



Programme Area: Smart Systems and Heat

Project: WP1 HEMS Development and Trial

Title: Request for proposals

Abstract:

A request for proposals for the Prototype Home Energy Management Systems (HEMS) Development project.

Context:

ETI's research highlights that a Home Energy Management System (HEMS) should be a key component of a future smart energy system, but given the fact that most consumers do not willingly engage with their energy system any product solutions need to be consumer focused if they are to be effective. Therefore this project to design an advanced HEMS is a core component of the ETI's Smart Systems and Heat programme (now delivered by the Energy Systems Catapult) to make energy and heat consumption more consumer focused. As part of the two year project, the system that is developed will be installed and tested in homes during the winter of 2016/17 and the results analysed to give an insight into consumer patterns, their electricity and gas use and the building and heating system performance. This will provide a significant dataset of consumer behaviours, energy use and building characterisation to develop further future products. Providing a secure and scalable platform will also help to integrate more appliances in the home and allow valuable services and applications to be developed, deployed and managed.

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Request for Proposal (RfP)

Title of Services for which Proposals are Requested

Smart Systems and Heat (SSH) Programme:

Prototype Home Energy Management System (HEMS) Development

Request Issue Date

13th August 2014

Request for Proposals Submission Date

1st October 2014

Contact for Enquiries

Fran Durnian
SSH Administrator
Tel: +44 (0)121 203 3700

Address for Notifications and Submission of Proposals

Energy Technologies Institute LLP
FAO: Fran Durnian
6220 Bishops Court,
Birmingham Business Park,
Birmingham,
B37 7YB
Email: SSH@eti.co.uk

SUMMARY OF KEY CONTRACT INFORMATION

The Smart Systems and Heat (SSH) Programme will create future-proof and economic local heating solutions for the UK. It will connect together an understanding of consumer needs and behaviour, with the development and integration of new technologies and with new business models. The associated insight will deliver enhanced knowledge across industry and the public sector, resulting in industry and investor confidence to implement SSH informed solutions from 2020 and thereby enable a UK heat transition, within an appropriate policy and support environment to deliver a cost-effective UK energy system transition.

Home energy management is a key component of any future smart energy system, enabling the delivery of added value and cost-effective consumer offerings, together with improved supply side asset utilisation. Insight gained from the deployment of HEMS will inform energy service providers of the requirements of consumers and the characteristics of their domestic environment. Furthermore advanced HEMS could provide the functionality necessary to control more complex low carbon energy solutions in the future.

The ETI is launching simultaneous Requests for Proposals (RfPs) to develop and evaluate through a field trial a Home Energy Management System (HEMS) prototype that is capable of addressing future consumer energy management needs in domestic dwellings out to 2030 and beyond. **This RfP aims to secure the services for a successful bidder to develop a HEMS prototype.** The other RfP will secure a successful bidder to manage field trials which could reach a scale of 300 properties during the 2015/16 heating season. The prototype HEMS developed and evaluated through these simultaneous contracts, or a variant thereof, is expected to form the basis of the HEMS system to be deployed in the subsequent and significant SSH Phase 2 demonstration activities.

The ETI believes that this work will provide the successful Participant with a unique opportunity to accelerate the development of Home Energy Management Systems for use in future low carbon smart energy systems.

Through its SSH Programme the ETI has developed a set of concepts that it believes need to be incorporated in an advanced, consumer centric HEMS. Once contracts have been executed the ETI will share these concepts with bidders to co-develop a functional specification to be implemented in the proposed HEMS Prototype System. The ETI will share appropriate high level information from these concepts under NDA as part of the procurement process. In addition the ETI will also bring to the contract an understanding of the requirements of future energy systems within which HEMS will be expected to operate.

The ETI believes that the successful delivery of this contract is heavily dependent on the development of software, capable of delivering the concepts proposed, through existing heating system components.

The ability to exploit the insight, knowledge and Intellectual Property that will be developed from the two proposed contracts is important to the ETI. The bidders response will need to be clear on how they would expect to manage this opportunity, this response will inform the basis for commercial discussions for this contract.

The ETI expects to appoint the successful bidder primarily on the basis of the value to the ETI of:

- The skills, expertise and resources which can be mobilised to deliver this contract;
- The commercial and Intellectual Property terms on which this proposal is made, both for delivery of the prototype HEMS and its subsequent exploitation;

A bidder workshop for the Prototype HEMS Development and Prototype HEMS Field Trial contracts will be held on 2nd September, Respondents are requested to submit an NDA by 24th August to register their attendance. The timeline for Contract Commissioning is described in Section 7.3. Respondents are required to provide to the ETI a formal notification of their intention to submit a Proposal using the form in Appendix E by 12th September.

The Contract is expected to commence in January 2015 and build in scale to the deployment of circa 300 HEMS systems ahead of the 2015 / 16 heating season.

CONTENTS

1. ETI INTRODUCTION	1
1.1. Introduction to the Energy Technologies Institute	1
1.2. ETI Approach to Health, Safety and Environment (HSE)	1
2. OVERVIEW	2
2.1. Background to the SSH Programme	2
2.2. Context	2
2.3. ETI HEMS Development Project Outcome	3
2.4. ETI HEMS Development Project Integration	4
2.5. Potential Project Participants, Benefits and Expectations	4
3. PROTOTYPE HEMS DEVELOPMENT	6
3.1. Prototype HEMS Development Contract Aim and Scope	6
3.2. Prototype HEMS Development Contract Delivery Approach	6
4. PROTOTYPE HEMS DEVELOPMENT - CONTRACT DETAIL	10
4.1. Exploitation	10
4.2. Timescales	10
4.3. Contract Management Methodology	10
4.4. Organisation Structure	11
4.5. Governance	12
4.6. Funding and Payment Structure	12
4.7. State Aid	12
4.8. Terms and Conditions for the Development Contract	13
5. COMMERCIAL AND LEGAL REQUIREMENTS	14
5.1. Insurance	14
5.2. Intellectual Property (IP)	14
5.3. Statement of Compliance	15
5.4. Non-Disclosure Agreement	15
5.5. General Due Diligence	15
5.6. Warranties	15
5.7. Indemnities	15
6. DISCLAIMERS	16
7. PROCUREMENT AND SELECTION	18
7.1. Step 1: RfP Issue and Respondent Selection	18
7.2. Step 2: Shaping and Contract Negotiations	20
7.3. Estimated Procurement and Contract Timeframes	21
7.4. Submission Content and Format	21
8. POST-SELECTION PROCUREMENT PROCESS	23
8.1. Shaping and Contract Negotiation	23
8.2. Contract Detailing & Negotiation Requirements	23

APPENDIX A - DUE DILIGENCE TABLE	24
APPENDIX B - INSURANCE REQUIREMENTS	25
APPENDIX C - CONTENT AND FORMAT OF PROPOSALS	26
APPENDIX D - TERMS AND CONDITIONS OF THE CONTRACT	30
APPENDIX E - NOTIFICATION OF INTENTION TO SUBMIT A PROPOSAL	31
APPENDIX F - NON-DISCLOSURE AGREEMENT	32
APPENDIX G – PROTOTYPE HEMS DEVELOPMENT REQUIREMENTS	39
APPENDIX H - GLOSSARY	46

1. ETI INTRODUCTION

1.1. Introduction to the Energy Technologies Institute

The Energy Technologies Institute (ETI) is a public-private partnership between global industries – BP, Caterpillar, EDF, E.ON, Rolls-Royce and Shell – and the UK Government. Hitachi has joined the ETI as a Programme Associate for the SSH Programme.

Public sector representation is through the Department for Business, Innovation and Skills, with funding channelled through the Technology Strategy Board and the Engineering and Physical Sciences Research Council. The Department of Energy and Climate Change are observers on the Board.

The ETI is focused on accelerating the deployment of affordable, secure low-carbon energy systems for 2020 to 2050 by demonstrating technologies, developing knowledge, skills and supply-chains and informing the development of regulation, standards and policy.

Further information can be found on our web-site at www.eti.co.uk.

1.2. ETI Approach to Health, Safety and Environment (HSE)

The Health and Safety of those who may be affected by ETI projects and the protection of the environment that may be impacted by ETI projects is of paramount importance to the ETI and its Members. It is ETI policy to pursue best practice in the health, safety and environmental management of its projects. The ETI therefore expects those who receive ETI funding to demonstrate a commitment to best practice in health, safety and environmental management as well as demonstrating that all applicable legal requirements are met.

The ETI requires certain HSE-related information as part of a Proposal. See Appendix A Section 8 of this RfP.

The ETI requires:

- The highest standards in Health and Safety (throughout the field trial): excellence not merely legal compliance;
- Robust and secure procedures for dealing with personal data in full compliance with the law;
- The application of safety in design, whereby opportunities to design out Health and Safety risks associated with proposed works are incorporated into designs and plans; and
- So far as reasonably practicable the successful Respondent shall demonstrate, communicate, manage and exceed Health, Safety and Environment compliance whilst dealing with all stakeholders including, specific to this Contract, the homeowner and or the home occupants whilst undertaking the contract scope of work within any home.

2. OVERVIEW

2.1. Background to the SSH Programme

The UK government has set a legally binding target of an 80% reduction in greenhouse gas emissions by 2050, with interim targets through the major transition that this implies. Over 40% of the UK's energy demand currently is for heat, with approximately half that amount arising from heat demand in domestic properties. The vast majority of domestic heat demand results from comfort requirements in the form of space heating and hot water. Mitigating emissions from domestic heat is a key component therefore of a future affordable, secure and sustainable national energy system.

The predominant issues include:

- The relatively low thermal performance of the current building stock (much of which will still be in use over the coming decades);
- Finding the economic balance in any one area between effective demand reduction and switching to a lower carbon energy supply (including distribution network reinforcement costs);
- The scale and highly variable nature of heat demand;
- The significant upfront capital costs inherent with any new solution coupled with policy/regulatory uncertainty and unclear return on investment; and
- The capacity and capability of the UK supply-chain to support the transition and consumers experience and general satisfaction with the high performance and low cost of the incumbent gas solution.

These issues are further exacerbated by lack of certainty about the nature of the rest of the energy system.

The ETI commissioned a major two-phase Smart Systems and Heat (SSH) programme in 2012. The SSH Programme will create future-proof and economic local heating solutions for the UK. It will connect together an understanding of consumer needs and behaviour, with the development and integration of new technologies and with new business models. The associated insight will deliver enhanced knowledge across industry and the public sector, resulting in industry and investor confidence to implement SSH influenced solutions from 2020 and thereby enable a UK heat transition, within an appropriate policy and support environment to deliver a cost-effective UK energy system transition.

The two distinct phases of the Programme are:

- **Phase 1:** Creation of the tools, technologies, delivery capability, consumer value propositions and business models needed to implement a future affordable, secure and sustainable energy system; and
- **Phase 2:** The second phase will validate the solution(s) developed in Phase 1 with a significant system level demonstration.

2.2. Context

Home energy management is a key component of any future smart energy system, enabling the delivery of added value and cost-effective consumer offerings, together with improved supply side asset utilisation. Insight gained from the deployment of Home Energy Management Systems (HEMS) will inform energy service providers of the requirements of consumers and the characteristics of their domestic environment. Furthermore advanced HEMS could provide the functionality necessary to control more complex low carbon energy solutions in the future.

The market for Home Energy Management is being shaped by the following factors:

- The introduction of Smart Meters will drive innovation in the supply and pricing of energy related services;

- The increased power and reducing cost of ICT Technologies is changing consumer expectations and enabling more powerful and responsive service delivery to them; and
- Energy prices in the UK have been low by global and historic standards. It is expected that energy supply will change due to global political and economic factors, not least increased electrification and district heating driven by the need to significantly reduce CO₂ emissions by 2050

The ETI has identified a gap between existing market developments in the area of HEMS and the functionality that is likely to be required. The ETI proposes to close this gap through the accelerated development and demonstration of a consumer focussed HEMS solution. This will be achieved through a single project: The ETI HEMS Development Project (the Project). The Project will comprise two Contracts: a Prototype HEMS Development Contract and a Prototype HEMS Field Trial Contract, to be delivered in the form of a Service Level Agreement.

2.3. ETI HEMS Development Project Outcome

At the conclusion of the ETI HEMS Development Project, the ETI will have:

- A significant dataset of consumer behaviours, energy use, building characterisation and HEMS interactions upon which to develop value propositions developed within the SSH Programme;
- Evaluation of the consumer value created by the prototype HEMS and evidence for further development; supported by a dataset from around 300 homes with a HEMS Prototype System installed;
- An emerging HEMS platform with a scalable architecture that could form the basis of the HEMS for Phase 2 of the SSH Programme (when developed further) and, eventually, a commercial product; and
- A potential pool of positively motivated participants in further work if requested by the ETI (subject to agreement).

