

Carbon capture and storage (CCS)

Investor Relations | National Grid

November 2014

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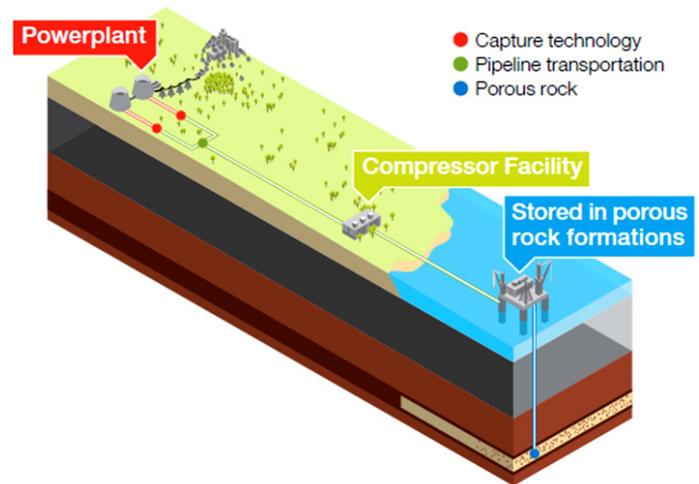
- ◆ CCS is widely recognised as one of the most significant potential contributors to reducing carbon emissions
- ◆ CCS holds investment potential for National Grid through the development of transportation networks serving the UK's many geographic clusters of industrial CO₂ emitters
- ◆ Our portfolio of expertise makes us ideally placed to take a leading role in the development of the UK CCS industry
- ◆ Our first CCS network development, in the Yorkshire and Humber region, has the highest concentration of CO₂ emitters in the UK, equal to around 10% of the UK's total emissions
- ◆ We are working closely with our partners and the Government to agree risk sharing along the chain and to attract new entrants to invest in CO₂ storage

Carbon Capture and Storage (CCS)

CCS uses innovative and established technology to capture, transport and permanently store CO₂ emissions from fossil fuel power stations and industrial emitters beneath the seabed in natural porous rock formations or depleted oil and gas fields.

It is a 'bridging technology' that is widely recognised as one of the most significant potential contributors to reducing carbon emissions while alternative clean energy sources are further developed. The CCS technology is currently the only means of meeting 2050 carbon targets and keeping long term energy costs low for consumers. It does this by providing flexible low carbon electricity generating capacity to balance other sources. It allows fossil fuels to be maintained within the UK generation mix, which could increase domestic security of supply, and is the only pathway for many carbon intensive industries (e.g. chemicals and steel) to reduce their emissions affordably.

The UK Government is committed to encouraging the development of cost-competitive CCS in the UK and abroad.



Humber Carbon Capture & Storage Infrastructure

National Grid Projects

We are playing a leading role in the development of the CCS industry in the UK.

Our work to develop a CCS cluster in the Yorkshire and Humber region has been supported by the European Energy Programme for Recovery (EPR) through the Don Valley project. This cluster brings together a large concentration of emitters (power stations and industrial sources including the White Rose project, capturing CO₂ at Drax) and connects them to nearby geological formations below the North Sea to realise cost savings through economies of scale. Other potential UK CCS clusters include the Firth of Forth, Teesside, Liverpool Bay and the Thames Estuary.

For several years National Grid has been at the forefront of researching and testing pipeline capabilities for CO₂ transportation. We have also progressed CO₂ storage development, having completed the test drilling of our sub-sea storage site in the North Sea, 65 km off the Yorkshire coast, in Summer 2013. This programme was awarded the Innovation Award at the 2014 Gas Industry Awards held by IGEM (Institution of Gas Engineers and Managers).

White Rose project update

In 2013, the UK government announced the award of a Front End Engineering Design (FEED) study to the White Rose Project as part of its CCS Commercialisation Programme. As part of this project, National Grid will be providing the transportation and storage solution for the CO₂ captured from a new efficient coal-fired power station to be built at the Drax site in North Yorkshire. In parallel with the FEED study we will now move to agree the contracts necessary to build the infrastructure and expect to be in a position to make a financial investment decision on the project in early 2016. This will establish the cluster in the Yorkshire and Humber region.

Development of a regulatory framework to enable clustering and economies of scale

The UK's historic industrial development has led to CO₂ emission sources formed in natural clusters. This lends itself to an onshore CO₂ gathering system, or hub, of pipelines and a shared infrastructure model. Shared infrastructure will be a key contributor to reducing the costs of CCS and enabling the reduction in energy bills to consumers.

Analysis of our Yorkshire and Humber Cluster shows there could be a reduction of around 40% in the transport and storage costs per tonne of CO₂ for two commercial scale capture projects sharing that infrastructure, compared to developing separate solutions. This economy of scale will facilitate the commercial deployment of CCS as an economic solution to the reduction of CO₂ from the power and industrial sectors. Independent analysis (by the IEA, the TUC and the CCSA amongst others) supports National Grid's position on CCS clusters, with the latest CCS/TUC analysis indicating that deployment of CCS could result in a reduction in household energy bills of around £82 per annum.

Project funding

The European Union is highly supportive of CCS and has put in place two funding packages designed to support CCS projects: the European Energy Programme for Recovery (EEPR) and the New Entrant Reserve (NER). We have secured both EU and UK funding support for our work on CCS to date through the ongoing EEPR programme and the Department of Energy and Climate Change (DECC). In July 2014, it was announced that the White Rose Project will be receiving an award of up to €300 million in the latest phase of NER funding. White Rose is the only CCS project in Europe to be allocated funds under the programme.

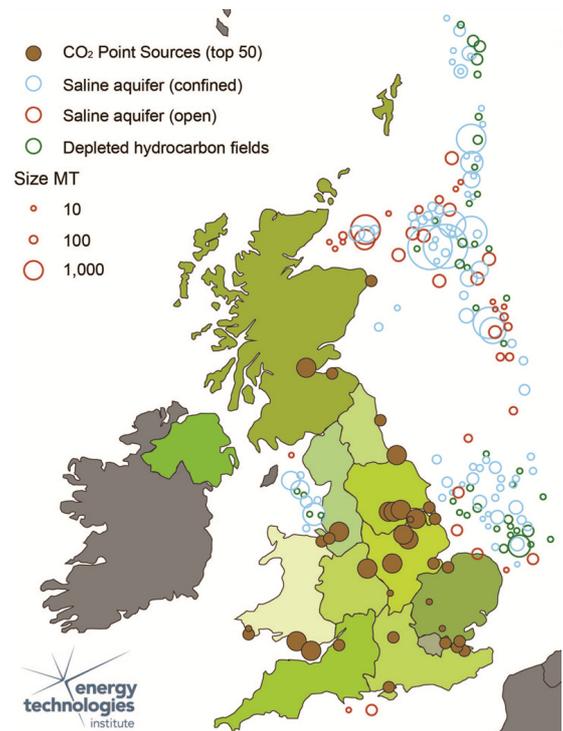
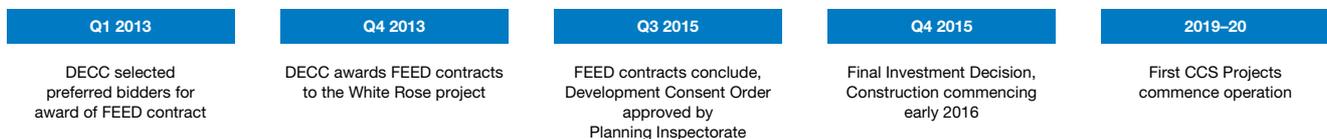


Image courtesy of The Energy Technologies Institute

Timeline



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