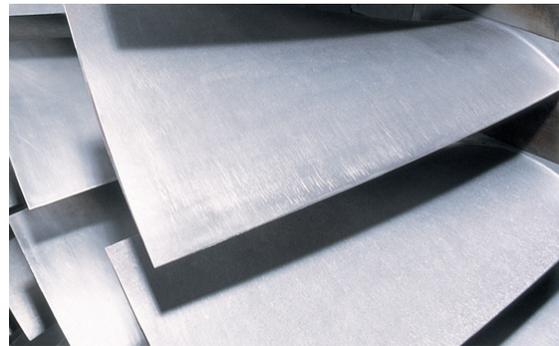


Collaborating to build innovative Generations

Dr Nina Skorupska
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RWE npower



Content



- Introduction to RWE npower
- History of the power industry
- Exciting times!
- The people agenda
- Shortage, what shortage?
- Addressing the issue
- Educational engagement
- Industry wide action

RWE npower is a leading integrated UK energy company

Generation and

Renewables

- Over 8,000MW of generation capacity in the UK
- 17 wind farms with a total capacity of more than 390MW
- 14 hydro sites in the UK
- Strong in-house operations and engineering capability
- RWE Power International



- Electricity and gas retail business, around 6.5 million customer accounts

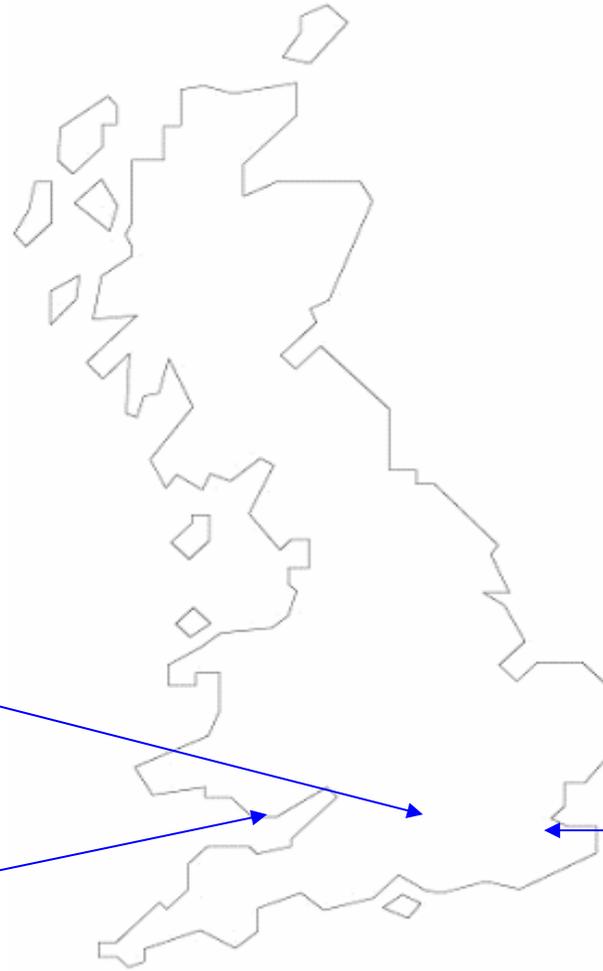
Retail



Domestic green energy product, npower Juice, has over 50,000 customers

Generation and Renewables

Fossil fuel plants - Coal



Didcot A
Coal



Aberthaw
Coal



Tilbury B
Coal

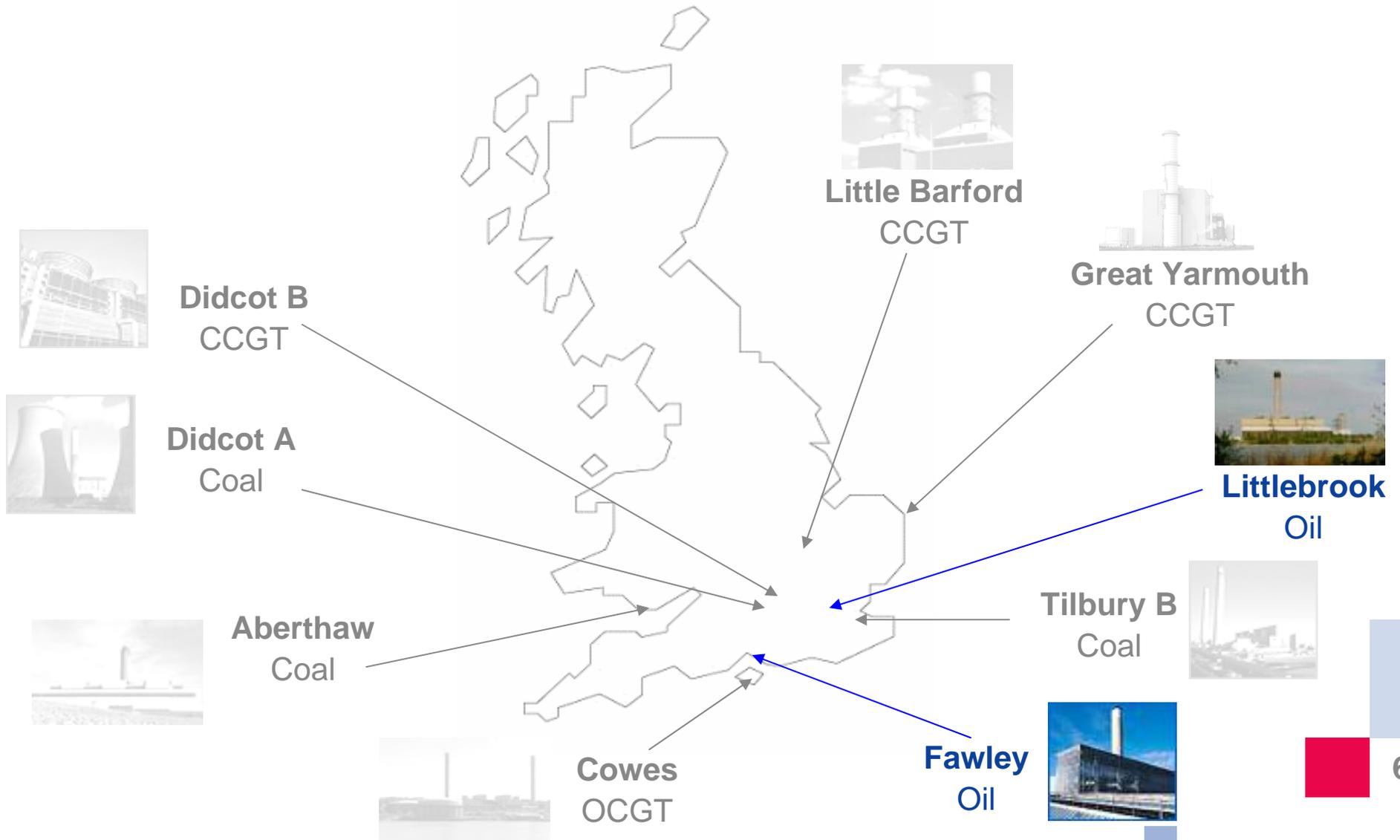
Generation and Renewables

Fossil fuel plants - Gas (Combined cycle and open cycle)



