

# Energy Review Consultation

## Response by Severn Tidal Power Group

The Severn Tidal Power Group was formed in 1981. It comprises Balfour Beatty, Taylor Woodrow, Sir Robert McAlpine and Alstom. The group carried out the major engineering and environmental studies into the Severn Barrage which were published jointly with DTI and CEGB in Energy Paper 57 in 1989. Following privatisation of the electricity industry, the project was not pursued at that time.

The Severn Barrage would harness the very large tides in the Severn Estuary to provide 5% of UK electric power demand from a predictable and renewable source.

**Question 1** *What more could the government do on the demand or supply side for energy to ensure that the UK's long-term goal of reducing emissions is met?*

Currently carbon credits are time limited. Thus the carbon credits for renewables projects with a long payback period are not guaranteed for a long enough period for the project to meet investment criteria. Tidal barrages, including the Severn and Mersey barrages, are such projects. They provide fully predictable and renewable power, but need assurance of revenue over decades rather than years.

The government should therefore increase the time over which carbon credits are assured to suit the nature of such renewable projects.

**Question 2** *With the UK becoming a net energy importer and with big investments to be made over the next twenty years in generating capacity and networks, what further steps, if any, should the government take to develop our market framework for delivering reliable energy supplies? In particular, we invite views on the implications of increased dependence on gas imports.*

A high dependence on imported gas will reduce our security of supply and will leave the UK in a weak commercial negotiating position regarding cost of supply. Providing security for the transport systems for gas imports, whether by pipeline or sea, over thousands of km is likely to be beyond the capability of the various governments involved. Increased terrorist activity means that security is more difficult and expensive to provide. Therefore measures should be taken to reduce the reliance on imported gas to a moderate level, and to have a diversity of electricity supply.

The market framework for delivering reliable electricity supplies should reward reliability and low carbon emission. A mix of technology is desirable including clean coal when it is sufficiently mature, nuclear power, wind power and **tidal power**.

Tidal power is a predictable renewable resource. It comes in two distinct forms. Tidal stream development should continue to be encouraged, but it is not yet a mature technology. Tidal barrages, however, use well-tried and reliable technology.

Accordingly, government should support the reappraisal of the Severn Barrage, to bring the earlier studies up to date with the changes in the electricity market, environmental legislation and costs of construction since the publication of the EP57 report.

The Severn Barrage alone could contribute 5% of current UK electricity demand, with more from other sources. Earlier studies show that the Severn Barrage is competitive with other forms of renewable energy

provides clean, CO<sub>2</sub> free generation of electricity

uses proven technology, as the La Rance barrage in France has demonstrated over more than 35 years of reliable power generation

has significant environmental benefits, such as flood prevention in the Severn Estuary and also in the River Severn is environmentally friendly, though this has still to be accepted by some and significant further work needs to be done

can provide new rail and road links across the estuary

While we anticipate private sector funding for the project, government support during the planning stages and with carbon credits is necessary for it to move forward. Reappraisal is a necessary to determine whether the project justifies this support.

#### *Electricity Market*

The electricity market should be developed to ensure that the value of carbon-free electricity is clear to investors in the relevant technology for the period needed to justify their investment. This applies particularly to clean coal and tidal power, and investigation is needed to determine these periods.

**Question 3** *The Energy White paper left open the option of nuclear new build. Are there particular considerations that should apply to nuclear as the government re-examines the issues bearing on new build, including long-term liabilities and waste management? If so, what are these, and how should the government address them?*

STPG is principally interested in the Severn Barrage and it is therefore not appropriate to comment on nuclear power beyond saying that we support a diverse mix of generation, and we see different forms of generation as complementary.

**Question 4** *Are there particular considerations that should apply to carbon abatement and other low-carbon technologies?*

As mentioned above, the value of carbon credits should be assured to the various technologies for the period needed to gain a return on the capital investment. This is a much longer period than is currently promised for nuclear, clean coal and tidal.

Another consideration is the desirability of promoting informed discussion about different forms of electricity generation. To assist this, government should clearly state the relative amounts of carbon emitted by each type of generation as there is some dispute about these numbers. The amounts should cover the whole construction and fuel cycle as well as generation itself.

**Question 5** *What further steps should be taken towards meeting the government's goals for ensuring that every home is adequately and affordably heated?*

Once the capital costs of tidal barrages have been sunk, they have very low operating costs, with no fuel cost, and provide predictable generation of renewable electricity. Their reliability is demonstrated by the operation of the tidal barrage at La Rance in France for over 35 years. The life of the barrage structure is indefinite, probably several hundred years. Therefore, once in place barrages provide a very secure source of supply with very low marginal

costs of generation. This is beneficial for government's goals.

**Comment i** *The long term potential of energy efficiency measures in transport, residential, business and public sectors, and how best to achieve that potential*

Energy efficiency is not a sufficient answer, demand will continue to rise. Developing micro-generation from gas in residential or business premises will create new long term CO<sub>2</sub> generation, which outweighs the short term benefit that the process is said to bring. Climate friendly energy generation is needed across the board.

**Comment ii** *Implications in the medium and long term for the transmission and distribution networks of significant new build in gas and electricity generation infrastructure*

The arrangements for grid strengthening to accommodate new generation infrastructure should be clarified. At present it is not clear whether renewables have to pay the full cost on connections. The Severn Barrage is well placed, close to the areas of demand, but as a large generator there will be grid strengthening costs, and these have been factored into earlier studies, but now need to be reappraised.

**Comment iii** *Opportunities for more joint working with other countries on our energy policy goals*

STPG has no comment.

**Comment iv** *Potential measures to help bring forward technologies to replace fossil fuels in transport and heat generation in the medium and long term*

STPG has no comment.

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