



April 2006

**Response to the Department of Trade and Industry's Energy Review
consultation document
'Our Energy Challenge' (January 2006)**

Is there an approaching "Energy Gap" in 2015?

The 2006 Energy Review is looking at options for nuclear new build because of the perceived 'energy gap' (more accurately electricity gap) that is expected to emerge around the middle to end of the next decade. This is expected to arise from the closure of coal fired power stations (in part due to the Large Combustion Plants Directive) and from the closure of the nuclear stations as they reach the end of their life.

At one level the energy gap is a construct of not accepting that a functioning market in energy will deliver desired outcomes. In principle, market signals about any shortfall in supply should stimulate investment on the supply side. So an 'energy gap' is an acceptance that markets are not working, or that the market approach is in some way inadequate. However, let us consider, in state planning mode, the size of this energy gap for 2015 and what might need to be done about it.

The UK currently uses about 400TWh (gross). According to DTI projectionsⁱ power demand is not expected to rise by 2015 as a result of measures in the climate change programme. Arguably there are a number of measures that could constrain demand further which do not appear to be part of the CCP. Examples include appliance efficiency standards, controls on 'standby' energy usage for electronic goods, measures to promote low-energy lightbulbs, and especially standards to promote efficiency of electric motors which make up a large proportion of power usage in industry. No total quantification of the impact of such measures is available although the Market Transformation Programmeⁱⁱ demonstrates that substantial savings are feasible. So with 'sensible' demand side measures the 2015 demand should be 380-390TWh or less.

How might these demands be met? In 2005 it is estimated that 123TWh were provided by coal generation. The changes in gas prices have meant that coal has become a much more attractive fuel source for generators, and now estimates would be that instead of station closure leading to a decline to around 50TWh per yearⁱⁱⁱ, more coal capacity will be retained to deliver around 100TWh^{iv} in 2015.

Currently Nuclear is set to decline to around 50TWh by 2015, although this depends on any Plant life extensions. Dungeness has already obtained a plant life extension to 2018, and so others in the Advanced Gas-cooled reactor fleet may achieve the same. Whilst Greenpeace wouldn't advocate it (a more aggressive target on renewables and energy efficiency would be much preferable), it is certainly possible. In particular Hartlepool and Heysham 1 and which were built the same year as Dungeness are

currently scheduled to close in 2014. They have a combined capacity of 2.3GW – a further 14TWh at a relatively low load factor.

We currently import 13TWh over the interconnector and could continue to do so.

The Government renewable target of 15% by 2015 (54TWh) can certainly be met if the grid connection issues for offshore wind are sorted out through grid charging, and with associated gains from onshore wind, landfill gas etc. Tidal and wave would not be expected to make significant contributions by that time although they could do so by 2020.

The Government target for CHP is 10GW by 2010. Meeting that target from current position would require 1GW of installation per year from now until 2010. Continuing that rate to 2015 would deliver an additional 5GW. At 70% load factor this would provide 61TWh, a level accepted as feasible by CHPA and REA.

Given current gas consumption and existing CCGT, with an operational lifetime of 20 years, a peer-reviewed study indicates that we can expect that stations delivering around 85TWh would still be available in 2015^v compared to 127TWh produced for the system in 2005. It is also likely that the Hydrogen-fuelled with CCS in Miller field station will be constructed delivering another 7TWh.

Combined available sources are 384TWh, within the expected range of generation required. Levels of renewable generation do not exceed 20% which might lead to concerns over intermittency. The decline in coal (replaced by renewables) and greater efficiency of gas use would deliver CO₂ savings; a power sector emission of 143.6MtCO₂ compared to the 2005 emission of 185.6MtCO₂^{vi} - all assuming that current efficiencies of plant are maintained rather than improved through retrofit etc. None of this assumes any significant contributions^{vii} from PV, micro-wind, anaerobic digestion, biomass, wave, tidal stream, 'Geopressure' or energy from waste (advanced gasification rather than mass-burn incineration) all of which could be expected to make small contributions by 2015 and develop a much more substantial presence thereafter, ensuring that generation in the rest of the decade and beyond 2020 should be secure.

In order to meet the 'energy gap' Government needs to meet its own targets on renewables, meet its own target (and sustain build rates) on CHP, with efficiency gains as predicted under the Climate Change Programme in DTI 2006 figures, plus some additional, feasible measures.

We firmly believe that in fact more could be done on efficiency, and a great deal more on micro-generation, although these are not yet quantified on this short timescale. (e.g. DTI micro-generation strategy focuses on 2050 and 2020 but are all subject to analyses of policy alter not on the genuine potential e.g. making them compulsory on new buildings.)

The energy gap, if it exists at all, is a function of Government failure on its own targets, not an immutable law of nature.

ⁱ DTI, 2006. UK Energy and CO2 projections, Updated projections to 2020. Feb 2006. See tables p. 46.

ⁱⁱ www.mtp.org.uk

ⁱⁱⁱ DTI, 2000. Energy Paper 68 Annex D p.76.

^{iv} DTI, 2006, *ibid*.

^v Friends of the Earth, 2006. A Bright Future. Data tables for scenarios. March 2006.

^{vi} Figures taken from Friends of the Earth model, *ibid* which are based on DTI stats.

^{vii} Under the Renewable Obligation most of the capacity required by 2015 will be delivered by wind and landfill gas