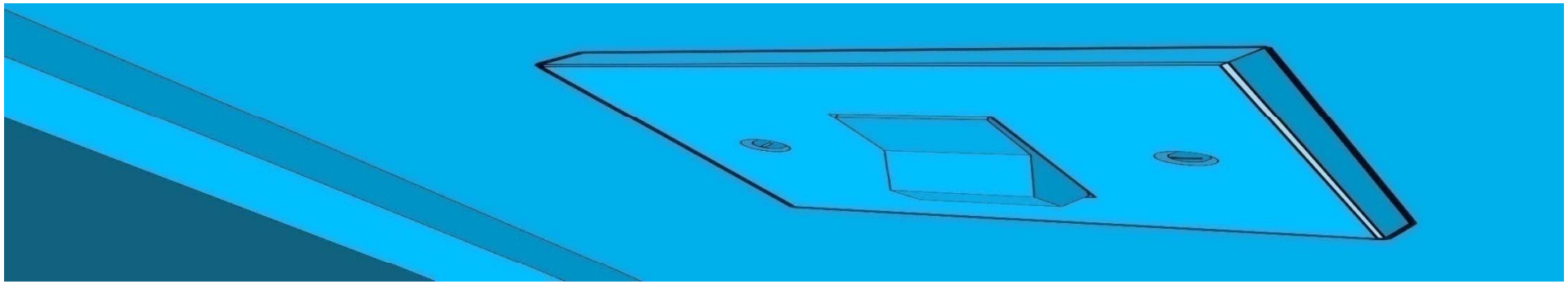


An overview of the energy industry in the UK and EU

Dr Jeff Hardy

Knowledge Exchange Manager

26/05/10

UKERC

UK Energy Research Centre

The UK Energy Research Centre

- The centrepiece of the Research Councils' Energy Programme
- A world class centre for interdisciplinary whole systems energy research (70+ researchers at 18 Universities)
- A bridge between the UK energy research community and the wider world of business, policy and international energy research

UKERC

Knowledge Transfer Network

Energy Generation & Supply

Energy Generation and Supply Knowledge Transfer Network

Steering Group

Technology Strategy Board – Driving Innovation

nationalgrid – The power of action.

bp, Clipper, EDF Energy, E.ON, Vattenfall, Rolls-Royce, Scottish and Southern Energy, Bac2, Subsea UK, EMEC Orkney, Department of Energy & Climate Change, Scottish Enterprise, One North East, WHEB Ventures – Clean Technology Venture Fund, University of Birmingham

KTN Director

TWI

Delivery Partners

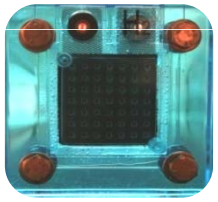
AEA, APG TF, itf, synnogy, UKERC

Offshore Wind

Wave and Tidal

Carbon Abatement Technology

Maximising Oil & Gas Resources



Hydrogen & Fuel Cells

Future & Emerging Opportunities

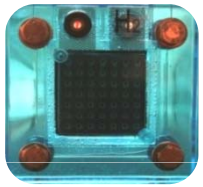
Knowledge Transfer Network

Energy Generation & Supply

Facilitating Business Success








- Dynamic Information Hub → _connect platform
- Focused Events → Ambitions for Power Generation in the UK
- (Special) Interest Groups → Call for EPSRC Supergen Power Networks Hub
- Global Outreach → International Engagement Workshop
- Advisory Helpdesk

→

- Utilities/Operators
- Equipment Suppliers
- Trade Associations
- Site owners/planners/EPCs
- Universities
- Research Institutes
- Investment Firms
- Certification Bodies
- Regulators
- Gov Funding Bodies
- RDAs/DAs
- Other KTNs

https://innovateuk.org/energyktn

Energy systems and whole systems…

The UK energy system……

> “the set of technologies, physical infrastructure, institutions, policies and practices located in and associated with the UK which enable energy services to be delivered to UK consumers”.

also…

… the UK energy system’s interconnections with the global energy system, the natural environment and wider society.

