



Joint Energy Security of Supply Working Group

Posted by [Chris Vernon](#) on May 26, 2006 - 8:42pm in [The Oil Drum: Europe](#)

Topic: [Supply/Production](#)

Tags: [electricity](#), [gas](#), [united kingdom](#) [[list all tags](#)]

We received the sixth report from the Joint Energy Security of Supply Working Group (JESS) recently (May 06), this follows the fifth report published way back in November 04. In the third paragraph of the report they state:

In a market-based system such as the UK's, the provision of adequate energy supplies to meet demand depends on effective market responses, which in turn rely on market players having information to inform their expectations about future supply, demand and prices.

Hopefully we won't have to wait another 17 months for the seventh report and information to inform future supply, demand and price expectations.

The JESS report is concerned with the UK gas and electricity markets over the medium- to long-term rather than short term although some mention of the past and coming winters are made.

Gas Market

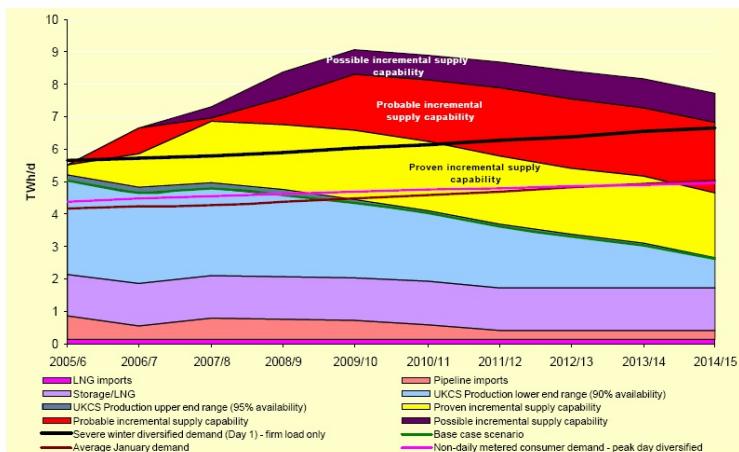
On demand JESS repeated the following information from National Grid:

It forecasts an average increase in annual gas demand of 2.2% per annum through to 2014, with peak demand growing at the marginally lower rate of 2.1% per annum; and an import dependency of 46% by the end of the decade, rising to around 80% by 2014-15.

They expect continued increase in gas demand in the face of indigenous depletion with this demand being met by imports. The magnitude and timescales of reliance on imports is surprising though, previous reports have suggested 80-90% reliant by 2020. Forecasting 80% reliant by 2014-15 is the most pessimistic outlook I have seen.

No graph is provided showing this annual supply and demand forecast but this chart showing daily demand against supply is provided

Potential daily gas delivery capability (various supply scenarios) versus peak diversified gas demand during a 1 in 50 winter in the UK



Click to enlarge.

On first glance this picture is reassuring, the demand curves are comfortably below the solid supply curves, however the text of the report admits this picture "may be overstated".

The following assumptions are made:

- The UK Continental Shelf (UKCS) production is shown at 95% of maximum - this is optimistic since recent past performance has shown gas delivery (on days where demand exceeded UKCS supply) vary between 85% and 95% of maximum centred on 91-92%.
- All other supply sources are shown at 100% of capability. It is by no means guaranteed that all available import (pipeline and LNG) and storage infrastructure will be utilised to such an extent, I would suggest it is extremely unlikely that the volume of gas will be available to fill all possible import infrastructure or even that all infrastructure would be available simultaneously.
- Much of the required infrastructure doesn't exist yet, the three categories are defined thus:

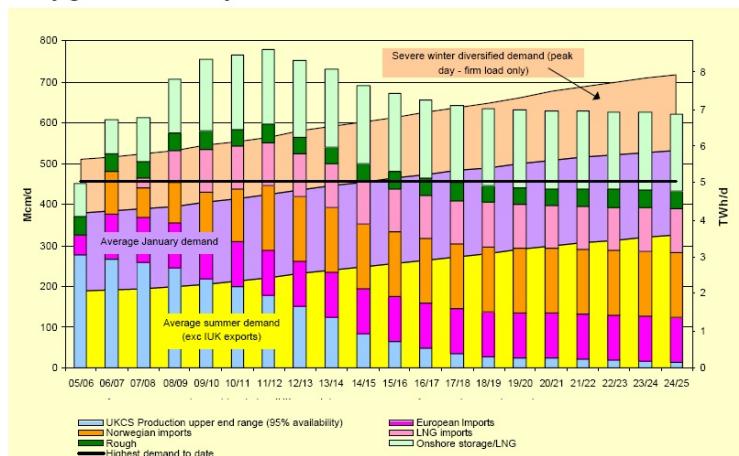
Proven incremental supply capability: Those projects that, on available evidence, are virtually certain to be technically and economically successful (ie better than a 90 per cent chance of being developed).

