on developing a new policy framework for energy efficiency and research by the IEA on accelerating energy efficiency in SMEs.

[1] BEIS (2020) Energy efficiency scheme for small and medium sized businesses – Summary of responses https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/891955/sbees-summary-of- responses.pdf

3) **Information on existing energy-related auction schemes (i.e. their design, performance, successes and challenges):** We will primarily focus on the German, Swiss and Portuguese schemes, but will also include other energy-related auctions if relevant. Example papers include an evaluation of the Swiss scheme, and similar papers published on the German and Portuguese schemes. When seeking to learn lessons from other jurisdictions, we will seek to characterise their energy efficiency market so that a comparative analysis can be made. Eunomia has extensive experience working in the energy-efficiency sector, and will use its existing knowledge to do this.
4) **Characterisation of the energy efficiency sector:** We will draw together evidence of the size of the UK non-domestic energy efficiency market, key market players, market trends and key barriers to the uptake of energy efficiency measures. A solid understanding of the UK energy efficiency market is critical to designing an effective auction. Relevant reports include a research paper on the non-domestic energy efficiency services market by BEIS, and the Energy Efficiency 2019 report by IEA.

The REA database will be populated using several sources, which will include internet and electronic journals, such as OpenAthens and Shibboleth. We will design a range of search terms and 'strings', such that we have some limitation to what we will review as part of the REA. Throughout this task, we will use a reference management system (Zotero) to capture all the evidence we find. We will create a matrix in Microsoft Excel to map the evidence collected against each of the research questions. For each item of evidence, we will record:

- key details (e.g. title, date, author, source of funding, country);
- a short description of the content;
- keywords;
- whether or not it addresses each research question (and if it does, a short summary of the key finding(s)); and
- a rating of its robustness/relevance (e.g. on a scale of 1 – 5).

We will create a colour-coded system so it is possible to visually assess how well the existing body of literature answers the research questions. Any gaps or inconsistencies in the research will be immediately clear. As well as informing the next task, the spreadsheet and list of references will provide an extremely useful resource for BEIS going forward.

We have used the REA approach to good effect in similar research projects many times, and it will serve as the appropriate process for a structured, rigorous and comprehensive review, while keeping this stage to an acceptable timescale and budget. The REA will be conducted in alignment with the guidance provided by the Government Social Research Service.[2]

Language Capacity – Within Eunomia's energy team we have a number of multi-lingual consultants. Kata Porenta is fluent in German (speaking, reading and writing) and has a high level of proficiency in French. We have built our team for this project with the required language skills in mind. In addition, we will source translators where necessary. No information sources will be excluded based on language.

Task 3: Expert Interviews - We will supplement the REA with up to ten semi-structured interviews with key experts in auction theory and design and key market players in energy efficiency (these could be academics, trade associations, energy companies etc.). The aim of the interviews will be to both address gaps and inconsistencies in the findings from the REA, and to encourage participants to discuss their views, perceptions and attitudes on auction design in an open way, so as not to exclude issues which may be important to the study. Senior staff members will conduct the interviews. Potential contacts include:

- Professor Peter Ragden – Institute of Energy Economics, University of Stuttgart

2 Government Social Research Service (2013) *How to do a Rapid Evidence Assessment*, http://www.civilservice.gov.uk/networks/gsr/resources-and-guidance/rapid-evidence-assessment/how-to-do-a-rea

We will develop and agree topic guides for these interviews with BEIS; multiple topic guides will be required to reflect the different research objectives and the background/expertise of the interviewee. With the permission of the participants, all interviews will be recorded digitally and transcribed to facilitate robust analysis that is grounded in the data. The interview transcripts will form the basis of an 'interview matrix'. This involves the re- organisation and summarising of data under key headings. The headings will be agreed with BEIS, but are expected to align with the research aims and objectives. The resultant matrix display (typically generated using an Excel spreadsheet) will contain hyperlinks back to the raw data. Further to the above, a coding scheme will be developed according to the key themes of the data to allow common issues to be easily identified. Where we have previously used this approach, it has facilitated detailed and coherent analysis across projects making the integrated outputs greater than the sum of their parts.

Task 4: Auction Design and Appraisal Framework - Following the completion of the REA and interviews we will synthesise the evidence and seek to develop four distinct options on designs of auctions. This number is chosen as we believe that it will give the greatest variation in design, whilst ensuring that we are not creating a spurious number of options.

Each option will be detailed and aim to demonstrate variation in the various design features. The four options will consider critical features that are identified in the REA and interview programme. Our initial thoughts have highlighted the following features: *indicators of value and impact (e.g. Kwh, £/Kwh, CO2, £/CO2); eligible technologies; organisation eligibility; scheme size; use of open or closed auctions (e.g. the use of specific lot structure for participants and/or technologies); frequency of auction operation; bidding mechanism (e.g. sealed bid vs descending clock auction); administration of the auction; use of co-funding vs 100% grant funding; and monitoring and evaluation methods.*

Each option will be designed to be a coherent option that is in alignment with the overall design principles agreed at the initial workshop. In order to ensure that this alignment is understood we will seek to appraise the options using a Red Amber Green status with associated commentary.