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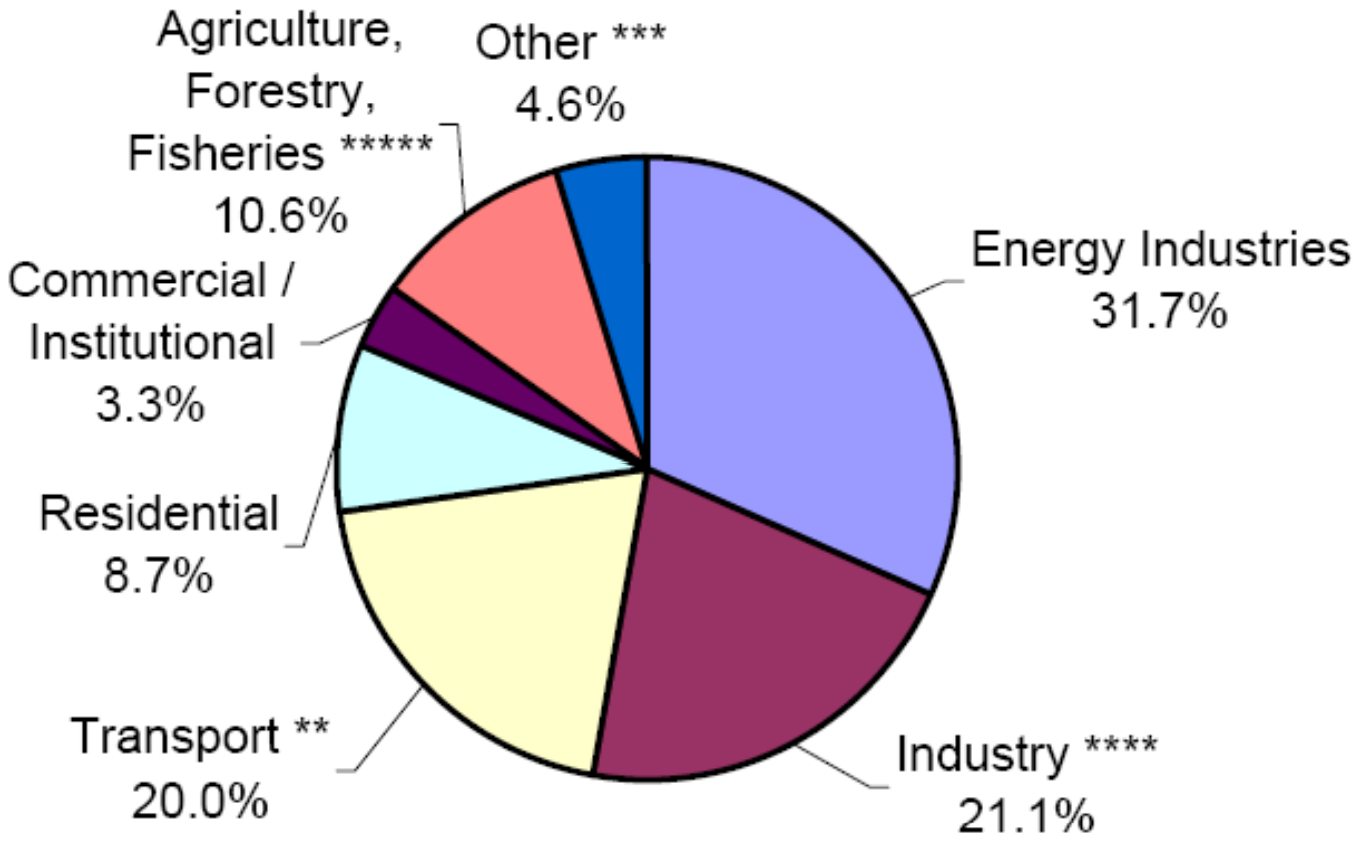
EU Energy

UKERC

Greenhouse Gas Emissions (GHG)* by Sector: EU-25
(Shares of Total Emissions:)



http://ec.europa.eu/energy/publications/doc/statistics/ext_greenhouse_gas_emissions_by_sector.pdf

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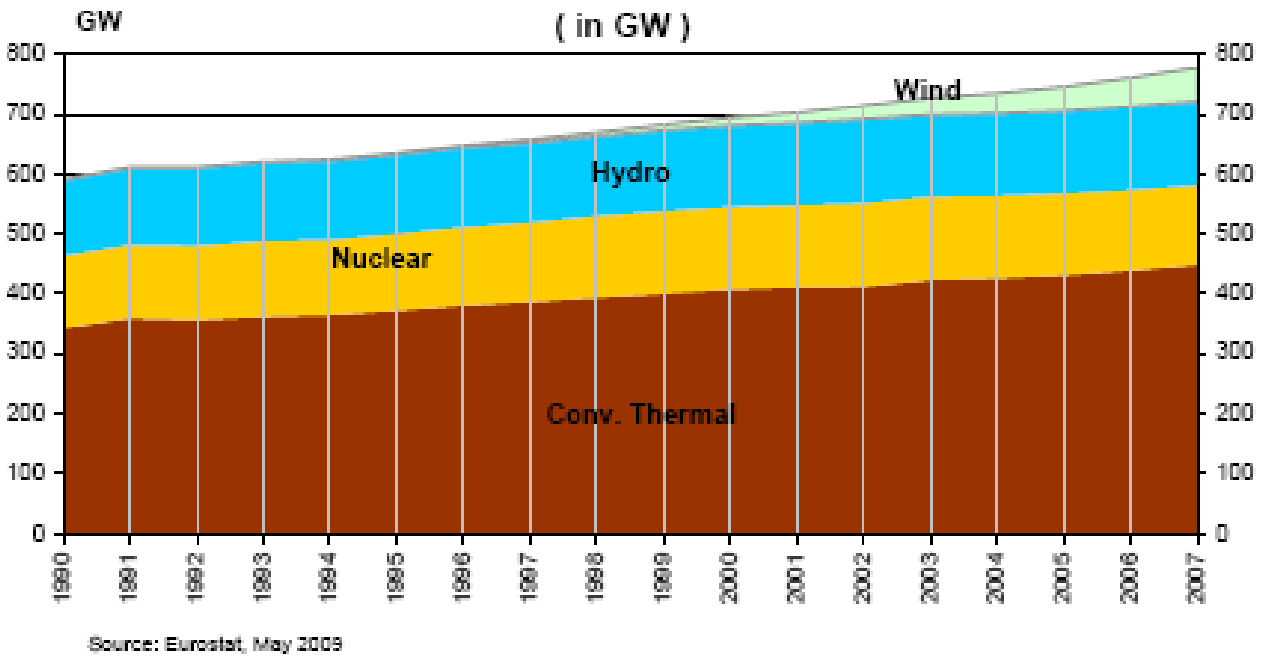
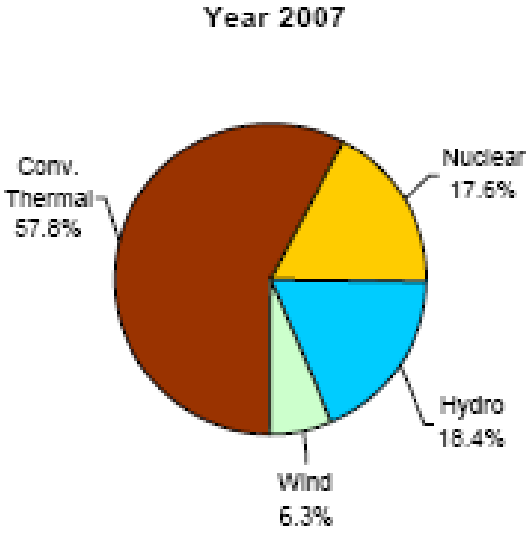
Electricity Production Capacity - EU27



