

How can operators ensure the production of shale gas is economical?

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How can operators ensure the production of shale gas is economical?

- CNG Services Ltd
- The secret DTI 15 Step Plan from 1964

CNG Services Ltd

- Supports projects to inject biomethane into the gas grid
 - Developer of Didcot and Poundbury biomethane to grid projects
 - Working on 40 further biomethane injection projects in UK
- CNG as a fuel for trucks
 - Owner of UK's largest CNG station in Crewe
 - Winner of £2M funding for 3 CNG projects including 2 supplied from LTS
- Supporting development of onshore gas fields and gas storage projects
 - Wingas Gas Storage Project at Saltfleetby
 - Ryedale Gas Field Project
 - Shale gas.....

We focus on getting gas in/out of the grid

Crewe CNG Station

- Official opening of our Crewe CNG filling station on 8th March 2013 – largest ever collection of CNG vehicles
- Filling dual fuel trucks for GIST/M&S, Brit European
- <http://www.youtube.com/watch?v=orxBtoXyjos>



Largest grid supplied CNG station in UK – now selling biomethane via Green Gas Certificates

Poundbury

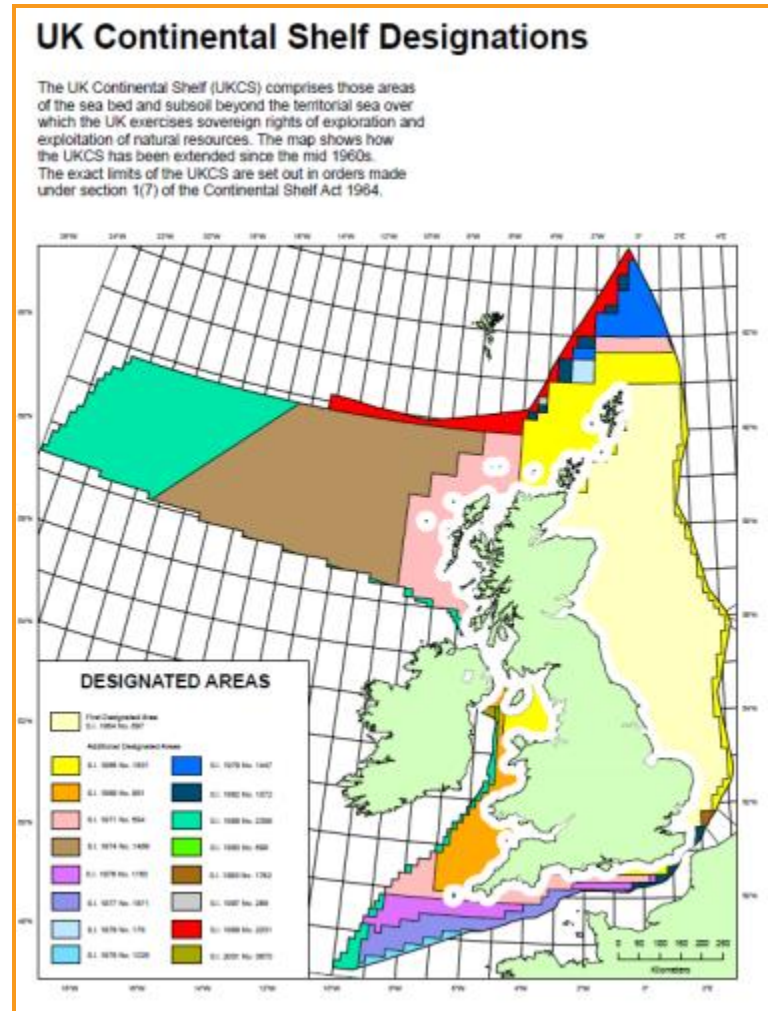
- UK's first commercial scale biomethane to grid project
- 500 m³/hr into grid (around 1 million therms)
- Membrane CO₂ removal plant
- Development is a JV between Duchy of Cornwall and some of its tenants