Task 5: Option Design Workshop with BEIS (Workshop 2) - Once the options have been developed we propose to hold a second workshop with BEIS to take key staff through the research findings to date. It will be facilitated by Eunomia technical leads and Daniel Marszalec (our expert in auction design). We will draw together evidence to outline the range of options available for each key stage / aspect of the auction process. We will then discuss the four options and our assessment of the pros and cons of each option with BEIS. We will use the discussion to refine the options ahead of the interim report / presentation in Task 6. Due to the current global pandemic that there is a strong likelihood that the workshops will need to be conducted online. We are confident that can be successfully hosted online.
Indeed we've recently completed research with BEIS on the UK heat pump manufacturing sector and successfully demonstrated (on multiple occasions) the use of online video conferencing and online voting and survey (via Microsoft Teams and Mentimeter)

Task 6: Reporting & Presentation - We will produce an interim report summarising the work completed in Phase 1, with recommended options of auction design to be tested in Phase 2. Our report will be clearly structured and written to a publishable standard. We have budgeted for two rounds of consolidated comments from BEIS for the interim report. We will also present the Phase 1 findings to BEIS, offering a chance for an interactive Q&A.

Key Outputs from Phase 1: 1) REA / expert interview excel file summary (and interview transcripts with participants permission) 2) Interim report on auction models 3) Presentation of Phase 1.

1.3 Phase 2 – Concept Testing

Task 7: Design Concept Testing - The objective of Phase 2 is to test the different auction designs developed in Phase 1 with key market players. Eunomia has extensive experience in conducting qualitative research for a range of clients, including BEIS. We will test the auction designs using a bespoke mixture of focus groups and individual interviews with key stakeholders. The aim of these research streams will be to gather further input on the pros and cons of each design option, assess their feasibility, and better understand how they compare against the auction appraisal framework.

Sampling & recruitment - At this initial stage of testing, the research phase will be largely explorative, so it is important to ensure that a diverse set of organisations are included. Our research sample will consist of the following types of stakeholders:

- **Trade bodies (e.g. Federation of Small Businesses):** Trade bodies can offer a view on behalf on their members.
- **SMEs:** Not all SMEs are the same when it comes to energy efficiency and decisions to participate in an auction; influencing factors include: the main source of energy use, building type and age, and proportion of turnover spent on energy. We will ensure that the sample of SMEs included in the research reflects to some extent the variation in views and perspectives in the market. However, we recognise that the sample size will be too small to confidently draw conclusions based on different types of SMEs.
- **Aggregators / 3rd parties:** Larger businesses with supply chains, energy service companies and local authorities, who can aggregate demand for energy efficient measures from multiple SMEs (and by doing so achieve economies of scale).

The table below sets out how each type of stakeholder will be involved in Phase 2.

Group	Trade Bodies	SMEs	Aggregators / 3rd parties
Expected participation in focus group	None	3 focus group with 5 to 10 attendees	3 focus group with 5 to 10 attendees
Expected number of interviews	3 – 5 interviews	4 – 8 interviews	4 - 8 interviews

We will use a mixed-method of recruitment with both written invitations and telephone follow-up contact. A clear explanation of the focus and purpose of the research (mentioning BEIS as the commissioner of the study via an agreed letter) is key to encouraging a good response rate and to ensure that those recruited are best placed to respond.

Engaging with SMEs - It can be challenging to find SMEs willing to engage with this sort of research. Through our previous work with SMEs on energy efficiency we have gained a number of contacts – primarily Energy Managers for SMEs who have participated in research in this area before and are likely to be willing to do so again.

Focus Groups – Auction Design Testing - Focus groups are used to gather data generated through a facilitated participant discussion, drawing on group dynamics to obtain deep and rich qualitative data. They are likely to reveal diverse understandings, which are often difficult to access by other methods of data collection, such as surveys and interviews. We propose to run six focus groups to test the auction designs: three with SME participants and three with aggregators. These two distinct groups of stakeholders are likely to have different requirements and barriers to entry in terms of engaging with an energy-efficient auction, so it is useful to explore their views separately. The design of the focus groups will depend on the options being brought forward, but they will explore the following issues: interest in implementing energy-efficiency measures, interest in and understanding of the concept of an energy-efficiency auction, motivation to be involved, and opinions on key design features (e.g.

pre-qualification processes, bidding mechanisms, available funding, timescales, frequency, M&E). Feedback on all four option designs will be sought.

Interviews - We will supplement the focus group findings with a series of in-depth qualitative interviews, the focus of which will be guided by the focus group outputs (i.e. are there areas where participant views do not align?). Our approach to data collection will be consistent across the interviews to ensure the comparability of findings (ensured by thorough interviewer briefings).The researchers conducting the interviews have a strong track record both in energy efficiency and undertaking qualitative research.

Topic guides will be developed in consultation with BEIS, they will outline the key questions, probes and prompts to be used during the interviews. Each theme within the guide will be closely aligned to the research objectives to ensure the study remains relevant and focused. It is likely that given the different types of organisations involved in the research that separate topic guides will be required for those that might participate in the auction (e.g. SMEs and aggregators) and those who represent organisations. With the permission of the participants, all focus groups and interviews will be recorded to facilitate robust analysis that is grounded in data, as described further below. Participants will be assured of confidentiality throughout the recruitment and interview / focus group process to provide them with the confidence required to share commercially sensitive data.

Remote research - It is expected that the workshops, focus groups and interviews will take place remotely (due to COVID-19). We have access to a wide range of video-conferencing and workshop tools including Microsoft Teams, Zoom, Cisco Webex, and Mentimeter which we have consistently used throughout the past few months to run virtual workshops and multi-stakeholder meetings, including for BEIS.

