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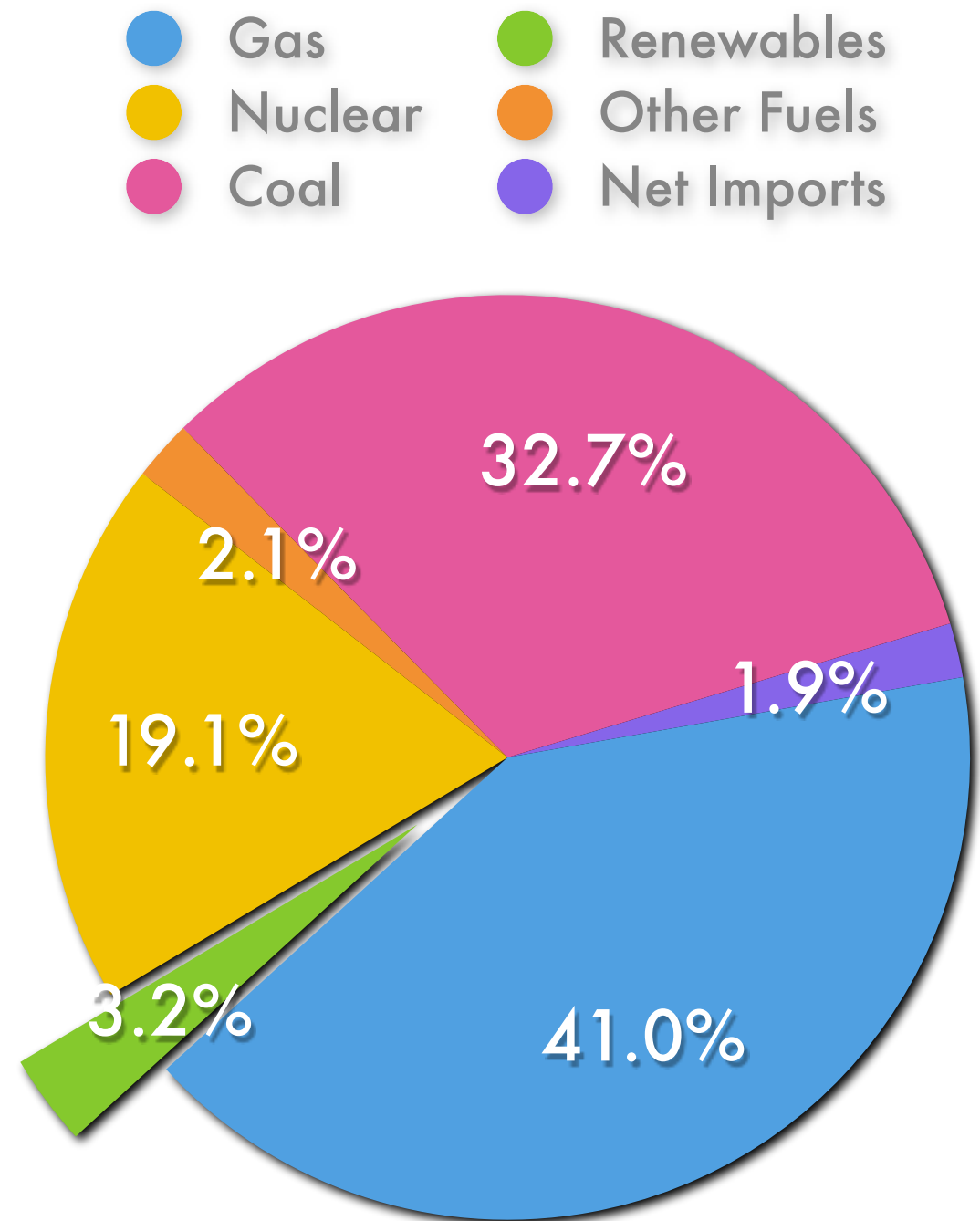
Renewable Electricity