Generation and Renewables

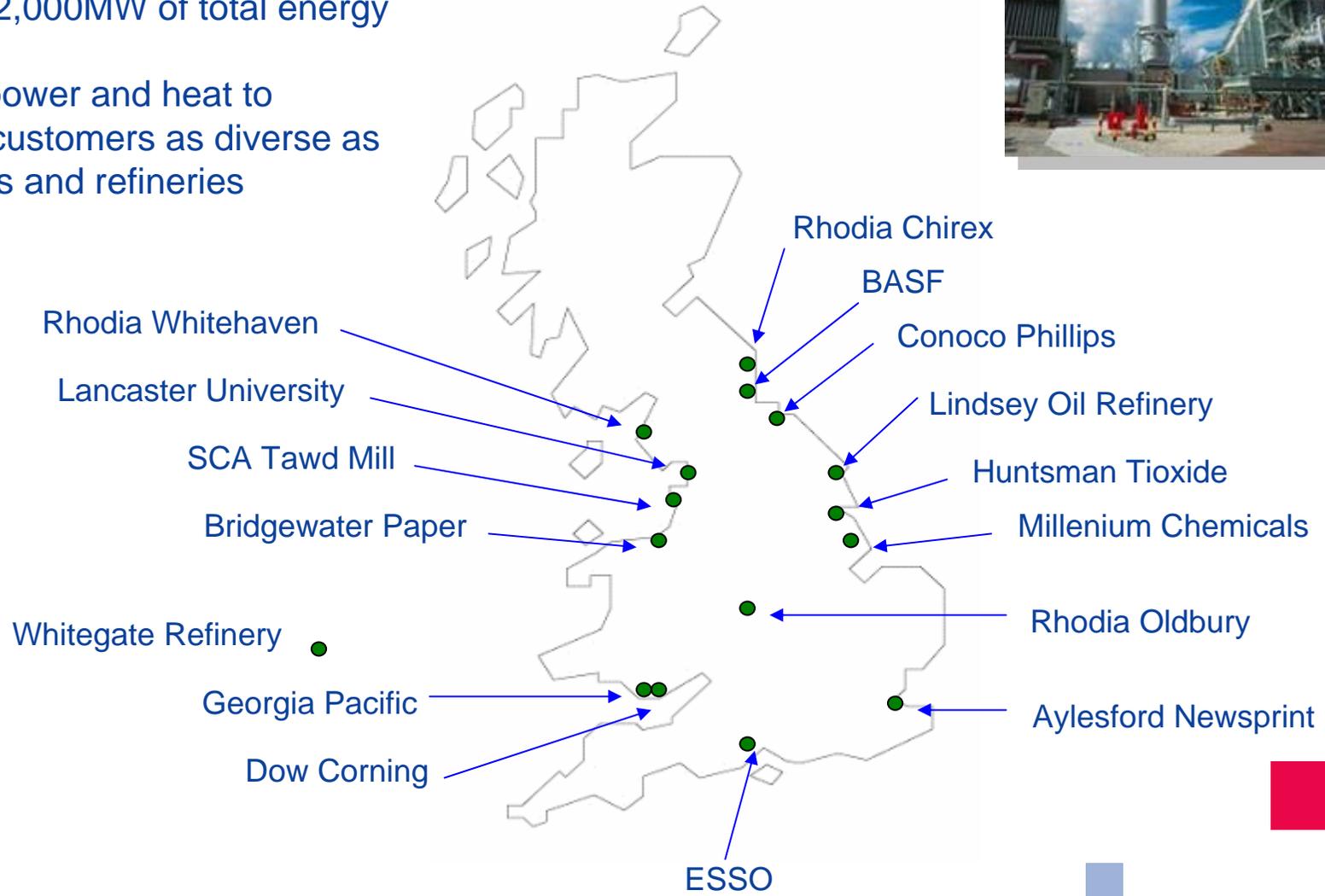
Fossil fuel plants - Oil



Generation and Renewables

Cogen

- 16 cogeneration plants on customer sites with 2,000MW of total energy capacity
- Supplies power and heat to industrial customers as diverse as universities and refineries

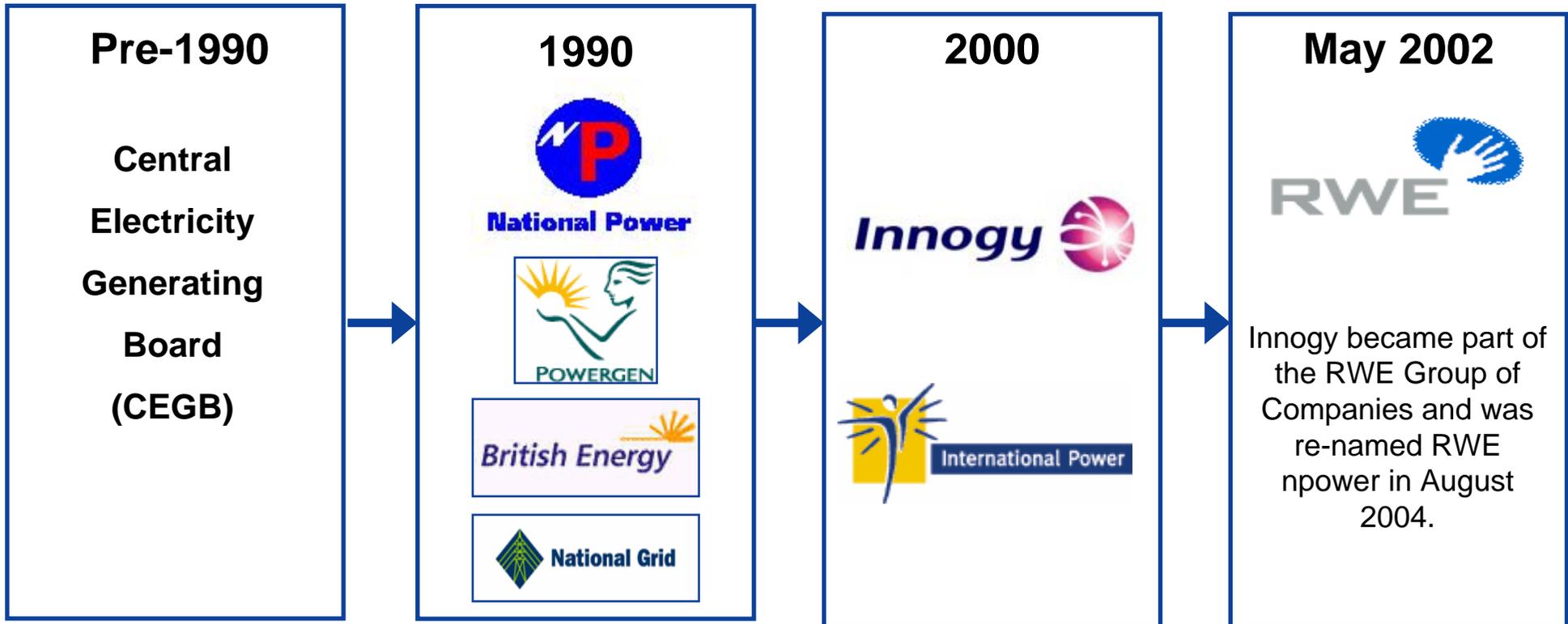


Renewables business

- RWE npower, is one of *the UK's leading* renewables developer and operator, in the wind, hydro and biofuel generating sectors
- Operates c340MW of onshore wind and 60MW of offshore wind over 18 sites
- Through *pioneering* green domestic electricity product “Juice” (*first non-premium product of its type in the UK market*), npower renewables set up the npower juice fund, which provides support to the development of emerging marine renewables technologies (wave and tidal stream)
- Through the juice fund we have invested £1million recently in 7 marine projects in the UK
- We are also the UK's most recognised green energy supplier with about 54,000 juice customers

