



Programme Area: Energy Storage and Distribution

Project: Transportable Storage

Title: Request for Proposal

Context:

With increasing utilisation of renewable energy sources, there are many cases where the ability to site generation of electricity within easy reach of demand becomes more limited (e.g. offshore wind farms). More remote locations are more costly to connect to electricity networks or pipelines. Additionally, intermittency of renewable energy sources places a greater emphasis on the use of energy storage to balance the different variations in supply and demand over time. Transporting stored energy is one possible way to address these concerns simultaneously. The aim of the project was to understand and quantify transporting energy for a number of different scenarios. Cases were developed for offshore wind farms located off the UK and concentrated solar in the Sahara. A range of options were then analysed for transporting and transmitting energy from source to demand with the different approaches quantified and compared.

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Request for Proposals (RfP)



Title of Services for which Proposals are Requested:

A Techno-Economic Evaluation of Transportable Energy Storage

Request Issue Date:

23rd August 2010

Deadline for Notification of Intention to Submit a Proposal:

10th September 2010

Engagement Workshop:

N/A

Closing Date:

Proposals must be received before 5pm on 30th September 2010

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1 Introduction and Overview of the Services Required

1.1 Introduction to the Energy Technologies Institute

The Energy Technologies Institute LLP (the ETI) is a private organisation formed as an innovative Limited Liability Partnership between international industrial energy companies and the UK government.

Our mission is to accelerate the development, demonstration and eventual commercial deployment of a focused portfolio of energy technologies, which will increase energy efficiency, reduce greenhouse gas emissions and help achieve energy and climate change goals.

We will do this by leveraging the skills, capabilities and market access routes of our members, working with other organisations worldwide; to take the most challenging large-scale energy projects to full system demonstration, thus bridging the gulf between laboratory proven technologies and full scale commercially tested systems. Our projects will also develop knowledge, skills and supply-chains, and will inform the development of regulation, standards and policy. Hence we aim to overcome major barriers, de-risk the future development and shorten the lead times to market for secure, affordable, low-carbon energy systems for power, heat and transport.

Our portfolio includes programmes in areas such as Offshore Wind, Marine, Distributed Energy, Transport, Energy Storage & Distribution, Buildings and Carbon Capture & Storage.

Further information on the ETI, its members and its programmes can be found on our web-site at www.energytechnologies.co.uk

1.2 Background to the Project

The feasibility and economics of transporting stored energy on a large scale is potentially an important factor in developing access to renewable energy resources.

There are a number of factors that can make the use of transmission and distribution infrastructure to directly connect sources of energy supply to corresponding demands more costly.

With increasing utilisation of renewable energy sources there are many cases where the ability to site generation within easy reach of demand becomes more limited; for example, offshore wind-farms are inevitably further from major conurbations than a typically located coal-fired power station. In scenarios of this type, how the energy is moved from where it is generated to where it is needed becomes a more critical aspect of the overall energy system.

More remote locations are more costly to connect to transmission lines, be they electricity networks or pipelines. At the same time the intermittency of renewable energy sources places a greater emphasis on the use of energy storage to balance the different variations in supply and demand over time. Transporting stored energy is one possible way to address both of these concerns simultaneously.

In this approach, instead of transmitting the energy directly and immediately to where it will be used, the energy is generated and stored in a mobile storage device. The storage device is then transported to a new location further down the supply chain and the available energy used either continuously or intermittently as required. In most conceptions of this approach, the spent storage device is returned to the generation site to be re-used.

The storage device is not defined and could be any energy storage device that facilitates the conveyance of energy, for example a battery or other chemical or heat storage device.

In deciding whether to support the development of transportable energy storage technologies, the ETI needs access to a thoughtful and factual analysis that considers all the relevant factors and identifies where transportable energy storage is most likely to be beneficial and what cost and performance targets would need to be met to justify the development of potential technologies to deliver transmission scale transportable storage.

1.2.1 Impact of Cost Effective Energy Transport for the UK

Cost effective large scale energy storage and transportation would impact each of the key interest areas of the ETI:

Affordability

- Improved overall system efficiency by making productive full use of energy from low carbon sources.
- Assist in minimising the need for generating plant operating at low load factors.

Security of Supply

- Reduce dependence on imports of energy to support short term peaks during the winter when prices are highest.
- Reduce susceptibility to generation system and distribution system failures.

Sustainability / Greenhouse Gases

- Large scale energy transport could allow greater diversity of low carbon energy sources to be deployed.
- Reduce the need for primary fuel through the overall system efficiency savings.

1.3 Scope of Project Activities

1.3.1 Outline

A high level techno-economic evaluation of the integration of transportable energy storage, including a comparison to the transmission of that energy through networks, into the UK 2050 energy system is required. Transportable energy storage in this context refers to the conversion of generated energy to a stored form that is subsequently transportable.