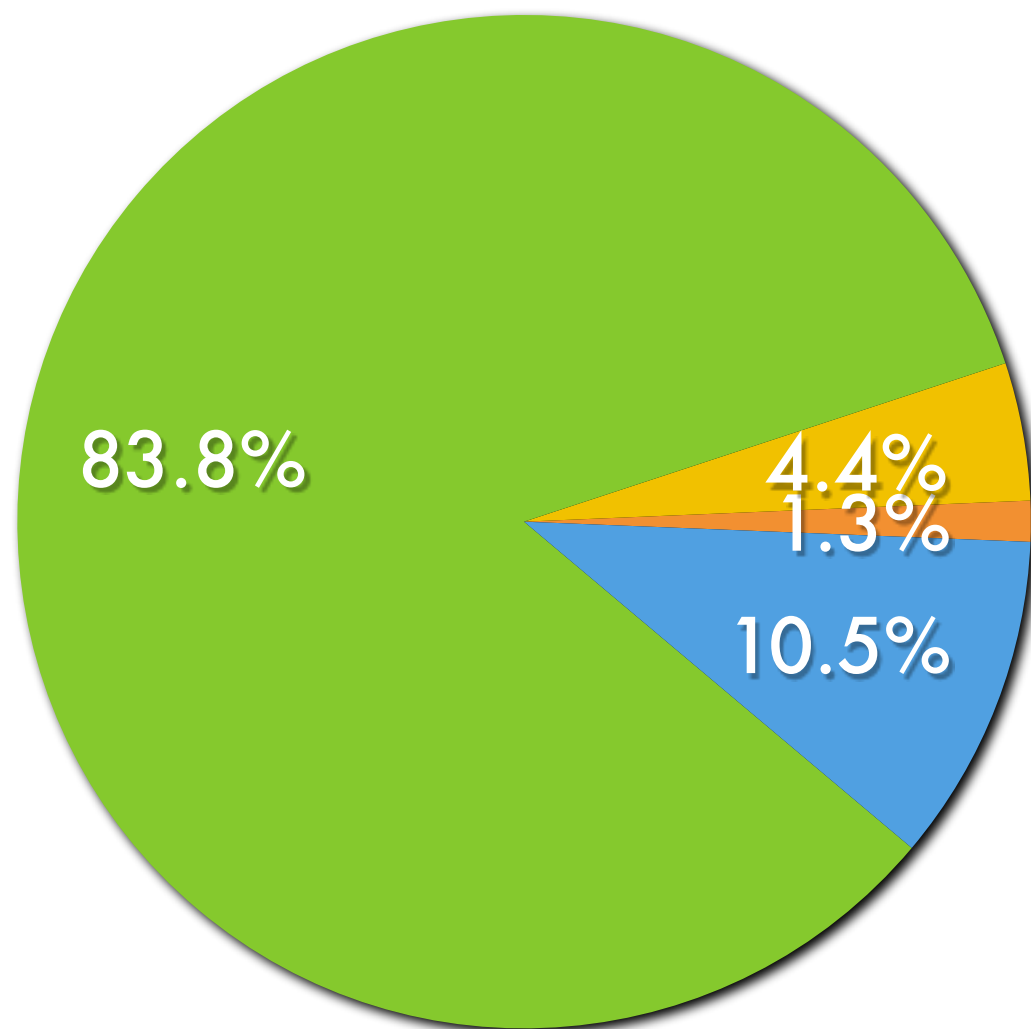
# The Overall UK Electricity Market

(for 2004)

- Note that electricity represents about a quarter of the UK's consumption of primary energy. (Transport and non-electric heating are a much larger share.)
- Total UK Electricity market in 2004 was around 325 000 GWhr
- Renewable Energy currently makes up 3.2% of the mix



# Makeup of Renewable Electricity Generation (for 2004)



- The vast majority of UK's renewable electricity currently comes from Biomass (Landfill gas, sewage gas, wood, waste combustion etc).
- Large-Scale Hydro provides 10.5% but is mature
- Despite its high profile, wind power is only 4.4% of renewables, or less than 0.15% of overall UK electricity (~ 450 GWhr)
- Solar Power is negligible

# ROCs, CCL, and Other Incentives

Pure “economic” costs are only part of the equation:

- Renewable Obligations (RO) are government policy to promote renewable generation of electricity.
- Renewable Generators are rewarded RO Certificates (ROCs) for each 1MWhr they produce.
- RO requires electricity suppliers to source an increasing percentage of their electricity from renewables (10.4% for 2010, 15.4% for 2015).
- Electricity Suppliers can meet their obligation by:
  1. Buying ROCs from renewable suppliers at a value determined by free-market economics
  2. Paying a buy-out fund contribution equivalent to £30 / MWh