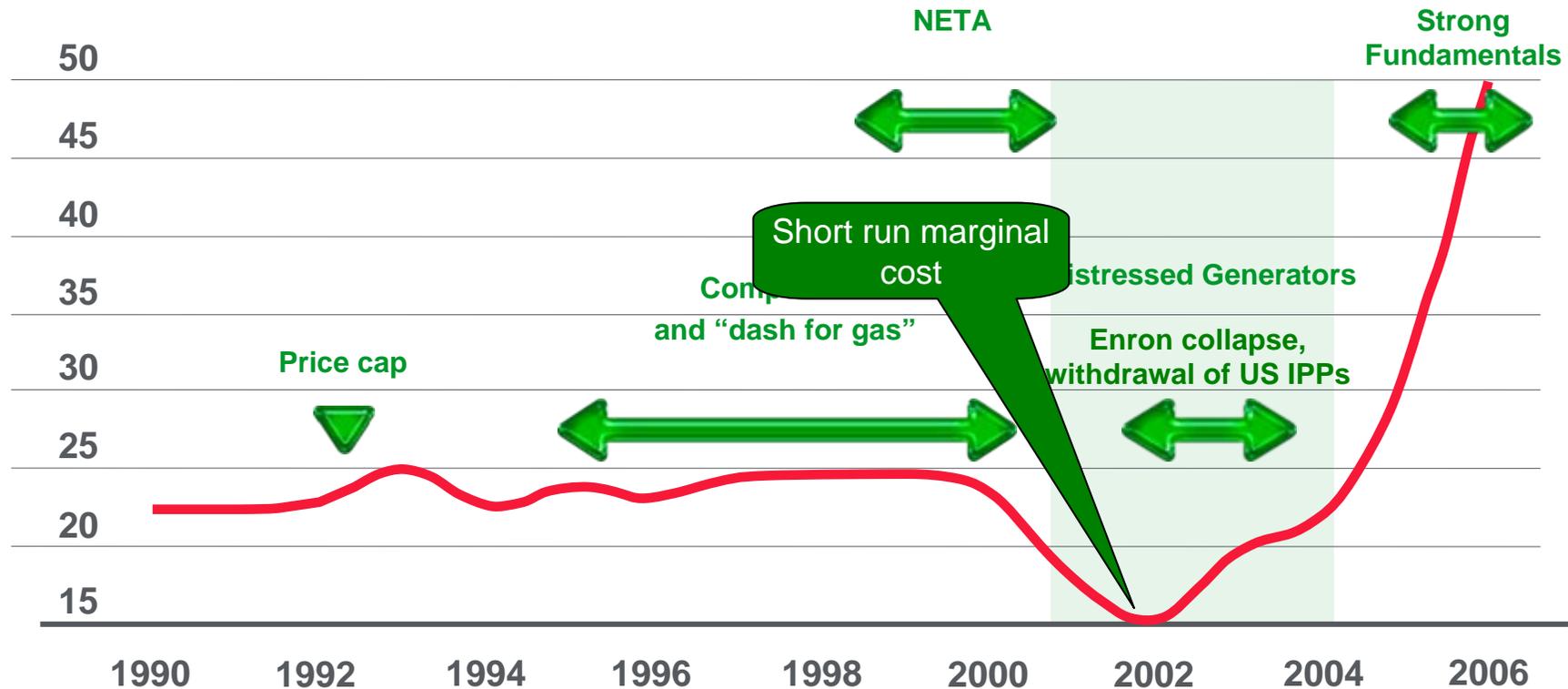


RWE npower's heritage

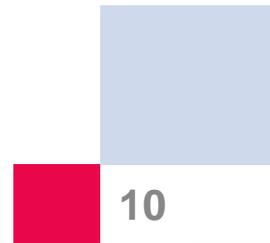


Power generation has experienced challenging days in the UK

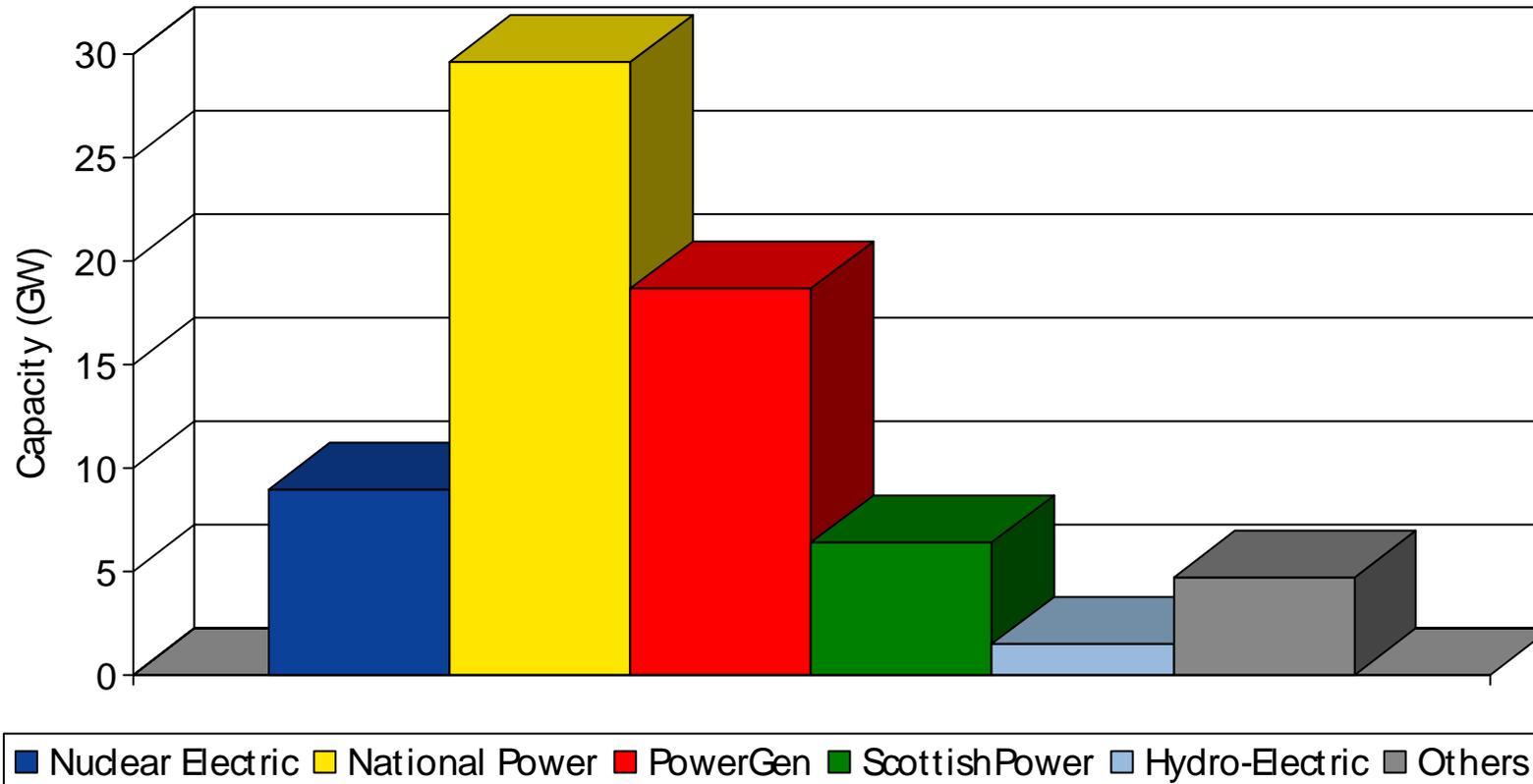
Power Price £/MWh



1990
▲
Privatisation



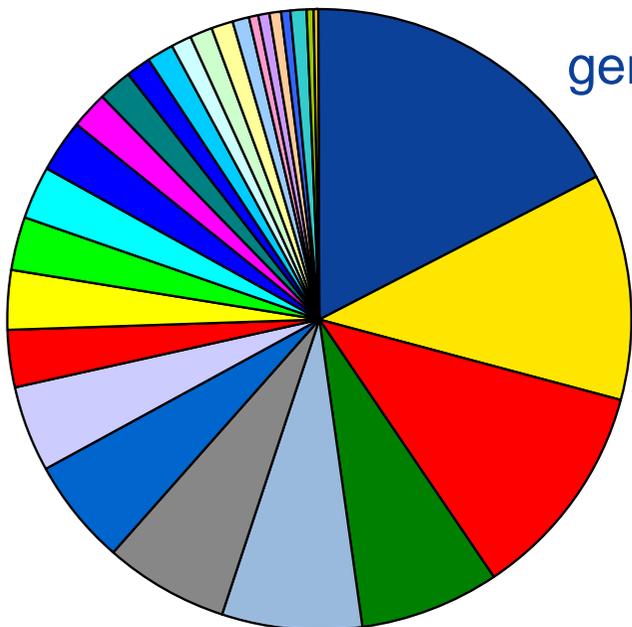
Sector has Moved from Oligopoly¹ at Privatisation in April 1990



1) Oligopoly: A market condition in which sellers are so few that the actions of any one of them will materially affect price and have a measurable impact on competitors.