Task 8: Evidence Analysis & Interpretation - The qualitative data gathered from task 7 will be analysed using a 'matrix' approach, as described in phase 1. Conclusions will be drawn on the pros and cons of each auction design tested, and how well they align with the objectives and design principles agreed in Workshop 1. Given the broad range of objectives defined by BEIS in the ITQ, it may be that there is not one design that is 'obviously best'. We will consider the scenario that it could be more optimal to run more than one design (e.g. separate auctions for separate groups of bidders or technologies).

Task 9: Final Report & Presentation - We will produce a final synthesis report of both phases 1 & 2 (including a detailed description of the methodology), a slide deck summarizing research findings, and a final phase 2 presentation (with Q&A). We have budgeted for up to three rounds of consolidated comments from BEIS for the final synthesis report. We will also share all interview transcripts / notes. Sam Taylor, as Project Director, will take responsibility for the QA of all outputs, including the final report. He has conducted and written up the findings of numerous literature and Rapid Evidence Assessments (REA's) in the past. He also project managed Eunomia's role in the evaluation of the RHI, which involved communicating complex findings in an accessible way.[3]

Key outputs from Phase 2: 1) Final synthesis report of Phases 1 and 2 2) Slide deck

3) Final Phase 2 presentation

3 The final published RHI reports available here: https://www.gov.uk/government/collections/renewable-heat- incentive-evaluation

PROJ1.2 – Staff to Deliver

1.1 Eunomia's Capability

The proposed Eunomia team has delivered several relevant strategic research and projects for public sector clients focused on energy efficiency measures and different financing mechanisms. In each of the below examples we've also deployed REAs, interviews and focus groups- all of the techniques needed for this project:

- **Hidden Cost to Business of Energy Efficiency Investments (BIS).** Eunomia completed interviews and focus groups with businesses on the hidden costs of installing energy efficiency and low carbon measures. This included identification of how decisions are identified and analysed. We appraised different approaches to risk, payback periods, project lifetimes, finance and processes to inform future policy advice.
- **Payments for Ecosystem Services Pilot Research Project (Defra).** Eunomia, in partnership with the Avon Wildlife Trust, was appointed by Defra to run a pilot research project. This project engaged with stakeholders to explore appropriate financing mechanisms and develop a practical and cost-effective approach to Payments for Ecosystem Services schemes. This included the design of different auction approaches.
- **Technical Advice on Electricity Demand Reduction Pilot (DECC**). DECC launched a pilot scheme which provides financial support for industry to install electricity demand reduction measures. Eunomia provided technical verification and measurement advice, including responding to technical queries, reviewing applications pre-auction, delivering site inspections, and analysing annual reports which aim to demonstrate the savings from the measures installed.
- **Rapid Evidence Assessment for ESOS Implementation (DECC).** Eunomia led a study to determine whether different approaches to reporting information from energy audits prompt behaviour change and higher take-up of energy efficiency measures. This was used to help DECC with the final design of the Energy Saving Opportunity Scheme (ESOS).
- **Building Skills for Net Zero Emissions (CITB).** Eunomia was commissioned by the Construction Industry Training Board to examine the skills implications of achieving net zero emission targets for the built environment. Our research included targeted interviews and surveys with businesses and trade associations within the energy efficiency sector.

1.2 Skills Essential to Project Delivery

The following section outlines the skills we believe are essential to this type of work. We will ensure that expertise is maintained throughout the duration of the project through core team members working across the different strands.

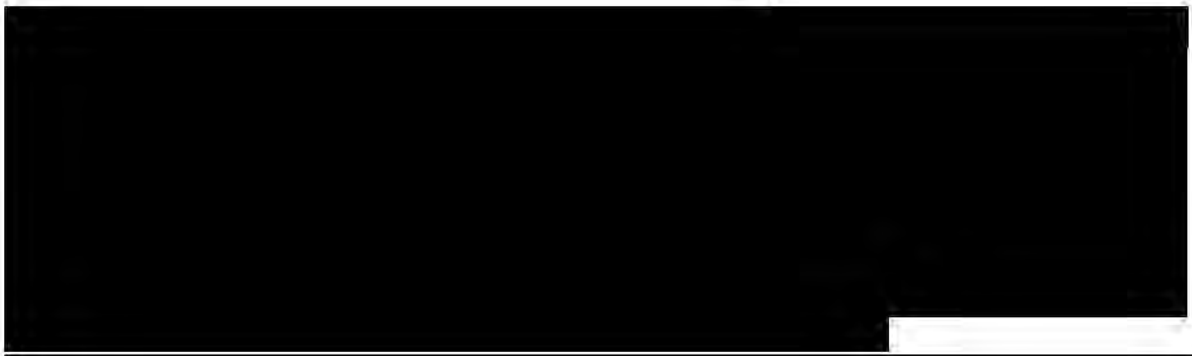
Project direction is key to this project due to the different strands of research methods and expert input required - from a review of literature, interviews, focus groups, data analysis, through to results validation and developing recommendations for an auction design. Sam Taylor, the Project Director, is experienced in directing research programmes of a similar specification. He brings mixed-method research expertise and a comprehensive understanding of energy efficiency and financing mechanisms.

Eunomia's **project management** practices are governed by an Integrated Management System (IMS). The IMS conforms to PRINCE2 and industry benchmarks, and has maintained ISO9001 certification since 2010. Our project manager, [redacted], is trained in both PRINCE2 and in Eunomia's project management practices. The IMS also incorporates a detailed Environmental Management System, which is ISO14001 certified.