There are a number of possible scenarios that have been initially identified as being of particular interest. It should be noted, however, that the analysis of other scenarios that may favour transportable energy storage in addition to those described here should not be excluded. The identified scenarios of interest can typically be characterised as having certain combinations of supply and demand factors. A typical supply might be a high power but intermittent form of energy generation in a remote or difficult to access location. Whilst the intended demand might also have a varying energy profile but be of a generally lower power.

The envisaged appeal of using transportable energy storage when scenarios with these factors arise is the possibility of avoiding the large costs associated with the transmission infrastructure that would otherwise be required. The costliness of connecting energy generation in remote locations is primarily due to the distance and thus associated amount of transmission infrastructure that is required as well as overcoming any complexities associated with the specific environment. It can even make it uneconomic to connect otherwise plentiful sources of energy. With an intermittent power supply there is the need to design any transmission system to cope with the peak power supply despite the average power load being much lower than this. When this is combined with a remote source the cost premiums are compounded.

An obvious example of this sort of supply is onshore and offshore wind in the far north west of Scotland. Understanding whether converting the energy generated at a generating site such as this to a stored form and then transporting that stored energy in bulk could be a more cost effective approach to delivering the energy to demand sites is the main interest.

With regard to the demand sites, flexibility is greatest when the demand is lower power than the supply. In areas of dispersed demand in particular transportable energy storage may provide a cost effective option for dispensing with sprawling networked distribution systems by enabling stores of energy to be infrequently delivered directly to the different sites.

The flexibility is borne out by the ability to store the energy to use when it is needed instead of needing to have a demand to make use of the available energy or to have to discard it. This will

become an issue of increasing importance with the likely increase in renewable energy generation, where even traditional transmission and distribution infrastructure will likely have to incorporate some form of energy storage. The question is whether combining the storage of energy and the transport of energy into a unified transportable energy storage system could be more cost effective than the use of transmission and distribution infrastructure to move the equivalent energy to separate storage devices prior to the energy being consumed.

The initially identified scenarios for consideration (noting that the analysis should not be limited to these scenarios if other scenarios that may favour transportable energy storage are identified) are described below in terms of the generation site cases and the corresponding demand site cases of which they comprise.

1.3.2 Generation Site Cases

The three generation site cases are:

1. Converting energy generated by onshore and offshore wind farms in the far north west of Scotland to a storable form and transporting that to sites of demand on the UK mainland. This would be in comparison to connecting those same wind farms to large scale transmission infrastructure.
2. Importing stored energy to the UK from North Africa that has been converted to stored energy from energy generated by concentrated solar power (CSP). This would be in comparison to connecting the same CSP source to a continental scale HVDC transmission network.
3. Exporting excess renewable generation, e.g. offshore wind, from the UK to other countries. This would be in comparison to that same energy being exported via transmission infrastructure.

1.3.3 Demand Site Cases

If and once suitable technologies are identified, an assessment should be made as to where in the energy distribution system(s) it is most cost effective to reintroduce the stored energy for use; based on the nature and scale of the identified technologies, convenience and cost of connection, and system value / benefit. Reintroduction points may be:

- a convenient point of access into the Transmission system (for each appropriate vector), such as an existing onshore generation site or primary substation;
- the location of a high consumption / high value load on the Transmission system (for each appropriate vector), such as a city centre, industrial site, data centre etc;
- a convenient point of access into the Distribution system (for each appropriate vector), such as an existing substation; or
- the location of a high consumption / high value, consumer-level point load on the Distribution system (for each appropriate vector).

As the reintroduction point gets closer to the ultimate demand site, transportable energy storage becomes potentially more attractive, but the characteristics of the final demand become more significant in the analysis. This analysis should therefore consider both 'Dispersed' demand sites and individual 'Compact' demand sites, each of which may have either constant or variable demand patterns.

Having made these assessments and identified where in the distribution system it is most cost effective to reintroduce the stored energy, suggestions should be made as to how the identified technology(ies) might be developed to further optimise their cost effectiveness in this application.

For the third generation site case described in section 1.3.2, the assessment should consider potential demand sites in a range of different countries that would offer the ability to compare a variety of distances, transport modes and terrains and environments that need to be negotiated.