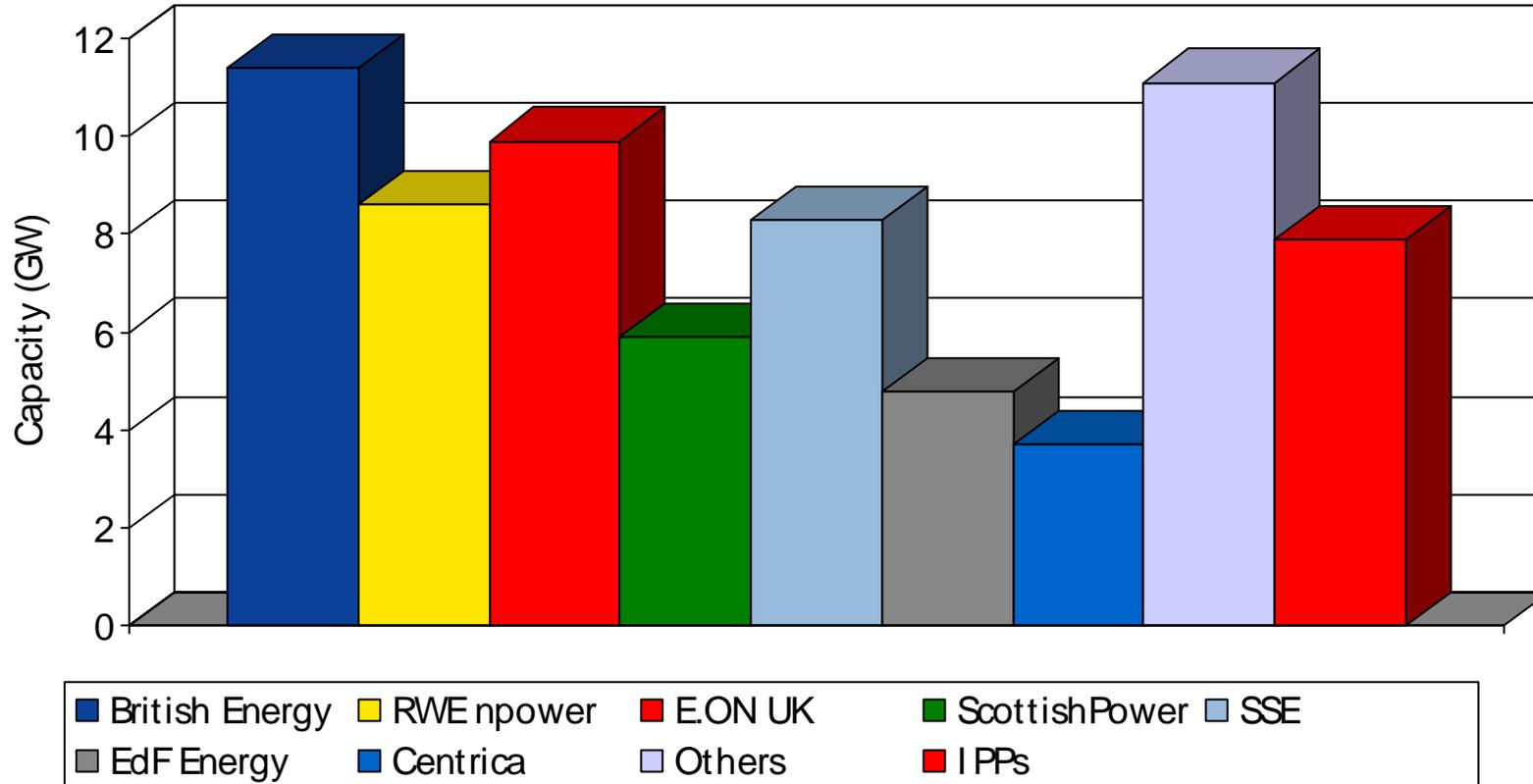
Healthy prices led to many new entrants

28 UK generators in 2001



British Energy	Innogy	Powergen	AES
EdF	SPO	AEP	BNFL
SSE	Mission	TXU	ETOL
Centrica	International Power	Saltend Cogeneration	Barking Power
Coryton Energy	Entergy	Rocksavage Power	NRG
Total FinaElf	BP	Enfield Energy Centre	Corby Power
South Coast Power	Alcan	Derwent Power	Lakeland Power

... and is now consolidating in hands of the “Big VI”

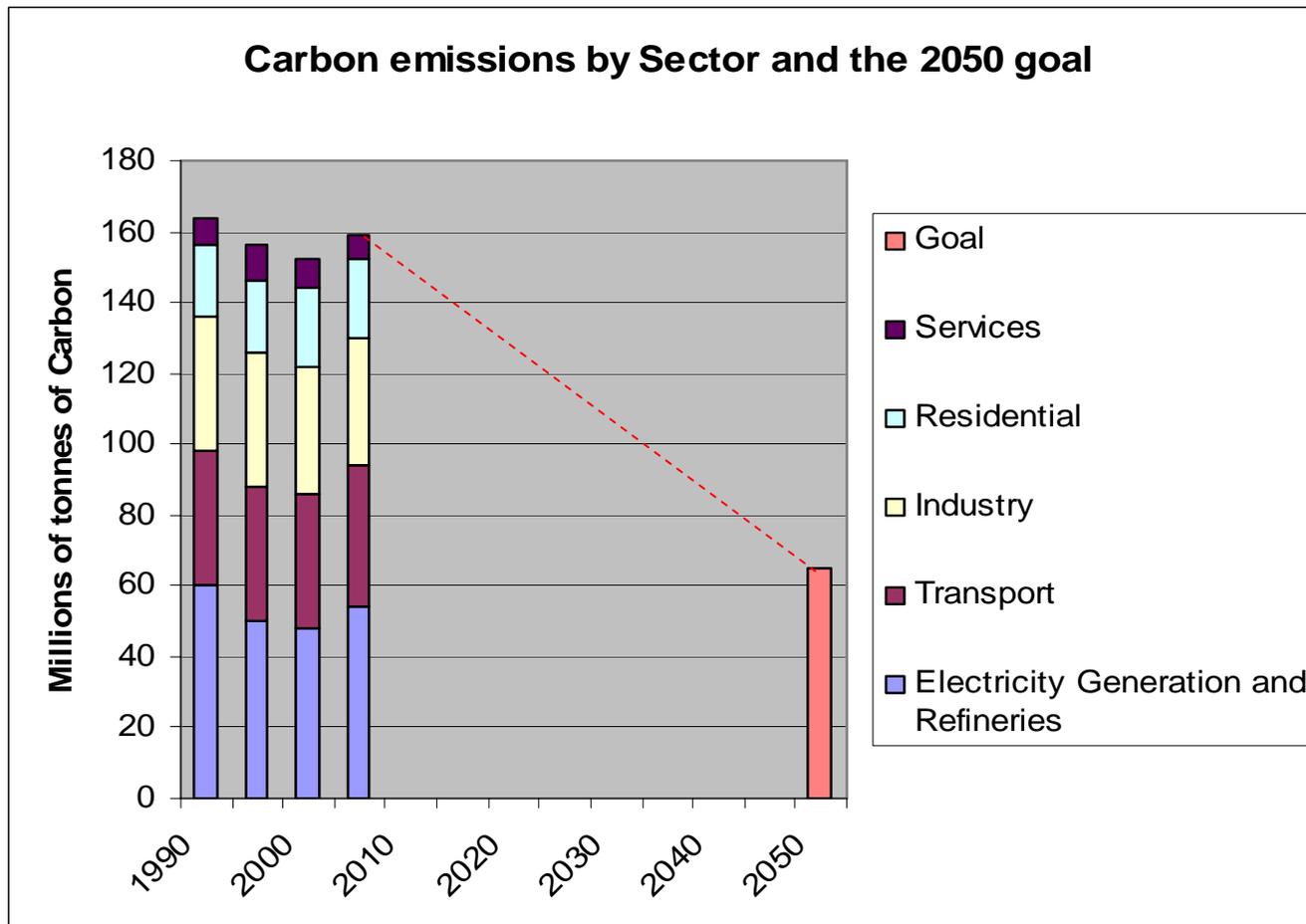


Exciting times

- Climate protection high profile debate
- Large Combustion Plant Directive
- Government's Energy Review
- published in July 2006
- Security of gas supply
- Recent publication of the Stern Report