These outcomes will be achieved through the execution of two contracts:

Contract 1 (the subject of this RfP): Prototype HEMS Development Contract

The development and test of an advanced, consumer centric, HEMS prototype focused on the customer experience of future smart energy systems. To do this, it should focus on supporting gas boilers operating in conjunction with hot water storage tanks, but with a flexible architecture to enable other heating system types to be controlled later. The HEMS Prototype System should:

- Enable the household to feel more in control of their heat use whilst fundamentally breaking the conceptual link that has traditionally existed between the demand for heat (heated spaces and hot water) and the supply of energy to meet that demand. By breaking this link the HEMS will enable energy to be supplied at the optimal time to reduce costs within the wider system whilst also ensuring the customer is in full control and able to satisfy their broader requirements;
- Enable the household and an energy supplier to 'negotiate' a service transaction that increases customer confidence and satisfaction; a dialogue to balance expectations for heated spaces and hot water on the one hand with the price for those services on the other. This capability could open new market opportunities, for example business models that include the provision of equipment, those that use hybrid gas / electric energy vectors, those that use home heat storage to balance the electricity grid, those that enable a consumer to directly compare and choose between energy supplier offerings against a known demand 'requirement' and those which offer to take some risks (such as the impacts of variation in the weather) away from the consumer to give guaranteed pricing; and
- Enable the household to identify and value investments in modifying their home or changing their heating system. This capability will facilitate the appropriate information environment required to enable consumers to find the best route for energy services that suits their individual

needs. This will require a “whole system” approach to heating systems and the related building fabric.

The successful participant will be expected to manage the dataset acquired through Contract 2.

Contract 2 (the subject of a separate RfP): Prototype HEMS Field Trial Contract

The development of a field trial methodology in collaboration with the Prototype HEMS Development contractor and with the ETI that when executed will lead to the acquisition of a large dataset on the building characteristics and physics, occupancy, consumer behaviours, energy use and HEMS interactions from circa 300 homes. The delivery of Contract 2 will encompass:

- The recruitment then management of the Trialists and installation of the infrastructure needed to create the field trial dataset, this will include:
 - Physical sensor measurements logged by the HEMS, revealing: building and heating system dynamics, times and zones / rooms of occupancy, heating system usage, energy consumption, system efficiency, etc;
 - Consumer attitudes from logging interaction with the HEMS, revealing aspects such as: relative importance of heating time, target temperature, responsiveness to requests for more space heat or hot water, etc;
 - Physical surveys of circa 300 properties and their heating systems, to the extent required to validate HEMS estimates of building and heating system modifications.
- The acquisition of operational experience in the installation and support of the HEMS Prototype System; and
- The creation of a service level agreement to expedite provision of future trials in homes if and as required.

2.4. ETI HEMS Development Project Integration

The ETI is simultaneously releasing RfPs for both Contract 1 and Contract 2. The ETI is prepared to receive proposals from the same organisation for both contracts. ETI will evaluate these against any proposals which only address one of the contracts. Respondents therefore need to address the specific requirements of each RfP clearly and separately.

The ETI HEMS Development Project is an ambitious piece of work which is expected to produce emerging insight during its delivery. Whilst it is expected that the two contracts will need to collaborate with one another, it is unrealistic for the ETI to delegate full accountability to the contractors for the successful delivery of the Project outcomes. It is intended to structure the Prototype HEMS Field Trial Contract as a Service Level Agreement, whereby packages of work are called off by the ETI when there is an appropriate level of confidence at a Project level to do so.

The ETI proposes to put in place a Project Steering Group chaired by the ETI and made up of the Project Managers from each contract, the Contract 1 Chief Engineer and Contract 2 Field Trial Manager together with ETI staff. This would be the steering body to direct the overall Project and its integration. The ETI would be the principal decision maker for the overall Project. In support of this the ETI would propose to initiate specific actions associated with the management of the field trial based on the recommendation of the Project Steering Group.

2.5. Potential Project Participants, Benefits and Expectations

The ETI anticipates that responses to the RfP may be received from a range of organisation types, from HEMS manufacturers with an existing platform and development capability through to Technology Development Consultancies. The RfP has been structured such that responses can be received from the full range of organisation types.

The ETI believes that participation in the Prototype HEMS Development Project and / or the HEMS Prototype Field Trial Project could provide a range of benefits to Participants, including:

- Accelerated product development, co-funded by the ETI's SSH programme;
- Access to a large scale live test environment of circa 300 domestic properties, and the subsequent data and insight that this will provide;
- Access to the ETI's strategic energy system insight in the area of smart energy systems;
- Collaboration with ETI on the development of a future HEMS product strategy, and the role of advanced HEMS within a future energy ecosystem; and
- A potential route to participation in the large scale demonstration of advanced HEMS in Phase 2 of the SSH Programme.

In return the ETI would expect that participants will agree an acceptable position with the ETI on the use of existing Background IP (both that of the ETI and the participant) and ownership and exploitation of Arising IP from the project; and

3. PROTOTYPE HEMS DEVELOPMENT

3.1. Prototype HEMS Development Contract Aim and Scope

The aim of the Prototype HEMS Development Contract is to develop and test an advanced, consumer centric, HEMS prototype focused on the customer experience of future smart energy systems.

The requirements of the Prototype HEMS Development Contract are described in Appendix G.

The prototype HEMS will be designed to control conventional 'wet' heating systems, with the heat source being a gas central heating boiler. This is to enable the Contract to focus on consumer facing issues first, subsequent development will extend HEMS functionality to the control of low carbon heating systems, such as heat pumps (note this is extended functionality is beyond the scope of this RfP).

Through collaboration with the Contract 2 the HEMS prototype developed in this Contract will be deployed in circa 300 domestic properties of mixed archetypes and consumer segments. It is expected that the full deployment will occur during the 2015/16 heating season, with scaled deployments and evaluation leading up to this. The scaled deployments are intended to manage the risk associated with large scale interventions into domestic properties with a prototype system.

The objectives of Contract 1 will be achieved through the execution of a range of activities in collaboration with the ETI and with Contract 2. It is proposed that the activities to be undertaken by Contract 2 are planned and costed in advance and then at suitable decision points the activities are initiated by the ETI in-line with pre-agreed lead times and costs.

3.2. Prototype HEMS Development Contract Delivery Approach

Contract 1 is expected to consist of four Work Packages. It is expected there will be appropriately planned milestones and Stage Gate Review points included within the project. The extent of these stages will be influenced by the existing capabilities of the participant. Due to the nature of product development, elements of the Work Packages may overlap with one another. The Respondent is invited to propose an appropriate project management approach best suited for the successful delivery of this Contract.

Work Package 1 – Development of Requirements.

Work Package 1 is expected to include the following activities:

- Collaboration with the ETI to develop a functional specification based on the existing capabilities, IP and know-how of both the Participant and the ETI;
- Creation of a development plan to implement the functional specification;
- Collaboration with Contract 2 to develop a field trial methodology to evaluate the functionality embodied in the HEMS prototype;
- Creation of a consumer research approach and plan to understand how to improve the HEMS Prototype System, so that it delivers a better consumer experience and to assess the success of the HEMS proposition(s) presented to the Trialists;
- Collaboration with Contract 2 to develop a HEMS Pre-Deployment Test Plan to demonstrate the safety, functionality, usability and stability of the HEMS prototype prior to deployment in domestic properties. This plan would be expected to include appropriate product certification activities; and
- Development of a HEMS proposition. The HEMS Proposition will describe the market offering of the HEMS Prototype System, i.e. the capability and services offered by the HEMS. It is expected that this proposition will be used as the basis for recruiting Trialists in Contract 2.

The expected deliverables from this Work Package are:

- A HSE plan describing how Health and Safety will be managed during the development, test

and evaluation of the HEMS Prototype System;

- A functional specification of sufficient detail that the Participant's engineers can subsequently develop a HEMS Prototype System capable of meeting the performance requirements as described in the functional specification. The functional specification would be expected to identify a series of packages of functionality which would incrementally build upon one another to increase overall system functionality in a modular and scalable fashion;
- A Data Protection Protocol that reflects the data requirements of Contract 1. The Data Protection Protocol shall encompass the acquisition, control, retention and transfer of any personal data (as defined under Data Protection Law) to be acquired during the execution of Contract 1 and 2. For the avoidance of doubt it is expected that the role of data controller across Contract 1 and Contract 2 will be fulfilled by the Contract 1 Participant.;
- A fully costed approach to implement the functional specification;
- A fully costed approach to carry out the required consumer research;
- A fully costed HEMS test plan; and
- An Intellectual Property statement, which describes the basis on which all IP within the project will be managed, including ownership of Arising IP, the Background IP and Third Party IP required to exploit the Arising IP and the associated licenses and costs.

It is acknowledged that it will be difficult for the Respondent to provide a firm price for Stage 1 without access to the ETI HEMS Concept Document, which will only be provided on execution of contracts. As such Respondents are asked to provide a range of costs within which they would expect stage 1 to fall, including assumptions and day rates as appropriate.

Work Package 2 – Prototype Development

Work Package 2 is expected to include the delivery of the activities described in the development and test plan required to create a working HEMS Prototype System suitable for deployment at scale in a live field trial.

The expected deliverables from this Work Package are:

- Documented design of the HEMS prototype system, including:
 - Hardware design, including sensors and actuators required to deliver the full range of HEMS functionality;
 - Documented source code; and
 - Product certification as appropriate.
- Results from the test activities to demonstrate that the prototype is suitable for deployment in the field trial environment;
- User documentation to be provided to field trial participants;
- Installer training package, identifying the appropriate skills needed to install the HEMS Prototype Systems and training to ensure that installation, commissioning and setting to work can be achieved in a single visit to a Trialist's property;
- Documented system installation, set-up and maintenance procedures to be followed by Contract 2; and
- Process and service level agreement for the diagnosis of hardware and software faults identified during the Field Trial. It is expected that the Contract 1 Participant will act as a triage for issues reported directly from Trialists and recommend actions to address them during the Field Trial activity, such support is expected to be offered to Trialists on a 24/7 basis.

Depending on the approach to the management and delivery of the Contract (e.g. waterfall or agile approaches to project management) then there may be overlap between Work Package 1 and 2, or even a combined approach based on an agile design and development approach.

Work Package 3 – Prototype Field Trial

Work Package 3 is expected to include the deployment of the HEMS Prototype Systems in line with the agreed field trial methodology to systematically test and evaluate the functionality developed. This work would be undertaken in conjunction with Contract 2.

It should be highlighted that the roll-out of HEMS Prototype Systems is expected to be done on a scaled basis, called off by the ETI. First deployments are expected to be to a small cohort of circa 10 ‘friendly Trialists’ suitably briefed and accepting of the fact that they will be evaluating early software releases. Subsequent deployment of HEMS Prototype Systems would be in line with direction from the ETI.

It is expected that regular software up-dates will be required, both to fix bugs, to reflect the feedback of Trialists and to change system functionality to allow different elements to be tested. These up-dates are expected to be carried out over the air by the Contract 1 Participant without the need to visit Trialist properties. It is expected that software up-dates will be scheduled in conjunction with the Contract 2 Participant to ensure that Trialists are informed in advance of any changes to the installed system and provided with appropriate training through Contract 2.

In the first instance the deliverables from this Work Package would be the HEMS Control Units to be installed in the field trial properties. It is expected that the systems for deployment would be manufactured or procured in line with direction from the ETI, for example in batches of 50. The HEMS Control Units would be free issued to Contract 2 for installation. Sensors and actuators required to implement the full range of the HEMS functionality would be specified by Contract 1 then procured and installed by Contract 2.

Subsequent deliverables would be expected to be based around regular progress reviews with the ETI, potentially in conjunction with the HEMS Prototype Field Trial Contract, including, but not limited to:

- Evaluation of functionality tested;
- Consumer experience of the HEMS;
- Collection and evaluation of data from the installed HEMS systems;
- Up-dates to functionality and evaluation of performance and the consumer experience of this functionality;
- Operational issues;
- System stability and bug rates; and
- Energy consumption.

Work Package 4 – Closure and Evaluation

At the instigation of the ETI (a decision informed by Contract 1 and Contract 2) the development of the HEMS Prototype System will be brought to a conclusion and the Field Trial exited in a controlled manner.

As described in Appendix G, two options for the de-commissioning of the Field Trial are anticipated, in option 1 the HEMS Prototype Systems are left in situ and the Contract 1 Participant provides a warranty to the Trialist. In option 2 the HEMS Prototype System is removed and a pre-agreed commercially available HEMS solution is installed, with the manufacturer’s warranty passed on to the Trialist.

In their response to this RfP the Respondent should describe the approach to both Option 1 and Option 2, and include costs for both options. It is acknowledged that option 1 may not be possible for certain Respondents, such as Technology Development Consultancies.