Source: Eurostat, May 2009



http://ec.europa.eu/energy/publications/doc/statistics/part_2_energy_pocket_book_2010.pdf

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UK energy policy

- Low carbon
  - 34% 2020
  - 80% 2050
- Secure
- Affordable
- Promote competitive markets

Energy Act 2008

2008 c. 32

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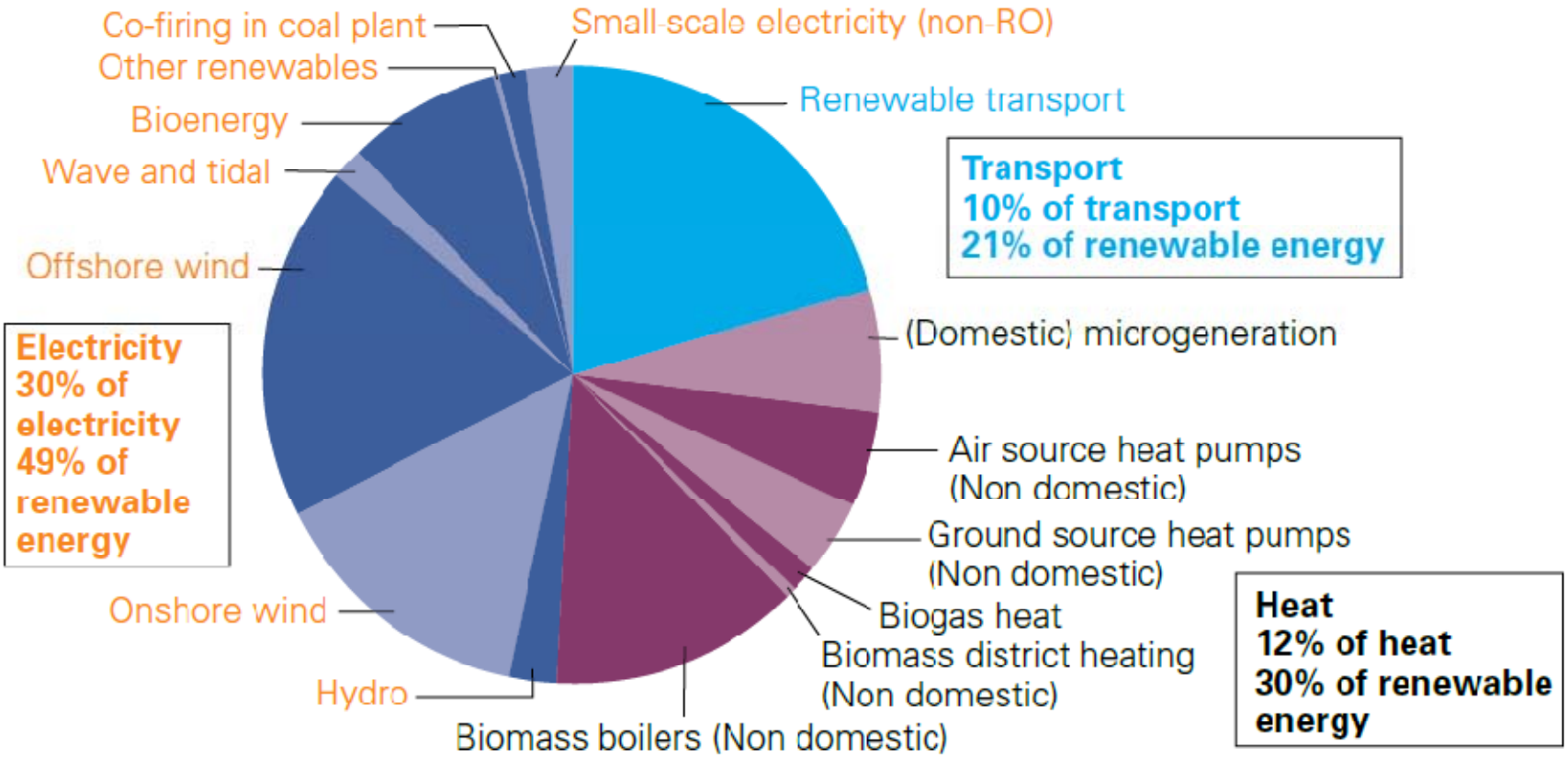
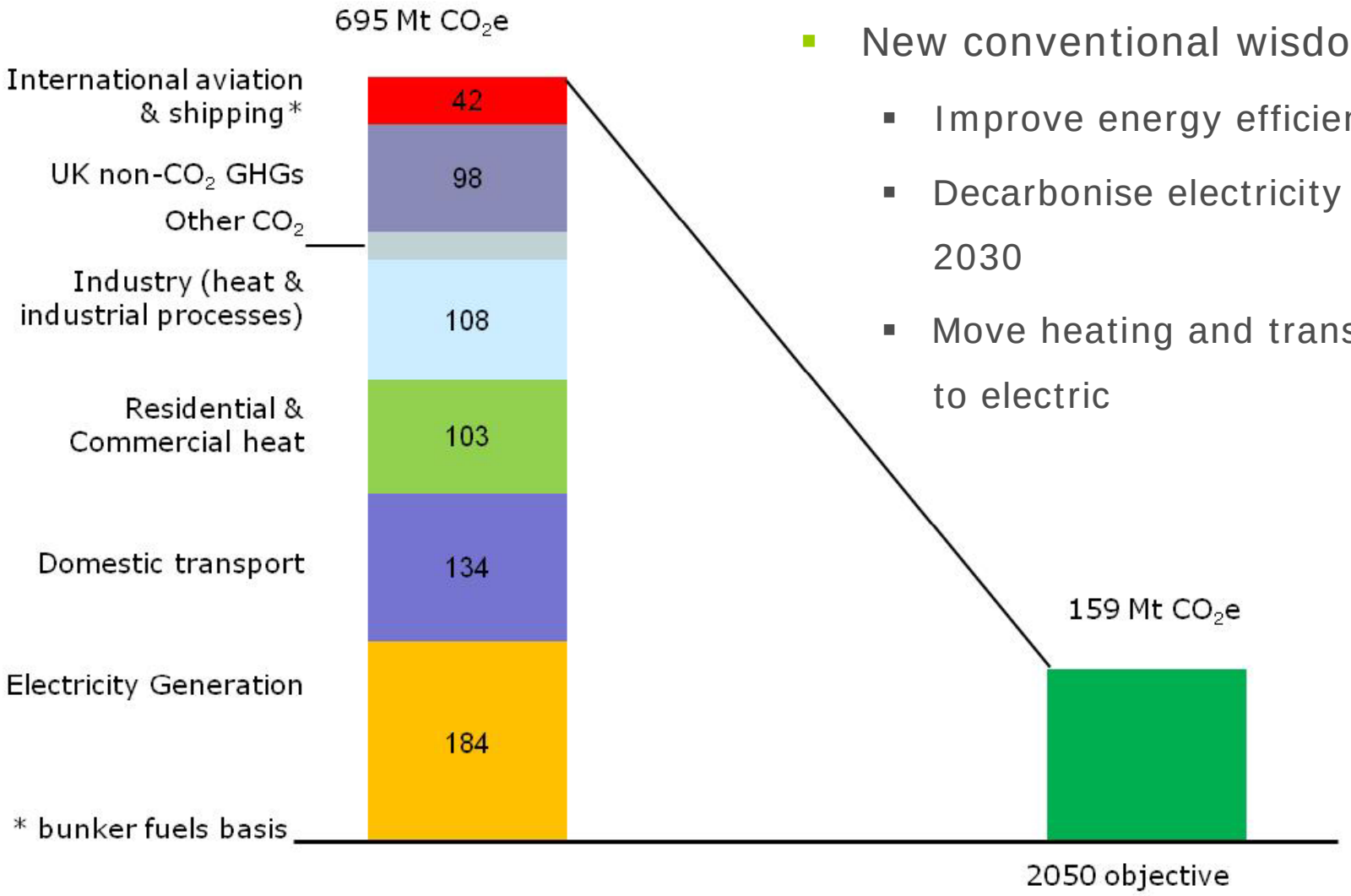
UK Renewable Energy Strategy