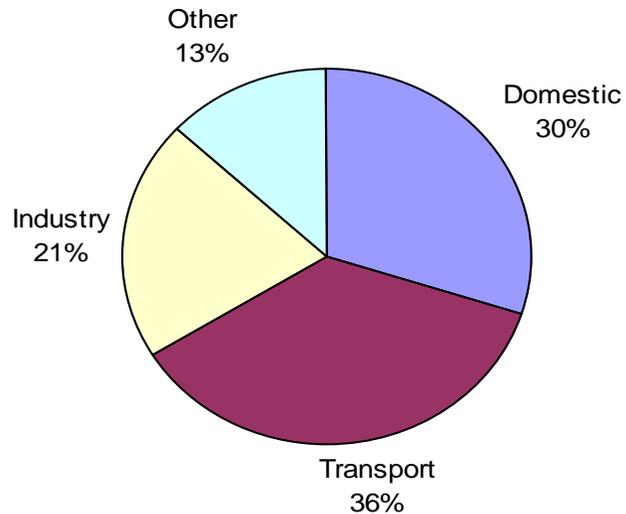


More progress on reducing carbon dioxide emissions!

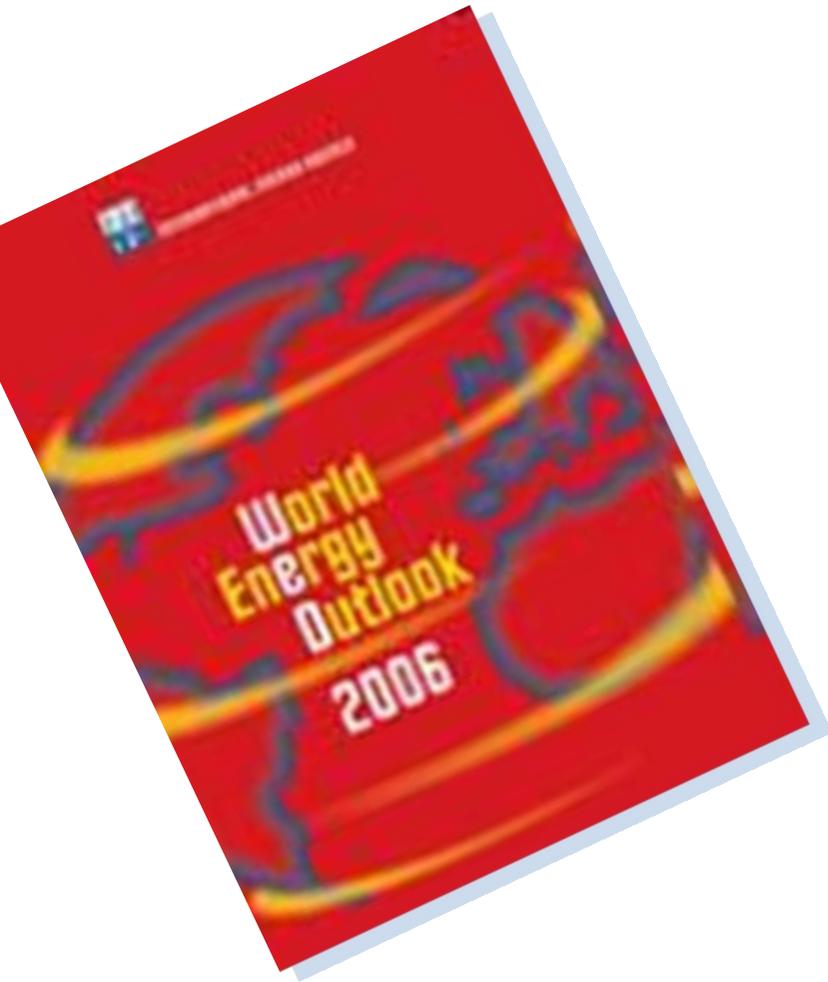


Growing demand for energy

End use of energy by sector of the Economy in 2004



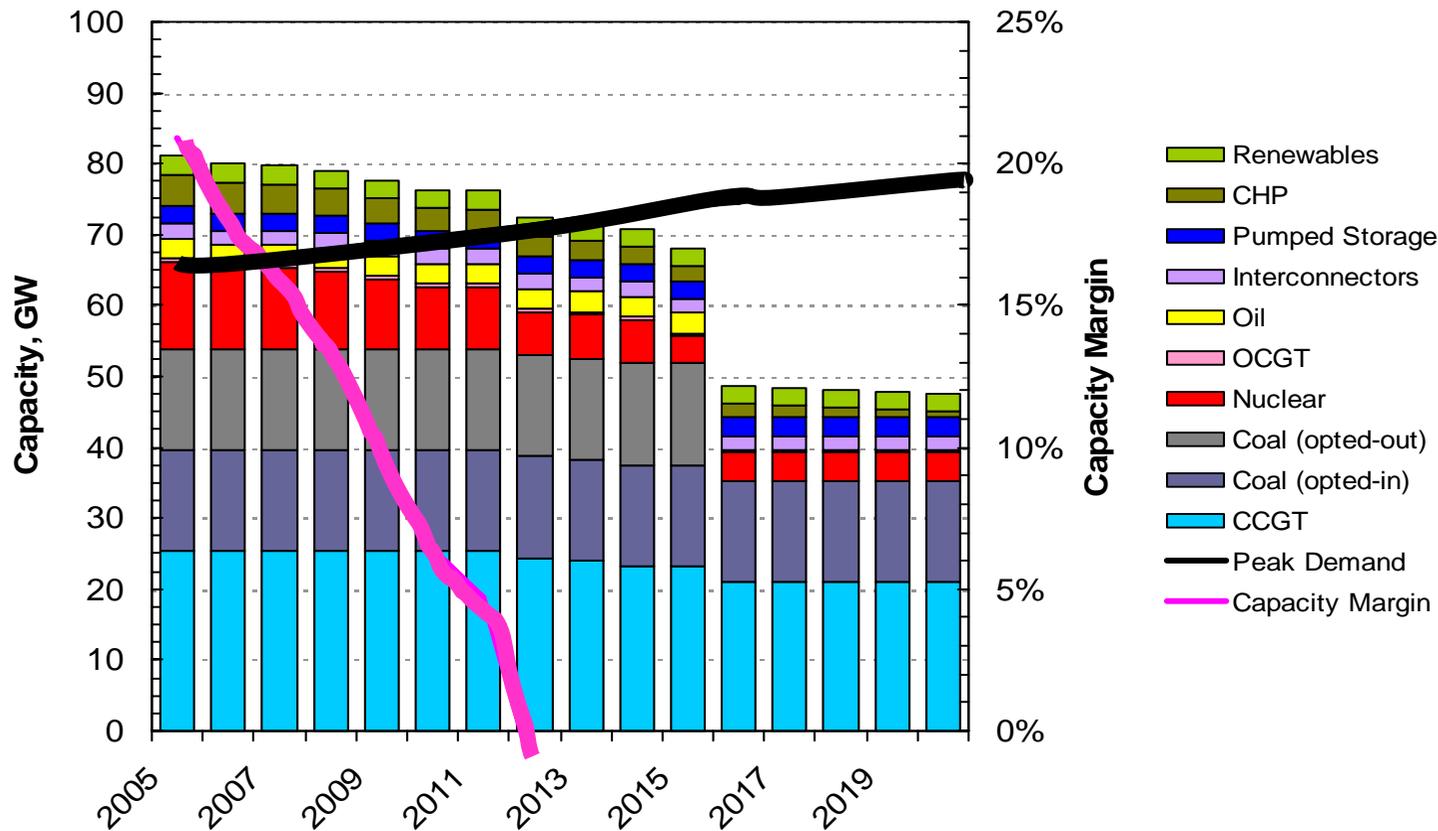
Compared with 30 Years ago, we use nearly **TWICE** as much energy in transport and over 20% more in heating our homes and powering our appliances!