Probable incremental supply capability: Those projects which are not yet "Proven" but have a better than 50 per cent chance of being technically and economically successful.

Possible incremental supply capability: Those projects which cannot be regarded as "Probable" at present, but are estimated to have a significant, but less than 50 per cent chance, of technical and economic success.

If that graph were to be redrawn recognising that only a fraction of the proven, probable and possible supply capacity will actually end up being built, once built it would operate at below 100% capacity and UKCS is likely to deliver below 95% the picture would be very different indeed.

This graph shows the same information, including all "possible" gas supply infrastructure, now broken down type along with summer, winter and severe winter demand curves.



Click to enlarge.

This time JESS is even more open about the optimistic nature stating:

...with the exception of UKCS production, it shows all supply sources at 100% of delivery capability. This is likely to be considerably overstated since there is no guarantee that that this volume of gas will be supplied, even if the infrastructure is built.

What I find most surprising is even after adding such a caveat to the graph they felt no need to attempt a more realistic forecast.

Norwegian production is sure to collapse in a similar fashion to UKCS with the impact on exports to UK likely to be exaggerated from the total decline. Other imports sourced from Russia and the Middle East (via an energy scarce continental Europe) are unlikely to maintain such magnitudes as indicated and with supply excluding storage barely above even summer demand (remember the 100% build and utilisation) when will 'spare' gas be available to recharge the storage infrastructure clearly needed for the winter?

There is neither analysis of export availability nor competition for imports from other countries included in this report. This omission from a report stating the UK will be heavily dependent on imports is inexcusable.

Electricity Market

Regarding electricity the most significant factor is the decommission schedule of the nuclear fleet which we have discussed previously: [Nuclear Britain](#)

Also covered is the impact of the Large Combustion Plants Directive on the coal-fired fleet. The LCPD imposes restrictions on emissions including sulphur dioxide (SO₂) and nitrogen oxides (NO_x). Individual plants can either elect to opt-in, in which case they have to meet the LCPD by burning cleaner coal or employing technology to scrub emissions or opt-out in which case they have to close completely after 20,000 hours operation or by the end of 2015, whichever comes earlier.

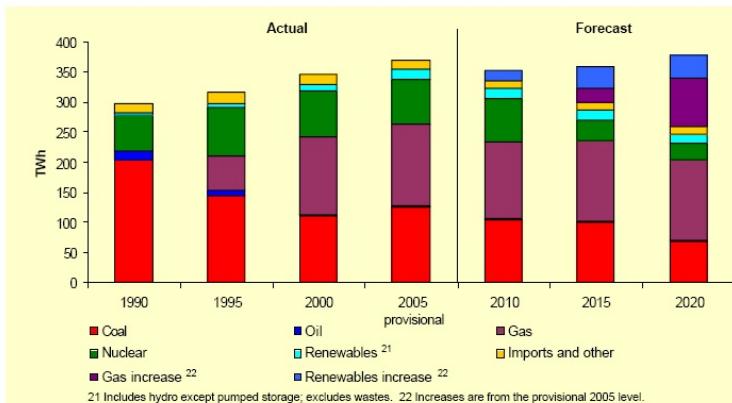
The opt-in/opt-out decisions were finalised on 3rd Feb 06 with the following results; of the total 28.8GW coal generating capacity 20.6GW have opted in with 8.2GW (28.5%) opting out.

Whether the opted out plant run flat out for just over two years or chose to run with a low (less than 30% activity factor) is a decision left to the plant owner and determined by the economics of the situation and any additional environmental and technical limitations.

Together this means by the end of 2015 the UK will lose 28.5% (8.2GW) of coal fired and 59.5% (7.1GW) of nuclear generation capacity.

Taking this into account the following forecast for electricity generation by fuel type is made with the decrease in coal and nuclear output more than compensated for with new gas and renewable build:

Electricity generation by fuel type – UK



Click to enlarge.

It is assumed that eligible renewables reach a market penetration of around 8% in 2010, though there is a great deal of uncertainty about the likely outcome. Penetration is assumed to reach 15% in 2015, remaining at the same absolute level of supply in 2020.

This statement illustrates how the target of 10% by 2010 and aspiration of 20% by 2020 is not expected to be met.

The report goes on to detail some 11,990MW of combined cycle gas turbine (CCGT), 1,211MW of combined heat and power (CHP) and 10,680MW of renewable infrastructure currently planned although the vast majority of this new build has not yet received planning approval

Summary

In summary I think this report has failed in its objective to provide the market with future supply, demand and price information. The quantitative data presented is so optimistic to be virtually worthless with qualitative caveats that don't adequately describe the risk.

Encouragingly their future work plan for the coming year does include this long overdue point:

examination of international aspects of security of supply e.g. impact of global markets in LNG and coal

Interestingly in 61 pages of discussion about the medium- to long-term UK energy security of supply there isn't a single mention of new nuclear build except to list it amongst the things that the Energy Review would consider.



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