Prince Charles opened it in Nov 12– a great project

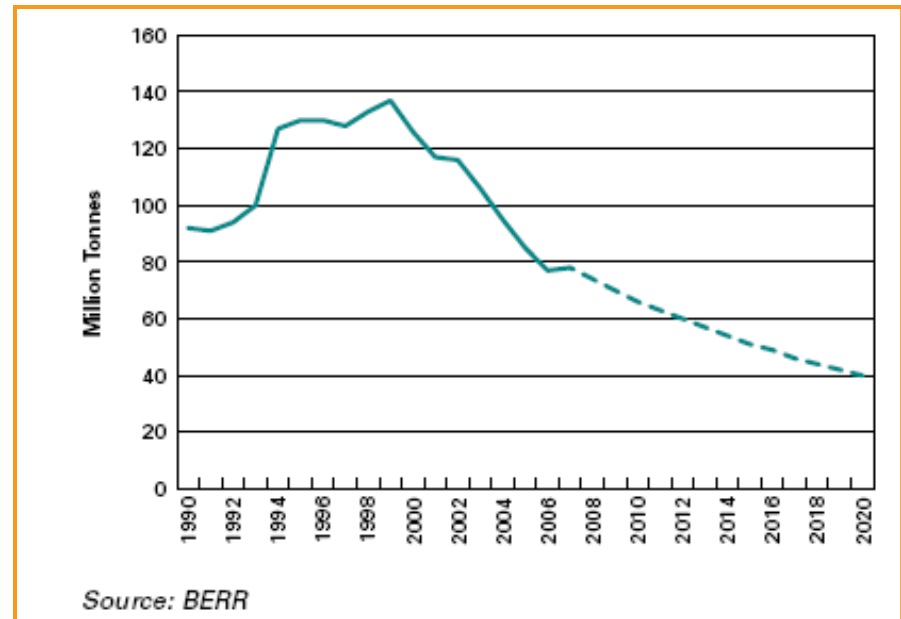
How can operators ensure the production of shale gas is economical?

- I have been told – in confidence – that when the DTI passed the UK Continental Shelf Act in 1964 they already knew about vast onshore shale gas resources
- A secret DTI team was tasked to prepare a 50 year plan to develop them.....
- So for the first time I am going to share the secret DTI 15 step plan that we have all been following.....



Step 1 – Produce Conventional UKCS Gas

- Produce conventional UKCS gas, starting in 1967, use this to develop industry competency and supply chain



2013 – sorted, we know how to produce oil and gas

Step 2 – Create a high pressure gas network

- £10 billion invested in the NTS that runs across all shale gas areas and has lots of spare capacity due to UKCS decline



2013 – sorted, after 46 years its finished!

Step 3 – Create an extensive gas distribution network for Well Testing

- £30 billion invested in the Gas Distribution Networks which connect >80% of UK domestic customers
- Next, invest £1 billion a year in pipe replacement to reduce gas leaks from cast iron mains

623/13 HSE Enforcement Policy for Replacement of Iron Gas Mains 2006 - 2013

 Health and Safety Executive
HSE

Enforcement Policy for the replacement of iron gas mains 2006 - 2013 - December 2005

Background

- In September 2001 HSE published its enforcement policy for the replacement of iron gas mains for the period 2002 - 2007. This followed a high level of societal concern about the potential consequences of gas mains failure. At that time records showed there were about 91 000 km of iron mains within 30m of property ('at risk') which may be a risk to people.
- HSE considered it realistic and practical for Transco plc, who owned and operated all the gas distribution networks, to speed up its rate of mains replacement over the 5 year from April 2002 - March 2007 so that it was in a position to complete the replacement of all the remaining 'at risk' iron mains within 30 years.

2013 – sorted, most extensive gas grid in Europe

Step 4 – Work on horizontal drilling and hydraulic fracturing techniques

- Work out how to drill horizontally and then fracture the rocks to produce gas
- This is now established practice in EU and UK