1.3.4 Parameters for Techno-Economic Evaluation

The techno-economic evaluations should address the following parameters:

- The costs throughout the entire life-cycle of the different options, from generation through to end-use and incorporating any costs associated with returning energy carriers.
- How to position transportable energy storage within the wider energy landscape, including identifying the tipping point or more likely tipping points between the transmission and transportation of energy.
- The relative costs associated with transmitting energy (e.g. as electricity using different types of transmission) versus converting the generated energy to a stored form (e.g. chemical) and subsequently transporting that stored energy to where it is needed.
- The costs associated with different locations in terms of the likely energy generation and the modes for transporting or transmitting energy to areas of demand; and identify which locations could best exploit transportable energy storage.
- The costs associated with transporting energy at different scales and frequencies.
- What level of performance would be required of the energy storage technology to make it a viable medium for transporting energy; and develop an appropriate performance specification (this could vary for different geographic areas).
- What technologies could be utilised to enable stored energy to be transported in a cost effective way. This should include both currently available technologies and those that will be available in the near term – these should fall within the Technology Readiness Levels (TRLs) 3-6 (see Appendix D for details).
- Which of the technologies would be best able to meet the aforementioned performance specification; including which would be best suited to applications of energy storage and transportation including for example different scales and frequency of operation.
- What the cost sensitivities and dependencies associated with the transportation of stored energy are; including their relative influence.
- The relative costs associated with transporting and delivering energy to different points and stages within the energy system; and consequently which points and stages of the energy system would be best served by transportable energy storage.
- The energy balance and CO₂ balance between the use of transmission and transportable storage of energy.
- What reduction in CO₂ emissions, if any, relative to the alternatives could be achieved using this approach.

(Later projects may include a cost review of designs and/or tests to increase confidence in projections.)

The evaluation should take account of the following technologies and considerations:

- The extensive move to more renewable forms of energy generation, as modelled in a number of published scenarios such as the National Grid 'Gone Green for 2020' scenario, the Renewable Advisory Board's '2020 Vision' report, et al.
- The relative locations of different forms of energy supply and demand and the costs associated with moving energy from where it is generated to where it is required.
- The different forms that usable energy is generated in, can be converted to for transmission or transportation, can be stored in and can be employed in for end-use; as well as the efficiencies associated with the respective conversions. For example, the efficiency of storing and transporting energy from low carbon generation not connected to the public electricity network.

- Various alternative energy vectors to electricity, including liquid hydrogen, liquid organic hydrogen carriers, ammonia and unconventional battery systems (e.g. zinc - air or other metal air systems).

The focus of this work is the UK energy system. However, there is recognition that there are potential parallels in locations beyond the UK (e.g. in other national or international energy systems) that would make it possible for this approach and/or any identified technology to be deployed there. In this respect, the export potential should be incorporated (where possible and relevant) to capture the full prospective impact of the proposed technologies.

Exclusions:

- Fossil Fuels: Transportable energy storage refers to the conversion of generated energy to a stored form that is subsequently transportable, and as such it excludes the extraction, transport and storage of fossil fuels, (although the conversion of generated energy to fuels *equivalent* to fossil fuels is within scope).
- Biomass: The use of biomass as a form of transportable energy is excluded from this Project.

1.4 Required Outcomes and Critical Success Factors

This project will be successful if it delivers the following outcomes:

- An assessment of the potential economics and contribution of energy storage and transportation as part of a future UK energy system;
- Identification of the most promising technologies and their development requirements;
- Identification of potential scenarios most suited to the deployment of transportable energy storage and, if possible, recommendation of locations; and
- Recommendation of scope and locations for the next stage of technology development and demonstration.

The main outputs that will support these outcomes are expected to be:

- A summary report and associated breakdown of costs associated with the different options for transportable energy storage, based on current technologies with estimates for cost reductions up to 2050.
- A comparison of energy transmission with the transportation of stored energy and what tipping points exist between the two.
- Proposed locations for where transportable energy storage might best be deployed.
- Proposed scales and frequencies of energy transportation that would be most cost effective.
- A performance specification for technologies for transporting stored energy that would offer a cost advantage over the transmission of energy.
- Proposed technologies (both current and near term) that would be best suited to the transportation of stored energy; and, if relevant, for different locations and for different scales and frequencies of energy transportation.
- Recommendations for which level(s) of the energy system would be best served by transportable energy storage.
- A list of the sensitivities and dependencies that affect the feasibility of transporting energy in a stored form and their relative influence.
- A summary and associated breakdown of the costs and lifecycle CO₂ emissions for using transportable energy storage.

1.5 Anticipated Project Organisation Structure

It is possible that a number of organisations / entities will be needed to work together in order to provide all the necessary knowledge, skills, experience and inputs to complete the Project (as detailed in Section 2.2).

These organisations may choose either:

- To form a Consortium, contracted with the ETI, governed by its own Consortium Agreement (drawn up by the Consortium and subject to approval by the ETI) and led by a “Lead Coordinator” to manage the Project and act as primary interface with the ETI, or
- To form sub-contracts between themselves and one of their number who shall act as “Prime Contractor” and form a contract with the ETI. The Prime Contractor shall manage the Project and act as primary interface with the ETI.

Either of these contracting arrangements is acceptable to the ETI, but there must be a single organisation (Lead Coordinator or Prime Contractor) leading and acting as the primary interface with the ETI. This organisation shall, subject to the agreement of all parties, appoint a Project Manager to lead and coordinate all activities of the Project Participants, and to liaise regularly with the ETI’s Programme Manager to whom he/she is accountable on behalf of the Participants. This organisation shall also act as the Respondent for the purposes of this Request for Proposals.