In addition to the above activities associated with the exiting of Trialists from the Field Trial, Work Package 4 should also ensure that All data (both from sensors and consumers) acquired from the Field Trial is documented and provided to the ETI in a form that is useful.

Work Package 4 is expected to include the evaluation of system performance, including all elements of functionality tested. The expected deliverables from this Work Package are:

- Documented final design of the HEMS prototype system, including:
 - Hardware design;
 - Documented source code; and
 - Product certification as appropriate.
- A summary of the consumer research carried out, and its implications for the future development of HEMS;
- Evidence based recommendations and specification of future functionality developments, with justifications based on value to consumers, to the ETI and to stakeholders in a future smart energy system;
- Exploitation plan for the HEMS prototype, demonstrating value to the ETI, its Members, the SSH Programme and the project participant; and
- Final IP statement, with supporting invention records as appropriate.

4. PROTOTYPE HEMS DEVELOPMENT - CONTRACT DETAIL

4.1. Exploitation

The potential exploitation of the immediate commercial value of the HEMS prototype and the information obtained from Contract 1 is open for discussion with Respondents. As described in section 2.3, the ETI anticipates two potential starting points for these discussions:

- Proposals from HEMS Manufacturers

The ETI will need to agree acceptable terms for exploiting the project outputs described previously. The ETI needs to have unfettered rights to exploit the Arising IP from the project within its own work and the normal business of its public and private sector Members. The precise terms of any such agreement will depend on the capabilities and offering (both technical and commercial) of the Respondent.

The ETI also needs to have access to the HEMS designs created to support further development and demonstration.

The ETI will also expect a realistic return on its investment from any commercial exploitation by the developer.

- Proposals from Technology Development Consultancies

The ETI would expect to own all Arising IP and have defined access to any Third Party IP (including Background IP) on an acceptable commercial basis to exploit the contract outputs.

In their response to this RfP, respondents should suggest potential areas of value that they envisage from their participation in the ETI HEMS Development Project via this Contract.

The extent to which Proposals provide assurance on the ETI's ability to exploit the outputs from the contract and their further development is a key Selection Criterion (section 7.1.4)

4.2. Timescales

The ETI recognises the challenging timescales of this contract and the importance of using the window of opportunity associated with the 2015/16 heating season effectively. The RfP for the HEMS Prototype Field Trial highlights the potential importance of location to the availability of sufficient heating days to provide meaningful trial data.

A key challenge to Respondents to address in their proposal is how to make best use of trial time and how to organise to deliver rapid progress. We strongly recommend to Respondents that they address this question directly, creatively and in some detail. Although the ETI will focus on the core functionality that is required to deliver the contract objectives, proposals that appear to have a high risk of reducing functionality, as a significant element in achieving the timescale, are unlikely to be successful.

Given the challenging window of opportunity, the ETI will place significant weight in its selection process on the detail in the proposals of how to get to contract and mobilise the contract rapidly with a fully effective team.

4.3. Contract Management Methodology

Respondents are invited to propose suitable approaches to the management of the Contract that:

- Deliver functionality and value incrementally throughout the contract;
- Reflect the challenge of exploiting heating seasons to fully evaluate HEMS Prototype Functionality; and

- Incorporate the need to work with the HEMS Prototype Field Trial Contract to collectively deliver the objectives set by the ETI.

4.4. Organisation Structure

The ETI has published complementary Requests for Proposals for both this Contract and Contract 2. The two resultant Contracts will between them need to work together to satisfy the overall ETI objective of developing and testing a HEMS Prototype System.

The ETI has proposed an approach whereby the delivery of field trial services in Contract 2 is managed as a Service Level Agreement controlled by the ETI, with packages of work initiated by the ETI when there is appropriate confidence at a project level to do so.

To deliver the scope of Contract 1, a number of participant organisations / entities may be required to work together in order to provide all the necessary knowledge, skills, experience and inputs to complete the Contract. **In this instance the ETI has a preference for a Prime Contract approach** and will only accept proposals on such a basis:

A **Prime Contractor** is a single organisation who shall form a contract with the ETI, and shall manage the Contract and act as primary interface with the ETI with other organisations (as appropriate) contracting as Subcontractors to the Prime Contractor.

The proposed Prime Contractor shall act as the Respondent for the purposes of this Request for Proposals. This organisation shall appoint a Project Manager to lead and coordinate all activities of the Participants, and to liaise regularly with the ETI's Programme Manager to whom he/she is accountable on behalf of the Participants. The Respondent must also appoint a Chief Engineer, User Experience Lead and Consumer Research Lead. The ETI places great emphasis on four critical roles in the delivery of this contract – Project Manager, Chief Engineer, User Experience Lead and Consumer Research Lead.

- **The Project Manager** is responsible for managing and progressing the project team and programme of work to time and cost, handling information flows and commercial issues, ensuring effective team-working and the continued engagement and support of key stakeholders. In essence this responsibility is to make sure that the ETI benefits from a result at the end of the programme of work that meets the agreed outcomes within time and cost;
- **The Chief Engineer** is responsible for the technical quality and content of the work, ensuring the competence of key technical staff allocated to individual work packages, the effective review of key outputs and the effectiveness of detailed technical planning to ensure that the emerging results of work are fed back into the forward plan. In essence this position has the responsibility to assure the technical quality of the Contract and its outcomes;
- **The User Experience Lead** is responsible for deploying user-centred design techniques to guide the design of desirable, useful products that users find delightful to use. Historically consumers have struggled to understand how to use their heating controls. The central objective of HEMS is to harness emerging technologies to put people in control of their heating. Therefore it is central that the experience of using HEMS is first class; and
- **The Consumer Research Lead** is responsible for the acquisition of independent evidence on consumer's experience with HEMS to inform improvement of the HEMS prototype system. Historically consumers have struggled to understand how to use their heating controls. The central objective of HEMS is to harness emerging technologies to put people in control of their heating. Therefore it is central that the experience of using HEMS is first class, this places a premium on the acquisition of high quality consumer insight which will in turn enable the deployment of user-centred design techniques to guide the design of the HEMS prototypes.

In the above structure the ETI would view the Chief Engineer as the ultimate point of authority for the Contract.

The ETI will assess the competence, experience and authority of these people and their ability to work together as critical to Contract success.

4.5. Governance

Throughout the duration of the Project the ETI expects to hold review meetings with the Project Manager and Chief Engineer and other members of the Participant's team as appropriate. These meetings may be at the premises of the ETI, the Participant or the Contract 2 Participant as appropriate, typically monthly or at other points which may be agreed. These meetings may be held jointly with Contract 2. The ETI may involve advisors, external consultants, key industrial stakeholders, or representatives from the ETI Members as appropriate.

The timing and scope will be confirmed in discussions after the Proposal has been reviewed. Preliminary arrangements are as follows:

- **Contract Kick Off:** This will be held within one week of the Contract start date. The purpose of the meeting is for the Participants and the ETI to review the scope of the Contract, planned timescales, deliverables, and the way of working and interfacing with the ETI and Contract 2 to ensure a common understanding of how the overall Project will be delivered. It is anticipated that this review will be held at ETI offices in Birmingham and will take no longer than one day;
- **Development Reviews:** These will be at key agreed points during Contract delivery. It is anticipated that these reviews will take no longer than one day each; and
- **Stage Gate Review:** This is a major Review Point involving Participants and ETI representatives at which the overall performance and business case for the Contract will be critically reviewed and following which a formal decision will be made whether to continue with the Contract, based on whether agreed Stage Gate Criteria have been met. It is expected that Stage Gate Reviews will be combined across Contract 1 and Contract 2 to ensure that progress towards the overall ETI HEMS Development Project goals is being maintained.

4.6. Funding and Payment Structure

In developing their proposal, respondents need to consider;

- The need to agree an acceptable position on the ownership and exploitation of Arising IP from the contract, reflecting the levels of Background IP brought into the Contract by both the Participant and the ETI;
- In principle the ETI only pays for work done, typically against deliverables and milestones;
- As a development contract there is considerable uncertainty in the specific activities and resource levels required to deliver. Proposals should therefore provide a structure to planning, control and costing that gives the ETI comfort that the scope, activities and costs of the contract will be organised and under control. It should be clear in the proposal what the base case is against which the contract costs, activities and resources have been modelled and how changes will be managed. The contractual structure between the parties which enables this flexibility should be explained; and
- The ETI operates a formal contract variation process, subject to internal governance, with appropriate levels of delegated authority.

The Contract team should describe how they will manage this kind of contractual interface with the ETI.

4.7. State Aid

Funding from the ETI for this Contract will constitute state aid. The ETI has a specific state aid clearance from the European Commission. A copy is available on request. In relation to their Proposals, Respondents should note:

- Further information may be required to support the specific state aid requirements of any Proposal during the procurement process;

- Successful Respondents will be required to provide full transparency of costs throughout the Contract to ensure both the Contractor and the ETI comply with EU state aid law; and
- Successful Respondents will need to agree to certain contractual obligations related to the state aid requirements including the duration of the retention of records, and obligations to return ETI funding in certain exceptional circumstances.

Each Respondent must confirm that there are no potential, threatened, pending or outstanding recovery orders by the European Commission in respect of any funding received (either by the Respondent or any proposed Subcontractor).

4.8. Terms and Conditions for the Development Contract

The Contract will be governed by a Development Contract, a draft of which will be made available to Respondents on signature of a non-disclosure agreement (Appendix F). The final Development Contract will incorporate appropriate information from the ETI's RfP, the Respondent's Proposal and information drawn up and agreed during the shaping and contract negotiation.

5. COMMERCIAL AND LEGAL REQUIREMENTS

The most important issues that the ETI would like to highlight for initial consideration are as follows:

5.1. Insurance

The Respondent should confirm that liability and indemnity insurance cover is held and should confirm levels of cover and expiry for each. See Appendix C for further detail.

5.2. Intellectual Property (IP)

A number of assumptions and requirements associated with Intellectual Property have already been described in sections 2.3 and 4.2. As part of this contract the ETI will provide certain Background IP, in the form of the ETI HEMS Concept Document together with insights from other areas of the SSH programme.

Depending on the nature of the contract Participant (HEMS Manufacturer or Technology Development Consultancy) then the way in which IP is managed on the contract, and consequently how the contract is funded may vary. Respondents are requested to propose how IP should be handled within Contract 1 bearing in mind the expectations of the ETI and the need for collaboration with the Contract 2.

Arising IP – Ownership:

The ETI has outlined its requirements in terms of the ownership and ability to exploit arising IP from the Contract in section 4.2. Participants should not fetter the ETI's rights in the Arising IP (for example, by using open source software in the deliverables).

Background IP:

Where a Participant has tangible Background IP that is required to carry out the Contract or for the subsequent exploitation of any Contract results, the Participant is expected to make this Background IP available on a non-exclusive basis; typically, this licence will be royalty-free where the Background IP is required for the Contract, but may, if appropriate, be subject to a fair and reasonable royalty where the Background IP is required for exploitation of Contract outputs. If Participants (or their proposed Subcontractors) fail to meet this expectation, the Proposal is unlikely to be acceptable to the ETI. The Respondents are to outline their IP proposals to the ETI as part of their submissions.

The Respondents will be required to provide warranties and indemnities that they own their Background IP.

Due diligence on Background IP will be required both in the Proposal (as requested Appendix A of this RfP) and during the Shaping and Contract Negotiation Stage.

Respondents selected to proceed to the Shaping and Contract Negotiation Stage will be required to undertake and demonstrate detailed intellectual property due diligence at their own expense.

Third Party IP

Respondents should describe any Third Party IP:

- Which is or may be needed (whether by the ETI, or to be licensed between the Participant and / or Subcontractors or otherwise) to carry out the Contract or which may be used during the Contract; or
- Which may be needed by the ETI to exploit the Arising IP.

Academic Organisations

Generally if requested, the ETI will grant rights to Participants who are academic institutions for the purposes of academic research and teaching. Publication of appropriate parts of the Contract results will generally be permitted subject to an approval process.

5.3. Statement of Compliance

The Respondents shall provide a statement that the Proposal is fully compliant with the Request for Proposals, or shall state clearly any exceptions, deviations, alternative approaches or additions, with justification. Note that in the absence of any specifically-stated deviation in this section of the Proposal, in the case of any subsequent dispute, the ETI's Request for Proposals will take precedence over the Proposal. Additional comments and clarifications should also be listed where appropriate (for example to clarify interpretation of requirements), but these must be differentiated from any deviations / exceptions above.

In relation to the Development Contract, the statement should set out as a minimum:

- Acceptance by each Respondent of the terms and conditions of the Development Contract; and
- Any exceptions to the terms and conditions of the Development Contract issued by the ETI.

