INFRASTRUCTURE INTEGRATION AND ECONOMIC DEVELOPMENT IN THE HUNTER REGION

The climate change challenge: how commercial development of new technologies will generate opportunities for the Hunter Region

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Electricity and transport sector climate change mitigation technologies

CEDA Forum: 'Infrastructure Integration & Economic Development in the Hunter Region

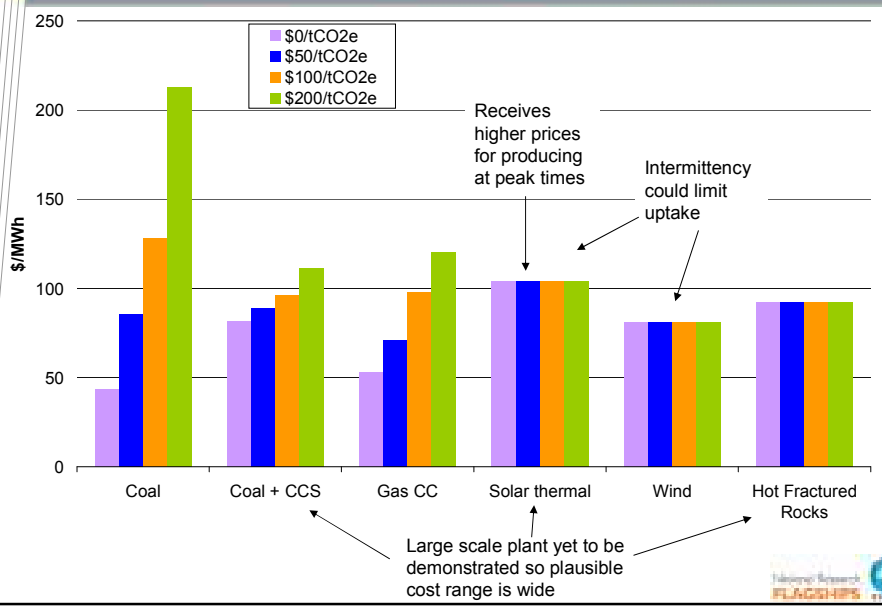
Paul Graham, 17 September 2008

National Research FLAGSHIPS CSIRO

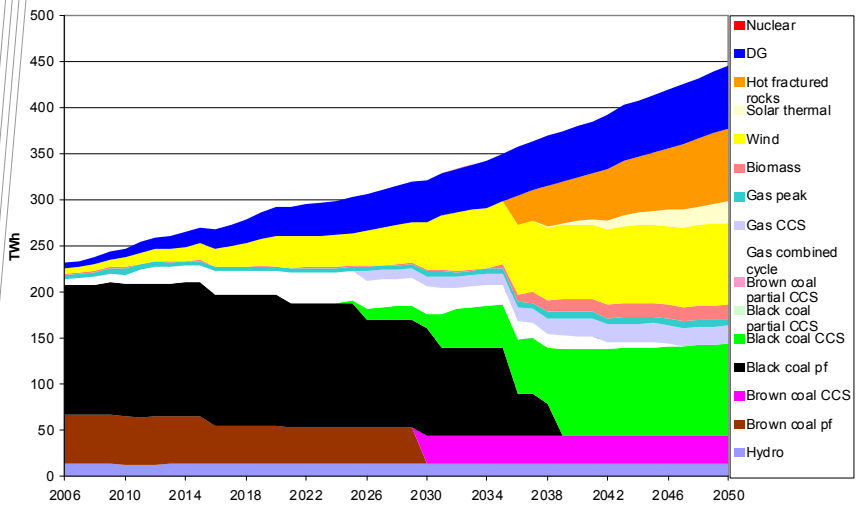
Presentation Plan

- **Outlook for electricity generation technologies in Australia**
  - Key uncertainties and CSIRO research
- **Outlook for transport fuels and technologies**
  - Competing fuels and technologies

