



Invitation to Tender

Restricted Commercially Confidential

Technology Acceleration Support for Development of a Tidal Generator Renewable Energy Concept

1 SUMMARY

Renewables East (“**RE**”) is engaged in programmes with both the East of England and East Midlands Development Agencies (EEDA & EMDA) to accelerate the route to market of very early stage renewable energy technologies, increasing both the quantity and quality of investable concepts capable of growing across the two regions.

Invite capable businesses, consultants and service providers to support the acceleration of the route to market for a horizontal axis, transverse mounted, tidal harvester concept, through provision of patent / IPR support and initial engineering analysis.

2 Background

The East of England is the leading English region for renewable electricity, currently producing 9% of the electricity it uses from renewable sources. It benefits from wide scale deployment of **bio energy** (for example the world’s first chicken litter electricity plant at Thetford, the UK’s first **bio ethanol** plant at British Sugar Wissington, and the world’s fastest biofuelled car at Lotus in Norfolk) and 2007 saw a record year for deploying on shore renewable energy. The region’s coast is also surrounded by the majority of the UK’s Rd1, Rd2 and [proposed] Rd3 offshore wind installations, with around £50 billion capital investment anticipated by 2020 as well as being the host region for **OrbisEnergy**, a Centre of Excellence focussed wholly on R&D, innovation, business development & growth for offshore wind, wave and tidal technologies. As a result, the region is well on target to meet its 2010 target of 14% electricity from renewable sources and has also been engaged by the East Midlands Development Agency to increase exploitation of the sector growth in offshore renewables.

In order to further strengthen the regional renewable energy proposition, **RE** is carrying out feasibility studies to underpin the business case for additional infrastructure projects which, if realised, will enhance the region’s ability to (1) capture economic benefit for businesses, (2) develop high calibre skills, and (3) increase knowledge holding in each of the areas of Primary Renewable Energy (Heat, Electricity & Transport Fuels). Each feasibility study will lead to a full Green Book business case assessment on which capital investment decisions can be based.

The Renewable East Technology Acceleration Scheme helps entrepreneurs, businesses and other technology developers create successful and innovative renewable energy solutions. It

does this by providing early-stages funding and other support to help ideas reach a level of development and credibility at which other significant funding options become viable.

The general objectives of the scheme are to:

Increase the strength of the renewable energy engineering and service sector in the East of England and East Midlands.

Help adoption of renewable energy technologies by producers and consumers in the region.

A Regional Innovator has developed a range of Tidal Stream Energy Converters and has now decided to concentrate on the development of the Tidal Harvester (TH2). The TH2 has the most potential for producing high power outputs (Megawatts). This in turn makes it potentially the most cost effective in terms of KW/£. The device is aimed at offshore power generating companies in the UK and further, and it is intended to produce the device locally.

3 About Renewables East

Renewables East is a private company delivering the services associated with being the renewable energy agency for the East of England. The Company is funded by the East of England Development Agency (EEDA) and officially designated as an EEDA sister organisation. For the year 2008/09, **RE** has been allocated £2.4M from various sources including EEDA, EMDA, EU, Local Authorities and central government to continue its mission.

The objectives of the Company are:

- a. To enable the East of England to meet its adopted target for the production of energy from renewable resources, within the context of national energy policy and the need to move towards a lower carbon economy; and
- b. To maximise the rate of growth of the renewable energy sector and the economic benefits to the East of England and East Midlands' regions, especially through stimulating investment and job opportunities, supply chain development and innovation.

RE's primary work areas are Bioenergy (Biomass and Biofuels,) Offshore/Onshore Wind and the emerging marine renewables (i.e. Wave & Tidal technologies), Planning, Supply Chain Development and the On-site Renewables agenda. If you have not already done so, you may find a visit to our web-site useful www.renewableseast.org.uk.

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- Increase the strength of the renewable energy engineering and service sector in the East of England and East Midlands;
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4 Scope of work

The concept owner has developed a Tidal Stream Energy Converter which has potential for producing large power outputs (Megawatts) at a cost effective rate (£/kWh). The device is aimed at offshore power generating companies in the UK and overseas, but is intended to be manufactured using a local supply chain.

The following scope of work builds upon existing research **already underway** in conjunction with a regional academic institute the results of which will be made available on completion to the successful bidder(s).

The successful bidder(s) will have the capability to provide one or all of the following support packages:

PACKAGE 1 – Support with Highlighting and Protecting Intellectual Property Rights (IPR)

This package of work is specifically focussed on understanding what (if any) intellectual property can be generated and protected in connection with the proposed concept on behalf of the concept owner. Therefore it is likely to include one or more elements of the following overall scope of work subject to signing of the declaration of confidentiality offered in Appendix 1:

a) **Outline Patent Search:**

Low-cost search to highlight the existence (if any) of prior-art which could effectively limit the concept owner's ability to develop all or specific parts of the technology. Based on the outcome of the outline patent search potential exists to progress to a detailed patent search (b) if evidence is presented to justify the need.

b) **Detailed Patent Search:**

Subject to the results of (a) above, a more detailed search may be necessary to establish in more detail the specific nature of potential prior art which could effectively limit the concept owner's ability to develop all or specific parts of the technology. Based on the outcome of the detailed patent search potential exists to progress to a detailed patent application (c) for one or more unique aspect of the concept owner's technology if evidence is presented to justify the need.

c) **Patent Application Development:**

Subject to the results of (a) & (b) the scope of work could potentially involve the successful tenderer providing support to the technology owner in developing and submitting an appropriate patent (or patents).