The exceptions set out will both be considered as part of the selection process to determine whether there is material compliance of the terms and conditions. Respondents should note that compliance with ETI terms and conditions is one of the selection criteria for this Request for Proposal. The ETI will not consider any further exceptions post selection which has not been identified in the statement.

5.4. Non-Disclosure Agreement

Respondents are required to enter into a Non-Disclosure Agreement with the ETI before attending the bidder's workshop. NDAs should be returned by the deadline outlined in Section 7.3.

A draft Development Contract and the ETI view of the requirements for an advanced consumer centric HEMS solutions shall be made available upon the successful execution and submission of an NDA. Signed NDAs should be returned to the ETI following the instructions provided in Appendix F.

For further information on the release of the draft Development Contract and other information, please refer to the Terms and Conditions in Appendix D.

5.5. General Due Diligence

All Respondents (except ETI Members, Programme Associates, universities / higher education institutions and UK/EU government laboratories / agencies) which provide more than 20% of the resources for the Contract or which provide an input which is critical to the Contract's success, shall provide due diligence Information to the ETI according to the table in Appendix A.

Please note that successful completion of all elements of the due diligence is a pre-requisite to any contract award: Failure to meet due diligence requirements at any stage may result in the exclusion of that Respondent or the Proposal from the ETI's selection process.

5.6. Warranties

The Development Contract contains a number of warranties and undertakings related to IP. The ETI will conduct an appropriate level of due diligence before the start of the Contract which relates to IP and the IP warranties. The wording of any warranties may be amended to reflect due diligence performed.

5.7. Indemnities

The ETI will contribute funding to this Contract but has no control over any risks and associated liabilities that may arise from the Contract. Therefore the Development Contract contains a number of indemnities for the ETI including for third party claims and for IP infringement. Respondents should review and comment on the indemnity position in the Submission.

6. DISCLAIMERS

- a) The ETI at its discretion may request clarification of a Proposal, and may reject any Proposal which is unclear;
- b) Neither the issue of any documentation in the Request for Proposals process nor any of the information presented in it should be regarded as a commitment or representation on the part of the ETI or any other person to enter into a contractual arrangement. The Request for Proposals is not an agreement to purchase goods or services, and the ETI is not bound to enter into any contract with the Respondent. By responding to this Request for Proposals, the Respondent does not commit itself to entering into a contract with the ETI;
- c) All decisions made by the ETI relating to the acceptance, review and selection or otherwise of Proposals are final;
- d) All documents, including Proposals, submitted to the ETI become the property of the ETI. They will be received and held in confidence by the ETI, subject to the terms of the Non-Disclosure Agreement. No part of a Proposal, or documents provided by Respondents, shall be returned;
- e) The ETI reserves the right to (i) change the basis of, or the procedures for, the Request for Proposals process, including the timetable or closing date, (ii) make modifications to, or alter any of the information within, the Request for Proposals at any time until the execution of the Development Contract, (iii) reject any or all of the Proposal received, and (iv) not invite any Respondent to proceed further. In cases (i) and (ii) the ETI shall provide a minimum of five working days written notice;
- f) Neither the ETI nor any of its agents or advisers accepts any liability or responsibility for the accuracy, adequacy or completeness of any of the information provided or any opinions contained in this Request for Proposals or of any other information made available during the Request for Proposals process. No representation or warranty, express or implied, is or will be given by the ETI or any of its agents or advisers with respect to such information provided or opinion given therein. Any liability is thereby expressly disclaimed;
- g) Respondents must assess the information and terms contained in this Request for Proposals independently, having taken professional advice if necessary. The Respondent will be deemed to have examined all the documents enclosed with this Request for Proposals and by its own independent observations and enquiries will be held to have fully informed itself as to the nature and extent of the requirements of the Request for Proposals. The Respondent must rely on its own enquiries and on the terms and conditions contained in any agreement, when and if finally executed, subject to such limitations and restrictions as may be specified therein;
- h) Respondents shall be wholly responsible for the costs they incur in the preparation and submission of their responses to the Request for Proposals. The ETI shall not be responsible for, and shall not pay, any costs and expenses which may be incurred by the Respondent in connection with its participation in the Request for Proposals process, including but not limited to any costs or expenses incurred up to the execution of the Development Contract;
- i) The ETI may, at its discretion, shortlist Respondents for the next phase. The ETI does not undertake to accept the lowest bid or to accept part or all of any Proposal and the acknowledgement of receipt of any Proposal shall not constitute any actual or implied agreement between the ETI and the Respondent;
- j) The submission of a Proposal will confirm acceptance of the foregoing provisions by the Respondent without qualification. Any attempt to qualify any of the foregoing provisions in this Disclaimer Notice, either expressly or impliedly, may result in a Respondent being disqualified;
- k) The copyright in the documentation and any other materials supplied by the ETI and/or its advisers in this Request for Proposals process, in whatever format, belongs to the ETI or its appointed advisers. Such documentation and materials may not, either in whole or in part, be copied, reproduced, distributed or otherwise made available to any other third party or used without the prior written consent of the ETI, except in relation to the preparation of the Proposal

in the course of the Request for Proposals process. All documentation supplied by the ETI in relation to this Request for Proposals process must be returned on demand, without any copies being retained by the Respondent; and

- l) This Request for Proposals, and any dispute or claim arising out of or in connection with it (including any dispute or claim relating to non-contractual obligations), shall be governed by and construed in all respects in accordance with the laws of England and Wales and the parties agree that the Courts of England and Wales shall have exclusive jurisdiction to settle any dispute or claim arising out of or in connection with this document (including any non-contractual disputes or claims).

7. PROCUREMENT AND SELECTION

The ETI is using a two-step approach to commission the Contract:

- Step 1 – RfP Issue and Selection of preferred Respondents; and
- Step 2 – Shaping and Contract Negotiation

7.1. Step 1: RfP Issue and Respondent Selection

7.1.1 Briefing workshop

Following the release of this RfP, potential Respondents may apply to attend a briefing workshop, to be held jointly across the Prototype HEMS Development Contract and the Prototype HEMS Field Trial Contract. The objective of this workshop is to further describe the requirements for both contracts and to provide an opportunity for Respondents to ask clarifying questions prior to making a Submission in response to either or both RfP. The ETI anticipates that valuable networking opportunities will also be available throughout the day.

The briefing workshop will be held in on 2nd September at a venue to be confirmed.

Interested Participants are to notify the ETI with their request to attend the briefing workshop no later than 24th August. Upon notification, a briefing workshop package, including agenda, will be distributed.

7.1.2 Notification of Intention to Submit a Proposal / NDA

Prior to making a Submission in response to this RfP, Respondents are required to provide to the ETI (i) a formal notification of their intention to submit a Proposal, in the form set out at Appendix E, and (ii) a non-disclosure agreement in the form provided at Appendix F, signed by all Respondents involved in the Proposal and returned to the ETI in accordance with the instructions at Appendix E. The NDA is required for attendance at the bidder's workshop, both documents must be received by the ETI no later than the closing date specified on the front page and at Section 7.3 of the RfP.

7.1.3 Questions and Clarifications

The ETI will endeavour to answer any questions or provide clarifications for potential Respondents before the Proposal deadline.

Any advice or clarifications of ETI requirements requested by and provided to any Respondent may (at the ETI's discretion) be made available to all Respondents to ensure parity of information. Respondents should therefore consider presenting requests for advice and clarifications in a way that the ETI can respond to all Respondents without revealing confidential information.

Respondents are required to provide Submissions in response to the RfP to the ETI no later than the closing date specified on the front page and at Section 7.3 of the RfP. Submissions shall comprise of a Proposal, the form and contents of which are set out at Appendix C, and supporting documentation set out in Section 7.4.

7.1.4 Selection Process

The ETI expects that the capabilities and experience of the Participant will be key to the successful delivery of the Contract. It is expected that the Participant will fully understand the holistic energy system challenge that the SSH programme is seeking to address. Specific areas of expertise and experience have been identified and listed below, these are felt to be critical to the successful execution of the Contract; Respondents are free to identify additional capabilities and experience which they consider to be critical or important to success or to provide reasoned arguments why capabilities identified by ETI are not required.

A Selection Panel will be held at the ETI's Birmingham office w/c 13th October 2014, to which respondents may be invited for interview.

The ETI's experience evaluating Proposals has shown that specific and objective evidence of capabilities and experience is more convincing than general statements about previous contracts executed by the organisation.

Proposals will be reviewed and judged primarily against the criteria listed below and the supporting evidence supplied. Failure to meet minimum standards in any criterion may result in the ETI rejecting a Proposal. The expected capabilities and experience to be detailed in the Respondent's Proposal include:

a) Generic Criteria:

- Willingness of Respondent(s) to materially comply with the terms and conditions of the proposed Development Contract;
- Willingness of Respondent(s) to support the contracting process as laid out in Section 7.2 and the contracting timeline as laid out in Section 7.3;
- Completeness of information content, structure and quality of the Proposal (against the areas listed in Appendix C);
- Record and ability in quality, timely and on-budget delivery (of complex software and hardware developments) to the full satisfaction of their main stakeholders;
- The suitability and capability of the Chief Engineer, Project Manager, User Experience Lead and Consumer Research Lead assigned to the Contract (as per Appendix C);
- The terms on which access is proposed to Background IP and Third Party IP which is required for Contract execution and the Arising IP being exploited by the ETI;
- Contract approach and plan, including project management methodology, Gantt chart, proposed management of specific risks and issues and (as appropriate) suitable Stage Gates, Milestones and deliverables; and
- Suitability and quality of proposed project management and co-ordination approach, taking account of the interactions with ETI staff and Stakeholders.

b) Technical Criteria:

- Access to the skills and knowledge to conduct the work proposed, including:
 - Development of HEMS, or comparable products involving the integration of hardware, software and user interface;
 - Experience and expertise in the area of consumer product design, in particular the integration of User Centred Design;
 - Consumer behaviour and evaluation;
 - Development and coding of complex computational mathematical algorithms, for example Bayesian probability analysis and pattern recognition;
 - Software engineering, including software architecture design and large data set manipulation;
 - Buildings physics;
 - Data security and protection;
 - Processes for managing safety in design; and

- Engineering system design and integration.
 - Software engineering quality management systems, including appropriate and formally recognised QA system for information security management;
- c) Commercial Criteria:
- Cost and time for all stages of the Contract;
 - Proposed commercial framework for the Contract;
 - Levels of assumptions and risk taken within pricing schedule;
 - Identification of risks and potential liabilities and the availability of suitable insurances and warranties;
 - Day rates and hourly rates of key staff and operatives;
 - Terms for exploitation of Contract outputs; and
 - Confidence in the terms of licences for access to Background IP and Third Party IP required for exploitation of the Arising IP and the scale of costs together with details of previous experience in delivering such licences.

7.2. Step 2: Shaping and Contract Negotiations

Following selection, the ETI will invite the preferred Respondent(s) to enter into negotiations with the ETI to shape the Contract scope and finalise the terms of the Development Contract. An overall period of up to 10 weeks has been allowed for this Shaping and Contract Negotiation Stage. See Section 7.3 for further details relating to anticipated dates.

The ETI reserves the right to subsequently take up negotiations with other Respondents under the Project Shaping and Contract Negotiation Stage should negotiations with the initial preferred bidder(s) not produce an outcome acceptable to the ETI. The Shaping and Contract Negotiation Stage will include the following activities (as required and dependent on the level of detail provided in the Respondent's Proposal):

- a) Detailing of the proposed technical programme, including definition of deliverables and acceptance criteria;
- b) Detailing and agreement of Stage Gate(s);
- c) Negotiation and agreement of the Development Contract;
- d) Detailing and due diligence relating to the breakdown of costs of the Contract;
- e) Further intellectual property due diligence activities as required (see Appendix A);
- f) Agreement (and approval as required by the ETI) to terms of other key contractual arrangements (e.g. Subcontracts);
- g) Gaining all necessary Respondent and ETI approvals to undertake the Contract; and
- h) Any further information or assessment that may be necessary to meet state aid requirements.

As part of the above process, the Respondents may be required by the ETI to present a Final Detailed Offer, addressing all technical, commercial, legal and financial issues.

Further meetings will be required to complete the Shaping and Contract Negotiation Stage and the Respondents are required to commit to provide legal, technical, commercial and managerial resources as required to achieve the target contract execution date shown. The ETI reserves the right to cancel the commissioning of the Contract should this not occur.

7.3. Estimated Procurement and Contract Timeframes

The following tables outline the anticipated schedule for the Commissioning Process. They also include anticipated dates when resources will be required to attend shaping and contract negotiation meetings with the ETI.

The timing and the sequence of events resulting from this Request for Proposals may vary and shall ultimately be determined by the ETI.