Hydraulic fracturing

From Wikipedia, the free encyclopedia

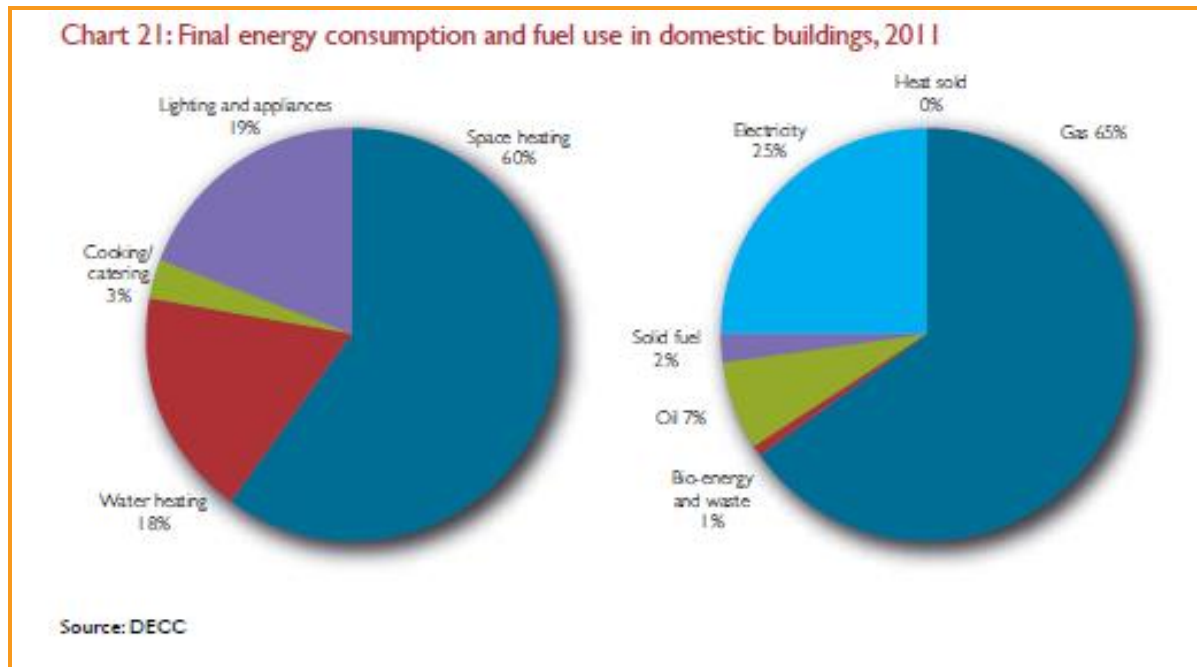
Hydraulic fracturing is the fracturing of rock by a pressurized liquid. Some hydraulic fractures form naturally—certain veins or dikes are examples. **Induced hydraulic fracturing** or **hydrofracturing**, commonly known as **fracking**, is a technique in which typically water is mixed with sand and chemicals, and the mixture is injected at high pressure into a wellbore to create fractures, which form conduits along which fluids such as gas, petroleum, and groundwater may migrate to the well. The technique is very common in wells for shale gas, tight gas, tight oil, and coal seam gas.^{[1][2]} A different technique where only acid is injected is referred to as acidizing.

The first experimental use of hydraulic fracturing was in 1947, and the first commercially successful applications were in 1949. As of 2010, it was estimated that 60% of all new oil and gas wells worldwide were being hydraulically fractured.^[3] As of 2012, 2.5 million hydraulic fracturing jobs have been performed on oil and gas wells worldwide, more than one million of them in the United States.^[4]