1.6 ETI Approach to Health and Safety

The health and safety of those who may be affected by ETI projects is of paramount importance to the ETI, and the ETI therefore expects all those involved in its projects to demonstrate a commitment to best practice in health, safety and environmental management as well as demonstrating that legal requirements are met.

2 Request for Proposals Process and Terms

2.1 Content and Format of Proposals

Any organisation interested in bidding for this Project (“Respondent”) is requested to submit a Proposal which shall be arranged according to the structure detailed in Appendix A and shall include all the information listed therein.

The Proposal must be written in a succinct manner and must not include imprecise statements, generalities or repeated information. The Proposal must be easily readable with appropriate font sizes, margins, etc, and **shall not exceed a maximum of 20 pages** (excluding the due-diligence information required under Section 9 of Appendix A and any other information explicitly stated in Appendix A to be exempt from this limit).

Additional information (such as organisational brochures, etc) may be provided to accompany the Proposal if this is expected to add value (although it is not necessarily required by the ETI), but such additional information will not usually be taken into account when reviewing Proposals.

The Proposal shall consist of **three (3) complete hard copies and one (1) complete electronic copy**. The latter shall be provided in both PDF and Microsoft Word formats.

2.2 Acceptance, Review and Selection of Proposals

Proposals will be reviewed and judged primarily against the criteria listed below.

- The knowledge and capability of the project team to address the key issues:
 - Availability of key staff (especially the key roles of project manager and project technology leader) as presented in their CVs;
 - Experience of the technologies required to develop and operate energy storage and transportation facilities at the scale indicated within the scope of this project;
 - High level understanding of the economics and technologies involved in energy production and distribution;
 - Understanding of the likely regulatory environment and risk factors for energy storage and transport; and
 - Capability in systems design and analysis, including model building and economics.
- Project approach and plan, including proposed management of specific risks and issues, Gantt chart and suitable payment milestones (if appropriate).
- Compliance with terms and conditions, including any intellectual property issues (such as acceptance of ETI IP terms, or the existence of any IP issues which may affect the ability to carry out the Project and exploit the results).
- Value for money for the ETI and confidence in achieving outcomes versus price.

The ETI at its discretion may request further information in order to assess a Proposal, and may reject any Proposal which does not provide sufficient information.

Important notices governing the Project commissioning process are set out in Appendix C. Submission of a Proposal in response to this RfP will be deemed to be a Respondent’s acceptance of these notices.

2.3 Estimated Time-Frames

The following timetable outlines the anticipated schedule for the contract process. The timing and the sequence of events resulting from this Request for Proposals may vary and shall ultimately be determined by the ETI.

Event	Anticipated Date(s)
Closing Date for Responses to RfP	30 th September 2010
Clarification Meetings (as required)	October 2010
Preferred Bidder Identified	8 th November 2010
Project Detailing and Contract Agreement	November 2010 – January 2011
Contract Approval	14 th January 2011
Project Start	1 st February 2011
Project Duration	Approx 3 – 6 months (TBD)

2.4 Ownership of Proposals and Confidentiality of Information

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 ETI reserving the right to provide such documents to third parties engaged by the ETI in its assessment of them. Organisations selected by the ETI to be taken forward to the Project Detailing & Contract Agreement phase will be required to sign non-disclosure agreements.

3 Price, Payment and State Aid

3.1 Price and Payment

Any funding to be paid by the ETI for this Project will be paid on a **“fixed price” basis**. The Project Contract will include defined deliverables, with acceptance criteria, and defined Payment Milestones by which one or more deliverables will have been completed. Payments will be made against each defined Payment Milestone, subject to ETI acceptance of the Milestone Completion Report. Unless otherwise agreed as part of a formal contract variation process, the ETI shall not be liable for any payments above the maximum stated in the Project Contract.

Further information is contained in the Terms and Conditions contained in Appendix B.

3.2 State Aid

Funding from the ETI for this Project may constitute state aid. The ETI has a specific state aid clearance from the European Commission. In relation to their Proposals, Respondents should note that:

- further information may be required to support the specific state aid requirements of any Proposal during the procurement process;
- the successful Respondents will be required to provide full transparency of costs throughout the Project to ensure both the Participant(s) and the ETI comply with EU state aid law;
- Participants will need to agree to certain contractual obligations related to the state aid requirements including the duration of Project records and obligations to return ETI funding in certain exceptional circumstances.

Appendix A – Content and Format of Proposals

The Proposal shall be arranged according to the structure defined below and shall explicitly include all the information listed.

1. Executive Summary [maximum 1 page]

A summary of the Proposal, describing briefly:

- The organisation undertaking the work
- Summary of the technical approach and **key** deliverables
- Confirmation of compliance with the Specification detailed in the Request for Proposals and/or brief summary of **key** exceptions/deviations
- Duration of key activities
- Fixed Price.