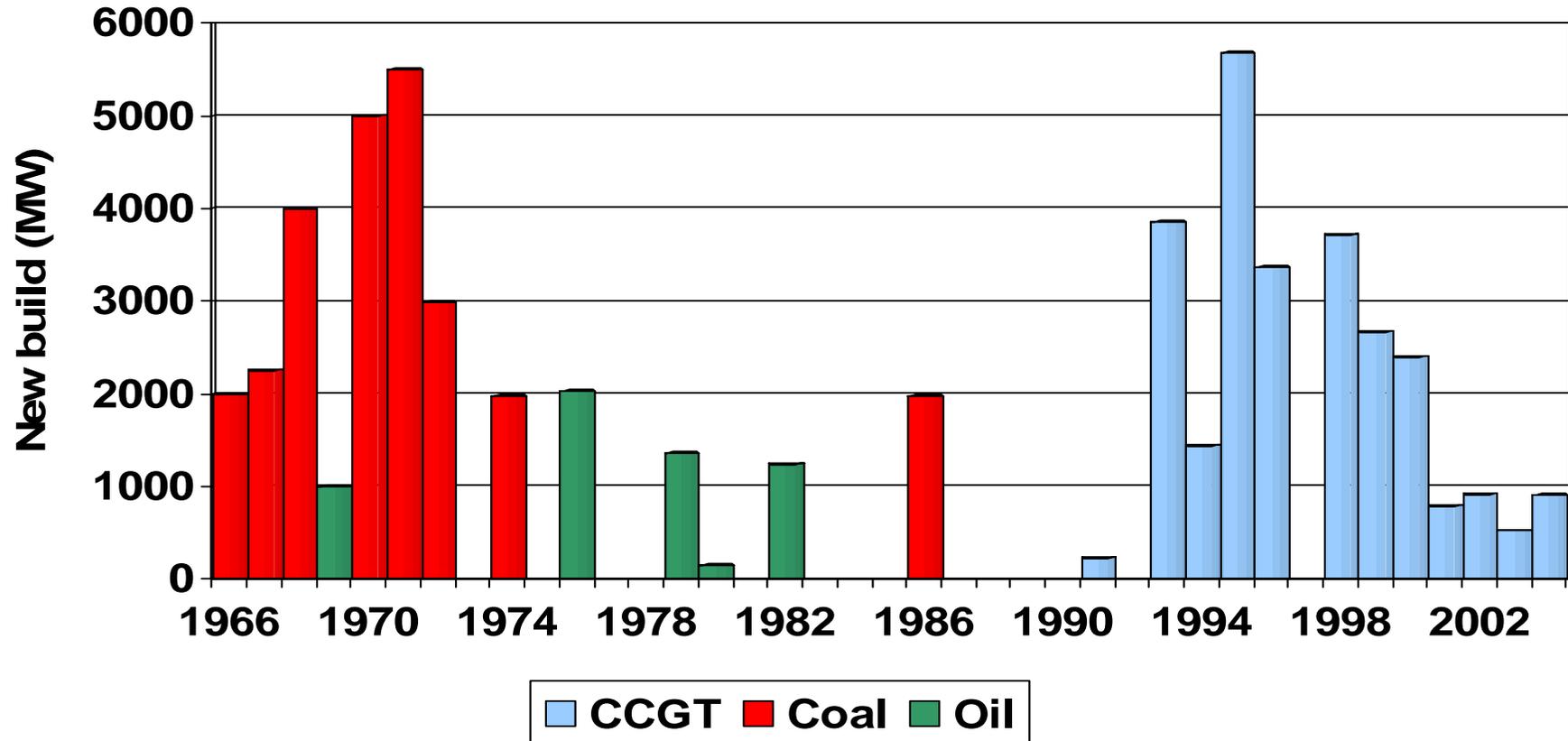
“To quench the world’s thirst for energy requires a cumulative investment in energy-supply infrastructure of over \$20,000 billion in real terms over 2005-2030”

07 November 2006 London

Fundamentals indicate over the short, medium and long-term, we need to build NEW POWER STATIONS!



Outcome of the changes and challenges on the 'people' agenda



UK market review resource issues

UK wide

- LCPD upgrades
- New thermal
- New Nuclear
- Offshore wind
- ASCRs
- SCRs

South Wales

- Port Talbot CCGT plant
- Milford Haven CCGT 1,500MW
- Pembroke CCGT 2GW
- Uskmouth CCGT 800MW
- New LNG terminal
- Refinery upgrades/expansion

South England

- Langage CCGT 800MW
- Marchwood CCGT 800MW
- AWE Aldermaston
- CHP/biomass plants
- Chemical plant upgrades
- Aircraft carrier new build

Scotland & the North

- Peterhead CCS/EOR project
- North Sea spend
- BP Grangemouth upgrades
- Glasgow Airport rail link
- Renewables
- Drakelow CCGT
- Bacton interconnector
- Gas storage projects
- Refinery upgrades/expansion

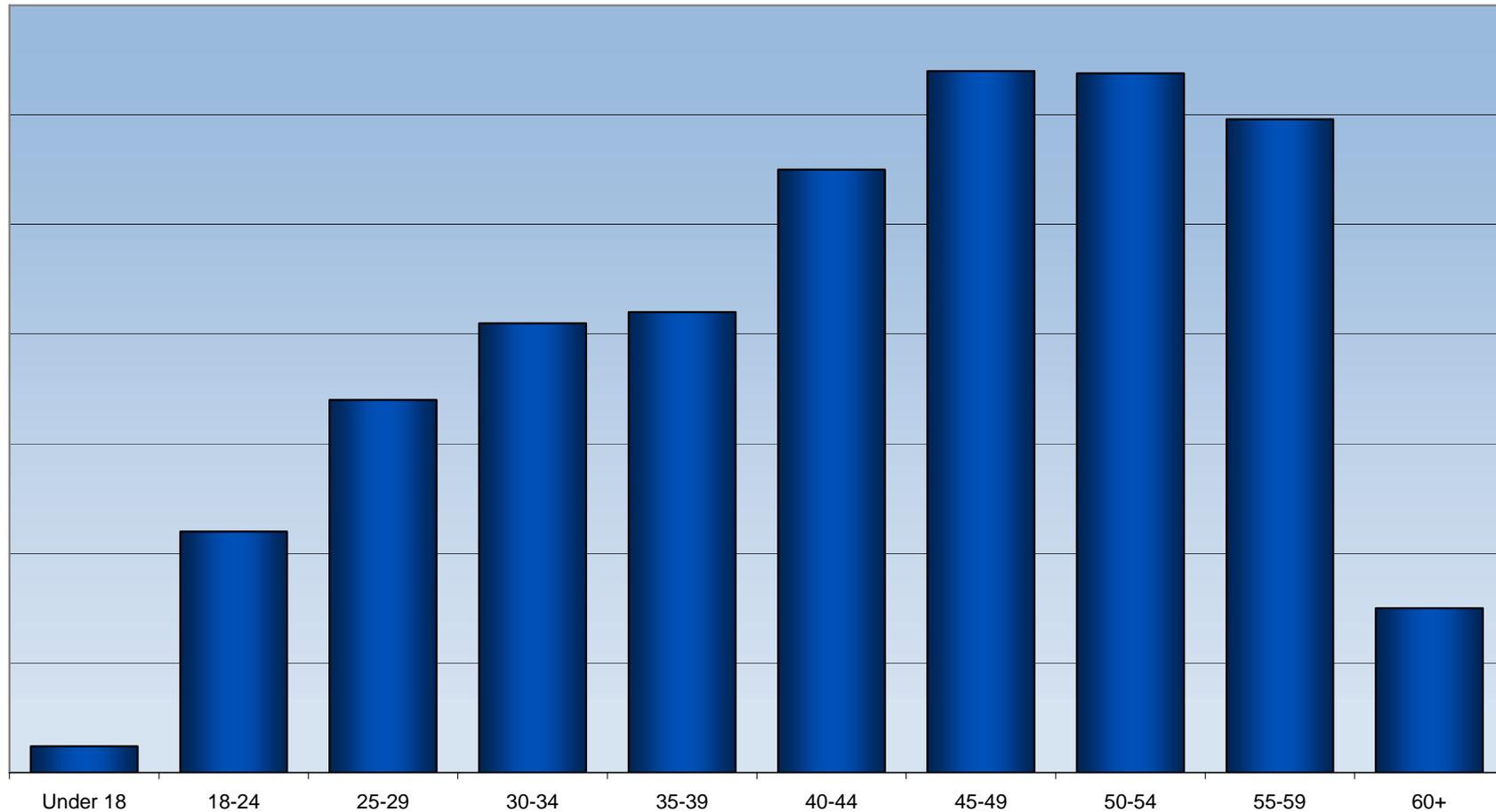
London & South East

- Wembley Stadium
- Heathrow T5 and upgrades
- Stanstead expansion
- Gatwick expansion
- Olympics
- London new build civil
- The cross rail link
- Isle of Grain phase II LNG
- Isle of Grain CCGT
- Felixtowe port expansion



RWE npower's generation business

– age profile



Shortage, what shortage?