2013 – sorted, established practice in EU

Step 5 – Grow demand for gas for heating

- 80% of heating is gas, 90% of industrial heating/process is gas



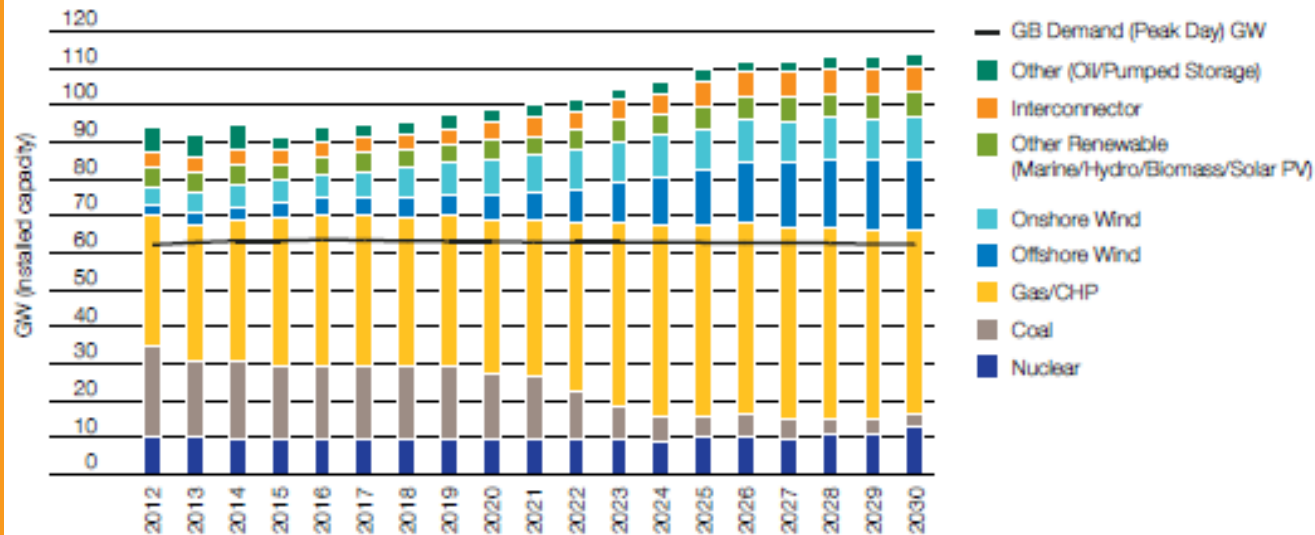
2013 – sorted, gas is dominant for heating, no competition in sight as the electric heating model is now discredited

Step 6 – Generate electricity from gas

- Gas dominant for electricity generation, with efficiency increased by having wind



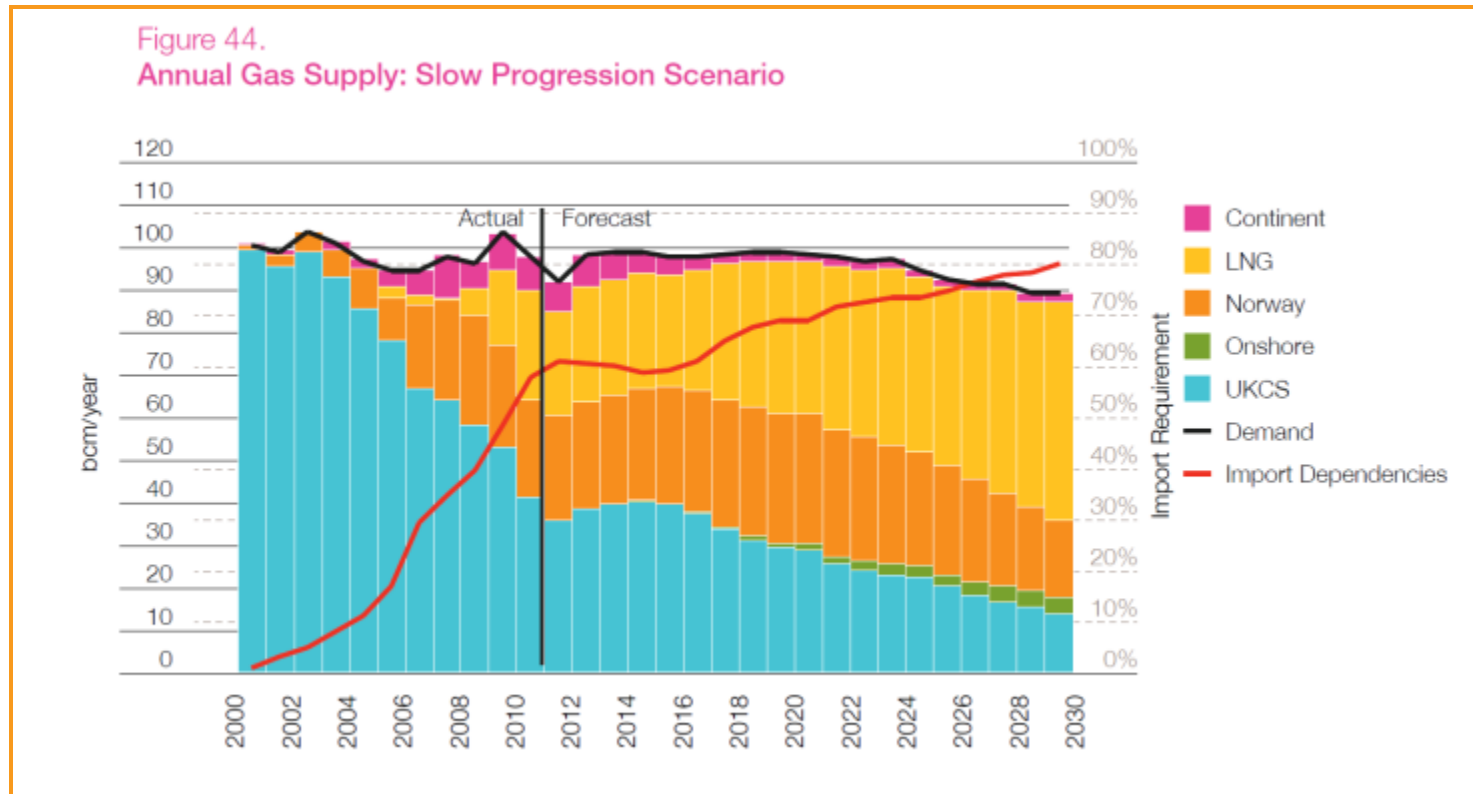
Figure 26.
Demand and Generation Background: Slow Progression