Request for Proposal and Selection	Anticipated Dates
Issue of Request for Proposal	13 th August 2014
Deadline for notifying the ETI of a request to attend a briefing workshop (via return of signed Non-Disclosure Agreement)	24 th August 2014
Briefing workshop	2 nd September 2014
Deadline for notifying the ETI of an intent to submit a proposal	12 th September 2014
Closing date for submission of proposal	1 st October 2014
Selection Panel	w/c 13 th October 2014
Preferred Respondents Notified	24 th October 2014

Shaping and Contract Negotiations	Anticipated Dates
Total duration for shaping and contract negotiations	Up to 10 weeks
Shaping and contract negotiation meeting 1	29 th October 2014
Shaping and contract negotiation I meeting 2	13 th November 2014
Shaping and contract negotiation meeting 3	31 st November 2014

Contract Start	Anticipated Dates
Contract signature target date (Note: this is dependent on the ETI selection process and an agreement on contractual terms and conditions being in place)	By 19 th December 2014
Contract Completion	April – July 2016

* Respondents are requested to provide a Gantt Chart with contract timescales and delivery points of deliverables for Stage 2 as well as Stage 1 in their proposal.

7.4. Submission Content and Format

The Submission shall comprise five components:

- a) Detailed Proposal, arranged according to the structure set out in Appendix C. The content must demonstrate how the bidding organisation will meet the requirements set out in this Request for Proposal. The Proposal must be written in a succinct manner and must not include imprecise statements, generalities or repetition. The Proposal must be easily readable with appropriate font sizes (10pt or larger), margins, and shall not exceed a maximum of 45 pages (excluding appendices);

- b) Supporting information as specifically set out in Appendix C;
- c) Risk register, as described in Appendix C, part 3.4;
- d) Due-diligence information (as set out in Section 5.5);
- e) A detailed project plan for all stages of the contract; and
- f) Statement of compliance and, if appropriate, supporting information, confirming compliance with or identifying exceptions to the specification or contractual requirements (as set out in Section 5.3). This must be signed by the Respondent.

Additional information (such as organisational brochures, etc.) may be provided to accompany the Submission, but such additional information will not be taken into account when reviewing Proposals.

The Submission shall consist of one (1) electronic copy which shall be provided in both PDF and Microsoft Word formats.

The ETI at its discretion may request further clarification of a Proposal, and may reject any Proposal which is unclear.

8. POST-SELECTION PROCUREMENT PROCESS

8.1. Shaping and Contract Negotiation

Following selection, the ETI will invite up to two preferred Respondents to enter into a phase of shaping, which includes due diligence and contract negotiations. An overall period of 10 weeks has been allowed for this phase.

The shaping and contract negotiation phase will include the following activities (as required and dependent on the level of detail provided in the Respondent's proposal):

- a) Detailing of the proposed programme of work, including definition of deliverables and acceptance criteria;
- b) Detailing and agreement of Payment Milestones;
- c) Other due diligence activities if required;
- d) Agreement of any identified contractual issues (note that compliance with the ETI's contractual conditions is a key selection criterion and the ETI does not anticipate that any significant exceptions to its contractual conditions will be agreed);
- e) Agreement (and approval by the ETI) to terms of other key contractual arrangements (e.g. Subcontracts);
- f) Gaining all necessary Respondent and ETI approvals to undertake the Contract; and
- g) Any further information or assessment that may be necessary to meet state aid requirements.

8.2. Contract Detailing & Negotiation Requirements

These are only required if a Proposal is selected to proceed to the shaping and contract negotiations phase, and will include:

- a) The ETI may ask for evidence of the organisation's health, safety and environmental management systems and specific technical competence to manage the risks in this Contract;
- b) Further intellectual property due diligence: This will primarily comprise detailed Background IP questionnaire;
- c) Copies of insurance policies; and
- d) Any other information that the ETI reasonably requires in order to fund the proposed Contract including any information necessary to meet state aid requirements.

APPENDIX A - DUE DILIGENCE TABLE

A stand-alone copy of this form is available from the ETI website.

Details of Organisation	
Full name:	
Registered Office:	
Type of Business: <input type="checkbox"/> Sole Trader <input type="checkbox"/> Limited Company <input type="checkbox"/> Partnership <input type="checkbox"/> Other – please describe:	
Names of Directors/Partners/Owner:	
VAT Number:	
Details of Directors, Partners or Associates	
Have any directors, partners or associates of the organisation been involved in any organisation which has been liquidated or gone into receivership? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Have any directors, partners or associates of the organisation been convicted of a criminal offence relevant to the business or profession? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Please give (and attach if necessary) full details if you have answered 'Yes' to either of the two previous questions.	
Audited Financial Accounts	
Please supply Audited Financial Accounts for the last 3 years for the organisation, or relevant part thereof.	
Claims of Litigation	
Please provide (and attach if necessary) details of any claims or litigation against the organisation, outstanding and/or anticipated.	
Insurance	
Please confirm that you have insurance cover for the following risks, and confirm levels of cover and expiry for each. ETI will require evidence of these during the Detailing phase.	
<input type="checkbox"/> Property damage	<input type="checkbox"/> Business interruption
<input type="checkbox"/> Employer's liability	<input type="checkbox"/> Public liability
<input type="checkbox"/> Product liability (or justify its exclusion if not appropriate)	<input type="checkbox"/> Professional Indemnity

APPENDIX B - INSURANCE REQUIREMENTS

The Respondent should confirm that insurance cover for the following risks is held, and should confirm levels of cover and expiry for each. The ETI will require evidence of these during the shaping phase:

- Property damage (both any Property occupied by the Participant, its Subcontractors and any third party properties);
- Business interruption;
- Employer's liability;
- Public liability;
- Product liability (or justify its exclusion if not appropriate); and
- Professional Indemnity.

The Respondent should identify if it self-insures for any of these risks.

The Respondent should identify if it is intending to take out any Project-specific insurance for the Contract and the scope and intended beneficiaries of such insurance.

In relation to the Professional Indemnity Insurance, Respondents should note that the ETI requires that the Participant is required to have in place at the start of a Contract a professional indemnity insurance policy (with at least a 6 month unexpired term):

- The policy should have a limit of indemnity of not less than £1,000,000 each and every loss;
- The policy should provide an indemnity at least as extensive as the ETI's policy (the ETI will make this assessment). For example, the cover needs to include cover for negligent acts or omissions, and dishonest or fraudulent acts or omissions by the insured);
- The Participant will need to agree to maintain a professional indemnity insurance policy in force for 6 years from the date of completion of the Contract; and
- The ETI will require sight of the insurance policy provided by the Participant or a copy of a letter of confirmation from the Participant's insurance company or broker summarising the policy.

APPENDIX C - CONTENT AND FORMAT OF PROPOSALS

The Proposal shall be arranged according to the structure defined below and shall explicitly include all the information listed. Proposals should be a maximum of 45 pages. Appendices are in addition to this but these may not be reviewed by the selection panel.

1. EXECUTIVE SUMMARY [approximately 1 page]

A summary of the Proposal, describing briefly:

- The organisation(s) undertaking the work and the organisation structure;
- Summary of the predicted cost of outcomes, approaches taken and key deliverables; and
- Confirmation of compliance with the Request for Proposals and brief summary of key exceptions/deviations.

2. BACKGROUND TO PROPOSED PARTICIPANTS [approximately 3 pages, plus appendices if required to include:]

2.1. Participants

This section should identify all participants to include all subcontractors, partners and suppliers of services as applicable.

2.2. Key Individuals and Roles

This section should identify all key roles and all associated key individuals (including deputies and alternates where appropriate). As well as key technical and other specialists, this should specifically include, (in detail), the nominated Project Manager, Chief Engineer, User Experience Lead and Consumer Research Lead.

The proportion of each individual's time dedicated to the Contract should be identified and their skills and expertise summarised; (CVs should be included in an appendix).

2.3. Organisation

An organisation diagram showing the organisations and their roles (complete with key individuals) should be included.

3. CONTRACT DESCRIPTION [maximum 32 pages, plus appendices if required to include]

3.1. Programme of Work

The programme of work to be undertaken in the Contract should be described. The description should include a task by task breakdown with detail of the proposed work aligned to the requirements provided within this document, identifying for each Task:

- The Task leader and others involved;
- The Task objectives;
- Dependencies including external dependences on Contract 2 and the ETI;
- The technical approach to delivering each Task or Work Package (WP);
- Description of Deliverables produced;
- Any issues or assumptions; and
- Any alternative approaches.

The inter-dependencies between Tasks should also be identified. Interactions with the ETI and with

Contract 2 should be highlighted, together with relevant assumptions.

3.2. Schedules

A top level schedule should be submitted, along with a Gantt which includes the timeline of work packages, proposed milestone and review points.

3.3. Deliverables and Payment Milestones

The Respondent should provide a summary of all deliverables and highlight the proposed timing of release of deliverables to ETI.

This section should also propose acceptance criteria, and desired payment plan linked to the proposed Contract milestones.

3.4. Risk Management

The Respondent should describe the proposed risk management strategy (i.e. how risks to the successful delivery of the Contract will be identified and managed throughout the Contract). The Respondent should also separately provide a summary of key risks should be included in this section, with a risk register as described above provided as an appendix. This risk register should highlight risks not only for Contract 1 but also risks associated with Contract 2 and the broader Project, highlighting owners as appropriate (e.g. Contract 1, Contract 2 or the ETI).

4. INTELLECTUAL PROPERTY [minimum 1 page] (Respondents should also refer to Section 5.2.)

Arising IP

The Respondent should provide a brief overview of the nature of any anticipated Arising IP from each stage of the Contract and the approach to its ownership and exploitation.

If Respondents wish to discuss any licence to use the Arising IP, Respondents should note that under state aid rules profit cannot be paid for the Contract in addition to the grant of a licence of Arising IP.

Background IP

The Respondent should describe any Background IP (e.g. patents, proprietary data, computer algorithms, know how or other IP) only to the extent there is Background IP:

- Which is needed (whether by the ETI, or to be licensed from the Participant or a Subcontractor, or to be licensed by a Subcontractor to the Participant or to another Subcontractor, or otherwise) to carry out the Contract or which may be used during the Contract; or
- That which may be needed by the ETI to exploit the Arising IP.

The description of any such Background IP should detail:

- The nature of the IP (including the legal nature of the IP right);
- Rights to that IP; and
- Ownership and control, whether this is by the Participant, Subcontractors or by any third parties.

Third Party IP

The Respondent should describe any Third Party IP:

- Which is or may be needed (whether by the ETI, or to be licensed between the Participant and / or Subcontractors or otherwise) to carry out the Contract or which may be used during the Contract; or
- Which may be needed by the ETI to exploit the Arising IP.

5. FINANCES [approximately 1 pages, plus appendices if required]

Costs

As stated in section 3.2 it is accepted that it will be difficult for the Respondent to provide a firm price for all stages of the Contract without access to the ETI HEMS Concept Document, which will only be provided on execution of contracts. As such Respondents should provide a breakdown of the total contract value as set out in the following table, giving a range of costs where appropriate. If there are any assumptions or limitations to this price, these should be clearly stated.

Proposals should be based on **costs for the whole contract (please delete columns as applicable)**.

	Date	Contractor 1	Subcontractor 1	Subcontractor 2	Total
Milestone 1					
Milestone 2					
TOTALS					

The Respondent should also provide a breakdown of the total fixed cost contract value as specified in the table below.

	Contractor 1	Subcontractor 1	Subcontractor 2	Total
Number of Person-days				
Total Labour				
Materials				
Subcontractors (minor)				
Travel & Subsistence				
Other				
TOTAL PRICE				

Significant Subcontractors (>20% costs) should be included.

6. INSURANCE [approximately ½ page]

The Respondent should confirm that insurance cover is held and should confirm levels of cover and expiry for each. The ETI will require evidence of these during the detailing phase. Refer to Appendix B for full requirement.

7. PLAN FOR SHAPING AND CONTRACT FINALISATION [approximately ½ page]

Respondents must clearly confirm in the submission that their key technical, commercial and legal resources will be available to meet the Contract signature target date.

8. HEALTH, SAFETY AND ENVIRONMENT (HSE) MANAGEMENT [up to 5 pages]

The ETI's approach to the management of HSE in contracts is based on three key elements:

- Competency assessment;
- Performance assurance; and

- Project incident protocol.

How the ETI applies this approach to a specific contract depends upon the nature and content of the contract.

Respondents will be expected to be able to demonstrate that their approach for managing Health and Safety is intended to deliver excellence, not merely legal compliance.

It is anticipated that work on Contract 1 will involve entering domestic premises or otherwise engaging with members of the public. Respondents should provide details of their arrangements for managing specific risks arising from this.

