



Future Generation Coal Forum Sub Group Report

John Topper, 23 January 2007



First Meeting – 16 January 2007

Agenda

- **Consider the Remit**
- **Work Plan**
- **Key messages and Issues**

- **To report to the Forum on the likely impact of clean coal generation technologies (CCT) and carbon capture and storage (CCS) on the demand for indigenous coal in the UK, based on existing work in this area. To include timescales for predicted demand.**
- **To propose various scenarios for future of coal-based generation out to 2025 and predict coal usage for each.**
- **To identify opportunities for Clean Coal Technologies in the UK, including CCS.**
- **To identify gaps/hurdles preventing/delaying investment in Clean Coal.**
- **To review the landscape for R, D and D in Clean Coal, including identifying opportunities for international collaboration and external funding.**



Draft Work Plan for Coal Forum Sub-group – courtesy of Doosan Babcock

Define three scenarios:

High coal generation – 15 GWe

Medium coal generation – 10 GWe

Low coal generation – 5GWe

Taking account of:

- (i) Likely future of Opted-in plant**
- (ii) Likely future of Opted-out plant**
- (iii) New capacity required**

Draft Work Plan (cont)

- **For each scenario, predict the possible mix of Clean Coal Technologies, the timing of building of plant including CCS and the “construction” capacity needed.**
- **For each scenario, predict power generation from Coal and Coal usage.**
- **For each scenario, identify the gaps/hurdles, barriers and propose solutions.**
- **Review the landscape for R, D & Demo of Clean Coal/CCS in the context of the above.**

UK Generation Gap

Coal closures	8GW
Oil closures	3GW
MAGNOX closures	2.3GW
Growth at 1% pa	7GW
Total	20GW

Additional 5.5 GW if AGRs do not get life extension and 3.5 GW if growth of demand is 1.5 % , so could be 29 GW

Already too late for nuclear (first new build unlikely to be on line before 2016)

Existing UK Coal Fleet

Opt-Out

LCPD Opt Out

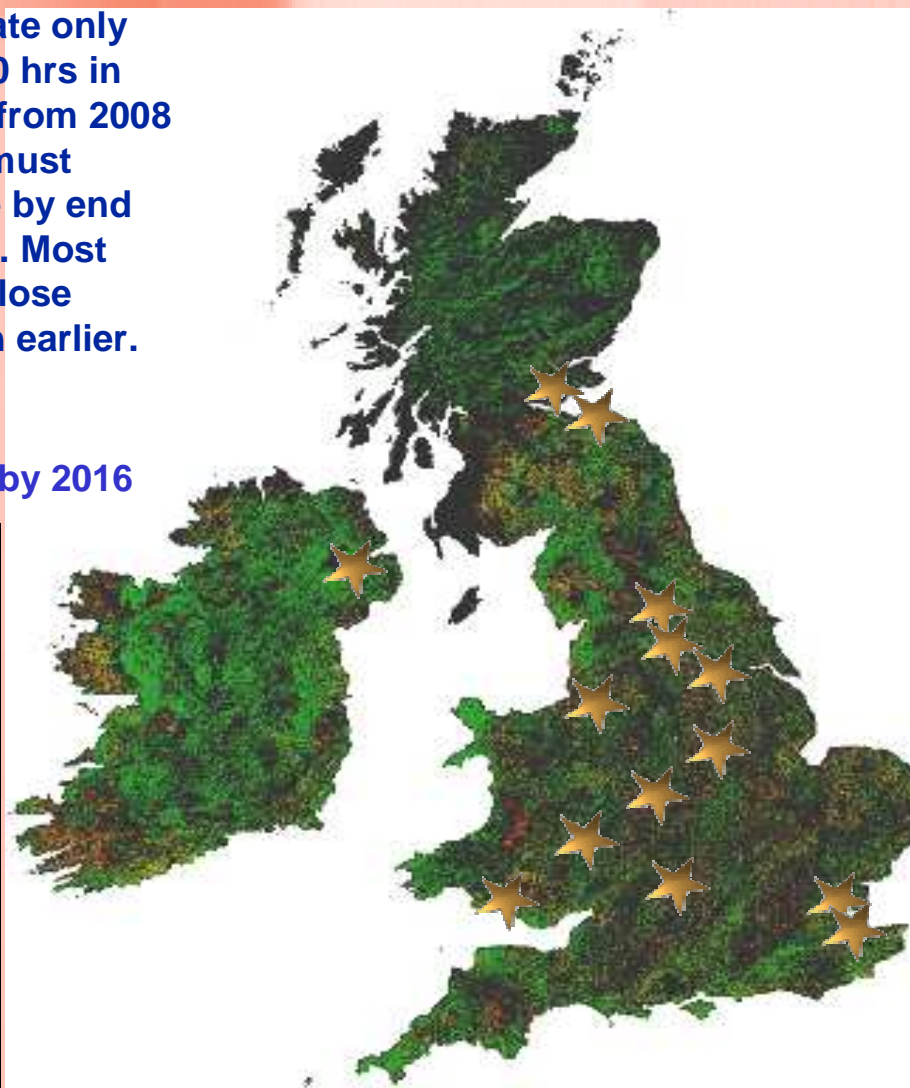
Power station	Owning Company	MWe
Ironbridge	Eon	972
Kingsnorth	Eon	2000
Didcot	RWE Npower	1920
Tilbury	RWE Npower	1050
Cockenzie	Scottish Power	1200
Ferrybridge (2 units)	SSE	1000
Total Opt-Out		8142

