

# USEFUL DATA

## AUSTRALIA'S ANNUAL ELECTRICITY PRODUCTION

- 228 million MWh (228 Twh)
- 81% coal
- 5% hydro
- 13% gas
- 1% other

(ESAA – Electricity Gas Australia 2009)

## AUSTRALIA'S CONSUMPTION PER CAPITA

- 28.6 kWh/day
- 10,435 kWh/year

(Australian Bureau of Statistics, 2009)

## CONVERSION FACTOR FOR ENERGY

- 1000 PJ = EJ =  $10^{18}$  J =  $2.35 \times 10^7$  toe (tonnes of oil equivalent)
- 1 MWh = 3.6 GJ = 0.62 bbl =  $8.5 \times 10^{-2}$  toe
- 1 barrel of oil = 5.8 GJ = 1.6 megawatt hour (MWh)
- 1 million barrels of oil = 5.8 peta joule (PJ) = 1.61 million MWh

## OIL RESERVES

- Australia's proven oil reserves = 4 billion barrels
- USA known oil reserves = 21 billion barrels
- World's proven oil reserves = 1.295 billion barrels

(OPEC Annual Statistical Bulletin, 2008, p. 41)

## ENHANCED GEOTHERMAL SYSTEM (EGS)

This term is now being used more and more internationally to describe what Geodynamics has been calling hot fractured rock (HFR) geothermal developments.

## 1 CUBIC KILOMETRE OF GRANITE

has the thermal energy equivalent of 2.2 PJ for every degree celsius that it can be cooled. This equals 0.38 million barrels of oil (heat equivalent). So if 1 cubic kilometre of rock is cooled by 100°C then 220 PJ of energy is released equivalent to 38 million barrels of oil.

## GEODYNAMICS MAIN GEOTHERMAL TENEMENTS (GRLs 3 to 12) OF 1,000 SQUARE KMS

in the Cooper Basin at an average temperature of 250°C and a thickness of 1.5 km (from 3.5 km – 5 km depths) has the energy potential of 60 billion barrels of oil. This is based on lowering its temperature by 100°C.

## CARBON DIOXIDE EMISSION EQUIVALENTS (per KWh)

- Brown Coal 1.20kg CO<sub>2</sub>
- Black Coal 0.85kg CO<sub>2</sub>
- Oil 0.80kg CO<sub>2</sub>
- Natural Gas 0.55kg CO<sub>2</sub>

## ESTIMATED ELECTRICITY COSTS FOR NEW PLANTS IN AUSTRALIA

(\$ per MWh, including a \$35/tCO<sub>2</sub> carbon impost)

- Brown Coal = 78
- Black Coal = 76
- Natural gas = 77
- Future clean coal = 92
- Nuclear = 73 (without waste disposal and de-commissioning)
- HFR = 72
- Wind = 90
- Solar = 150