The HEMS Prototype Systems will be installed by people who are at work, as such the systems developed by Contract 1 will attract the requirement of Section 6 of the Health and Safety at work Act 1974 (General Duties of Manufacturers as Regards Articles and Substances used at Work). The Respondent should describe their procedures for complying with Section 6, with regards to their duties as designers / suppliers of equipment at work.

Respondents should note that:

- Specific HSE requirements will be included in the Development Contract including reporting against HSE performance on a periodic basis and
- The ETI will carry out a full HSE competency assessment against the selected Respondents (the Prime Contractor and the members of any Consortium) prior to (and HSE competency being pre-condition of) execution of the Development Contract.

The ETI may wish to explore the management of environmental issues with the Respondent prior to contract award.

APPENDIX D - TERMS AND CONDITIONS OF THE CONTRACT

There is a general requirement that Respondents provide in their Statements of Compliance information on any proposed clarifications and exceptions to the terms and conditions of the draft Development Contract. Each Respondent should mark-up and comment upon any areas of the draft Development Contract that the Respondent considers to be problematic.

In addition to this general requirement, there are aspects of the Development Contract that are of particular importance to the ETI and that the ETI wishes to highlight in this Appendix D. The ETI expects that each of the Respondents will provide an initial detailed view on these aspects in their Proposal, as part of the Statements of Compliance.

The particular aspects of the Development Contract that the ETI would like to highlight for Respondents' initial consideration are as follows.

1. INTELLECTUAL PROPERTY

The ETI has outlined its requirements in terms of the ownership and ability to exploit arising IP from the Contract in section 4.2. The ETI expects to have rights to Background IP and Third Party IP such that it can use and commercially exploit the Arising IP at its discretion.

Since both the ETI and Respondents are likely to be using Background IP to the contract, **the ETI strongly recommends that the Respondents have an early discussion with the ETI on commercial and IP approaches to the delivery of this contract.**

Respondents should note the minimum requirements for this Contract in Section 5.2 of the RfP.

2. IP WARRANTIES AND DUE DILIGENCE

The Development Contract contains a number of warranties and undertakings related to IP. The ETI will conduct an appropriate level of due diligence before the start of the Contract which relates to IP and the IP warranties. The wording of any warranties may be amended to reflect IP due diligence performed.

3. INDEMNITIES

The ETI will invest funds in this Contract but has no control over any risks and associated liabilities that may arise from the Contract. Therefore the Development Contract contains a number of indemnities in favour of the ETI, including for third party claims and for IP infringement. Respondents should review and comment on the indemnity position in their Submission.

4. STATE AID REQUIREMENTS

The Development Contract has requirements that relate to State aid (through the provision of public monies to the ETI and therefore to the Contract). Please see Section 4.5 of the RfP (State Aid). This includes requirements to return ETI funds in certain exceptional circumstances and record keeping requirements. Please note, the ETI cannot award a contract to any organisation unwilling to accept these requirements.

APPENDIX E - NOTIFICATION OF INTENTION TO SUBMIT A PROPOSAL

The following form is to be completed and received at the address (postal or email) on the front cover no later than the date defined on the front cover and in Section 7.1 of this RfP.

Notification of Intention to Submit a Proposal

Respondent Name: [Legal Name]

Address: [Registered Office Address]

Contact:

Email/telephone:

The above named Respondent hereby notifies the ETI of its intention to submit a Proposal in response to the ETI's Request for Proposal entitled "Prototype Home Energy Management System (HEMS) Development" issued on 13th August 2014.

The Respondent submits this notification on its own behalf [and on behalf of the following proposed Subcontractors]:

Please list below the legal names of the organisations / entities proposed to deliver the Contract.

- 1. [Enter Name]
- 2. [Enter Name]
- 3. [Enter Name]
- 4. [Enter Name]
- 5. [Enter Name]
- 6. [Enter Name]
- 7. [Enter Name]

Signed: _____
For and on behalf of the Respondent(s)

Name: _____

Date: _____

APPENDIX F - NON-DISCLOSURE AGREEMENT

The Non-Disclosure Agreement protects the confidential information of the Respondents and the ETI during the bidding process through to the conclusion of contract negotiations. For the successful Respondents, the confidentiality provisions in the Development Contract will supersede this NDA.

In order to ensure parity across different groups of bidders, the ETI will not enter into negotiations on the terms of this NDA during the bidding process.

Instructions for completing the Non-Disclosure Agreement

1. The Respondent should arrange to complete a single electronic NDA with its company details in Schedule 1;
2. The Respondent should print and sign TWO copies of the NDA. The NDA **must not be dated**;
3. Both copies of the signed NDA are to be sent to the ETI by post and scanned by email to the address on the front of the RFP;
4. On receipt of the NDA fully signed by the Respondent, the ETI will execute and date both copies of the NDA. The ETI will then send a copy of the now fully executed NDA to the Respondent; and
5. The Respondent should then arrange for non-disclosure agreements to be entered between it and any proposed Subcontractors in order to comply with the NDA.

A separate version of this NDA is available on the ETI website.



TWO WAY CONFIDENTIALITY AGREEMENT

THIS AGREEMENT is made on _____ of _____ 2014

BETWEEN:

- (1) **ENERGY TECHNOLOGIES INSTITUTE LLP**, a limited liability partnership (company no. OC333553) whose registered office is at Holywell Building, Holywell Way, Loughborough, Leicestershire, LE11 3UZ (the “**ETI**”); and
- (2) **The parties named in Schedule 1 of this Agreement** (the “**Respondents**”),
(collectively the “**Parties**” and individually a “**Party**”)

BACKGROUND:

The Parties intend to exchange certain Information on or after the Effective Date for or in relation to the Purpose. The Parties agree to receive such Information, and to treat it as confidential information, on the following terms and conditions.

IT IS AGREED:

In consideration of the above and for other good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound, the Parties agree as follows:

- 1 In this Agreement, unless the context requires otherwise, the following words shall have the following meanings:

“**Disclosing Party**” means any Party that discloses Information pursuant to this Agreement;

“**Effective Date**” means the date of execution of this Agreement;

“**ETI Affiliates**” means the Secretary of State for Business, Innovation and Skills (and any successor governmental department or agency from time to time) and any other entity which is entitled to appoint the directors or otherwise having the ability to direct management policies of the ETI (together with any affiliates of those entities), together with their respective officers, employees, agents and consultants;

“**Information**” means any and all confidential information or data exchanged, submitted or otherwise disclosed in respect of or further to the Purpose or prepared for or in relation to the Purpose, including but not limited to written proposal documentation, due diligence materials, contractual documentation, reports, and the fact that the Parties have entered into this Agreement and are discussing and considering a business relationship;

“**Contract**” means the proposed contract under the ETI’s Smart Systems and Heat Programme entitled “Prototype HEMS Development Project”;

“**Contract Commissioning Process**” means the ETI’s commissioning process for the Contract as defined in the RfP and as set out at Section 7 of the RfP or as later may be notified or published by the ETI;

“**Proposal**” means a Proposal as such term is defined in the RfP;

“Purpose” means:

- a the preparation and/or submission of any Proposals and related documents in response to the RFP;
- b the Contract Commissioning Process;
- c any activities related to the assessment of any Proposals for the Contract; and
- d any related exchanges of Information, clarifications, clearances, discussions, due diligence, meetings, and/or negotiations in respect of the RFP, the Contract Commissioning Process and/or the Contract;

“Receiving Party” means any Party that receives Information pursuant to this Agreement; and

“RFP” means the request for proposals relating to the Contract, issued by the ETI on 13th August 2014.

2 The Receiving Party shall with regard to any Information disclosed pursuant to this Agreement by or on behalf of a Disclosing Party on or after the Effective Date:

- a. hold the Information in confidence and, except as is otherwise stated herein or agreed in writing by the Disclosing Party, shall not disclose or make available the Information by publication or otherwise to any third party (including for the avoidance of doubt, disclosure in any patent application or to any patent office) and shall use any Information disclosed to it pursuant to this Agreement only for carrying out the Purpose;
- b. make copies of the Information (or any further information derived from the Information) in whatever form or medium only to the extent that the copies are reasonably necessary for the Purpose and clearly mark all such copies as confidential;
- c. take all necessary and proper security precautions (and at least as great as those it takes to safeguard its own information) to safeguard every part of the Information to prevent it from being disclosed or otherwise made available to any third party except as permitted by this Agreement; and
- d. at the request and direction of the Disclosing Party, and without delay, return or destroy any Information provided to it pursuant to this Agreement and any copies of such Information, except that one copy may be kept by the Receiving Party for archival purposes and for the purpose of defending itself against any claims arising in connection with this Agreement.

3 The obligations set out in clause 2 shall not apply to Information that:

- a. the Receiving Party can prove (using written or electronic records), was lawfully known to the Receiving Party or in its possession prior to its communication by or at the direction of the Disclosing Party and was not communicated to the Receiving Party subject to any restrictions on disclosure or use; or
- b. is or becomes a part of the public domain through no wrongful act of the Receiving Party or any person on its behalf, provided that this clause 3(b) shall only apply from the date that the relevant Information so enters the public domain; or
- c. the Receiving Party receives from a third party without similar obligations of confidence in circumstances where the third party did not obtain that Information as a result of a breach of an obligation of confidence; or
- d. subject to clause 4, is required to be disclosed or made available by the Receiving Party pursuant to any applicable law, governmental regulation, or decision of any court or tribunal of competent jurisdiction or any government body, agency or regulatory body.

4 If a Receiving Party believes it is required by law to disclose any Information under clause 3(d)

above, the Receiving Party shall (in each case and to the extent not prohibited in law):

- a. provide the Disclosing Party with prompt written notice of such requirement or obligation (together with a copy of any relevant access request, court order or other evidence giving rise to such belief) in advance of the required disclosure, to enable the Disclosing Party to seek appropriate protective relief and/or to take other steps to resist or narrow the scope of any required disclosure;
 - b. where it is not permitted in law to notify the requirement for disclosure in advance of the required disclosure, notify the Disclosing Party as soon as reasonably practicable after the disclosure confirming the nature of and extent of the disclosure; and
 - c. co-operate with the Disclosing Party with respect to such matters, and in any event disclose only such Information as it has ascertained, after taking legal advice, it is legally compelled to disclose.
- 5 The ETI shall be entitled to disclose or make available any Information it receives from the Respondents (or any of them) to:
- a. such of the ETI Affiliates, and either the ETI's or the ETI Affiliates' employees, officers, secondees, agents, consultants, Subcontractors, proposed Subcontractors, professional advisers and proposed professional advisers where such disclosure is necessary for the Purpose, provided that all such aforementioned persons to whom any Information is disclosed by the ETI are bound by obligations of confidentiality and the ETI shall be responsible for breaches of the obligations by such persons. Each ETI Affiliate may enforce this clause in accordance with the Contracts (Rights of Third Parties) Act 1999; and
 - b. the Department of Business, Innovation and Skills (or other relevant government department), the European Commission and such other bodies and/or individuals (including without limitation professional advisers) as may reasonably be required for the notification of, to seek advice in relation to, as part of an assessment of, or otherwise in relation to, State aid.
- 6 The Respondent shall be entitled to disclose or make available any Information it receives from the ETI to such of its employees, officers, consultants, subcontractors, proposed subcontractors and professional advisers where such disclosure is necessary for the Purpose provided that all such persons to whom any Information is disclosed are bound by obligations that are no less restrictive than those in this Agreement. The Respondent disclosing Information shall be responsible for breaches of the obligations by such persons.
- 7 Each Party as Receiving Party expressly agrees and accepts that except in the case of fraud, no representation or warranty, express or implied, is made by the Disclosing Party as to the accuracy, completeness, reasonableness or otherwise in respect of the use of the Information, and that neither the Disclosing Party or any of its affiliates nor any of its or their respective employees, officers, secondees, agents, consultants, Subcontractors and professional advisers (as applicable) shall have any liability to the Receiving Party as a result of the Receiving Party's possession or use of the Information.
- 8 The Parties agree that money damages would not be a sufficient remedy for any breach of this Agreement and that the Disclosing Party shall be entitled to specific performance and injunctive or other equitable relief as a remedy for any such breach. Such remedy shall not be deemed to be the exclusive remedy for breach of this Agreement, but shall be in addition to all other remedies available at law or equity.
- 9 No rights or obligations other than those expressly set out in this Agreement are to be implied and nothing contained in this Agreement:
- a. constitutes an offer by or on behalf of the Disclosing Party; or
 - b. confers upon the Receiving Party a licence or other transfer of rights in respect of any Party's interest in any Information or in any present or future patent or patent application;

