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**Programme Area:** Carbon Capture and Storage

**Project:** Next Gen Capture Tech Benchmarking and Performance Analysis

**Title:** Benchmarking and Performance Analysis of Next Generation CO<sub>2</sub> Capture Technologies – Request for Proposal

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**Context:**

This project provided ETI with an objective view of the techno-economic performance of a range of current and next generation CO<sub>2</sub> capture technologies including pre and post combustion and oxyfuel CCS plant. The analysis that underpins these benchmarking studies was based on coal and gas fired power station designs typical of those found in the UK and considered parameters such as power station capital cost, efficiency and levelised cost of electricity (with and without CCS).

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Title of Services for which Proposals are Requested:

## **Benchmarking and Performance Analysis of Next Generation CO<sub>2</sub> Capture Technologies**

Request Issue Date:

12 February 2009

Closing Date:

Proposals must be received before 5pm on 19 February 2009

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## Glossary

<b>Term</b>	<b>Definition</b>
Address for Submission of Proposals	The address listed on the front cover of the Request for Proposals as being that to which all Proposals shall be submitted.
Closing Date	The date and time listed on the front cover of the Request for Proposals as being that by which all Proposals shall be submitted.
Contractor	The organisation which will undertake any project arising from this Request for Proposal.
Contact for Enquiries	The individual and contact details listed on the front cover of the Request for Proposals (RfP) to whom all enquiries concerning this RfP should be directed.
ETI	The Energy Technologies Institute LLP.
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 4 and on the Terms in Appendix C,
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 described in Section 5, to be entered into between the ETI and the Participants (whether as a Consortium, Prime Contractor or single contractor)
Project Detailing Stage	The stage of Project commissioning carried out by the ETI if and after it has decided to take forward a Proposal, during which full and final Project details are established and a Project Contract is agreed.
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.
Proposal	The proposal for the Project submitted to the ETI, as described in Section 2.1, in response to this Request for Proposals.
Respondent	The organisation submitting a Proposal to the ETI, as described in Section 2.1, on behalf of themselves and of any Consortium or Subcontract Participants.
Request for Proposals (RfP)	This document issued by the ETI to solicit Proposals from potential Participants.
Selection Criteria	The primary criteria used by the ETI to inform their decisions.
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.
Work Package (WP)	A major section of the Project scope of work, which may be identified in this RfP 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.

## **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 Wind, Marine, Distributed Energy, Transport, Energy Networks and Carbon Capture & Storage.

Further information can be found on our web-site at [www.energytechnologies.co.uk](http://www.energytechnologies.co.uk)

### **1.2. Background to the Project**

The current ranges of commercially-available technologies for CO<sub>2</sub> capture impose substantial capital cost and plant efficiency penalties. The ETI has identified opportunities to bring forward capture technologies to demonstration that offer step change cost and/or efficiency penalty reductions over current state of the art. A wide range of potential technologies exists, for example:

- Pre-combustion (eg novel solvents, sorbents, membranes, physical separation; H<sub>2</sub> firing (boiler and gas turbine); shift reactor design);
- Post-combustion (eg novel solvents, sorbents, membranes, physical separation; biofixation);
- Oxyfuel (eg novel solvents, sorbents, membranes, physical separation);
- Novel combinations.

The ETI is currently undertaking an analysis of the opportunities for application of CCS within a UK context, given the current generating fleet and the likely roll out of new generating capacity over the next 20 – 30 years.

This has resulted in a prioritisation of application and generic technology areas. The ETI will consult further to identify promising technologies (currently at TRL 3 – 4) and hence potential ETI projects. As a key part of this prioritisation, the ETI wishes to establish benchmark performances (operating performance, capital and operating costs) of current ‘best available technology’ for the selected application(s), then assess likely performance of potential next generation technologies.

### 1.3. Outline Scope of the Project

The proposed project is split into two Work Packages. WP1 will establish a consistent assessment methodology and provide Benchmark performances (operating performance, capital and running costs) for agreed, full-scale power plant designs in four application areas (pre- and post-combustion coal, post-combustion gas and oxyfuel). WP2 will carry out Performance Evaluations of selected (up to 6) potential next generation technologies, using as far as possible the same basis and methodology as WP1. Refer to Section 3 for full details.