2. Background to Proposed Participants [typically 2 pages per organisation]

The Respondent should provide a brief description of each organisation involved, including:

- Key skills, capabilities, knowledge, experience and previous track record in the area (technical, commercial and project management, including any UK-specific issues such as technology applicability to UK systems, UK industry practice, UK market/industry knowledge, etc)
- Key staff members involved (including designated Project Manager), with the amount of each individual's time which will be dedicated to the Project, and detailing their experience – with CVs included in an Appendix (maximum 2 pages per individual)
- Any major Subcontractors

The Respondent should identify in their Proposal any anticipated potential issues or difficulties in executing subcontracts (as appropriate).

3. Programme of Work [typically 4-7 pages]

The Respondent should provide a summary of the overall approach to delivery of the project, and a Task-by-Task breakdown of the proposed work, identifying for each Task:

- the Task leader
- other Participants involved
- key dependencies
- the technical approach (including use of any specific methodologies, techniques or tools)
- Task objectives
- deliverables, including for each deliverable a specification (e.g. quality, appearance, scope, function and purpose as appropriate) and proposed Acceptance Criteria

The Respondent should be specific about the activities within the Task, e.g. including test/simulation matrices or stating a number of tests/simulations

The description of the tasks should be in sufficient detail for someone familiar with the field to understand the proposed technical approach.

Any issues or assumptions in defining the programme or schedule (e.g. inputs required from the ETI or other projects) should be explicitly stated.

A specific project management Task (or Tasks) should be identified describing all the activities in this area for the project scope (e.g. regular meetings, reporting, Stage Gates etc). **Note that throughout Project delivery the ETI will require reports of monthly progress with supporting financial data, reports to substantiate completion of each milestone, etc.** If appropriate, a work flow diagram should be provided to illustrate the relationships between Tasks.

Any relevant activities related to but not included within this Project and the relationships with these activities, should also be described.

4. Deliverables & Payment Milestones [typically 1 page]

Following the detailed specifications of each deliverable in the previous section, a summary table should be provided here listing all the Project Payment Milestones (i.e. key points in the Project where one or more Deliverables will have been provided and payment is requested from the ETI), and their constituent deliverables, with due dates for each deliverable and Payment Milestone.

Refer also to Section 8 of this Appendix A.

5. Project Schedule [typically 1 page]

The Respondent should provide a time schedule for the Project (e.g. in the form of a Gantt chart) showing the main Work Packages, Project stages and main Tasks within each Work Package and stage. This should clearly identify:

- Task durations and dependencies (including any inputs required from the ETI or other parties and any other external dependencies)
- Project Deliverables
- Payment Milestones and other relevant milestones
- Project Stage Gates, Design Reviews and other review points.

6. Risk Management [typically 1 pages]

The Respondent should describe the proposed Risk Management Strategy (i.e. how risks to the successful delivery of the Project will be identified and managed throughout the Project). They should also provide a Risk Register, identifying the key challenges, risks (including any assumptions or dependencies identified earlier), issues and opportunities which may affect the successful delivery of the Project outcomes and identifying planned activities to address / mitigate each item.

7. Statement of Compliance [typically 1 page or less]

The Respondent shall provide a statement that the Proposal is fully compliant with the Specification and all other aspects of the Request for Proposals (including the Summary of Terms in Appendix B), or shall state clearly any exceptions, deviations, alternative approaches or additions to the required Specification, 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 specification 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.

8. Price and Project Payment [typically 1 – 2 pages]

The Respondent should provide:

- a figure for the **fixed price total contract value** for the project
- a **breakdown** between Tasks.

If there are any assumptions or limitations to this price, these should be clearly stated. The Respondent should also provide a **breakdown of the total contract value (only) by category**, as specified in the Table below.

	Participant 1 (Lead Coordinator or Prime Contractor)	Participant 2	Participant 3	Participant 4	Participant 5	Total
Number of Person-days						
Base Labour						
Materials						
Capital						
Subcontractors						
Travel & Subsistence						
Overheads						
Other						
Profit						
TOTALS						
Profit Margin, %						

Notes on Category Breakdown table:

1. Base Labour should include direct add-ons (e.g. NI, pension etc)
2. Capital costs should be based on depreciation during the Project x % usage on Project
3. Participants will be required to provide justification of overhead calculations during the Project Detailing & Contract Agreement phase. ETI can provide a spreadsheet to calculate overheads on request
4. Participants are required to declare their profit margins
5. Academic Participants should determine their costs using the JeS system. Note that ETI funds Academic Participants at 100% Full Economic Cost.

9. Health, Safety and Environment (HSE) Management [typically ≤ ½page]

The ETI anticipates that the work required for this Project will be entirely desk based. It is not anticipated that any site visits, field trials, experimental or laboratory work will be required.