We have worked closely with **SMEs** for **energy efficiency** measures, following the completion of a study on the cost to businesses of energy efficiency measures. We are therefore confident in gaining participation from SMEs, which the specification highlighted as a key challenge. Senior team members with strong track records in energy efficiency and stakeholder engagement will lead **interviews and focus groups**. The ability to undertake comprehensive **literature reviews, data analysis and report writing** are all core skills required at Eunomia. We have a strong track record in crafting policy options that address environmental and social problems. For **language skills**, we will use a combination of in- house skills (particularly for French and German) and hire translation services for other languages (e.g. Portuguese) as necessary.

1.3 Project Team and Continuity

The figure above outlines our project team and management structure. We have carefully selected the team with the requisite skills and resources to deliver this project. We recognise that key knowledge and skills held in a small number of individuals adds risk of project failure if staff is unavailable. We build contingency through the substantial reserve within the business of over 70 researchers capable of increasing project team capacity if needed.



PROJ1.3 – Understanding the Project Environment

Energy efficiency is essential to help businesses to reduce their energy consumption and improve the comfort within their buildings. It is also central to achieving the UK's commitment to reducing its greenhouse gas emissions and ensuring that energy bills are affordable and businesses improve their productivity. Currently, the deployment of energy efficiency measures is much lower than desired. This is despite a large number of schemes being economically viable and intervention by Government. The following sub-sections outline our understanding of:

- the current UK energy policy landscape and how this project feeds into both the Clean Growth Strategy and plans for net zero;
- the UK SME market, the barriers to uptake of energy efficiency by this group and previous policies in the space; and
- how auctions have been used for energy policy and energy efficiency in the UK or internationally.

Current UK energy policy landscape and how this project feeds into both the Clean Growth Strategy and plans for net zero

Carbon Targets - In June 2019, the UK Government announced that it will eradicate its net contribution to climate change by 2050. In doing so, the UK became the first major economy to set a net zero emissions target in law by amending the Climate Change Act 2008.

To ensure that a cost-effective path is made towards the long-term targets in 2050, the Climate Change Act established a system of five-yearly carbon budgets. This required the Government to adopt emissions limits and then publish policies and proposals for meeting the targets. The Committee on Climate Change (CCC) publishes annual reports on progress towards meeting the carbon budgets and 2050 target. The CCC's most recent report stated that, although emissions have reduced, the UK is not on course to meet the legally binding 4th (2023-2027) and 5th (2028-2032) carbon budgets.[1]

The CCC has stressed that widespread deployment of energy efficiency measures across the UK's building stock will be a key plank of any credible and cost-effective strategy for meeting net zero. This follows repeated warnings from the CCC that energy efficiency needs addressing immediately if the UK is to meet its 4th and 5th carbon budgets.

Clean Growth Strategy - The Government released the Clean Growth Strategy (CGS) in October 2017[2], aiming to set out how the emission reductions could be achieved. The strategy sets out a comprehensive set of policies and proposals that aim to accelerate the pace of "clean growth", i.e. deliver increased economic growth and decreased emissions. Renewable heating and energy efficiency featured heavily within the report. Some of the key highlights include:

- Invest in low carbon heating by reforming the Renewable Heat Incentive, spending £4.5 billion to support innovative low carbon heat technologies in homes and businesses between 2016 and 2021;
- Provide £9.2 million for an Industrial Energy Efficiency Accelerator, to help reduce emissions from UK industry by increasing the commercially viable options available;
- Establish an Industrial Energy Efficiency scheme to help large companies to cut their energy use and their bills;
- Consult on the design of a new industrial heat recovery programme. This £18

million fund will encourage investment by manufacturers to recover and reuse heat from industrial processes that would otherwise be wasted; and

- Explore with stakeholders how the government can improve the provision of information and advice to SMEs to encourage the uptake of energy efficiency technologies.

In its review of the strategy, the CCC identified heating and energy efficiency as key areas where further policy action would be required to meet the fourth and fifth carbon budgets.

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1 https://www.theccc.org.uk/publication/reducing-uk-emissions-2018-progress-report-to-parliament/

2 https://www.gov.uk/government/publications/clean-growth-strategy

The heat and energy efficiency policies were amongst those highlighted as "possible actions to fill the remaining gap" – the most uncertain category.

Energy Efficiency Scheme for Small & Medium Sized Businesses (SBEES) – Call for Evidence - The government announced in its Budget 2018[3] that a call for evidence on introducing a new Business Energy Efficiency Scheme would be introduced. The stated aims of such a scheme was declared as twofold: to reduce business energy bills and carbon emissions. BEIS published the call for evidence in March 2019 setting out options for developing a SBEES targeting SMEs and incentivising them to engage in energy efficiency. Responses overall were finely balanced, with no consensus as to whether the SBEES should be an energy efficiency auction or an energy efficiency obligation, though individual responses did offer strong views on preferences.[4] In the call for evidence, questions one to four asked respondents for their opinions on the possibility of using auctions to support the delivery of energy efficiency measures in SMEs. The questions delved into the challenges of how to design such an auction and how best to fund it.