The ETI intends to identify the technologies to be evaluated in WP2 in parallel with the Contractor completing WP1. In its response to this RfP, the Respondent is required to provide a firm scope and price for WP1, and define its approach for WP2 with illustrative examples based on its previous experience in similar projects.

### 1.4. Anticipated Outcomes and Critical Success Factors for the Project

The key deliverables in each Work Package will be a technical report (describing the methodology used and the results of the analysis) and a spreadsheet-based model enabling 'what if' calculations to be undertaken. These will be used to quantify the potential benefits of proposed new technologies (operating performance, capital and running costs) against the relevant Benchmark case(s). This will ensure that, as far as is possible with the information available, the ETI will be in a position to rank potential projects objectively on the basis of projected performance and cost. Refer to Section 3 for full details.

The critical factor against which the success of this project will be judged will be that it provides a sufficient evidence base to enable the ETI to make investment decisions on potential next generation technologies. As such it is critical that consistent assumptions and methodologies are used throughout.

## 2. Request for Proposals Process and Terms

### 2.1. Content and Format of Proposals

The Proposal may be in a format of the Respondent's choice. However, it shall be arranged according to the structure detailed in Appendix A and shall include all the information listed therein.

The Proposal shall include a cover letter substantially similar to that set out in Appendix B, signed by a person authorised to sign on behalf of the Respondent and to bind the Participants to statements made in the Proposal.

The Proposal must be written in a succinct manner and should avoid 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 25 pages** (including the covering letter and all diagrams, tables, etc, but excluding the due-diligence information required under Section 12 of Appendix A and key staff CVs) unless specific approval for this has been received in writing from the Contact for Enquiries (named on the front cover of this RfP) prior to receipt of any Proposal by the ETI.

Additional information (such as organisational brochures, etc) may be provided to accompany the Proposal (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 **one (1) complete hard copies and one (1) electronic copy (in Word 97 – 2003 compatible format)**. The latter may be submitted by email, to the Address for Submission of Proposals listed on the front cover, or may be enclosed with the hard copies, provided that all are received by the Closing Date.

The Proposal and its envelope, along with any electronic media, must be clearly marked with the name and address of the Respondent, the RfP name and the name of the intended individual recipient (as listed on the front cover of this RfP under Address for Submission of Proposals). Emails should clearly cite the RfP name.

## **2.2. Enquiries**

All enquiries related to this RfP should be directed to the Contact for Enquiries listed on the front cover of this RfP. Enquiries and answers may, at the ETI's discretion, be recorded and distributed to all Respondents.

## **2.3. Closing Date**

The Proposal must be received at the Address for Submission of Proposals listed on the front cover, before the Closing Date listed on the front cover.

Proposals will be marked with the time of their receipt by the ETI. Only complete Proposals received and marked before closing time will be considered to have been received on time. Late Proposals will not be considered or evaluated, except at the absolute discretion of the ETI.

No Respondent may change the wording of their Proposal after the Closing Date and time specified on the front cover of this RfP and no words or comments may be added to any Proposal unless requested by the ETI for purposes of clarification.

## **2.4. Acceptance, Review and Selection of Proposals**

Proposals will be reviewed and judged against the criteria listed below, and the final decision will be made by the ETI.

- Completeness of information content, structure and quality of Proposal (against areas listed in Appendix A)
- Compliance
- Price and/or Value for money
- Knowledge, skills and experience relating to benchmarking of 'current' carbon capture technologies and performance analysis of developing technologies
- Availability of resources and key skills, and ability to deliver within the required timescales
- Project approach and plan
- Existence of any IP issues or commercial arrangements which may affect the ability to carry out the Project (eg any interests which may affect the Respondent's ability to provide an independent assessment of a broad range of technologies) or may affect the ETI's ability to exploit the results

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.

It is intended that the ETI will initially enter a contract with the successful Respondent for WP1 only. Proceeding to WP2 will be dependent on satisfactory completion of WP1 and the submission and agreement (by the ETI) of satisfactory detailed proposals for WP2.