2013 – sorted, wind increases effective ccgt efficiency from 50% to 100%

Step 7 – Start to import lots of oil and gas

- By 2020, we will be importing vast amounts of oil and gas, appears completely unaffordable to UK plc



2013 – sorted, on track for whatsit creek, no paddle

Step 8 – Run a current account deficit of >£100 billion

- Its above £100 billion, we need to find a way for companies to pay some tax

Public Sector Finances, May 2013



Coverage: UK
Date: 21 June 2013
Geographical Area: UK
Theme: Economy

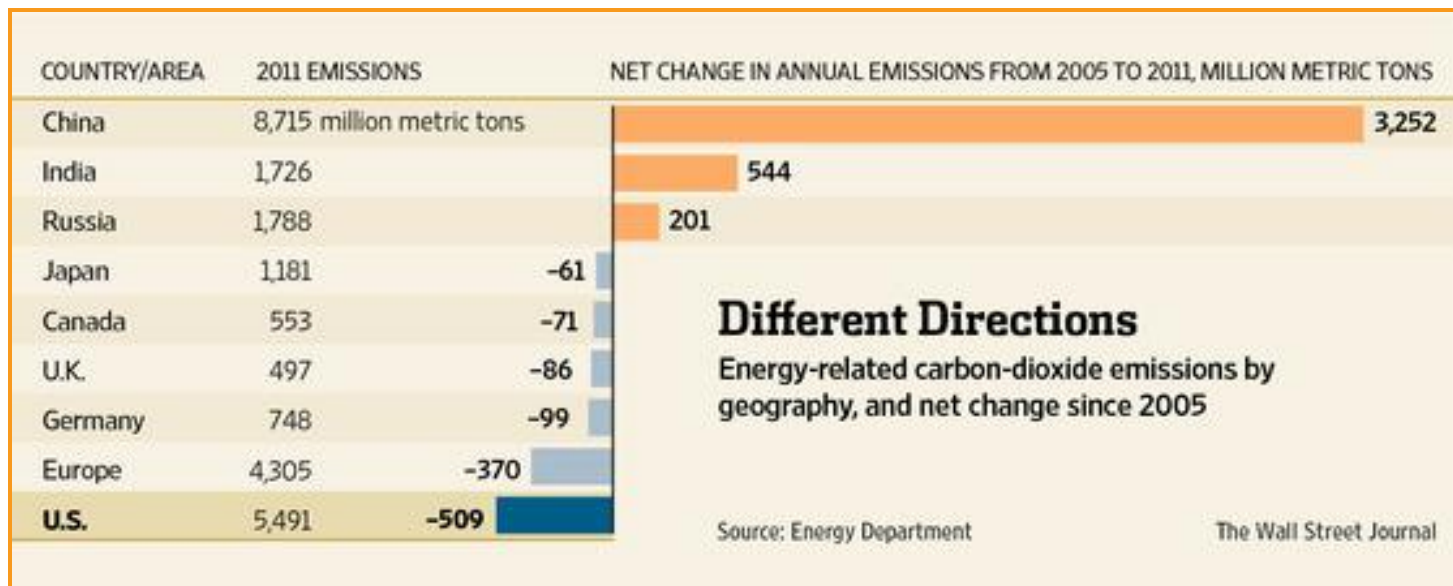
Latest figures

- This bulletin contains the third estimates of outturn for the 2012/13 public sector finances and the first estimates for May 2013. These estimates are updated throughout the year as finalised data are received from public sector bodies.
- In 2012/13, public sector net borrowing excluding temporary effects of financial interventions and also excluding the effects of the transfer of the Royal Mail Pension Plan and the transfers from the Bank of England Asset Purchase Facility Fund was £118.8 billion. This is similar in level to 2011/12.