The UK SME market, the barriers to uptake of energy efficiency by this group and previous policies in the space

The UK energy efficiency sector is diverse with a wide range of organisations providing services such as heating, HVAC and energy management. A recent reliable estimate of the UK market indicated that the market totalled £349m in 2017.[5] It is estimated that over recent years the median rate of growth has been 15% per annum and is estimated that future growth would be around 10% per annum.[6]

Looking forward, estimates indicate that if the UK energy efficiency services market is to make a strong contribution to delivering the fifth carbon budget, for non-domestic buildings alone it will have to grow at an annual rate of almost 20%, reaching an annual revenue of almost £5bn in 2032. Achieving the fifth carbon budget may result in £6bn of potential savings to business energy users.[7]

Despite the need, the uptake of energy efficiency measures has been historically low. Previous policies to encourage their uptake have focussed on fiscal measures, these include:

- **The Climate Change Levy**. Introduced in 2001, the Climate Change Levy is an environmental tax charged on the energy that businesses use. It's designed to encourage businesses to be more energy efficient in how they operate, helping to reduce their overall emissions in the process. It does not apply to very small business.
- **Climate Change Agreements.** Introduced in 2013, Climate change agreements are

voluntary agreements made by UK industry and the Environment Agency to reduce energy use and CO_2 emissions. In return, operators receive a discount on the Climate Change Levy, a tax added to electricity and fuel bills.

- **The Carbon Price Support**. This is less relevant for SMEs, but is the government's key fiscal policy to ensure that there is long term certainty in the price of carbon. The total carbon price is made up of the EU emissions trading system (ETS) price and the carbon price support (CPS) rate. CPS rates are provided for different fuel types on a £/kWh basis. This is calculated by multiplying the difference between the Government's target carbon price from the market price.
- **Enhanced Capital Allowances (ECA) Support.** The ECA scheme allowed businesses to claim 100 per cent first-year tax relief on investments in qualifying technologies and products. This meant that businesses could write off, i.e. deduct, the whole cost, or up to

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[3]HM Treasury (2018) Budget 2018 https://www.gov.uk/government/publications/budget-2018-documents/budget-2018

[4]Department for Business, Energy & Industrial Strategy (2020) Energy efficiency scheme for small and medium sized businesses – Summary of responses https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/891955/sbees- summary-of-responses.pdf

[5]Department for Business, Energy & Industrial Strategy (2018) The non-domestic energy efficiency services market https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/725393/IPA_Advisory_Final_Report_NDEESM_Research_MAIN_180517.pdf

[6] Ibid.

[7] https://www.gov.uk/government/publications/clean-growth-strategy

the published claim value, of buying the energy-saving product against their taxable profits in the year of purchase. The scheme closed in April 2020.

Over the years, a range of evidence has identified a significant number of barriers for the uptake of energy efficiency measures in the non-domestic sector. These include: a lack of information; lack of access to free capital; high upfront costs; slow paybacks; split incentives (tenant/landlord split); disruption to business activities; and prioritisation of resources and capital elsewhere.[8]

The extent to which these are present in each business will vary in intensity over time. Accordingly, it is very difficult to design policies that are able to overcome each of these factors on a universal basis.

Use of auctions for energy policy and energy efficiency in the UK or internationally

The typical connotation of auctions is in the context of an individual item – such as a painting, or a house – beings sold to a small group of bidders. Here, bids are usually either submitted in sealed envelopes, or announced in public to the auctioneer. The former is an example of a sealed-bid auction, while the latter describes an open-outcry English auction. Beyond such canonical examples, however, millions of pounds' worth of goods, services, and government debt, are sold every day using other auction rules. Depending on what is being sold, to whom, and at what speed – the range of relevant auction rules varies greatly and selecting the appropriate design to fit the context is a nuanced process.

It is equally typical to assume that the simple aim of an auction is to maximize the sale price of the item on offer. In the context of an auction selling funding for energy efficiency measures, value is maximised by agreeing a minimum price, or by maximising the "amount of energy efficiency" that bidders are willing to sell for a certain amount of money. Taking this focused viewpoint, the design of the auction itself is unlikely to be important: what will make the difference between a successful and an unsuccessful programme is the complexity of the application process, chance of success, level of funding available, and the burden of overheads and verification.

A more comprehensive approach to auction design can incorporate features which go beyond simple maximization of the sale price. Depending on the auctioneer's preferences, non-price aspects such as technological specifications, project quality, or a bidder's track-record of delivering projects in a timely manner, can all be included as a part of the auction. Then the question becomes one of picking an auction design that maximizes overall project value, not just price. Rather than a single blunt tool to achieve a single goal, auction design therefore offers a toolbox that can tailor a solution to complex problems, so long as the aims are clearly defined.

The object of the exercise is to reduce future demand for energy, which requires the establishment of a counterfactual against which reduction can be measured. This may be straightforward (e.g. upgrading lighting in an office with set occupancy patterns) but can be complex (e.g. fitting variable speed drives, voltage optimisation and power factor correction in a factory with variable and increasing production) and, as the auction must take place before the measure is implemented, the saving achieved must be estimated in advance. It can be straightforward to ensure a measure has been taken (e.g. through presentation of paid receipts) but less so to verify the energy saving achieved, making the process vulnerable to exaggerated claims.

This issue is typically addressed using a combination of a structured application framework, a programme of auditing a sample of projects, the facility to claw back payments, and the use of professional intermediaries that aggregate and manage several projects. These intermediaries are more dependent on the auction funds, so more likely to be honest in their estimates, and aggregating projects can result in economies of scale, as well as the ability to

[8] House of Commons: BEIS Committee (2019) Energy efficiency: building towards net zero – Twenty-first Report of Session 2017-19 https://publications.parliament.uk/pa/cm201719/cmselect/cmbeis/1730/1730.pdf

reach smaller business, however these projects tend to be less precisely focused on the specific requirements of individual companies.