This RfP is not an agreement to purchase goods or services, and the ETI is not bound to enter into a Contract with any Respondent. The ETI reserves the right to modify the terms of this RfP at any time at its sole discretion, including the right to cancel this RfP at any time without entering into a Contract. The ETI will be under no obligation to request or review further information, whether written or oral, from any Respondent. All decisions made by the ETI relating to the acceptance, review and selection or otherwise of Proposals are final. The ETI will be under no obligation to explain or justify any such decisions at any time.

## **2.5. Respondent Expenses**

Respondents are solely responsible for their own expenses in preparing a Proposal and in any subsequent negotiations with the ETI. The ETI does not warrant the accuracy of information contained in this RfP. The ETI will not be liable to any Respondent for any claims, whether for costs or damages incurred by the Respondent in preparing a Proposal, loss of anticipated profit in

connection with any final contract, or any other matter whatsoever prior to entering into any final contract.

## 2.6. 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)
Preferred Bidder Identified	23 February 2009
Project Detailing and Contract Agreement	23 – 27 February 2009
Contract Signature	4 March 2009
Project Start	9 March 2009
WP1: delivery of draft report	1 May 2009
WP2: start (subject to agreement detailed proposals and satisfactory completion of WP1)	11 May 2009
WP2: completion	To be agreed

## 2.7. 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 Non Disclosure Agreement entered into between the ETI and the Respondent.

### **3. Specification of Project Scope of Work and Deliverables**

#### **3.1 Work Package 1: Benchmarking of Current ‘Best Available Technologies’**

##### **3.1.1 WP1: Scope**

The purpose of this task is to establish a consistent assessment methodology and provide Benchmark performances (operating performance, capital and running costs) for agreed plant in four Application Areas. These Application Areas have been identified through ETI analysis of the requirements of ETI Members and UK market opportunities for application of Carbon Capture (CC), and are:

- New-build Pre-combustion coal power plant (IGCC);
- New-build pulverised coal power plant with state-of-the-art amine solvent post-combustion capture;
- New-build natural gas CCGT power plant with state-of-the-art amine solvent post-combustion capture;
- New-build pulverised coal power plant with state-of-the-art oxyfuel capture.

The ETI and Contractor will agree a Basis of Design and Costing (BoD) document prior to the commencement of the study to give the Contractor clear and consistent basis for assumptions eg:

- Plant location;
- Site condition;
- Plant capacity;
- Plant operating conditions;
- Battery limits (note – the study will include CO<sub>2</sub> compression);
- Utility supplies;
- Feedstock specification;
- CO<sub>2</sub> specification;
- CO<sub>2</sub> capture rate;
- Price basis date;
- Forex rates;
- Inflation/escalation;
- Feedstock, products and utilities pricing.

For the purposes of providing a project price, the Respondent will make reasonable assumptions for the Basis of Design, and will specify these assumptions in its proposal. It is expected that the Benchmarks will be based on new-build, state-of-the-art plant in the UK. The Respondent should state what factors in the Benchmark design (should this be changed from that assumed) may (or may not) affect the project price.

In its proposal, the Respondent will provide the ETI with details of the methodology it proposes using to undertake the assessment, including its cost estimation methods, to ensure that the Benchmark performances provide:

- Clear and fully auditable Benchmark plant performance data, capital and operating costs;
- Breakdown of information by process block, identifying the contribution to capital and operating costs, contribution to performance/penalty and potential performance headroom (eg how close operation is to theoretical maximum thermodynamic efficiencies).

For each Benchmark case, the Contractor will be required to produce a block level process flow scheme and cost & performance data. It is anticipated that data will be drawn mostly from in-house Respondent data and published sources. For each Benchmark case, the Contractor will also provide cost and performance data for an equivalent unabated plant, to enable capture cost per MWh and per tonne captured.

Cost and performance data will be built into a simple spreadsheet-based model including Discounted Cash Flow (DCF) to arrive at CO<sub>2</sub> capture cost per MWh and per tonne captured and avoided, to enable basic 'what if' calculations to be undertaken on an overall and block-by-block level. The Respondent should provide an outline description of this model in its proposal, and detailed specification for the model as one its early deliverables in the project.