2013 – sorted, oil and gas sector pays most tax, immune to Starbucks/Google/Amazon effect

Step 9 – Worry about global warming, reduce CO2

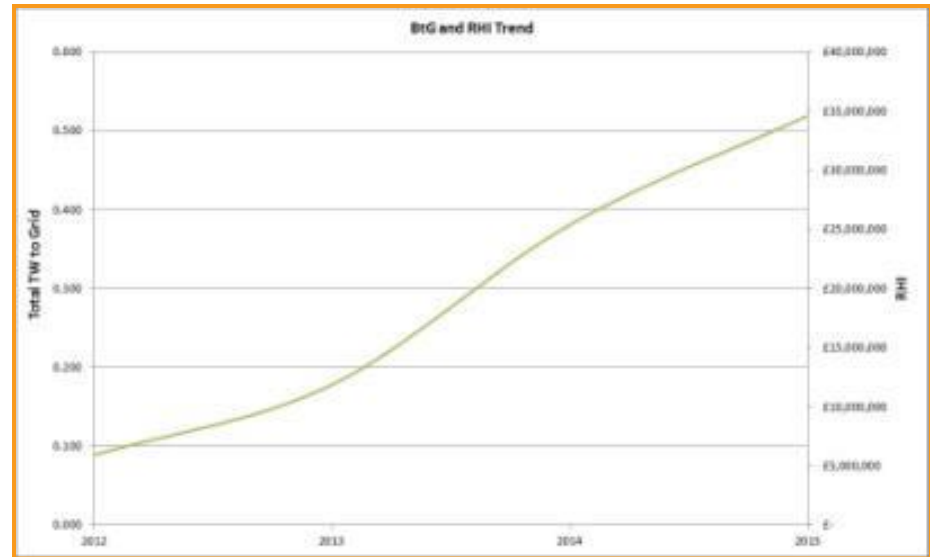
- Gas gives 28% less CO2 than oil
- Gas for electricity gives 60% less CO2 than coal
- Domestic shale gas likely to give 15% less CO2 than imported LNG
- US is making the shift, so can we



2013 – sorted in US, UK can follow suit by replacing coal and petrol/diesel with gas

Step 10 – Work out how to inject biomethane into the gas grid

- From Jan 2006 – May 2013 lots of work on this
- At last its sorted, now less than a year from start to finish for a new biomethane injection project



2013 – sorted, dynamic market, 20 projects by end 2014

Step 11 – Realise that thousands die due to diesel emissions and start to shift trucks and buses onto natural gas