The Respondent should therefore identify and describe in its Proposal any work it proposes to carry out in relation to the Project which is not desk based, in order that the ETI may assess any implications of such work in relation to HSE management.

10. Intellectual Property [typically ≤ 2 pages]

Arising IP

The Respondent should provide a brief overview of the nature of any anticipated Arising IP from the Project.

This Project will be subject to the appropriate ETI terms and conditions (a summary of which is included in Appendix B). In this Project, the Arising IP will belong to the ETI. Any licensing of Arising IP from the ETI to the Participants may be discussed if appropriate. If Participants wish to discuss any licence to use the Arising IP, Participants should note that profit will not be paid for the Project in addition to the grant of a licence of Arising IP.

Generally, the ETI will grant rights to Participants who are academic institutions for the purposes of academic research and teaching if requested. Publication of appropriate parts of the Project results will generally be permitted subject to an approval process. Participants should include details of their desired requirements in relation to academic research, teaching and publication in their Proposal.

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 that there is Background IP:

- which is needed (whether by the ETI, or to be licensed from one Participant to another Participant or a Subcontractor, or to be licensed by a Subcontractor to a Participant or to another Subcontractor, or otherwise) to carry out the Project or which may be used during the Project; or
- 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 any of the Project Participants or by any third parties.

Please note that further due diligence on Background IP will be required during the Project Detailing & Contract Agreement phase.

11. Due Diligence Information [this is excluded from the page limit]

The ETI requires due diligence information in two stages. Certain information is required with the Proposal. Further information will be required if any Proposal is selected to proceed to the Project Detailing & Contract Agreement phase.

Part A (Information Required with Proposal)

ALL Participants shall confirm that there are no potential, threatened, pending or outstanding recovery orders by the European Commission in respect of any funding received by any Participant.

All Participants (except ETI Members, universities / higher education institutions and UK/EU government laboratories / agencies) which provide more than 20% of the resources for the Project or which provide an input which is critical to the Project's success, shall provide Due Diligence Information to the ETI according to the table overleaf.

Details of organisation
Full name:
Registered Office:
Type of Business (sole trader, limited company, partnership etc):
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? (Yes/No)
Have any directors, partners or associates of the organisation been convicted of a criminal offence relevant to the business or profession? (Yes/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 or litigation
Please provide (and attach if necessary) details of any claims or litigation against the organisation, outstanding and/or anticipated.

The Respondent should also confirm whether insurance cover for the following risks is held by each Participant, and should confirm levels of cover and expiry for each. The ETI will require evidence of these during the Project Detailing & Contract Agreement phase.

- Property damage (both any Property occupied by the Participants and any third party properties)
- Business interruption
- Employer's liability
- Public liability
- Product liability
- Professional Indemnity
- The Respondent should identify if it and/or any other Participant self-insures for any of these risks.
- The Respondent should identify if it and/or any other Participant is intending to take out any project-specific insurance for the Project and the scope and intended beneficiaries of such insurance.

Part B (Information Required During the Project Detailing & Contract Agreement phase)

Further due diligence will only be required if a Proposal is selected to proceed to the Project Detailing & Contract Agreement phase, and may include (at the ETI's discretion):

- Intellectual property due diligence, including a detailed Background IP questionnaire.
- Financial due diligence on the breakdown of costs for the Project to enable the ETI to assess value for money and ensure that it meets State Aid requirements.
- Copies of insurance policies.
- Any other information that the ETI reasonably requires in order to fund the proposed Project including any information necessary to meet state aid requirements and/or health and safety obligations.

Appendix B – Terms and Conditions for Project Contract

Introduction

The following represents a summary of the key contractual terms which the ETI would expect to be included in the Technology Contract for a project under which the ETI owns all arising IP. This summary covers both contracting arrangements detailed at Section 1.5 of this RfP; that is, either (i) a single contractor, the Prime Contractor, which may have specific parts of the Project scope subcontracted (subject to the approval of the ETI), or (ii) a multi-party consortium basis.

Structure

- 1 Where the Project will be carried out by a Prime Contractor, the Prime Contractor will manage the Project. Where there are Subcontractors, the Prime Contractor shall be solely responsible for the management and coordination of the activities of the Subcontractors. The Prime Contractor will be responsible for and administer payment for all of its Subcontractors.
- 2 Where the Project will be performed by a multi-party consortium, the Participants shall be represented in dealings with the ETI by a Lead Co-ordinator, who shall, in the majority of instances, be the intermediary for any communication between the ETI and the Participants. This role includes providing notices of meetings and other activities to the ETI, reviewing and commenting on project reports (as required under the Project) and administering payment of invoices for all Participants.