It is recognised that the capture technologies analysed will be at differing stages of development, and that none has been implemented at full scale. The Respondent should provide an assessment of the relative quality and uncertainty of performance and cost estimates in its Proposal.

### **3.1.2 WP1: Deliverables**

(a) Technical report, describing the methodology used and the following for each Benchmark case:

- Capital costs. Including breakdown of costs at a main unit / block level. Based on 2009 UK£;
- Operating costs. Including, as appropriate, catalysts & chemicals costs, maintenance (including planned replacements), direct labour, general overheads;
- Process description. Block level process flow scheme and process description;
- Heat and material balance (H&MB)
- Outline scheme performance figures. Summary of performance figures including, for example,
  - gross power, net power,
  - individual block power demands,
  - CO<sub>2</sub> capture (quantity, and capture level),
  - overall and individual block efficiency,
  - feedstock composition and feedrate,
  - assumed entry conditions for CO<sub>2</sub> compression system,
  - turndown requirements,
  - utilities,
  - performance headroom (eg approach to theoretical maximum thermodynamic efficiencies);
- Key assumptions and uncertainties.

(b) Spreadsheet-based model (with appropriate documentation to enable the ETI to use it) incorporating performance and cost data, enabling simple 'what if' calculations to be undertaken on an overall and block-by-block level, including DCF to arrive at generation cost and CO<sub>2</sub> capture cost per MWh and per tonne captured and avoided.

In addition it is anticipated that the Contractor will provide at least one intermediate Payment Milestone Report (see Section 4).

## 3.2 Work Package 2: Performance Evaluation of Next Generation Technologies

### 3.2.1 WP2: Scope

The purpose of this work package is to carry out Performance Evaluations of selected (up to 6) potential next generation technologies, using as far as possible the same basis and methodology as WP1.

The exact scope for each will be very dependent on the specific technology and how it changes and impacts the Benchmark. It will also be highly dependent on the level of information available for the technology (many technologies of interest are likely to be at TRL 3 – 4, which means information will be limited). Where possible the ETI's identified technology provider will, through the ETI, provide performance and cost information of the next generation technology to the Contractor to work-up in the overall flow-sheet. In cases where technology provider information is not sufficient, the Contractor will be expected to make best estimates based on its own in-house or published data. Performance evaluation studies may typically involve:

- Evaluation of the process and integration opportunities across the whole plant that arise as a result of incorporating the new technology;
- Evaluation of performance and efficiency impacts resulting from the new technology, clearly identifying the major sources of these impacts;
- Block flow schemes which clearly illustrate how the new technology differs from the relevant Benchmark scheme;
- Evaluation of the impact of the new technology on flexibility / transient capability / turndown capability;
- Development of a CAPEX and OPEX cost estimates, for comparison with the benchmark scheme;
- Identification of the impact and uncertainty of key issues associated with the new technology, including key technical challenges and recommendations on how to resolve them;
- Preliminary ranking of the various flow sheet options evaluated including CAPEX, OPEX, economics, efficiency, level of integration, risks;
- Provision of feedback on key process data required for subsequent design phases (e.g. detailed design), as an input to the next phases of the development programme.

In its proposal, the Respondent should provide illustrative examples of how it would approach Performance Analyses of technologies with different levels of development and different level of input data.

### 3.2.2 WP2: Deliverables

(a) Technical report, describing the methodology used and the following for each Benchmark case:

- Capital costs. Including breakdown of costs at a main unit / block level. Based on 2009 UK£;
- Operating costs. Including, as appropriate, catalysts & chemicals costs, maintenance (including planned replacements), direct labour, general overheads;
- Process description. Process flow diagram (PFD) and process description;
- Heat and material balance (H&MB)
- Outline scheme performance figures. Summary of performance figures including, for example,
  - gross power, net power,
  - individual block power demands,
  - CO<sub>2</sub> capture (quantity, and capture level),

- overall and individual block efficiency,
- feedstock composition and feedrate,
- assumed entry conditions for CO<sub>2</sub> compression system,
- turndown requirements,
- utilities,
- performance headroom (eg approach to theoretical maximum thermodynamic efficiencies);
- Key assumptions and uncertainties.
- Recommendations on the potential benefits of the technology/ies and issues to address in any future development programme.