Allowed to operate only 20000 hrs in total from 2008 and must close by end 2015. Most will close much earlier.

Opt-In

Must fit additional NOx reduction by 2016

Power station	Owning Company	MWe	Approach
Kilroot	AES	520	ELV
Eggborough	British Energy	2000	NERP
Uskmouth	Carron Energy	393	ELV
Drax	Drax Power Limited	3960	NERP
Cottam	EdF Energy	1948	ELV
West Burton	EdF Energy	1924	ELV
Ratcliffe	Eon	2000	ELV
Rugeley	International Power	996	ELV
Aberthaw	RWE Npower	1386	ELV
Longannet	Scottish Power	2400	NERP
Ferrybridge (2 units)	SSE	1000	ELV
Fiddlers Ferry	SSE	2000	ELV
Total Opt In		20527	





KEY MESSAGES & ISSUES

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- **Another dash for Gas?**
- **More urgency from Government re CCT + CCS**
- **1st of a kind demo plants in OECD countries**
- **UK to have some EU demos for leadership**
- **Co firing biomass can make significant and cost effective early contribution to CO₂ red'n**
- **May need to think in terms of 2GWe of new coal plant ordered every year 2007-2012**
- **Regulation and incentives – delay = more gas**
- **Log Jam in equipment supply?**
- **Shortfall in available skilled manpower**
- **Credibility of EU ETS**
- **CO₂ pipelines not adequately considered or costed**

UK IGCC proposals

Operator/proposer	Output (MWe)	Location	Technology proposed
Progressive Energy	800-850	Teeside. Two possible sites	IGCC + CCS
Powerfuel + Kuzbassrazrezugol	800-900	Hatfield	IGCC + CCS
EOn	450	Killingholme	IGCC + CCS
Valleys Energy Ltd/Progressive Energy	450-460	Drym, South Wales	IGCC + CCS

UK Supercritical PCC proposals

Operator/ proposer	Output (MWe)	Location	Technology proposed
RWE	1000	Tilbury	SC PCC (+CCS later?)
EOn	1600	Kingsnorth	SC PCC (+CCS later?)
Scottish & Southern Energy	500	Ferrybridge	SC PCC (+CCS later?)



US Possible New Supercritical Plant

MidWestern Power Council Bluffs Unit 4 in Iowa - 790 MWe. Due for completion in 2007.

750 MWe SC Unit 3 at *Comanche Generating Station* in Colorado. Commercial operations scheduled for 2009.

Several other projects being considered:

- **WE Energy Elm Road Station in eastern Wisconsin - 2 x 650 MWe units. Commercial operations scheduled for 2009 and 2010.**
- **Peabody in Illinois - 2 x 750 MWe. Prairie State project in Washington County. Completion in 2010-11.**
- **DTE Energy Holcomb Unit 2 in Kansas. 600 MWe.**
- **EOn US LG&E Trimble Country 2 plant in Kentucky. 750 MWe.**
- **WPSC Weston Unit 4 in Wisconsin. 520 MWe. Operational in 2009.**
- **Duke Energy Cliffside Steam Station, North Carolina. 2 x 800 MWe units. Operational by 2011.**
- **Iatan Unit 2, Kansas City Light & Power - 850 MWe. Operational by 2010.**
- **Glades County, Florida Light & Power - 2 x 980 MWe units. Operational in 2012 and 2013.**

TXU proposals

TXU has announced plans for new SC capacity - 11 new generating units at 9 existing TXU power plant sites. Some could be operational by 2010.

Project	No. New units to be added	Capacity to be added (MWe)	Fuel
Big Brown 3	1	858	PRB
Lake Creek 3	1	858	PRB
Matin Lake 4	1	858	PRB
Monticello 4	1	858	PRB
Morgan Creek 7	1	858	PRB
Oak Grove 1 & 2	2	1716	Lignite
Sadow	1	600	Lignite
Tradinghouse 3 & 4	2	1716	PRB
Valley 4	1	858	PRB



THE END