PACKAGE 2 – Development & Refinement of the Technical Concept & Design

Based on information which will be made available from (i) the concept owner; & (ii) the results of the academic research already underway, this package of work is specifically focussed on providing expert support in developing the technology through modelling the following aspects of the technical concept:

Outline Mechanical Design:

Construction of a 3D CAD model of the concept to allow approximate figures for the weight of the system and the cost of manufacture to be calculated. The precise profile or proposed fixed dimensions will not be modelled, but rather an estimate of the overall volume and weight of the device will be the objective in order to estimate the manufacturing cost.

Initial Electro-mechanical Investigation:

Investigate the electromechanical design and make an initial estimate of the power that might be obtained from the proposed system under fixed operational conditions. Compare these theoretical results with commercially available systems.

Numerical Analysis:

Using the 3D CAD models, conduct an initial assessment of the key stress points within the system and highlight where these may carry a risk with respect to reliability and durability. Using the estimation of physical weight obtained from the 3D CAD models, make an initial assessment of the most appropriate offshore foundation or mooring solution.

Risk Review:

Conduct a risk review to identify areas of the concept which represent the highest technical risk, including design aspects where:

- the initial 3D models indicate there is significant mechanical risk
- operating conditions may require addition control/operating functionality

Make an assessment of the potential impact of these risks and make recommendations for mitigation of these risks in future development.

Cost Model:

Using the estimates generated from the mechanical and electronics investigations generate an outline Bill of Materials and a Cost of Goods model. Estimates of the costs of parts can be made on the basis of the tenderer's own engineering experience (as opposed to seeking quotations for component prices).

Reporting:

Prepare a presentation style report summarizing the work input to the project and the conclusions from the initial investigation and where appropriate make recommendations for the focus of the next stages of the concept development.

NOTE: The detailed design, fabrication and then testing of a prototype, for example in a controlled environment such as a tank, flume or directly offshore, is outside the scope of this contract.

5 Tender Details

Responses to this tender must be received by **Renewables East** no later than **1200 hours on Friday 30th January 2009** and should be sent via email to:

John Heath
Delivery Manager
Renewables East
ZICER Building
School of Environmental Sciences
University of East Anglia
Norwich
NR4 7TJ

Responses should be submitted electronically, and should include your total fees (including the number of people involved, their daily rates, plus any expenses and VAT), outline proposals on the form and type of training session and supporting materials you would develop, evidence of previous experience, and any additional value you can add.

The successful applicant will be notified by Friday 6th February 2009 at the latest and must be in a position to start work immediately upon notification.

The materials produced will be the property of **Renewables East** and will need to be supplied in formats (hard copy and/or electronic) that can be reproduced by us without further project cost.

6 Tender Process & Assessment

Tenders should be no longer than ten pages, including a two page executive summary. Further information can be included in the form of an appendices.

Above all else, the successful tenderer will clearly articulate specifically how the work packages will be delivered, stating how resource will be deployed to stay within the budget and timescale.

The tenders will be assessed against the following criteria:

- 30% - Value for money: Clear, concise evidence of how the tenderer will not only deliver the scope, but will deliver a greater/wider value to the overall project/programme.
- 50% - Track Record: Demonstratable (evidenced) examples of knowledge and experience in delivering work packages of a similar nature on time and to budget.
- 20% - Understanding economic drivers in SME businesses: Demonstratable (evidenced) examples of funding and resource constraints often prevailing within small to medium size enterprises (SME's)

Any information provided will be treated with total confidentiality.

7 Fees

The total budget available for this work will not exceed:

- £15,000.00 (“Fifteen Thousand Pounds”):

Derived from the following Packages::

Package 1 (Support for IPR) :

- Element a). GBP£500.00 (“Five Hundred Pounds”)
- Element b). GBP£2,000.00 (“Two Thousand Pounds”)
- Element c). GBP£2,500.00 (“Two Thousand Five Hundred Pounds”)

Package 2 (Tech Development) :

GBP£10,000.00 (“Ten Thousand Pounds”)

All prices are inclusive of VAT and any materials/expenses incurred in the course of this work and will be released in line with tangible evidence of progress against milestones.

8 Further Information

Should you require any further information on this brief to complete your tender submission, please contact John Heath by e-mail or post: JohnHeath@RenewablesEast.org.uk

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ZICER Building, School of Environmental Sciences
University of East Anglia (UEA)
Norwich
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9 Restricted and Commercially Confidential

PLEASE NOTE THAT THE INFORMATION AND ASSOCIATED DOCUMENTS SUBMITTED IN RESPONSE TO THIS INVITATION TO TENDER AND ALL SUBSEQUENT INFORMATION RELEASED TO TENDERERS SHALL NOT BE AVAILABLE IN THE PUBLIC DOMAIN AND SHALL REMAIN COMMERCIALY CONFIDENTIAL. THE INFORMATION IS NOT TO BE USED FOR ANY PURPOSES OTHER THAN TO RESPOND TO THE TENDER.

Refer to the Declaration of Confidentiality & Non Disclosure in Appendix 1 which is a condition of receipt of further information about the technology upon successful award of contract.