The Portuguese energy efficiency auction (PPEC[9]) system uses intermediaries (promoters), which develop intervention measures. The net present value (NPV) of these measures is calculated according to a standard protocol and they are ranked, then the budget is allocated in order of decreasing impact, until it is all allocated. Promoters include utility companies, business associations, local authorities, research centres and others. Similarly to the ECO, the system is paid for through a universal tariff. PPEC supports predominantly conventional energy efficiency measures (e.g. lighting, information, audits, load management, refrigeration systems, motors and drives) but extends into municipal energy efficiency (e.g. street lighting, traffic lights).

The Swiss ProKilowatt[10] system supports only projects and programmes which would not

be implemented without financial support (through a minimum payback threshold of four years), yet allocates funds on the basis of least cost per kWh saved. This is similar to the Local Enterprise Network approach, which can only support measures which cannot secure funding by other means; in many cases this suggests that the measures should not be supported, as more efficient alternatives will be available, however the auction element mitigates against this flaw.

The system distinguishes projects (submitted by individual companies) from programmes (aggregated by intermediaries); each has pros and cons. Projects tend to be tailored to specific needs, readily assessed in advance and typically implemented as planned, but they have high assessment and overhead costs. Programmes enable small-scale measures through aggregation, and can spread overheads (although these overheads tend to be higher overall, as they must cover individual project overheads and management of the programme); they are also harder to verify and there is often a significant discrepancy between proposal and implementation. Applicants can increase the apparent effectiveness of their measures, and therefore the probability of success, by applying for only partial subsidy.

In 2016, the German government established the STEP up! programme, based on the Swiss ProKilowatt system. This system eliminates applications from commercially viable investments with a payback threshold of greater than three years; it also has a maximum permissible cost/benefit ratio. In the first four years of operation, the system is estimated to have saved in the region of 3m tonnes CO_2e. The system is focussed on specific interventions that are known to have good potential and investment constraints. In contrast to the Swiss system, STEP up! must comply with EU state aid rules, so can only support up to 30% of the extra investment costs required to achieve a higher level of efficiency. This rate of funding, and the complex calculations required, resulted in limited interest from companies in the first round; in some cases, the potential funding available would not cover the costs of completing the complex application and verification process. In the second round, steps were introduced to simplify the application process, while ensuring that the application process remained rigorous enough to ensure good quality applications.

In the UK, the Electricity Demand Reduction (EDR) Pilot was an application process rather than an auction but its design similarly gave insufficient incentive for businesses to apply, resulting in the pilot disbursing only 13% of its budget in the first year, and 79% in the second; also more than 98% of projects were for LED lighting.The UK (CfD) Allocation Round 3 auction resulted in the award of a strike price for generation of 3.97-4.16p/kWh. ProKilowatt cost-efficiency has fluctuated around 2.17-2.44p/kWh for the past couple of years, suggesting that bidders would have to be exaggerating their claims by almost 60% to make the two approaches equivalent. However, UK renewable energy developers are now building installations without subsidy, suggesting that they are comfortable with revenues below this level, or that they have established alternative forms of support, such as Power Purchase Agreements.

9 https://www.mdpi.com/1996-1073/11/5/1137/htm#B3-energies-11-01137

10 https://iea.blob.core.windows.net/assets/imports/events/251/S4IvanProkilowatt_IEAWorkshop_SFOE_ivankoenig_FINAL_sent.pdf

Interpretation of the project and what is required - The ultimate aim of this research is to increase BEIS's understanding of how an auction could work, and to ensure an informed decision is made on how SBEES should proceed. This project represents a key aspect of the government policy on energy efficiency, as it will explore the potential for a cost-effective mechanism that could provide long term certainty to the sector and aid its growth.

This project builds on the findings of the call for evidence[11] and aims to achieve the

aspirations and targets set out in the Clean Growth Strategy and the plans for net zero. BEIS has extensive experience of designing and delivering an energy efficiency obligation through the domestic ECO but lacks similar experience of an auction aimed at SMEs. Designing an energy efficiency auction is not a simple task, and there is complexity in all aspects of its purpose, design and application that need to be fully considered.

It's important that the study works with those who operate in the sector and results in meaningful consultation. The call for evidence identified several strong messages associated with needing an auction to be accessible and with as little burden as possible.[12] We will seek to build on this work and ensure that credible options for the auction design are explored.

We will also need to work closely with BEIS. We've purposively developed a methodology that enables a close working relationship to be maintained, whilst acknowledging that BEIS' own resources may be limited.

It should be recognised that this project is not starting from scratch and there are lessons to be learnt from previous initiatives in the UK. This project also offers an excellent opportunity to learn valuable lessons and experiences from other countries, whilst tailoring the output to the UK market.

Ensuring the successful delivery of this project within the working environment - Eunomia has extensive experience in conducting research of this nature and in this policy area. We're adept at undertaking rigorous research and are very confident that we can deliver REA, workshops, interviews and focus groups in the current working environment.

Recently Eunomia has worked successfully with BEIS on understanding the UK heat pump manufacturing sector using all of these techniques. We're also currently running a similar study with the Construction Industry Training Board, engaging with over 60 organisations in the energy efficiency sector. The key risk associated with the current working environment is the availability of key staff in businesses (due to being furloughed). However, this can be mitigated in the same manner as when we were working prior to Covid-19. The same principles of engaging early, being organised, explaining the research and having exposure to BEIS all apply and help ensure that participation is greatest. Indeed, over the last three months, we witnessed some of the greatest levels of participation in our research; contrary to expectations.

An internal risk associated with the current working environment is the impact on Eunomia staff. We take great care and pride in our staff welfare and have put in place a series of measures to protect staff from increased and unnecessary exposure to Covid-19 risks.