Illustrative mix of technologies in lead scenario, 2020 (TWh)



Source: DECC analysis based on Redpoint/Trilemma (2009), Element/Pöyry (2009) and Nera (2009) and DfT internal analysis

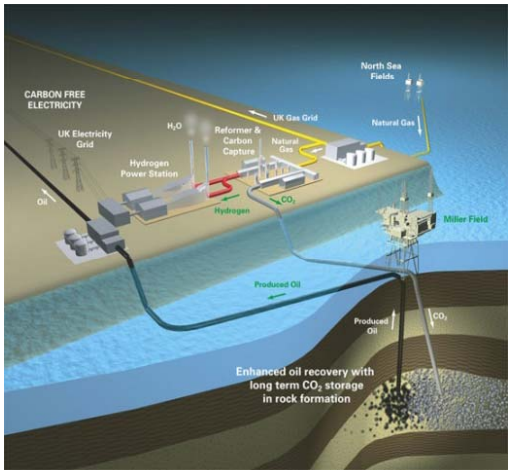
Meeting the UK 2050 target



- New conventional wisdom:
  - Improve energy efficiency
  - Decarbonise electricity by 2030
  - Move heating and transport to electric

Source: Committee on Climate Change

Key technologies



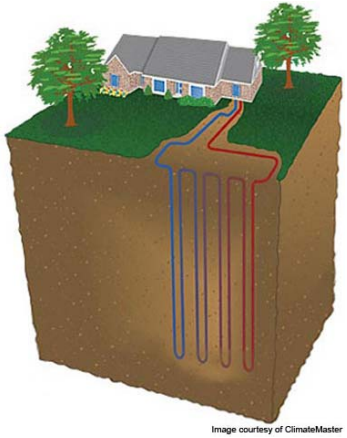
Carbon capture and storage

Electric vehicles

Efficiency

Nuclear

Biofuels

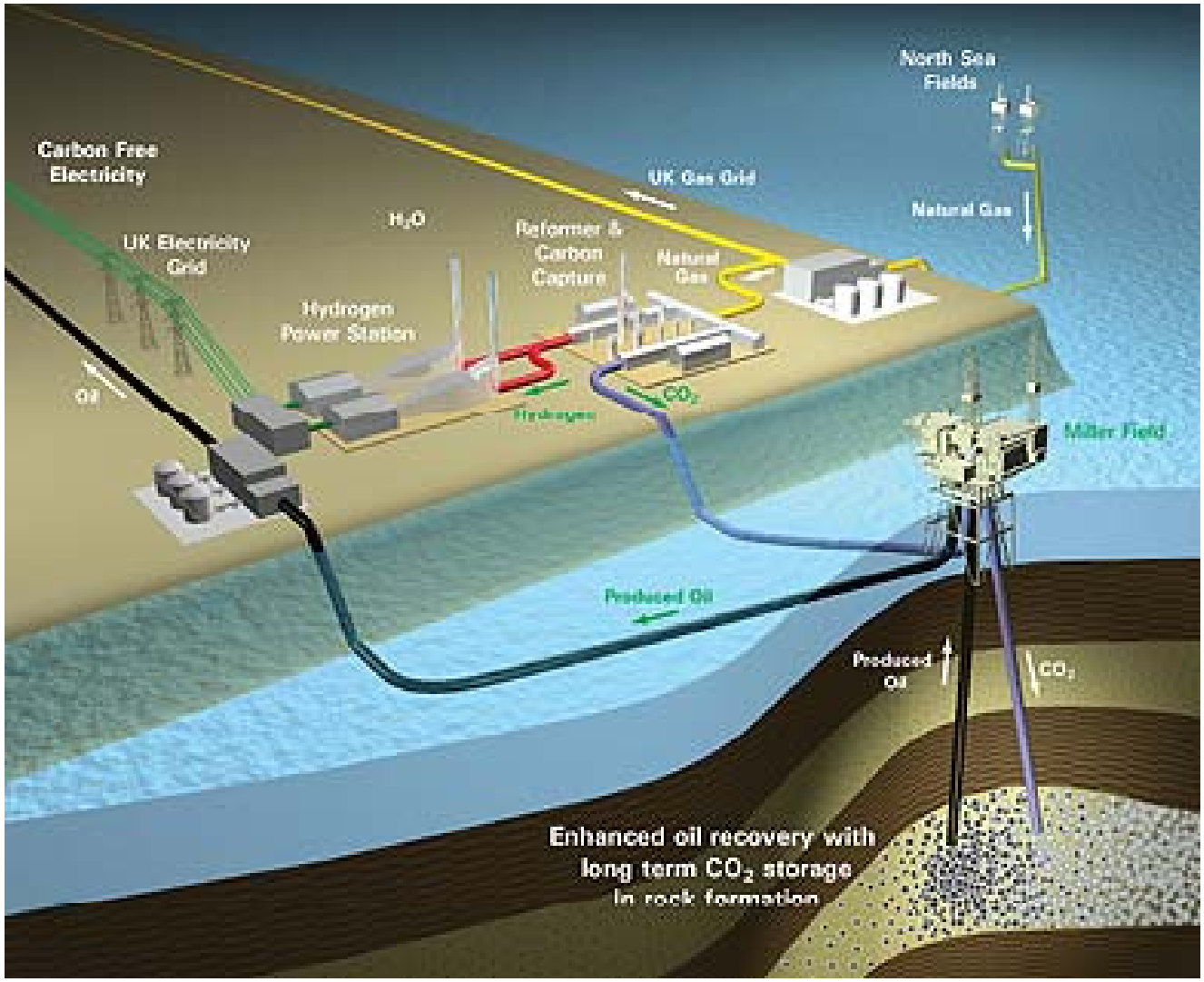