- 35% of companies do not expect to be able to recruit sufficient technical staff this year. Senior engineers are the most difficult to find – IET
- 45% increase in engineering graduate recruitment in 2006
- 20% did not recruit desired number of graduates – AGR
- “The power sector faces an acute shortage of engineers” - DTI

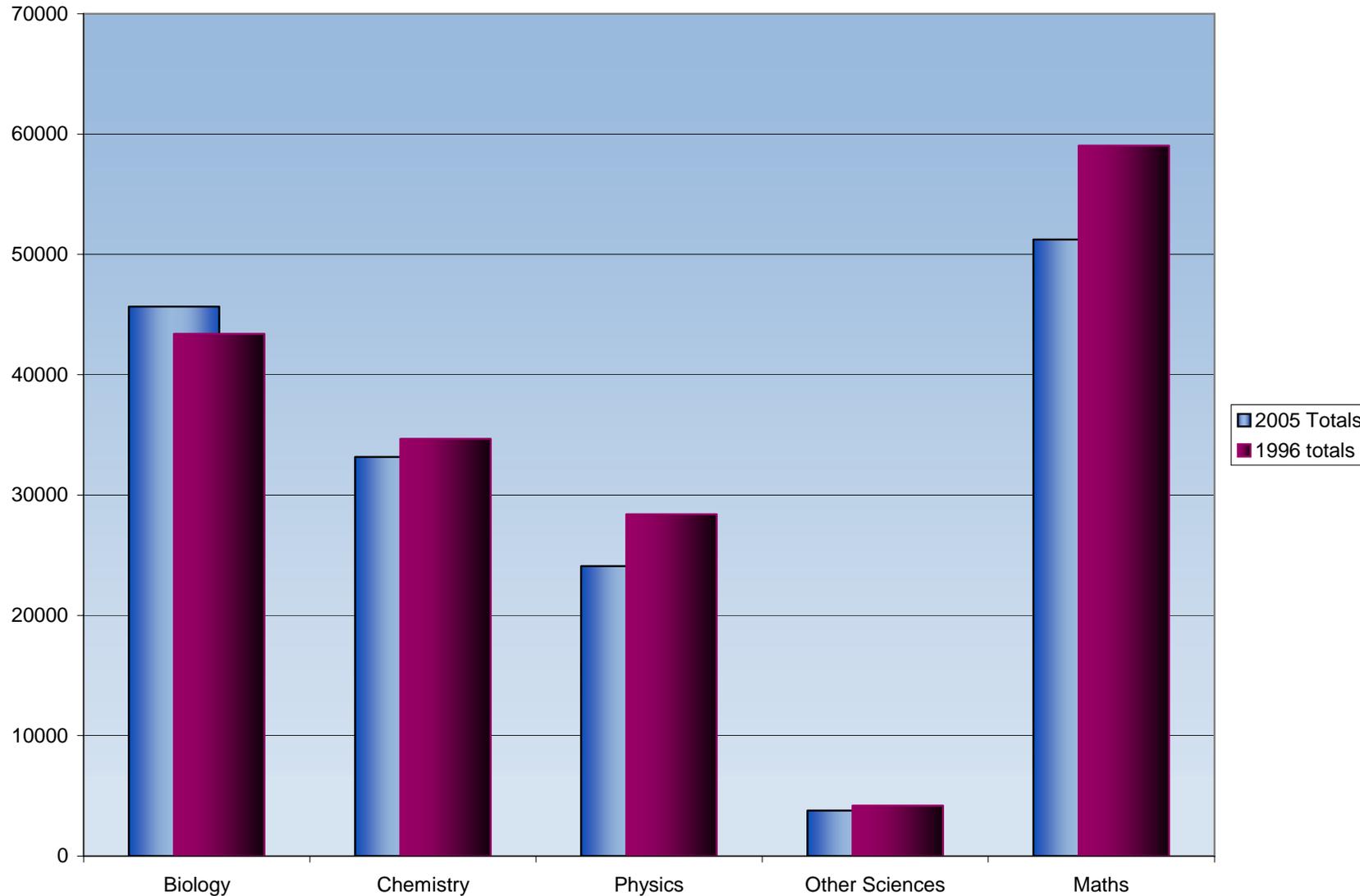


Where will the future engineers come from?

- Drop in A-level maths students
- Number of engineering and technology graduates remaining static
- Fewer than half of engineering graduates take up jobs as engineers
- Concerns identified over the long-term pipeline of young talent going from schools onto university engineering courses and subsequently into engineering firms – Royal Academy of Engineering



STEM A-level stats

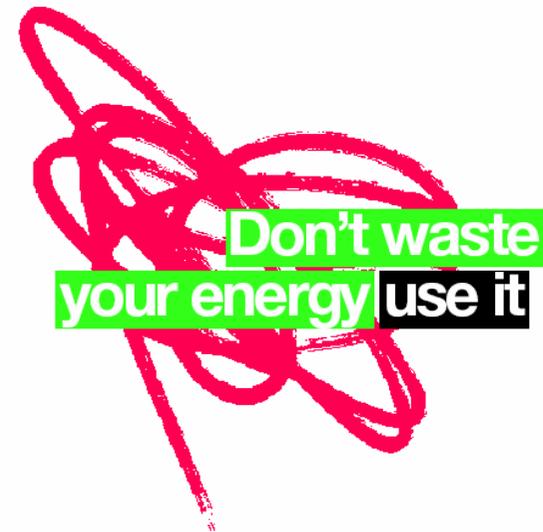


- In 2004
 - 55,500 students were awarded GCSE in Physics
 - 49,000 students studying Chemistry
- Science less likely than Maths and English to be seen as necessary for a good job
- Students lack understanding about SET careers. Large majority see engineering in terms of working with machinery
- 80% of students in Year 9 already have an interest in working in a specific area and consider option choices appropriate for that area