However, should for whatever reason staff members be unavailable we have sought to identify a range of key staff members that are able to provide adequate cover for key responsibilities within the project. In the event that this is necessary, [redacted] would take on the role of Project Director and [redacted] the role of Project Manager.

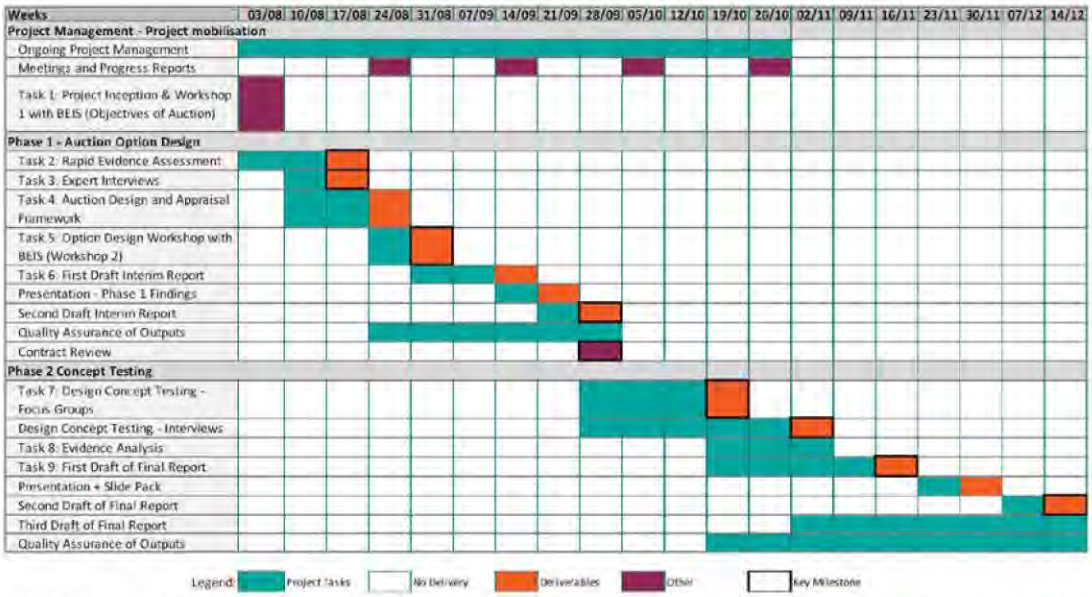
Another aspect of the working environment is that the policy environment is rapidly changing. We are very adept at working in a fast-paced environment and we are adaptable to changing needs. We work closely with our clients so to ensure that we understand their needs and expectations.

[11] Department for Business, Energy & Industrial Strategy (2020) Energy efficiency scheme for small and medium sized businesses – Summary of responses https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/891955/sbees-summary-of- responses.pdf

[12] ibid

PROJ1.4 – Project Plan & Timescales

Our bid stage project planning is shown in the Gantt chart below. Ongoing work is shown in blue, milestone deliverables in orange, and meetings in purple. One of the benefits of the Eunomia offering is our ability to mobilise a team and commence the project quickly. We have reserved time in project team schedules, and can commence the project inception and literature review without any delay. Time is attributed to assigned team members against each of tasks, which has been used to build the project costs quoted in the Price Schedule.



As indicated in the project plan above, we have allocated time for quality assurance (~8 days in total for all outputs). Attachment 'PROJ1.5 Quality Assurance' describes Eunomia's QA process. Furthermore, as outlined in attachment 'PROJ1.1 Methodology' our contingency plans for conducting primary research during the current pandemic would be to undertake these interactions online. We have access to and experience in using a wide range of video- conferencing tools including Microsoft Teams, Zoom, Cisco WebEx, and Mentimeter.

As part of the inception process, we will agree on an appropriate communication plan for the project to establish working contacts (i.e. between the Eunomia and BEIS Project Manager) and the frequency of regular progress updates, which we propose from the outset as weekly.

Ethics – Eunomia regards maintaining the highest ethical standards as a fundamental quality issue. Our commitment to research ethics also includes a commitment to inclusive research practice and we will ensure that we adhere to the GSR Principals. There are a number of specific ethical issues which will have to be taken into consideration and we have outlined our approach to these below:

- Participation in all social research must be with fully informed consent. This implies both that participants understand what the research involves, and that they are enabled to consent (or refuse to consent) to participate. We will provide accessible or translated materials where required and inform people that participation is voluntary, confidential and anonymous; and
- Avoiding distress to research participants: whilst we do not believe that this research

carries serious risks of harm to participants, any research involves a degree of intrusion, and the interviews may cover issues that may have the potential to cause discomfort or distress. We will make every effort to minimise the potential for participation in this study to cause distress.

Risk Management - To manage risk, Eunomia uses a Risk Register approach to track the development of any pre-identified or newly identified risks and appropriate mitigation responses as the project develops. Risks are identified based on the experience of our Project Director and Project Manager, and from lessons learned from existing projects. They will also be discussed with BEIS to ensure that none are missed and that all risks have been defined appropriately. The Risk Register will be a 'live' document, with the Project Manager being responsible for the day-to-day management of risks and the upkeep of the Risk Register. Early warning indicators and risk tolerances will be agreed by the Project Team, as these will dictate the nature of the risk mitigation responses. After the project inception, the risk register will include a more comprehensive assessment of the risks and our proposed mitigation measures. Whilst the nature of the risks will vary between projects, some risks will be internal to Eunomia whilst others will be external. Each will require a different management strategy. Typical project risks might include those in the table below, with the corresponding mitigation measures for this project.