Heat pumps

Solar power

Renewables

Carbon capture and storage

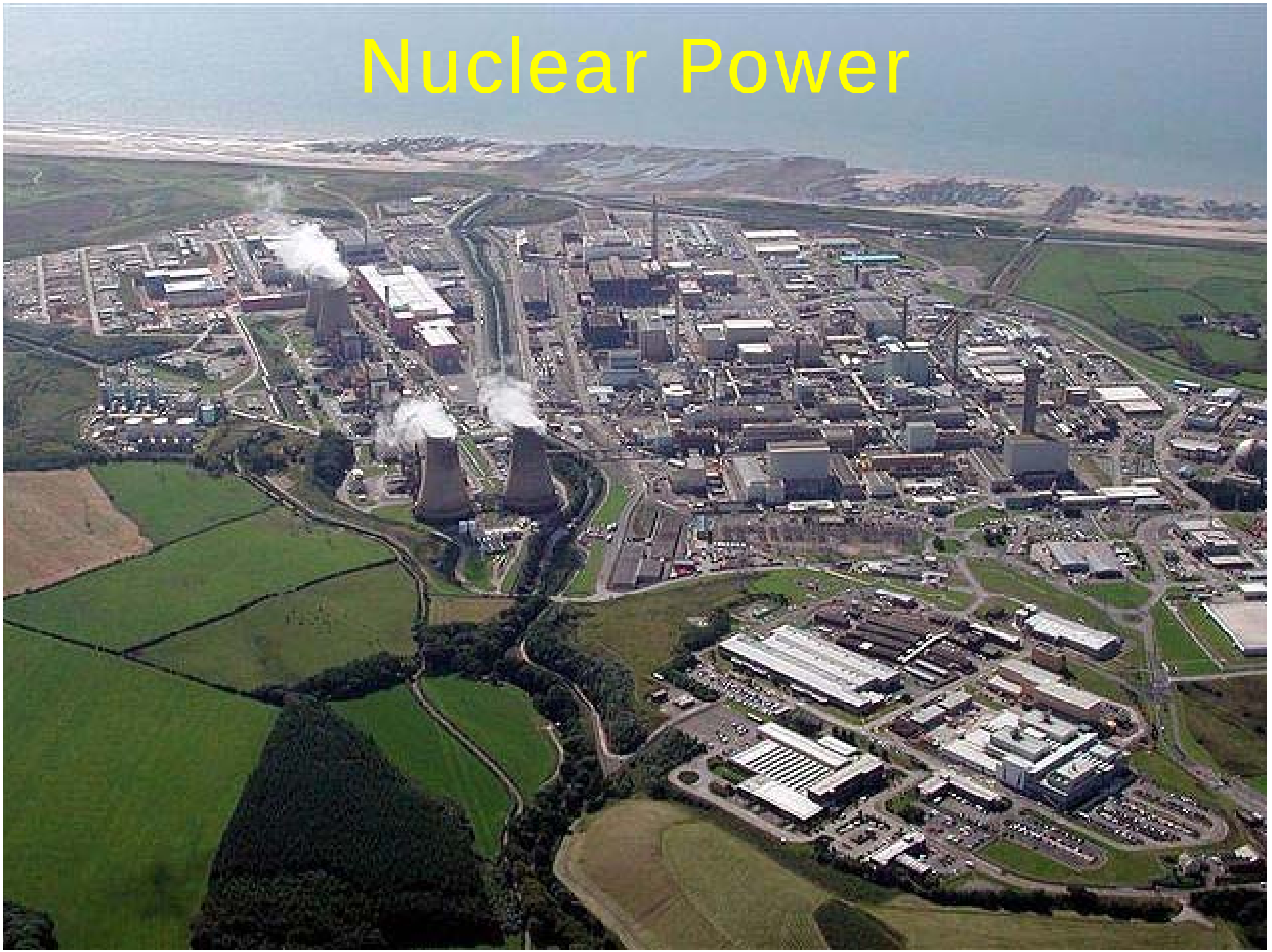


Peterhead power station, Scotland

Source: BP

UKERC

Nuclear Power



Nuclear waste management

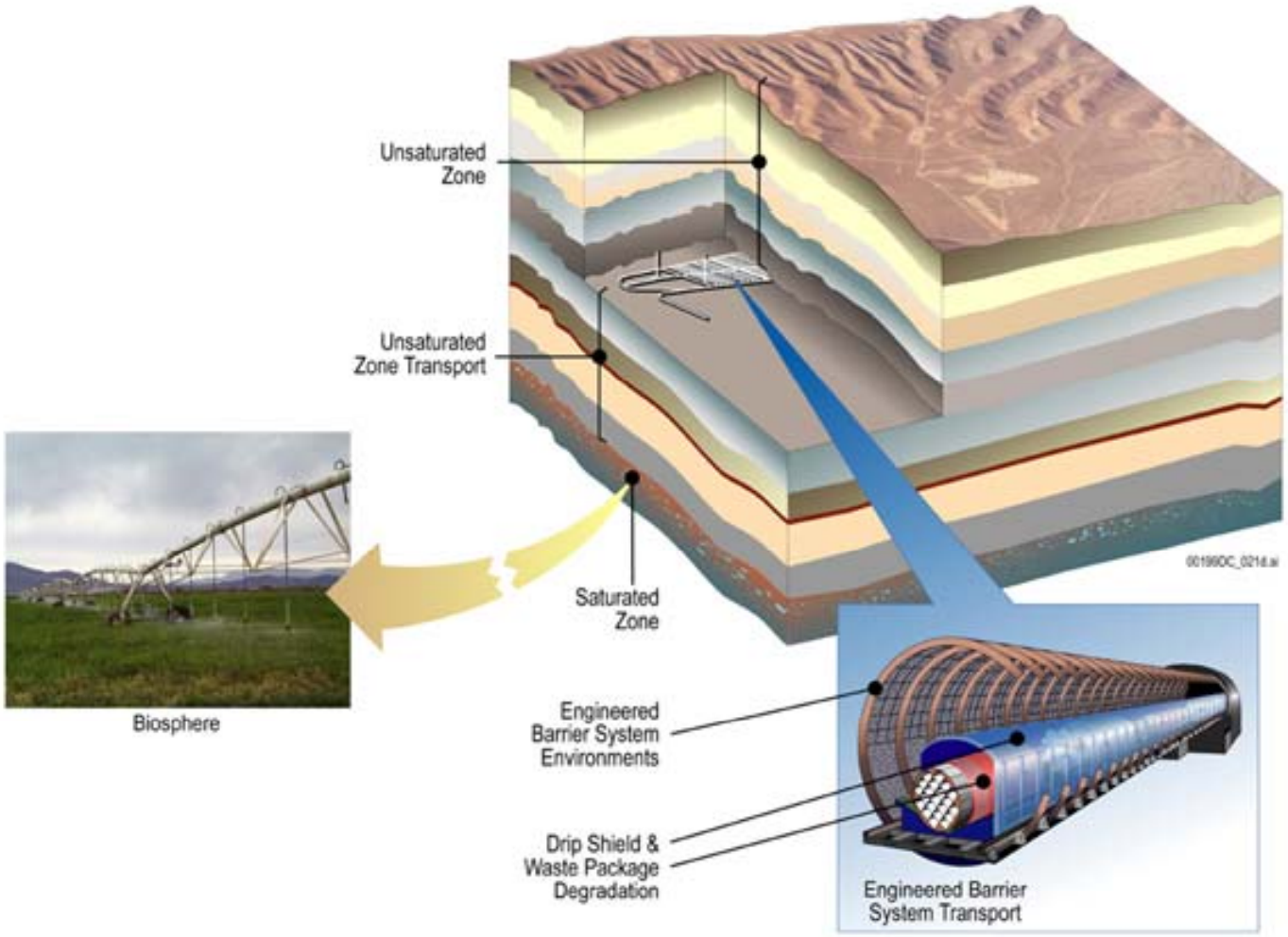
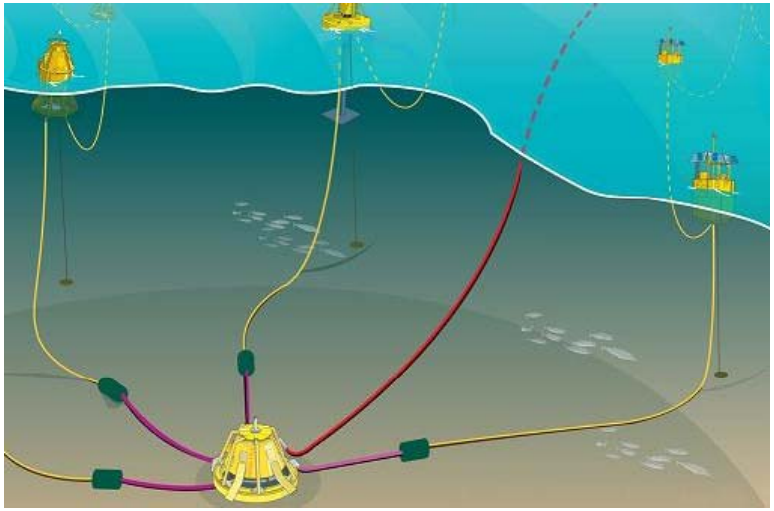