(b) Spreadsheet-based model (with appropriate documentation to enable the ETI to use it) incorporating performance and cost data, enabling simple ‘what if’ calculations to be undertaken on an overall and block-by-block level, including DCF to arrive at generation cost and CO<sub>2</sub> capture cost per MWh and per tonne captured and avoided. The model should allow simple comparisons to be made with the relevant Benchmark Case.

In addition it is anticipated that the Respondent will provide at least one intermediate Payment Milestone Report (see Section 4).

#### 4. Price and Payment

This Project will be paid on a **“capped cost plus” basis**. Payments will be made against each defined Payment Milestone according to actual costs incurred by the Participants (plus an agreed profit margin), up to the agreed maximum for each Payment Milestone. 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.

**Note that payment will be made:**

- (a) only against defined Payment Milestones, and**
- (b) only when the ETI accept that all constituent deliverables of a given milestone have been delivered in full compliance with the Acceptance Criteria (defined in the Project Contract), and are so documented in a Milestone Completion Report which has been accepted by the ETI.**

Further information is contained in the Summary of Terms contained in Appendix C.

An Accountant’s report shall be required to support selected financial reports and invoiced amounts, dependent upon the total contract value to be paid to each Participant. Details of these requirements will be provided during the Project Detailing phase.

The Respondent must provide a firm maximum (capped) total contract value for Work Package 1 and budget prices (using the same costing basis) for the illustrative examples provided in response to Section 3.2.1. Refer also to Section 11 of Appendix A.

#### 4.1 Anticipated Project Payment Milestones

It is anticipated that there will be 3 Payment Milestones in WP1.

Milestone	Week (approx)	Suggested Deliverables
M1.1	4	Final Basis of Design for all cases Draft Report covering first Benchmark Case Specification for Spreadsheet
M1.2	8	Draft Report covering all Benchmark Cases Draft Spreadsheet covering all Benchmark Cases
M1.3	11	Final Report and Spreadsheet, incorporating all comments from the ETI

Milestones for WP2 will be agreed when the programme of work for WP2 is agreed.

#### 5. Terms and Conditions for Project Contract

During the Project Detailing phase, a Project Contract will be drawn up by the ETI based on its standard contracts for such work and incorporating appropriate information from the ETI's RfP and the Respondent's Proposal. Full terms and conditions will be agreed at that time, but a Summary of Terms is included in Appendix C.

## Appendix A – Content and Format of Proposals

The Proposal may be in a format of the Respondent's choice. However, it shall be arranged according to the structure defined below and shall explicitly include all the information listed.

### 0. Covering Letter [1 page]

The Proposal should include a covering letter substantially similar to that set out in Appendix B, signed by a person authorised to sign on behalf of the Respondent and to bind the Participants to statements made in the Proposal.

### 1. Executive Summary [1 page]

A summary of the Proposal, describing briefly:

- The organisation / Consortium 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
- Total Project cost and duration.

### 2. Project Objectives [typically ≤ ½ page]

The overall Project objectives will be as specified in the Request for Proposals. The Respondent may provide subsidiary objectives if they think this is appropriate.

### 3. Background to Proposed Participants

The Respondent should provide a brief description of each of the proposed Participant organisations, including any major Subcontractors, **[maximum 1 page per Participant]**, including:

- Key skills, 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 a 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)
- Alternate resources available to be deployed in the event that the above key members become unavailable
- Role within the Project
- Relevant quality, health, safety and environment management systems.

If the Project is to be undertaken by a group of organisations (whether as a Consortium or as Subcontractors), a table **[typically ½ page]** should also be provided to identify which Participant(s) is/are proposed to satisfy each of the specific criteria (skills, experience, etc) listed in the 'Criteria for Review and Selection of Proposals' section of the Request for Proposals.

Also if the Project is to be undertaken by a group of organisations (whether as a Consortium or as Subcontractors), evidence of previous collaborative working (or subcontract management as appropriate) should be provided, both within and outside the Participant group **[typically ½ page]**.

