



Deloitte on UK electricity to 2020

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Deloitte's Energy, Infrastructure and Utilities division have recently published a report on the UK electricity environment. Its title: [2020 vision - Meeting UK power generation objectives in 2020](#).

The focus of the report is quite rightly on UK electricity supply recognising that 2006 should be "*a watershed in UK energy policy*." The executive summary includes this on the emerging energy gap:

By 2020, over 50GW of new or refurbished generation capacity will be required which represents circa two-thirds of current capacity - equivalent to either 55 new CCGT's, 30 new nuclear power stations, 95,000 on-shore - or 40,000 off-shore wind turbines.

These figures give an idea of the challenge the UK faces over the next 14 years, more than 3.5GW per year starting now. It's clear 2006 isn't going to hit that target so the objective, if business as usual is to continue unchanged looks more like at least 4GW per year starting in a few years time.

The challenges facing the UK are identified by the report as:

- Declining gas reserves
- Reducing civil nuclear capacity
- Renewables growth (rate slower than required)
- Climate change (closure of uneconomical coal plant due to emission profile)
- Rising and volatile gas prices

Remarkably this list is a perfect match to the presentation I gave at the [PowerSwitch](#) conference July 2005 ([link 0.5MB .pdf](#)). The Vital Trivia article [UK Gas and Electricity Crisis Looming](#) article also covers the material.

The report doesn't only highlight the problem but also looks at what can be done about it. It is clear that significant policy decisions must be made, to this end the need for consultation is identified and stakeholders are identified.

Four possible scenarios for 2020 are considered:

Business-as-usual with a low gas price, which increases the gas share to 70%, doesn't build any more nuclear as the fleet is decommissioned, significantly reduces coal burn and increases the renewable contribution to 15%. Investment: £22bn, cost of generation: £31/MWh.

Business-as-usual with a high gas price, similar to the first scenario but only 50% from gas (still considerably more than today!), the remaining 20% to come new integrated gasification combined cycle (IGCC) and carbon capture and storage (CCS) coal plant. Investment: £32bn, cost of generation: £40/MWh.

Diversified portfolio, here the current gas share is maintained at 30%, IGCC and CCS provide

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20%, limited new nuclear build increases the contribution to 15%, renewables provide 20% and the remaining 15% is provided by CHP and fuel cells. Investment: £51bn, cost of generation: £41/MWh.

Low carbon, again the current gas share is maintained at 30%, IGCC and CCS provide 25% now, significant new nuclear build makes up 30% with renewables providing 15%. Investment: £50bn, cost of generation: £40/MWh.

These scenarios are very interesting. Firstly none assume a lower gas burn than we have today, I think this reflects an unrealistically optimistic assessment of gas availability in 2020. Secondly all assume little or no demand reduction, the report is weak in this area.

My assessment: I suspect 2020 won't look exactly like any of these scenarios but rather be characterised by lower electricity consumption, provided by reduced gas burn (20%), reduced coal burn (20%), limited new nuclear build (10%) and increased renewables (10%) making 60% of current supply. Conservation and efficiency will enable that 60% of supply to deliver 80-90% of the utility electricity provides today leaving us 10-20% worse off than today in electricity terms.

My final quote from the report is this on gas prices:

Only four countries in Europe have greater than 35% gas penetration in their generation mix. The UK is set to join this super league within three years. With 200% volatility in month-ahead gas in 2005 (compared to circa 20% for the equities markets) and with gas price inflation running at 20% compared to 2.5% for the overall the economy, the UK may become an increasingly unattractive base for energy-intensive multinational industry.

To me this sums up the fundamental flaw in the current business-as-usual policy of not only importing gas to offset North Sea decline but also to replace decommissioned coal and nuclear plant. The road we are currently on looks like requiring 40% of gas to be imported by 2010, with construction expected to start on between 2,000 and 5,000 MW of CCGT within 18 months.

The challenge facing the UK is immense; though I believe with immediate and dramatic action the situation can still be saved. Deloitte are right to hope for 2006 to be a watershed. Hopefully this report will help to focus the debate since decisions made this year will determine whether the lights are still on in 2020.



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