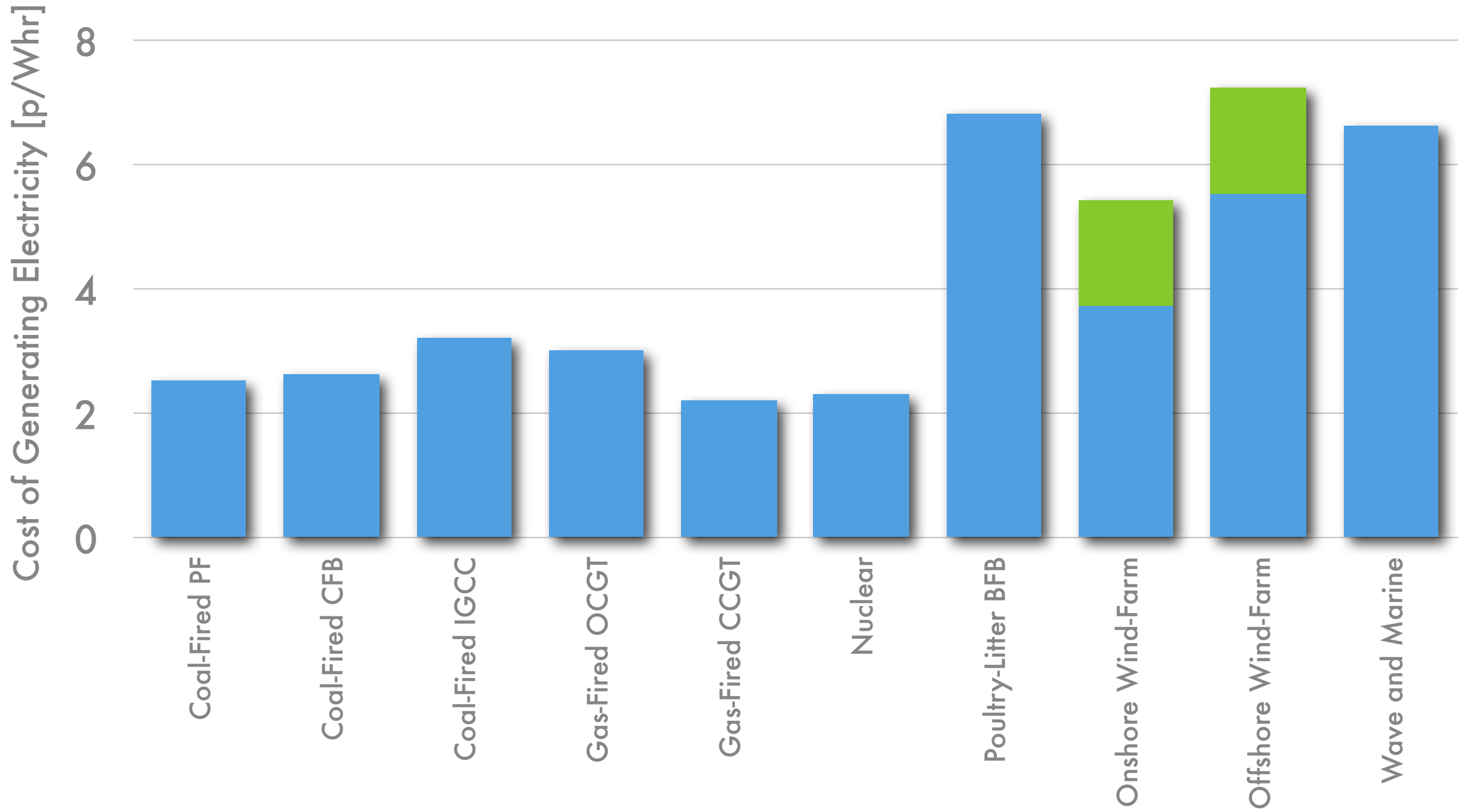
# Future Trends and Directions

Motivations for the future of Renewable Energy are broad

- Strategic **social** incentive for a stable energy source. See for example UK government's 10% by 2010 policy
- Reduce **environmental** impact of non-renewable energy sources. See for example CO<sub>2</sub> and Kyoto
- **Economic** incentive as prices of conventional sources spiral ever upwards.
- Don't forget: Better economy is the only real solution.

# Costs

■ Cost of Generating Electricity      ■ Standby Generation Cost





# How much CO<sub>2</sub> do renewables displace?

Fuel Type	kg CO <sub>2</sub> per kWhr	kg CO <sub>2</sub> per tonne	kg CO <sub>2</sub> per litre
Grid Electricity <sup>1</sup>	0.43	-	-
Natural Gas	0.19	-	-
Fuel Oil	0.27	3223	-
Diesel	0.25	3164	2.63
Petrol	0.24	3135	2.30
Other Coal <sup>2</sup>	0.32	2548	-
Aviation Fuel	0.25	3150	2.52

<sup>1,2</sup> See Notes

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