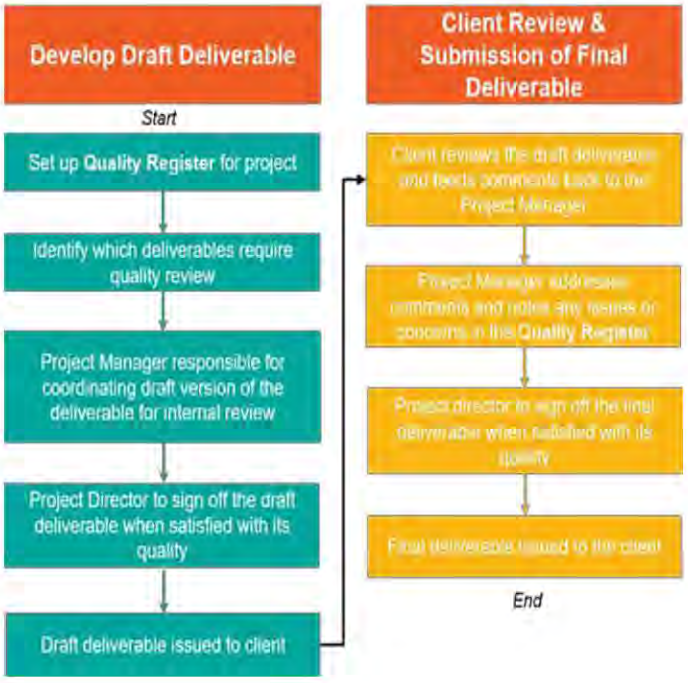
Risk Identified	Risk Owner	Potential to Affect Project Delivery	Unmitigated Level of Risk	Mitigation Measures	Final Level of Risk
Producing a clear analysis of responses on different themes	Eunomia	Difficulty in comparing individual viewpoints due to wide range of considerations in scope	Medium	Set up matrices/framework to organise evidence gathered, using codification in order to objectively categories the data.	Low
Continuity of Service Personnel	Eunomia	Key members of the team could become unavailable (e.g. due to illness), which could create gaps in knowledge and an overwhelming workload.	Medium	Identification of sufficient and appropriate 'reserve' staff to step into all key roles. For example, if Laura Williams was to become unavailable, Duncan Oswald would step into the Project Manager role.	Low
Bias/Lobbying	Eunomia	A certain type of company may be more likely to participate, which could skew the project findings. Additionally, participants could use this study as a platform to lobby or complain about specific initiatives.	Medium	Clearly communicate the purpose of the project and exploratory nature of the research to participants. Indicate the importance of their contributions in order to get their support to participate. Agree with BEIS an approach to achieve varied participation.	Low
Scope Creep	BEIS/ Eunomia	There is a risk that the project's scope could extend beyond its original purpose.	Medium	Use of a Project Initiation Document (PID); Adherence to specification and planned milestones.	Low

PROJ1.5 – Quality Assurance

Eunomia has developed a reputation for delivering work of the highest quality. We pride ourselves on providing independent and unbiased analysis, demonstrating academic rigour, and adhering to ethical standards at all times. The Project Manager will be responsible for ensuring that all team members are familiar with the requirements of the AQUA book, particularly 'RIGOUR' (repeatable, independent, grounded in reality, objective, uncertainty- managed, and robust). These are principles that Eunomia adheres to on all projects. We are committed to 'The Joint Code of Practice for Research' and wholly comply with the code to maintain a climate of good scientific practice.

This project will be subject to Eunomia's internal Quality Management System (QMS), which is ISO 9001:2015 accredited. The QMS has been developed based on industry best practice and backed by the PRINCE2 ® project management framework. It is also backed by a management team with significant project and programme management experience for major public and private organisations. Our drive towards continuous improvement goes to the heart of the organisation, ensuring that performance feedback is built into this QMS. Quality registers are our key quality delivery tool. They link tasks, actions and ultimately deliverables to 'quality reviews.' Reviews are carried out by a separate member of staff to the person who created the quality register in the first instance. The method for the quality review is also set out in the quality register, along with target / actual review date, review comments, results and whether there is any root cause or repeat issues. These quality registers are linked to the specific quality review tasks, which are identified in detailed project plans. The quality review process used to monitor quality on deliverables is summarised in the diagram and text below:

- **Internal Monitoring:** Our internal processes – used to deliver projects – are based upon the PRINCE2™ project management framework. The Project Manager will lead the team in adhering to these principles.
- **Review Processes:** The Project Manager will undertake the initial review of deliverables to ensure that the required level of quality is achieved. Key deliverables will be reviewed by key staff prior to release to BEIS. Each draft deliverable will be reviewed and signed off by the Project Director before being issued. For the final report, a 2-stage review process will be undertaken, with the project director and a second reviewer is tasked with reading and reviewing the report.



Managing Subcontractors - Eunomia has a great deal of experience in working with subcontractors and we require our subcontractors to adopt similar quality assurance processes to our own. We only work with subcontractors where we are confident that they can add value, and where they will produce work on time and to the high standard we expect

of our own projects. We have strict processes in place to ensure regular communication and updates on progress are made and before any work is undertaken or assigned to a third party, the scope of that work is clearly set out and agreed with them to prevent scope for misunderstanding on deliverables.

Part 2: Contract Terms

Contract Terms v6.0