Project Management

- 3 The Prime Contractor or, in the event of a consortium, the Participants will appoint a Project Manager for the day-to-day management of the Project. The ETI will appoint a Programme Manager to act on behalf of the ETI with regards to the Project.
- 4 Where the Project will be performed by a consortium, the Participants may be required to form a Steering Committee to make decisions on day-to-day matters (excluding decisions affecting the overall scope, structure and timing of the Project). The frequency of meetings of any Steering Committee will be agreed with the ETI. The ETI and its members shall be entitled to attend any meetings of the Steering Committee.
- 5 The Prime Contractor or, in the event of a consortium, the Participants must fulfil various reporting obligations. The requirements for reports will depend upon the nature of the project, the deliverables under it and the duration of the Project but are likely to include monthly reports and a final report. Each report must address a specified list of topics required by the ETI.
- 6 The ETI will require the right to carry out a Stage Gate review on completion of a Stage (or from time to time at a frequency to be agreed) in order to assess whether the Project continues to deliver against ETI outcomes and also in order to carry out a validation exercise against the business case. The ETI may carry out Stage Gate reviews more frequently if the Project is in jeopardy. The need for Stage Gate reviews and the definition of a stage will depend upon the nature of the Project.
- 7 The ETI will require that the Project is carried out in accordance with health and safety law and will require reports and information as evidence of such compliance from time to time (tailored to the Project).

Finance

- 8 ETI will pay a fixed price against defined Payment Milestones for the work done under the Project (as set out at Section 3 of this RfP, "Price and Payment"). Acceptance of deliverables and milestones will be determined by the ETI, where appropriate, against agreed acceptance criteria. Any increase in costs in carrying out the Project over and above the agreed contractual amounts will only be payable by the ETI in the event that such charges are agreed in accordance with the contractual variation control procedure.
- 9 Costs are payable in Sterling and ETI will pay valid invoices within 30 days of receipt of invoice following acceptance of a milestone.
- 10 The ETI reserves the right to require the return of funding in certain circumstances (such as in the event of corruption or fraud, overpayment, costs incurred in respect of unapproved project changes and failure to comply with State Aid obligations).

Confidentiality

- 11 Restrictions on disclosure of any other party's confidential information will apply. Any publication of results (if appropriate) will be subject to the confidentiality provisions in the agreement.

Audits and Records

- 12 ETI will require the right to audit the Project, the Prime Contractor (alternatively, in the event of a consortium, the Participants) and any and all Subcontractors during the Project and, in certain circumstances, up to 7 years from the end of the Project on financial or technical grounds.
- 13 All parties involved in the Project will be required to maintain the majority of Project records for a minimum of 10 years from the Project end date and for potentially more than 20 years where the records relate to registered intellectual property rights. The Prime Contractor shall require no less obligations from its Subcontractors.

Sub-contracting

- 14 Sub-contracting is not permitted without consent, except for agreed known subcontractors included/detailed in the Technology Contract at signing.

Variation

- 15 Any variations to the Project must be made via the variation control procedure.

Liability / Warranty / Indemnity etc.

- 16 The ETI will require that warranties and undertakings be given by the Prime Contractor or Participants (as appropriate), including without limitation in relation to rights to Background IP and the amount of the Project costs spent on research and development as defined in the Income and Corporation Taxes Act 1988.

- 17 There will be an indemnity in favour of the ETI members for tax losses in the event that the Prime Contractor or Participants (as appropriate) fails to provide complete and accurate information relating to the Project costs spent on research and development as defined in the Income and Corporation Taxes Act 1988.
- 18 The liability provisions relating to the Prime Contractor, alternatively in the case of a consortium the Participants, will be tailored on a case-by-case basis but are likely to be capped at the amounts payable under the Project (except in the case of IP infringement claims, certain third party claims or other liabilities which cannot be limited or excluded by law. For these claims, no cap will apply). Recovery of indirect, consequential etc. damages will usually be excluded. The ETI will require an indemnity in respect of certain claims brought by any third parties against the ETI as a result of the acts or omissions of the project participants under the project. The Prime Contractor will be liable for the acts and omissions of the Subcontractors.

Withdrawal

- 19 Withdrawal from the Project is only possible with the express consent of the ETI and, in the event of a consortium, with the unanimous consent of the other Participants. In such circumstances, the Contractor or withdrawing Participant(s), as appropriate, cannot recover outstanding costs, unless otherwise agreed.

Termination and Suspension

- 20 The ETI reserves the right to terminate the agreement in certain circumstances (such as breach by the Contractor (which shall include without limitation a breach by a Subcontractor) or, in the event of a consortium, a Participant, insolvency or change of control of a Contractor/Subcontractor/Participant etc.). The ETI also reserves the right to terminate the agreement unilaterally upon giving a (to be agreed) period of notice to the Contractor or Participants, as appropriate. Upon termination, the ETI will pay the eligible costs incurred by the Contractor or Participants (as appropriate) up to the date of termination.
- 21 The ETI will reserve the right to suspend the Project in certain defined circumstances.