or

- c. affects the present or prospective rights of the Disclosing Party under the patent laws of any country or precludes the filing or prosecution of any patent applications by the Disclosing Party.
- 10 This Agreement represents the entire agreement between the Parties in relation to the subject matter contained herein and supersedes all other agreements and representations, whether oral or written, between the Parties relating to such subject matter. This Agreement may only be modified if such modification is in writing and signed by a duly authorised representative of each Party. Each Party also agrees that it shall have no remedies or claims under this Agreement for any innocent or negligent misrepresentation based on statements made prior to the Effective Date.
 - 11 The Parties agree that the ETI may disclose that one or more of the Respondents are involved in discussions with the ETI and the subject matter of the discussions provided that the ETI will provide a copy of any press release or other announcement to the Respondents and seek the approval of the Respondents prior to its publication or release. Other than as set out in this clause, none of the Parties will make any public announcements, statements or otherwise publicise the subject matter of this Agreement (or its existence) without the prior written consent of the other Parties and no Party will use the business names or trademarks of any other Party in any way without that Party's prior written consent.
 - 12 This Agreement shall come into force on the Effective Date and shall continue in full force and effect, notwithstanding the completion of the Purpose, for a period of seven years from the Effective Date unless extended, superseded or otherwise varied by a subsequent written agreement between the Parties.
 - 13 It is not intended that a third party (other than an ETI Affiliate) should have the right to enforce a provision of this Agreement pursuant to the Contracts (Rights of Third Parties) Act 1999.
 - 14 The rights of the Disclosing Party under this Agreement are in addition to and not exclusive of rights under the general law and may be waived only in writing and specifically. Delay in exercising or non-exercise of any right under this Agreement is not a waiver of that or any other right, partial exercise of any right under this Agreement shall not preclude any further or other exercise of that right or any other right under this Agreement and waiver of a breach of any term of this Agreement shall not operate as a waiver of breach of any other term or any subsequent breach of that term.
 - 15 If any provision of this Agreement is or becomes illegal, invalid or unenforceable in any jurisdiction, that shall not affect:
 - a. the legality, validity or enforceability in that jurisdiction of any other provision of this Agreement; or
 - b. the legality, validity or enforceability in any other jurisdiction of that or any other provision of this Agreement.
 - 16 Nothing in this Agreement is intended to or shall operate to create a partnership or joint venture of any kind between the Parties (or any of them), or to authorise any Party to act as agent for another, and no Party shall have authority to act in the name or on behalf of or otherwise to bind any other in any way.
 - 17 Except as provided otherwise, no person may assign any of its rights under this Agreement or any document referred to in it.
 - 18 This Agreement may be executed in any number of counterparts, each of which when executed and delivered shall constitute an original of this Agreement, but all the counterparts shall together constitute the same agreement. No counterpart shall be effective until each Party has executed at least one counterpart.
 - 19 This Agreement shall be construed in accordance with and governed by English law and the

Parties hereby submit to the non-exclusive jurisdiction of the English Courts.

The Parties have caused this Agreement to be executed by their duly authorised representatives.

ENERGY TECHNOLOGIES INSTITUTE LLP

Signed By: _____

Name: _____

Title: _____

Date: _____

SCHEDULE 1

Respondent	Signature
Company Name: Company No: Address of Company:	By: Name: Title:

The ETI will return a copy of the executed Non-Disclosure Agreement to the Respondent. Please provide the relevant name and address for this correspondence below.

Contact for return of executed Non-Disclosure Agreement	Send to [name]: At postal address:
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APPENDIX G – PROTOTYPE HEMS DEVELOPMENT REQUIREMENTS

1. SCOPE AND OBJECTIVES OF THE ETI HEMS PROTOTYPE DEVELOPMENT PROJECT

Based on prior research the ETI has developed a set of requirements and capabilities which it believes will characterise a future HEMS solution for the domestic market. As a starting point the environment which HEMS are likely to operate within is described in Figure 1:

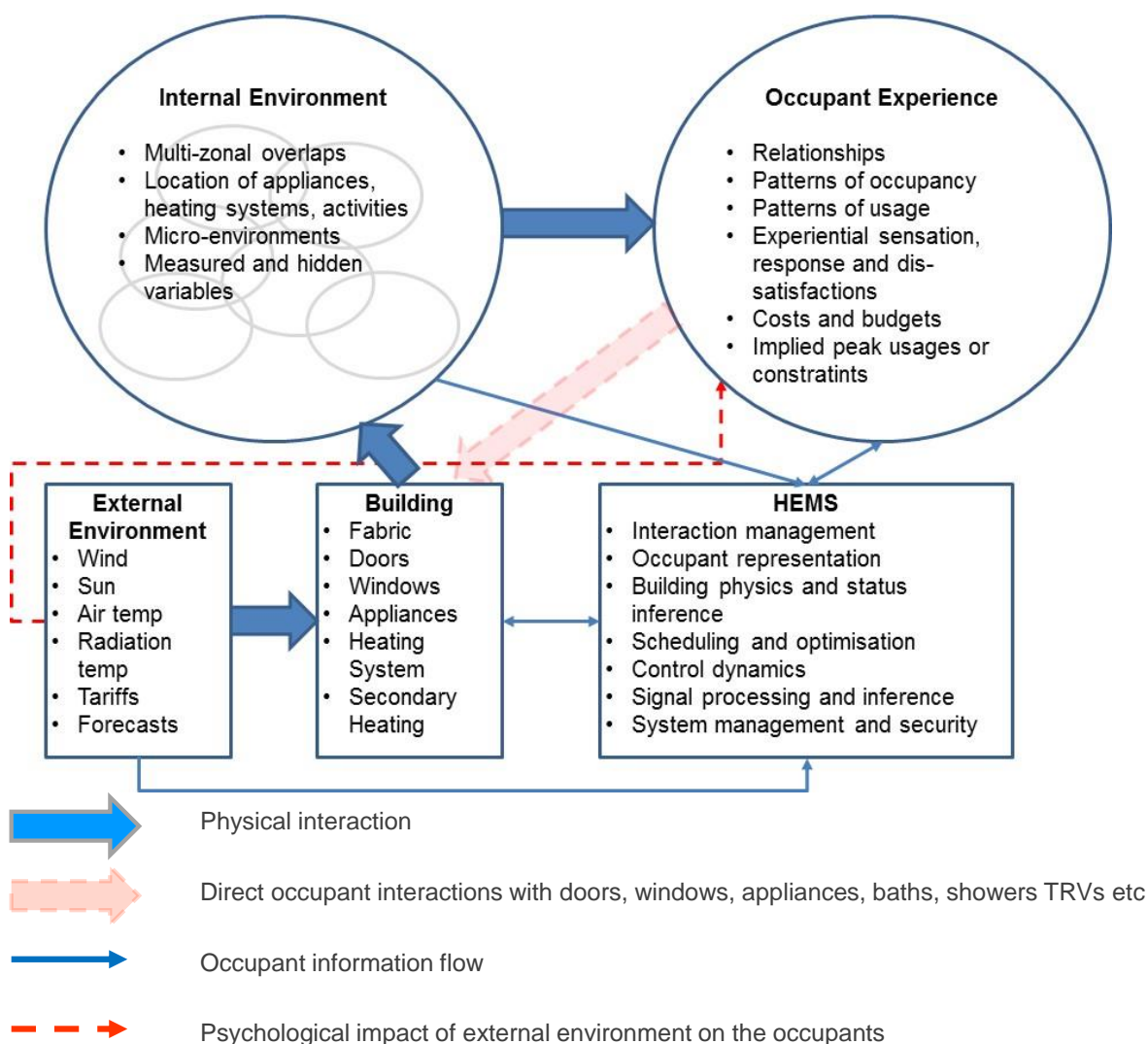


Figure 1: HEMS Operational Environment

Preliminary requirements identified by the ETI are captured in the ETI HEMS Concept Document.

Whilst the range of capability of a future HEMS solution described above is broad ranging, the ETI sees the following at the core of any development;

- The development and test of an advanced, consumer centric, HEMS prototype focused on the customer experience for future smart energy systems. The HEMS Prototype System should:
 - Enable the household to feel more in control of their heat use whilst fundamentally breaking the conceptual link that has traditionally existed between the demand for heat (heated spaces and hot water) and the supply of energy to meet that demand. By breaking this link the HEMS will enable energy to be supplied at the optimal time to reduce costs within the wider system whilst also ensuring the customer is in full control

and able to satisfy their broader requirements;

- Enable the household and an energy supplier to 'negotiate' a service transaction that increases customer confidence and satisfaction; a dialogue to balance expectations for heated spaces and hot water on the one hand with the price for those services on the other. This capability could open new market opportunities, for example business models that include the provision of equipment, those that use hybrid gas / electric energy vectors, those that use home heat storage to balance the electricity grid, those that enable a consumer to directly compare and choose between energy supplier offerings against a known demand 'requirement' and those which offer to take some risks (such as the impacts of variation in the weather) away from the consumer to give guaranteed pricing; and
- Enable the household to identify and value investments in modifying their home (e.g. adding more insulation) or changing their heating system (e.g. a more efficient boiler). This capability will facilitate the appropriate information environment required to enable consumers to find the best route for energy services that suits their individual needs. This will require a "whole system" approach to heating systems and the related building fabric.

Delivery and demonstration of such a capability would be seen as the first stage of development in the ETI HEMS solution. Future system developments would be based on this capability.

2. CURRENT ETI ASSUMPTIONS ON THE STRUCTURE AND APPROACH TO THE HEMS DEVELOPMENT AND FIELD TRIAL

The following assumptions should be used by the Respondent in the development of their response to this RfP:

- Contract 1 will develop a HEMS Proposition with support from the Contract 2 Participant. The HEMS Proposition will describe the market offering of the HEMS Prototype System, i.e. the capability and services offered by the HEMS. It is expected that this proposition will be used as the basis for recruiting Trialists;
- The development of a Field Trial Methodology to evaluate the HEMS Prototype System will be led by Contract 2 and supported by the Contract 1 Participant;
- The current thinking of the ETI in relation to the early testing and evaluation of the HEMS Prototype System is intended to be a staged process designed to manage risk, it is described below. This approach is not frozen and is dependent on the capabilities and approach of the Contract 1 Participant. Respondents are invited to propose their preferred approach, with suitable justifications where appropriate:
 - The HEMS Prototype will be tested in a laboratory or similar controlled environment by the Contract 1 Participant prior to being released to the Contract 2 Participant for deployment in a property;
 - It is expected that the HEMS Prototype will be installed, commissioned and set to work in an unoccupied building, where it will control a real heating system, before deployment in occupied properties. The unoccupied home would be provided by Contract 2. The intention of this activity is to evaluate the performance and safety of the basic platform;
 - Once satisfied with the performance and safety of the basic platform, the HEMS Prototype will be deployed in ~ two, occupied trial dwellings; and
 - Once appropriate system stability, functionality and bug rate are demonstrated, then the HEMS Prototype will be deployed to a small cohort of circa 10 "friendly" Trialists for further evaluation prior to any larger scale deployment;
- The Contract 2 Participant will be directed by the ETI as to when and in what quantities to deploy HEMS Prototype Systems to Trialists;

- Software up-upgrades to the deployed HEMS Prototype Systems will be managed and carried out by the Contract 1 Participant. Training in the use of new functionality released to Trialists would be carried out by the Contract 2 Participant;
- Interviews with Trialists for the purposes of consumer research will be arranged by the Contract 2 Participant, but carried out by the Contract 1 Participant;
- The Contract 1 Participant will provide a 24/7 helpline for Trialists to call in the event of problems with the HEMS Prototype system installed in their home. The Contract 1 Participant will act as a triage for reported issues and recommend actions to address them. For reported issues which collectively require less than 1 day of on-site activity to resolve then the Contract 1 Participant will have the delegated authority from the ETI to direct the Contract 2 Participant to resolve them, for any issues which collectively require greater than 1 day of on-site activity then only the ETI may direct the Contract 2 Participant to address such issues. In the case of site visits representatives from the Contract 1 may accompany Contract 2 as required; and
- At the conclusion of the Field Trial, or when a Trialist elects to leave the Field Trial, there are two anticipated exit routes:

Option 1 – Leave HEMS Prototype Systems in Situ

Should the Contract 1 Participant agree to provide a warranty for the HEMS Prototype System equivalent to that of a commercially available HEMS, then the Trialist may be given the option to retain the HEMS Prototype System installed in their property. The Contract 2 Participant would be expected to agree and document the handover of the system and formal exit of the Trialist from the Field Trial, such that there would be no on-going liability to the ETI or to Contract 2. As part of this process the Trialist's property would be 'made good' and returned to its original condition.

If the Contract 1 Participant is not able to provide a suitable warranty then Option 2 would be followed.