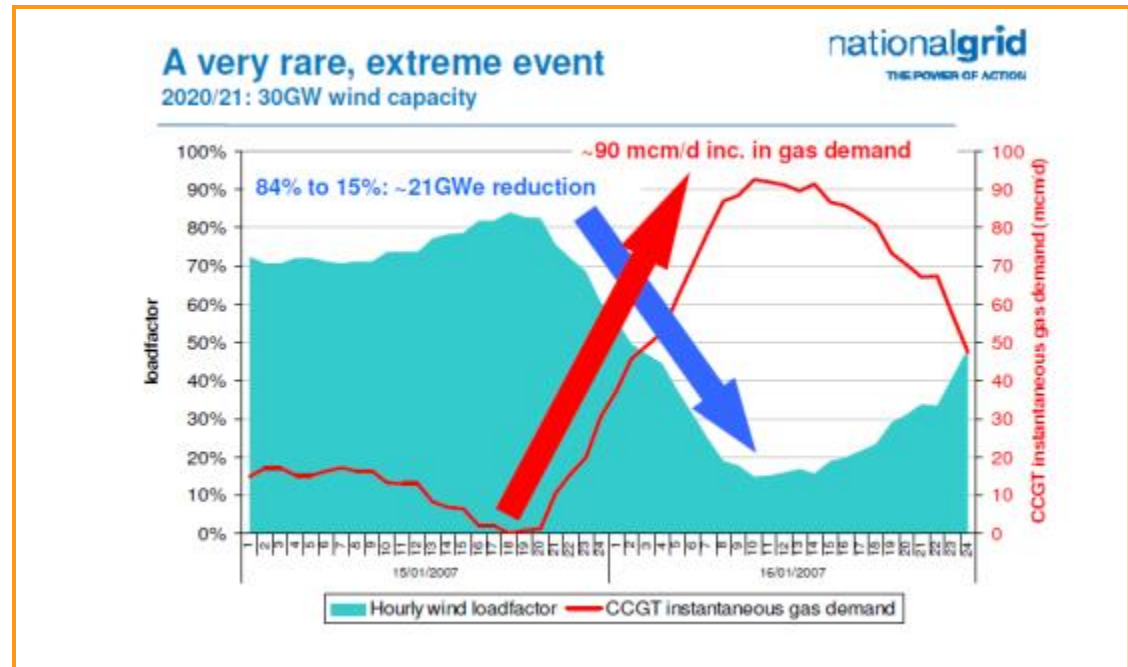
- Diesel pollution is very bad, we can now run trucks on natural gas
- Gas gives big reduction in harmful emissions of NOX and particulates and also >20% CO2 saving



2013 – mostly sorted , we just need more trucks and buses, DfT on the case

Step 12 – Use flexible gas CCGT fuelled by shale gas to back up wind

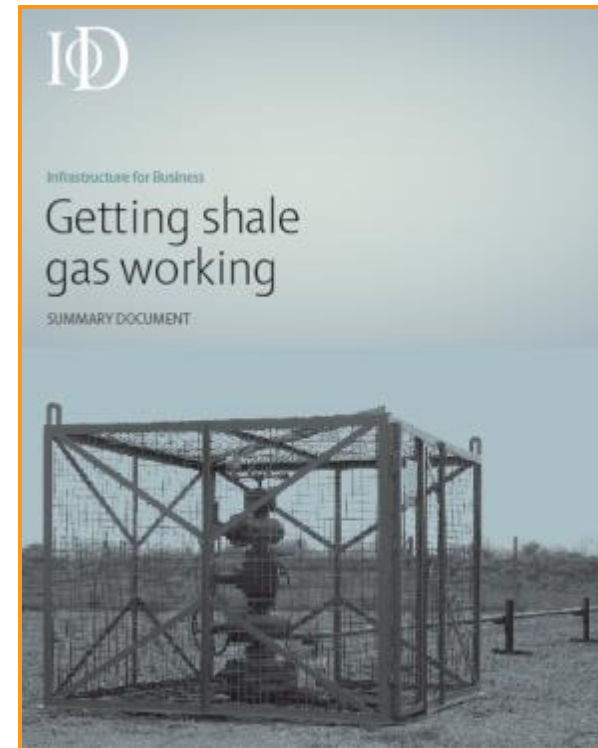
- This will happen once the EMR Capacity mechanism is in place to fund them
- Gas CCGT is essential to back up wind



2013 – nearly sorted DECC trying to sort via EMR, Ofgem starting to panic

Step 13 – Start to create jobs in UK producing and using shale gas and use the tax to invest in insulation of homes to reduce demand

- The best way to reduce CO2 is to reduce gas demand, this needs investment, this can come from shale gas taxation




2013 – not quite sorted, we need a shale gas turbo Green Deal

Step 14 – Introduce community benefits for shale gas production and clarify planning requirements

- Work in progress

6/23/13 New Office to look at community benefits for shale gas projects - Press releases - Inside Government - GOV.UK

 **GOV.UK**

[Menu](#)

Press release

New Office to look at community benefits for shale gas projects

2013 – nearly sorted

Step 15 – Produce shale, create jobs, fund insulation, reduce gas imports, reduce CO2, improve air quality

- Starting in 2014
- The DTI 50 year plan is on track (we are in year 49)
- The 2nd GB Industrial Revolution will begin where the first one began - Lancashire
- Whilst we have all been puppets on the DTI/DECC string for 49 years, we are cool with that
- Because we Lancashire folk are a chosen people

2014 – we have waited 350,000,000 years, we are ready