Intellectual Property

- 22 All arising IP from the Project will be owned by the ETI. The Contractor (or, in the event of a consortium, the Participants) and any Subcontractor(s) will, to the extent required, be required to assign all relevant arising IP to the ETI.
- 23 The Contractor (or, in the event of a consortium, the Participants) and any Subcontractor(s) will be required to licence their Background IP: (i) to the other parties (including for the avoidance of doubt Subcontractors) involved in the Project on a royalty free basis where required for the purposes of the Project; and (ii) to the ETI or sub-licensees of the ETI, where required for the use or exploitation of the Arising IP.

Appendix C – Notices

- 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. A 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. All negotiations relating to, and the terms and conditions of, any contract are “subject to contract”.
- c) All decisions made by the ETI relating to the acceptance, review and selection or otherwise of Proposals are final. The ETI is not obliged to explain or justify any such decision(s) at any time.
- d) All documents, including Proposals, submitted to the ETI become the property of the ETI. No part of a Proposal or documents provided by Respondents or Participants 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 Project Contract, (iii) reject any part or all of any Proposal(s) received, and (iv) not invite any Respondent to proceed further.
- 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 Requests for Proposals or otherwise in connection with the Project commissioning process. The ETI shall not be responsible for, and shall not pay, any costs and expenses which may be incurred by the Respondent or other Participants or Subcontractors in connection with their participation in the Project commissioning process, including but not limited to any costs or expenses incurred up to and including the execution of the Project Contract.
- i) The ETI may, at its discretion, shortlist Respondents for the next stage. 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 copyright in the documentation and any other materials supplied by the ETI and/or its advisers in this Project commissioning 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. All documentation supplied by the ETI in relation to this Project commissioning process must be returned on demand, without any copies being retained by the Respondent or any other Participant or Subcontractor.

- k) 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).
- l) The submission of any Proposal will confirm acceptance of the foregoing provisions by the Respondent (and on behalf of any and all other Participants and/or Subcontractors) without qualification. Any attempt to qualify any of the foregoing provisions in this Appendix C, either expressly or impliedly, may result in a Respondent / Consortium being disqualified.

Appendix D Glossary

Term	Definition
Arising IP	Any intellectual property which is created by or for any Participant during the Project or for the purposes of the Project.
Background IP	Any intellectual property which existed prior to any Participant's commencement of the Project and which was created by or for the Participant.
Consortium	The group of organisations described in Section 1.5 which may decide together to submit a Proposal to carry out the Project and be governed by a Consortium Agreement between themselves. This will not include the ETI itself or any Subcontractors.
Consortium Member	An organisation which forms part of the Consortium.
Consortium Agreement	The agreement to be entered into between the organisations together forming a Consortium, as described in Section 1.5, which governs the execution of the Project within the Consortium.
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.
Lead Coordinator	The organisation which is a Consortium Member, and which manages and coordinates the activities of all the Consortium members, and which acts as the primary interface between the Consortium and the ETI, as described in Section 1.5.
Participant	Either the Prime Contractor or a Consortium Member.
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 Project 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 on the basis described in Section 3 and on the Terms in Appendix B.
Prime Contractor	A sole organisation which contracts with the ETI to manage the project. It may have Subcontractors.
Programme Manager	The individual appointed by the ETI to manage the overall ETI programme to which this Project is affiliated, and to whom the Project Manager is accountable.
Project	The project for which the purpose, scope of work and other details are described in this Request for Proposals.
Project Contract	The contract, as referred to in Section 1.5, to be entered into between the ETI and the Participants (whether between the Consortium Members or a Prime Contractor).
Project Manager	The individual who is appointed by the Lead Coordinator or Prime Contractor, or is otherwise agreed by the Project Participants, to carry out its responsibilities.

Project Organisation	The entity or group of entities / organisations, and the contracting and management structure which they adopt, as described in Section 1.5, which together will carry out the Project if commissioned by the ETI and includes any Consortium Members or Prime Contractor and any Subcontractors.
Proposal	The proposal for the Project submitted to the ETI, as described in Section 2.1, in response to this Request for Proposals.
Respondent	An organisation submitting a Proposal to the ETI, as described in Section 2.1, on behalf of itself as Prime Contractor or on behalf of itself and the other Consortium Members, as appropriate.
Stage Gate	A project review at which the ETI, supported by the Project Participants, can determine whether or not a Stage has been satisfactorily completed, whether or not activity on subsequent Stages should be commenced, what if any remedial actions are required, and in extremis whether the project should be terminated.
Subcontract	A contractual arrangement between a Participant (described in Section 1.5) and another organisation to which work for the Project has been subcontracted.
Subcontractor	An organisation which has a Subcontract.
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.
Technology Readiness Level (TRL)	A scale, originally devised by NASA and now in widespread use, to quantify the status of development of a technology from concept definition, through laboratory and full scale demonstration in a range of environments increasingly close to final application conditions, finally reaching mature technology.
Work Package (WP)	A major section of the Project 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.