Option 2 – Remove HEMS Prototype Systems

Should the Contract 1 Participant not be able to provide a warranty for the HEMS Prototype System equivalent to that of a commercially available system, or if the Trialist does not want to retain the HEMS Prototype System in their property, then the Contract 2 Participant would be obliged to supply a pre-agreed, commercially available HEMS system for installation in the Trialists property. The warranty associated with the commercially available system would be passed on to the Trialist. The Contract 2 Participant would be expected to agree and document the handover of the system and formal exit of the Trialist from the Field Trial, such that there would be no on-going liability to the ETI. As part of this process the Trialist's property would be 'made good' and returned to its original condition. The provision of a commercially available HEMS product is felt to be a more effective solution than to re-install the HEMS system originally in the Trialist's property prior to the start of the Field Trial.

3. TECHNICAL REQUIREMENTS FOR THE ETI HEMS PROTOTYPE

The ETI expects the prototype system to be built of generic, proven and cost-effective mass-market hardware and software platforms as far as possible, to deliver the functionality at low development cost and risk. Customisation should focus only on critical elements such as user interface and experience, reducing computational load to practical levels, reliability engineering etc. Within reason development time, cost and risk are more important than marginal reductions in cost or performance enhancements of the prototype.

In order to deliver the required cost and scalability requirements for future exploitation, the ETI expects that the system will be built in a number of layers:

- Basic operating control hardware that will continue to function in the absence of any input from the HEMS;

- A HEMS installed as a “hidden box” in the building that carries out most of the data handling and user interface tasks and enables the essential user interface control functionality;
- A tablet and phone application that provides the user interface;
- A cloud data and process server that provides back-up and services that are infrequent and too computationally intense for the dwelling hardware to deliver cost-effectively; and
- Indicators and tell-tales that provide user feedback about system functioning, preferably local to the relevant components.

The design of this architecture will be for the Participant to optimise.

The core elements of functionality of the HEMS Prototype System are expected to be as follows:

- The integration of existing mature functionality as defined by the HEMS developer, expected to include but not be limited to:
 - Control of a gas boiler;
 - Smart phone / tablet / internet interface;
 - Monitoring and response to consumption of gas, electricity and water consumption;
 - Monitoring and response to the state of a hot water cylinder(s);
 - Compatibility with smart meters;
 - Humidity monitoring;
 - Interface to live weather data; and
 - Response to changes in energy tariffs.
- A budget management and energy use analysis capability to inform users of the impact in terms of cost and comfort of their behaviours and desired living conditions;
- A model of the physics of the building, its systems and surrounding environment;
- Intelligent learning algorithms and dialogue based user interface that adapts to the needs and engagement style of different types of household;
- Setup support tools that enable an installation engineer to rapidly capture and apply information about the building, heating system and occupants; and
- System security and reliability functions.

Depending on the capability of the Participant, then additional functionality could be implemented into the prototype HEMS solution.

The ETI believes that it is possible to define a modular systems architecture that defines the interactions between the modules and enables the challenge of developing each module to be localised within the Participant.

The HEMS should consider the building as a set of interconnected living spaces that are occupied for different purposes at different times and with varying physical and emotional needs. The control system needs to reflect the relationship between the various physical factors affecting comfort, including air temperature, surface temperatures, air flow and humidity. However, many of those parameters can only be inferred rather than measured.

Zonal control is likely to be the core of delivering the envisaged HEMS functionality. The operation of the primary heating systems will be monitored in some detail, as well as the external environment (air temperature, radiation temperature, wind speed and insolation).

The HEMS is expected to have access to data from sensors inside the building, weather sensors outside the building, sensors integrated into the heating and water systems, sensors attached to the energy and water supplies and sensors integrated into the ICT equipment associated with the HEMS. In principle it could also gather information from the internet connection, any sensor and state data associated with smart appliances and smart meters and inputs from its interface device.

Patterns from these sensors are expected to be analysed by various means, in combination with user inputs, to make inferences about energy use.

Building occupants with advanced HEMS will expect that the HEMS will increase the overall reliability of their heating (and other systems if included in a wider home automation) and not reduce it. The system therefore needs to be designed to mitigate the effects of user error, programmer error, installation and setup error, malicious attack, failure of hardware inside the building and extended systems outside the dwelling. Delivering this is mostly about following good practise in system design and integration, quality management and testing.

Much of the functionality currently being promoted in the market place will come for free or is implied by the statements above. For example a tablet app within the home can become a solution for remote operation trivially, given that the system has an internet connection. The depth of energy use capture and analysis in our requirements would enable very significant analysis of energy use and prioritisation by the user.

4. CONSUMER RESEARCH OBJECTIVES

There are two broad objectives associated with conducting research with consumers as part of the ETI HEMS Development Project.

The first objective is to understand how to improve HEMS so it delivers a better consumer experience. This typically involves highly skilled research specialists spending time with a relatively small number of households to understand how to improve each aspect of their HEMS customer journey from first hearing about HEMS, deciding they want one, arranging one to be installed, learning how to use it and finally living with it over time. Respondents will need to demonstrate they have specialist skills in this area with a proven track-record of designing, conducting appropriate research, analysing the findings and producing bespoke deliverables to communicate the implications. This is typically called qualitative research or user research and often includes interviewing occupants in their homes, observing what they do at home and asking them to complete diaries to understand how a product fits into their lives.

The second objective is to assess the success of specific HEMS propositions. This typically involves researchers spending less time with a larger number of households to collect metrics which capture how well a HEMS proposition is performing across the customer journey. Again, Respondents will need to demonstrate they have specialist skills in this area with a proven track-record of designing, conducting appropriate research, analysing the findings and producing bespoke deliverables to communicate the implications. This quantitative research normally involves occupants completing very structured surveys either with an interviewer (in person or over the phone) or by completing a form on the internet. In this case the research methodology could include:

- which households to include;
- how to find them;
- what questions to ask; and
- when to ask those questions.

The research methodology developed should be capable of assessing its success objectively.

In each case it will be more informative if consumer feedback is combined with other evidence. For example, it will be useful to combine consumers' subjective perceptions of how comfortable they feel

with objective evidence on the indoor environment. This will require whomever integrates the different types of data to produce a holistic impression of evidence from different sources to produce a more holistic evidence base.

It is not possible to finalise exactly what research is required to meet either objective until the HEMS proposition has been defined. With that in mind, Respondents are asked to identify appropriate qualitative and quantitative research specialists, agree how they would collaborate and estimate what they would charge to deliver the activities set out below. Proposals should demonstrate how these organisations will work together to meet the objectives outlined above.

Example qualitative feedback

- For 50 households:
 - Design and conduct a 30 minute phone interview;
 - Organise Trialists to complete 3 diaries; and
 - Set up 3 x 3 hour interviews and 1 x 3 hour workshop in a viewing studio.

Example quantitative feedback:

- For up to 300 households working in collaboration with the Contract 2:
 - Design and conduct online customer feedback survey;
 - Conduct a 30 minute telephone survey; and
 - Conduct a 1 hour in home interview.

5. OUTSIDE THE SCOPE OF HEMS DEVELOPMENT AND DEMONSTRATION

The following should be considered outside the scope of Contract 1:

- Engagement with field trial participants, except for the purposes of consumer research, or at the specific request of Contract 2;
- Collection of data from the field trial properties.
- Training of Trialists; and
- Training of installers.

6. DATA MANAGEMENT REQUIREMENTS

Data acquired from the HEMS Prototype Systems deployed in the Field Trial shall be stored on secure server with restricted access to approved personnel. Daily automatic backup of data will be carried out. Data should be stored in a readable format with commonly available software data management tool(s) for third party access. Data should be captured on real-time basis with ability to download data stored on HEMS control hub in the event of temporary loss of broadband connection.

7. HEMS DESIGN AND MANUFACTURE

The Respondent should address the following requirements in their response to this RfP:

- Prototype equipment manufactured as part of Contract 1, for instance the HEMS Control Unit, should be assembled in accordance with a well-established and appropriate quality management system;
- Prototype equipment provided by Contract 1 to Contract 2 should comply with the WEEE (Waste Electrical and Electronic Equipment) Directive and the RoHS Directive (implemented in the UK by The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic

Equipment Regulations 2012). The Respondent should describe their procedures for ensuring compliance; and

- The Respondent should indicate what product safety directives and electrical safety directives may be applicable to their equipment and how certification will be achieved.

APPENDIX H - GLOSSARY

Term	Definition
Arising IP	Any intellectual property which is created by or for any party during the Project or for the purposes of the Contract.
Background IP	Any intellectual property which existed prior to any party's commencement of the Contract and which was created by or for the party.
Business Model	The way in which assets / commercial propositions are managed to deliver, create and capture value.
Company Registration Number	Company number as registered at Companies House. Universities should enter their Royal Charter (RC) number in place of the Company Registration Number requested.
Contract 1	The Prototype HEMS Development Contract (the subject of this RfP)
Contract 2	The Prototype HEMS Field Trial Contract
Development Contract	The Contract, as described in Appendix E, to be entered into between the ETI and the Prime Contractor.
ETI	The Energy Technologies Institute LLP, a limited liability partnership (Company no. OC333553) whose registered office is at Holywell Building, Holywell Way, Loughborough, Leicestershire LE11 3UZ.
ETI HEMS Concept Document	A document developed by the ETI which defines the functionality and requirements expected to be required in an advanced, consumer centric Home Energy Management System.
ETI HEMS Development Project	The overarching project to develop and demonstrate an advanced consumer centric HEMS product, supported by Contract 1 and Contract 2.
Field Trial Methodology	The methodology and approach to evaluate the functionality embodied in the HEMS prototype to be developed in Contract 1.
HEMS	Home Energy Management System(s).
HEMS Proposition	The market offering made to Trialists around the capability and services offered by the HEMS, to be used as the basis for recruiting Trialists into the Field Trial
HSE	Health, Safety and Environment.
ICT	Information and Communication Technologies.
HEMS Proposition	The market offering made to Trialists around the capability and services offered by the HEMS, to be used as the basis for recruiting Trialists into the Field Trial
Member	The ETI's industry members (as identified on the ETI's website from time to time - http://www.eti.co.uk/about/current_members), including affiliates of such members, and Her Majesty's Government (including but not limited to those public sector members identified on the ETI's website (above) from time to time and Associate Member(s)).
Non-Disclosure Agreement or NDA	A non-disclosure agreement in the form provided at Appendix F.
Participant	The Respondent selected by the ETI to be the Prime Contractor. For the

	avoidance of doubt, references to “Participant” do not include any Subcontractors.
Payment Milestone	A contract milestone with defined constituent deliverables, associated deliverable acceptance criteria, and milestone value (all to be detailed in the Respondent’s Proposal and agreed in the Contract) which should be completed in order to reach the said milestone, and at which, subject to acceptance by the ETI that the milestone has in fact been reached, payment may be claimed from the ETI.
Prime Contractor	A sole organisation which contracts with the ETI to manage the Project. It may have Subcontractors.
Programme Associate	Programme associates of the SSH Programme (as identified on the ETI’s website from time to time).
Programme or SSH Programme	The ETI Smart Systems and heat programme that includes the Project.
Project Manager/Lead	The individual who is appointed by the Contractor to carry out its responsibilities and act as the prime point of contact with ETI.
Project Steering Group	A steering group chaired by the ETI and consisting of the Project Manager and Chief Engineer from Contracts 1 and Project Manager and Field Trial Manager from 2.
Proposal	The proposal for the Contract submitted to the ETI, in response to this Request for Proposals.
Respondents	The organisations submitting a Proposal to the ETI.
Review Point	A Contract review involving the Contractor and ETI representatives at which the overall progress in Contract or a specific Work Package will be critically reviewed and following which a formal decision will be made on the future Contract programme.
Stage Gate Review SGR (Stage Gate Review)	A major Contract Review Point involving the Contractor and ETI representatives at which the overall performance and business case for the Contract will be critically reviewed and following which a formal decision will be made whether to continue with the Contract, based on whether agreed Stage Gate Criteria have been met.
Subcontract	A contractual arrangement (described in Section 3.6) between the Contractor and another organisation to which work for the Contract has been subcontracted.
Subcontractor	An organisation which has a Subcontract.
Submission	The components set out in Appendix C, including the Respondent’s Proposal submitted by the Respondent in response to this Request for Proposals.
Task	A significant activity or group of activities (within a Work Package) which results in completion of a deliverable or a significant part of one, or which represents a significant step in the process towards one.
Third Party IP	Any intellectual property which is required for or used in the Contract (other than Arising IP and Background IP) and which is owned by parties other than the ETI and Participant.
Trialist	A member of the public, recruited by Contract 2 to take part in the

	Prototype HEMS Field Trial
Work Package (WP)	A major section of the Contract scope of work, which may be identified in this Request for Proposals or in the Respondent's Proposal, in order to break up the scope of work into separate manageable parts. A Work Package will usually consist of a number of Tasks.