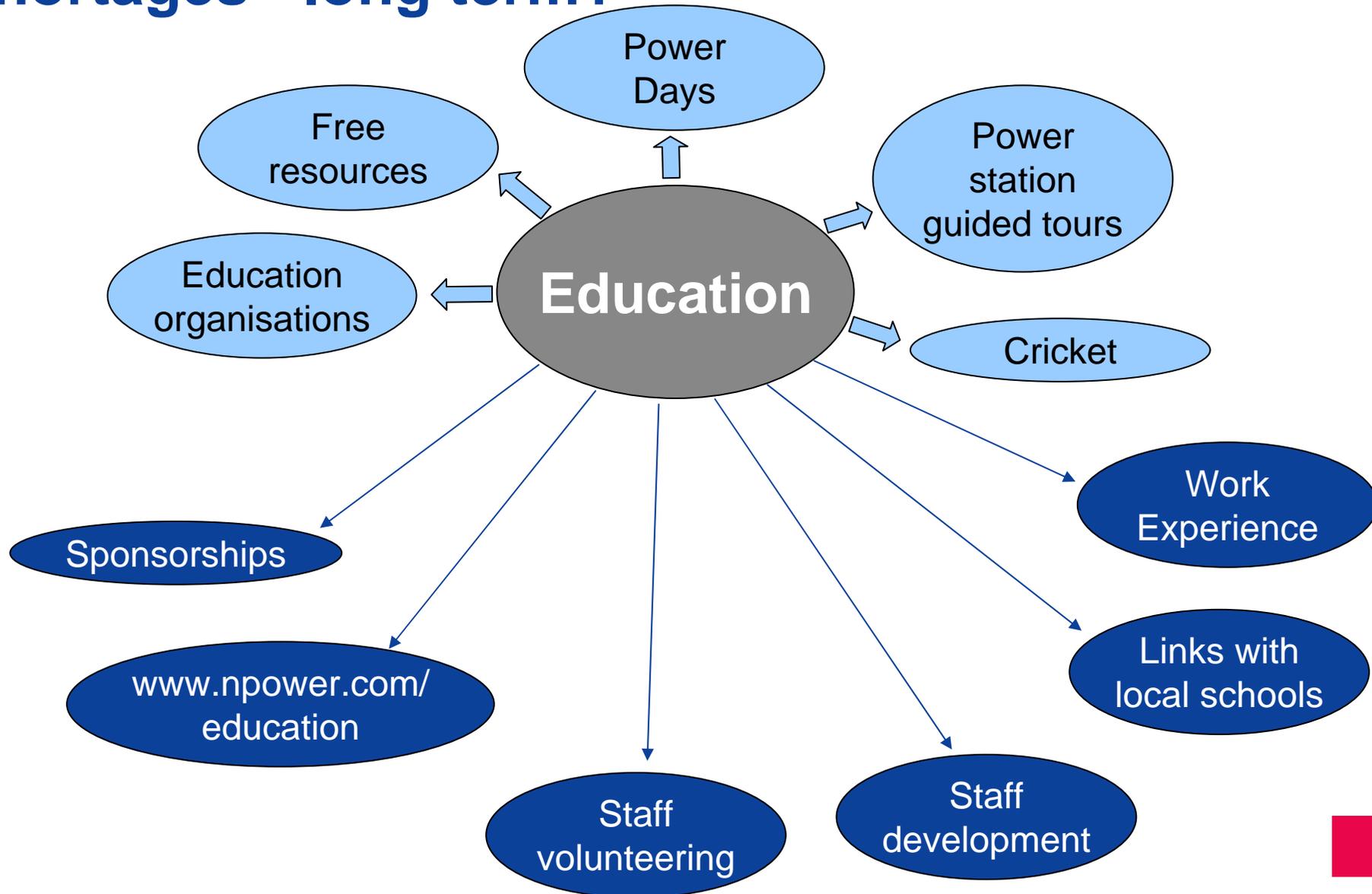


What are we doing to address shortages - medium term?

- Increase graduate intake
- November 2006 - Launch of npower graduate recruitment campaign at Science Museum
- Broad exposure in graduate recruitment publications and web sites
- npower graduate website re branded – new style recently launched
- 2006 Careers fairs complete
- 500 applications received so far – twelve weeks into campaign



What we're doing to address shortages - long term?



Enthuse

- Targeted at Year 9 (ages 13 -14)
- Aim to increase interest/curiosity about engineering and science
- enthuse will be an activity day
 - Practical activities
 - Teamwork and Problem solving
 - Excitement and competition
- Learn By Design – Primary developer (including design and delivery) – Power Days
- Days would be delivered with the assistance of npower Graduates and Apprentices



Enthuse pilot day

- Morning Q1: Are you interested in a career in engineering?



Yes 23%
No 77%

- Afternoon Q1: Are you now interested in a career in engineering?



Yes 47%
No 53%

Enthuse pilot day

- Morning Q2: Do you think you know enough about engineering to consider it as a career?

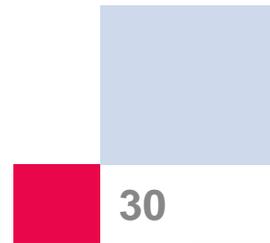


Yes 4%
No 96%

- Afternoon Q2: After what you've experienced today, do you think you know more about engineering to consider it as a career?



Yes 96%
No 4%



Enthuse pilot day

■ Morning Q3: Do you think your science lessons are relevant to your everyday life?



Yes 60%
No 40%

■ Afternoon Q3: Do you now think your science lessons are relevant to your everyday life?



Yes 82%
No 18%

“Shape the future”



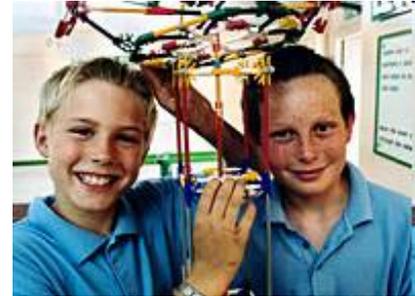
- Influencing the influencers
- Teacher experience days – hosted by industry
- Supported by government funding
- Littlebrook power station was one of the first in the UK
- 15 teachers visited – reaching over 3000 students
- Excellent feedback from Teachers, RAE and Education Business Partner
- Next event at Didcot power station in March
- Potential to influence is enormous



SETNET

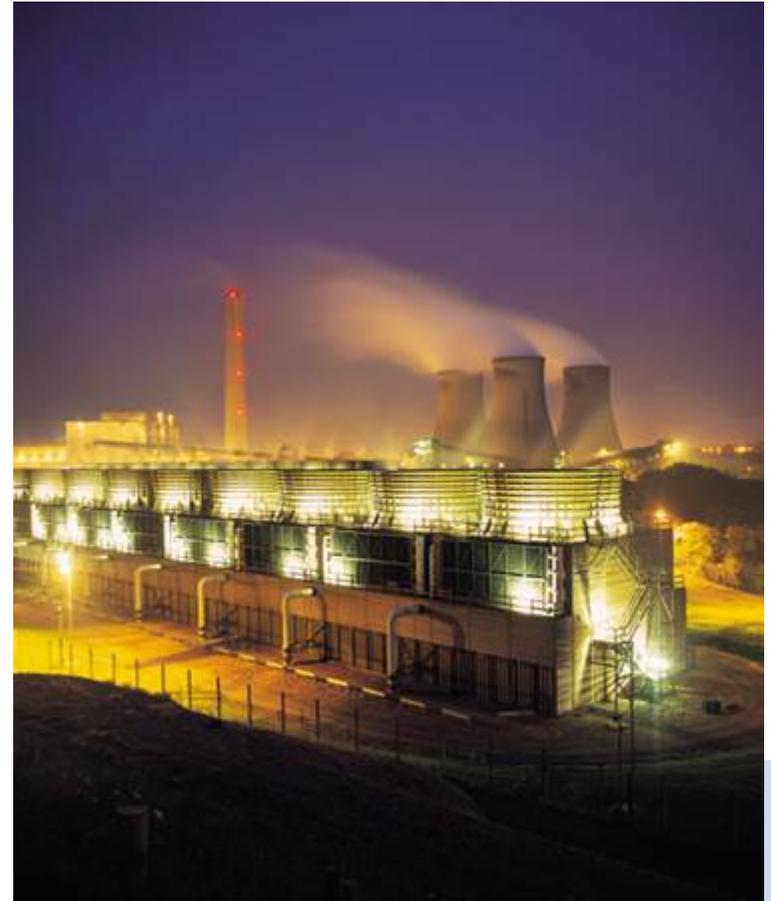
Science, Engineering, Technology, and Mathematics Network

- Supported by SETNET, The Science, Engineering, Technology and Mathematics Network that promotes Science Technology Engineering and Mathematics (STEM) awareness, especially among young people
- SEA scheme underpins promotion of STEM subjects
- 2006 graduates encouraged to become SEAs
- SETNET will deliver bespoke training to npower in January and February 2007
- npower has been instrumental in encouraging IMechE and IET to include reference to education engagement as contributing towards competence E.



Industry wide action

- Major problem for Power Generating Industry
- Can't be solved by one company alone
- All need to engage – lots of great work already being done throughout industry in this field
- Need close links with educational institutions
- **All need to be ambassadors for engineering and power industry**



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