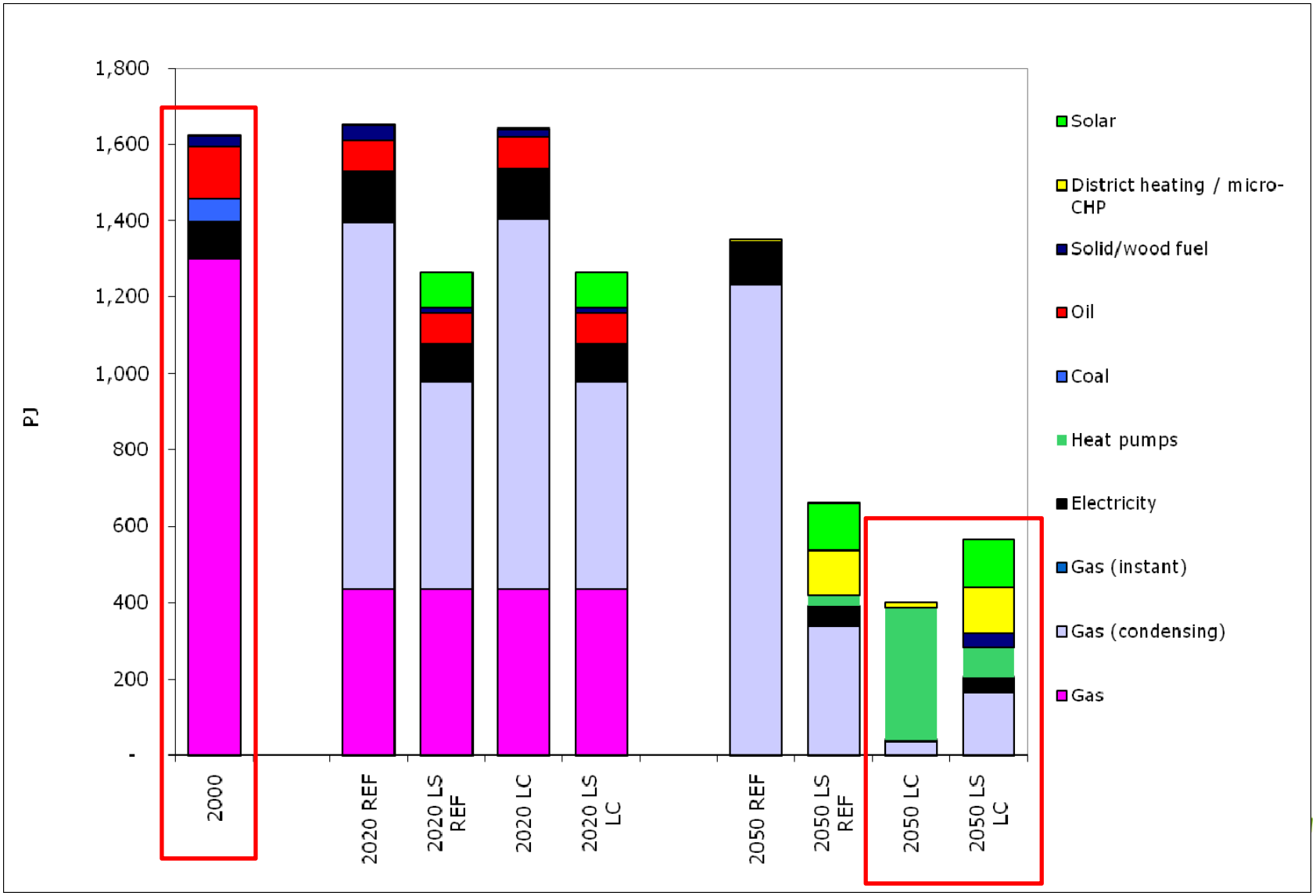
Image from NEI website

Renewables



Concentrating Solar Power

Residential heating to 2050



Source: UKERC 2050

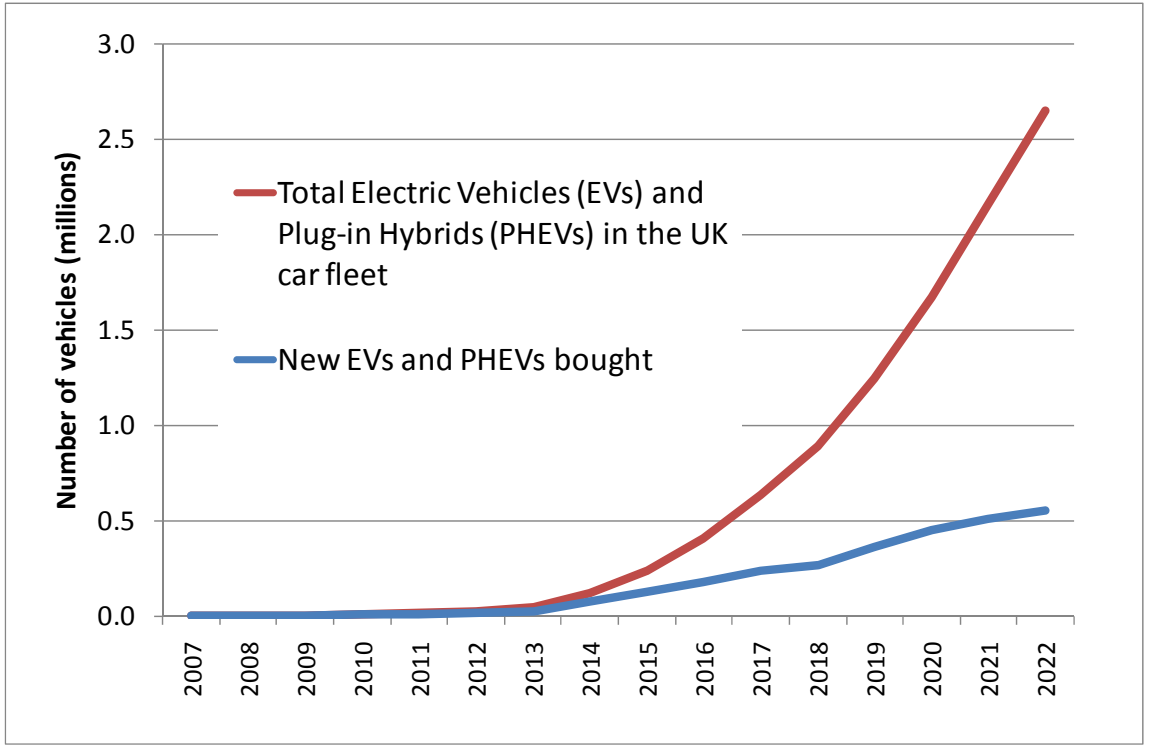
Biofuels

UKERC

Image Chris Madden website

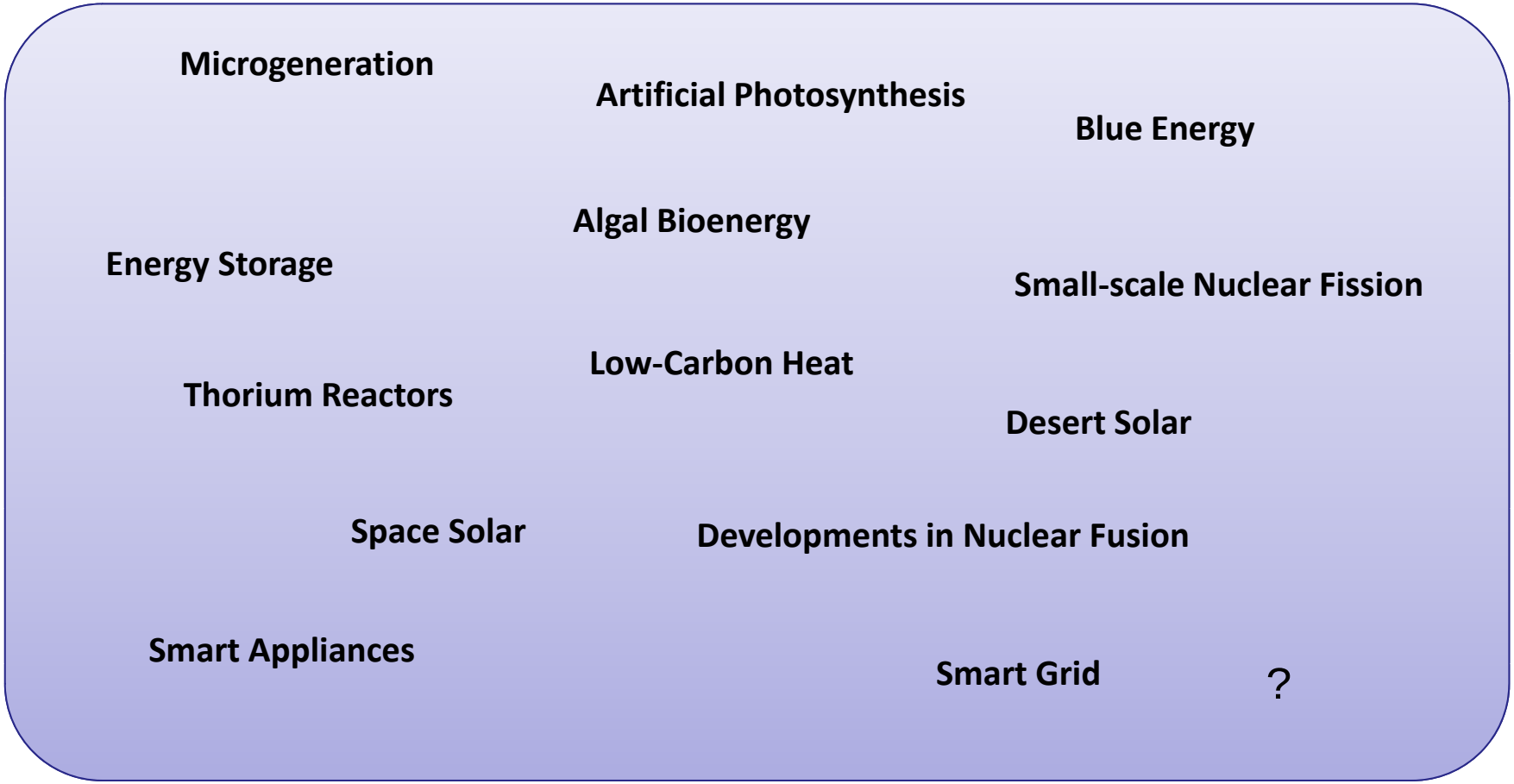
Electric car policies

•Models expected to come to market in next few years.
• Scope for substantial **battery cost reduction**.
• Government has committed price support of £2,000-5,000 per car totalling £230 million; CCC analysis suggests up to £800 million may be required.
•Government support for development of charging infrastructure is required.
• Pilot projects targeting 240,000 cars in 2015, on way to **1.7 million in 2020**.
• Limited impacts on power networks to 2020.



Knowledge Transfer Network
Energy Generation & Supply

Future and emerging opportunities



Questions for the meeting

- To what extent will groundwater issues present a barrier to the low carbon transition?
- Is deep geothermal energy an opportunity for the UK?
- Emerging technologies may require exotic materials – is anyone researching the effects on groundwater of mining operations?

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