All Participants should complete part A of Section 12. 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, should provide Due Diligence Information to the ETI according to the format set out in part B of Section 12. **[This due diligence information is excluded from the page limit]**.

### 4. Project Organisation [typically 2 pages]

The Respondent should provide Project organisational, governance and control structures and processes (particularly for Consortia), and should describe the rationale for their selection.

The Respondent should indicate in the structure each Participant (including the ETI) and the position of the key individuals identified in Section 3 (including the Respondent's Project Manager).

**Note that during Project Detailing (prior to contract signature) the ETI may request a copy of any Consortium Agreement for review/approval. A Model Consortium Agreement is available from the ETI.**

The Respondent should identify in their Proposal any foreseen issues or difficulties in respect of the details of such an Agreement or of the process of executing one.

## **5. Programme of Work [typically 5 – 10 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.

Any assumptions (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 (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.

## **6. 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 Deliverables and their due dates.

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) should be tabulated, with their due dates and constituent deliverables.

Refer also to Section 11.

## **7. Project Schedule [typically 3 pages]**

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, if appropriate (i.e. major review point(s) in the Project).

This may be accompanied by a narrative in the body of the Proposal if appropriate to explain or highlight any particular issues. Any assumptions made in producing this plan should be explicitly stated.

## 8. Risk and Health, Safety & Environment (HSE) Management *[typically 3 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.

The Respondent should state the extent of any exposure to fluctuations in foreign exchange rates or commodity prices, and their strategies for mitigating any such exposure. Respondents should also state the extent of any credit required throughout the Project, the sources of such credit (whether financed directly by the Participants or by their parent organisations or from other sources), and their strategies for mitigating any emergent shortfall in this credit supply.

Further to the summaries of each Participant's HSE management systems provided in Section 3 of the Proposal, The Respondent should provide here a register summarising the main anticipated HSE issues potentially affecting the Project and proposed strategies to address / mitigate each item.

## 9. Statement of Compliance *[typically 1 page]*

The Respondent shall provide a statement that the Proposal is fully compliant with the Specification and all other aspects of the Request for Proposals, 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.

## 10. Intellectual Property (IP) *[typically 1 – 2 pages]*

Any Project commissioned by the ETI will be subject to the appropriate ETI terms and conditions, (a summary of which is included in Appendix C), which state that all Arising IP will belong to the ETI. This will usually be IP in the reports and other deliverables, but will vary from project to project. The Respondent should provide a brief overview of the nature of any anticipated IP Arising from the Project.

The Respondent should describe any Background IP (e.g. patents, proprietary data, computer algorithms, knowhow or other IP):

- which is needed 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,
- rights to that IP, and
- ownership and control, whether this is by any of the Project Participants or by any third parties.

Where appropriate, the ETI may require further information to be provided either prior to completing the assessment of the Proposal or during the Project Detailing phase.

**11. Project Payment [typically 1 – 2 pages]**

(a) The Respondent should provide:

- a figure for the **maximum (capped) total contract value**, and
- a **breakdown** between Tasks and (for consortia or other Participant groups) **between Participants against each Task**.

If there are any assumptions or limitations to this price, these should be clearly stated.

(b) 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						
<b>TOTALS</b>						
Profit Margin, %						

Notes on Category Breakdown table:

1. Base Labour should include direct add-ons (eg 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 stage. 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.

For University or other academic institutions, the JeS system should be used to determine costs for inclusion in the above data.

**Please note that during Project Detailing (prior to contract signature) the ETI will require more detailed cost breakdowns, including a schedule of payments against the Payment Milestones identified in Section 5 above.**

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

- A. 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.
- B. 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.

<b>Details of organisation</b>
Full name:
Registered Office:
Type of Business (sole trader, limited company, partnership etc):
Names of directors/partners/owner
VAT number
<b>Details of directors, partners or associates</b>
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
<b>Audited Financial Accounts</b>
Please supply Audited Financial Accounts for the last 3 years for the organisation, or relevant part thereof.
<b>Claims or litigation</b>
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:

- Property damage
- Business interruption
- Employers liability
- Public liability
- Product liability (or justify its exclusion if not appropriate)
- Professional Indemnity.

