

**SECOND CALL**  
OF THE TECHNOLOGY PROGRAMME**New and renewable energy**

Funding is available to support the development of new and renewable energy sources, including fuel cells, offshore wind, wave and tidal power, photovoltaics, and biomass. Support is also available for research into technologies that will assist the connection of higher levels of embedded and intermittent generation to the existing electricity network.

The focus of this call is on collaborative research, for which up to £8 million has been allocated.

**Knowledge Transfer Networks**

Knowledge Transfer Networks in the area of new and renewable energy (including fuel cells) will be called in the autumn. However, the concept of a web-based Fuel Cell Forum was set out in the Energy White Paper of February 2003 and the Forum was launched at the Grove Symposium in September 2003. We are inviting bids in the current call from organisations to run the Forum, as an information network, over the next three years. Further information on the Forum can be obtained from Mark Wingate at Pera at [informationnetworks@pera.com](mailto:informationnetworks@pera.com).



## Collaborative Research and Development

### Fuel cells

Proposals should focus on tackling key development issues that affect the commercial prospects for fuel cells. Our approach is technology-neutral although priority areas include commercial/industrial CHP, distributed power generation and road transport.

Commercial entry to these markets may be some way off but proposers should provide evidence of a clear route to significant longer-term markets.

We welcome proposals for developing and evaluating innovative fuel cell stack and system designs, and key stack and system components, with particular emphasis on the UK supply chain.

### Wave and tidal stream

Funding is available for projects that will further develop, evaluate and test wave and tidal stream device concepts and components. Proposals should include a clear description of the concept, the rationale for its configuration and energy capture and the basis for the further work proposed. Proposals will be assessed on the basis of the long-term economic prospects and should include a relevant evaluation with assumptions and data clearly identified.

### Offshore Wind

Funding is available for innovative technologies and approaches that offer the prospect for significant reductions in capital and operating costs of offshore wind farms.

We are also prioritising technologies that will reduce the radar cross section of wind turbines, through new materials and designs. Ideally, such proposals should include turbine and component manufacturers.

## Photovoltaics

Projects are likely to focus on identifying, developing and evaluating novel materials and/or cell structures that offer significant improvements in performance, reliability and generation costs. We encourage research into possible '3rd generation' PV. Incremental technology developments will also be considered where they offer significant cost reduction.

Proposals should demonstrate technical advantages over competing approaches and good prospects for sustainable business in the UK. Proposers should offer credible teams with relevant scientific and industrial skills and financial resources, and who demonstrate a commitment to longer-term development.

Proposals should be led and driven by industry but can involve collaboration with academia. Projects may also include international collaborations where these deliver a clear net benefit to the UK. (DTI funds will not contribute to the costs of non-UK participants.)

## Biomass

The development of viable and cost-effective energy crop fuel supply chains are essential to the long-term future development of bio-energy in the UK. A further barrier to bio-energy deployment is the high level of capital and operating costs that make it difficult for bio-energy to compete in the Renewables Obligation without additional support.

In the short term, the most promising way forward may be to develop clusters of smaller-scale energy generation based on energy crops.

Projects should address these immediate R&D challenges and the underlying issues in developing cost-effective technology.

- Fuel supply chain development and reduced delivered fuel cost - projects should reduce the delivered cost and improve the reliable supply of energy crops, forestry residues, and other biomass materials (including wastes) for energy production. Typically this would be by developing, and subsequently evaluating, innovative equipment and techniques within the fuel production, harvesting and supply chain
- Energy generation - strategies for cost-effective deployment of multiple small electricity-generating stations (typically less than 20MW fuel input). Research and development into commercial deployment of advanced biomass conversion devices
- The impact of energy crops on combustion process – research that will improve understanding of the behaviour of energy crops in combustion systems (including co-firing)
- System Studies - optimisation studies that model the deployment of clusters of related bio-energy installations, with respect to their size, technology, costs, environmental and social impacts and other factors
- Biofuels - projects examining next generation transport biofuels, including the use of ligo-cellulosic feedstocks. (This will not include the translation of existing biofuel production processes to the UK.)

## Embedded Generation

Projects should focus on ways to connect and operate renewable energy technologies (and CHP) on the current network while keeping parameters within statutory limits.

The highest priority areas are:

- Techniques/devices to mitigate voltage constraints on connection of generation
- Fault current limiting technology
- Protection/control devices applicable to multi-directional power flows
- Active management techniques and the co-ordination of network and generator control systems
- Techniques to mitigate system-level impact of intermittency, including demand side management
- Applying advanced metering in the interests of system security and energy efficiency

On a longer timescale and of a lower priority:

- Developing utility scale storage
- Revising network design practice leading to increased generation integration