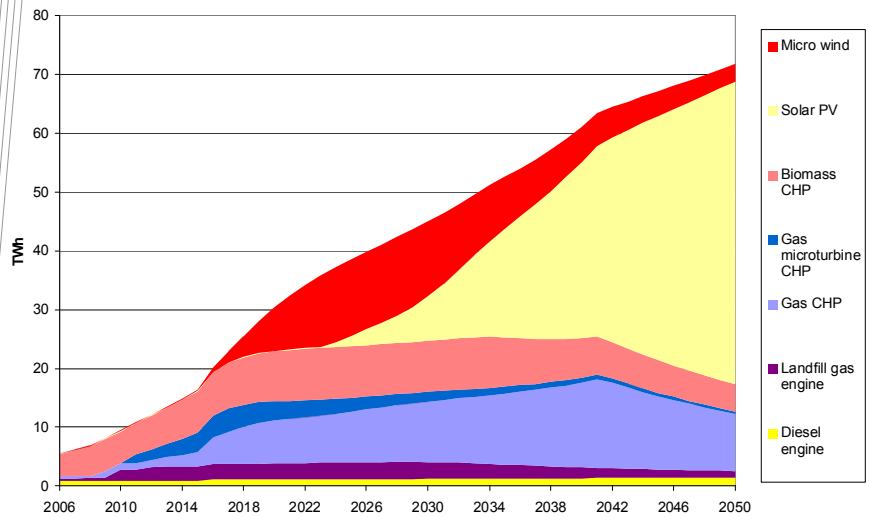
Uncertainties



Electricity generation projections under 550ppm target



Projected distributed generation mix



CSIRO low emission electricity research

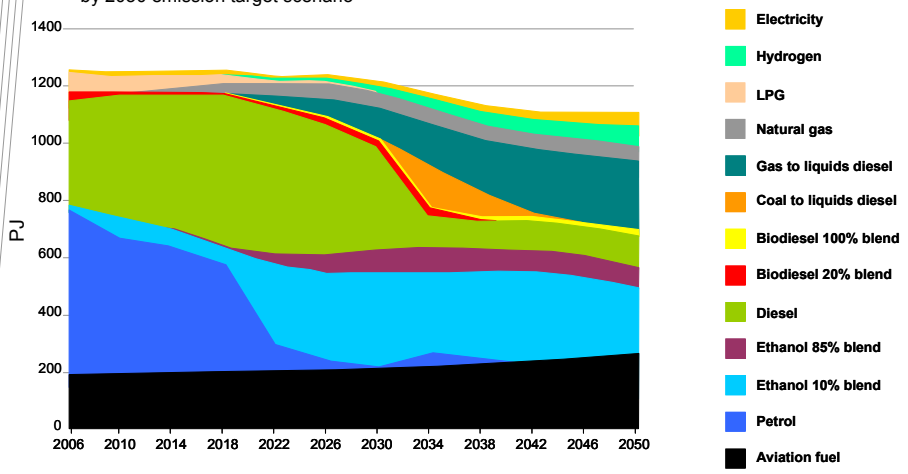
- More efficient coal energy conversion and CO2 capture [Newcastle/QLD]
- Testing of different CO_2 storage options [Newcastle/WA]
- Hot fractured rocks: geological modelling and processes for low grade heat utilisation [Perth, WA]
- Battery systems and wind forecasting to address intermittency [Victoria]
- Solar thermal energy conversion efficiency and demonstration [Newcastle]

CSIRO low emission electricity research

- Organic solar PVs [Newcastle]
- Fuel cell technologies [Sydney]
- Integration of distributed energy systems via communications technologies and optimisation of systems [Newcastle]
- Tri-generation: electricity, heat and cooling [Newcastle/Sydney]

Possible transport fuel mix

Low cost fuel cell vehicles available, EIA high oil price, 60% below 2000 levels by 2050 emission target scenario



CSIRO low emission transport research

- Advanced battery technologies and hybrid electric drivetrain optimisation
- Thermochemical and enzymatic lignocellulosic ethanol production
- Synthetic fuels and gas separation
- Assessment of Australian biomass feedstocks and their suitability for alternative energy conversion technologies
- Oil and gas exploration including subsea and well technologies
- Enhanced oil and gas production