ETI will require evidence of these during the Project Detailing phase.

## Appendix B – Proposal Covering Letter

### Letterhead or Respondent's name and address

Date:

ENERGY TECHNOLOGIES INSTITUTE LLP  
HOLYWELL BUILDING  
HOLYWELL WAY  
LOUGHBOROUGH  
LE11 3UZ

Attention: [Name]

Subject: **Request for Proposals (RfP) for ..... including any amendments or additions (the “Request For Proposals”)**

The enclosed Proposal is submitted in response to the above-referenced Request for Proposals.

We have carefully read and examined the Request for Proposals and have conducted such other investigations as were prudent and reasonable in preparing the Proposal. We are authorised to submit this Proposal on behalf of the Respondent and have obtained appropriate authorisations from other organisations as required, including any Consortium or Subcontracted Participants.

Yours sincerely,

---

*Signature*

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

e-mail address: \_\_\_\_\_

Date: \_\_\_\_\_

## Appendix C – Summary of 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 relates to projects to be carried out by a single contractor, the Contractor, which may have specific named parts of the scope subcontracted.

### Structure

1. The Contractor will manage the project. Where there are other subcontractors, they shall be represented in dealings with the ETI by the Contractor, who shall be responsible for managing communication between the ETI and any subcontractors. This role includes providing notices of meetings and other activities to the ETI, reviewing and commenting on project reports (as required under the project). The Contractor will be responsible and administer payment for all of its subcontractors.

### Project Management

2. The Contractor 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.
3. The Contractor 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, milestone reports, annual reports and a final report. Each report must address a specified list of topics required by the ETI.
4. The ETI will require the right to carry out a stage gate review on completion of a “stage” (or at least once a year) 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.

### Finance

5. ETI will pay against milestones and only in respect of actual costs incurred (or at pre agreed profit margin, if appropriate) for the work done under the project. Only eligible costs will be payable. Ineligible costs include interest charges, bad debts, advertising costs and legal costs incurred in finalising contracts and carrying on the project. Acceptance of 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 when such charges are agreed in accordance with the contractual variation control procedure.

6. Costs are payable in Sterling and ETI will pay valid invoices within 30 days of receipt of invoice following acceptance of a milestone. An accountant's report will be required to support selected invoices, in accordance with a standard ETI matrix.
7. 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**

8. 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**

9. ETI will require the right to audit the project, the Contractor and the named subcontractors during the project and, in certain circumstances, up to 7 years from the end of the project on financial or technical grounds.
10. Any 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 Contractor shall require no less obligations from its key subcontractors.

### **Sub-contracting**

11. Sub-contracting is not permitted without consent, except for agreed known subcontractors included at signing.
12. The Contractor must subcontract on no less onerous terms than the Technology Contract.

### **Variation**

13. Any variations to the project must be made via the variation control procedure.

### **Liability**

14. The liability provisions relating to the Contractor will be tailored on a case-by-case basis but are likely to be capped at (or at a multiple of) the amounts payable or received 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.

## **Withdrawal**

15. Withdrawal from the project is only possible with the unanimous consent of ETI. In such circumstances, the Contractor cannot recover outstanding costs, unless otherwise agreed.

## **Termination and Suspension**

16. The ETI reserves the right to terminate the agreement in certain circumstances (such as breach by the Contractor (which shall include a breach by a subcontractor), insolvency, change of control of a Contractor etc.). The ETI also reserves the right to terminate the agreement unilaterally upon giving a (to be agreed) period of notice to the Contractor. Upon termination, the ETI will pay the eligible costs incurred by the Contractor up to the date of termination.
17. The ETI will reserve the right to suspend the project in certain defined circumstances.

## **Intellectual Property**

18. All arising IP from the project will be owned by the ETI. The Contractor and any subcontractors will, to the extent required, be required to assign all relevant arising IP to the ETI.
19. The Contractor and any subcontractors will be required to licence their background IP: (i) to the other parties involved in the project on a royalty free basis where required for the purposes of the project; (ii) on fair and reasonable terms to the ETI or sub-licensees of the ETI, where required for the use or exploitation of the arising IP.