Need the Lights Go Out?

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A Keynote talk given at
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http://bit.ly/cleanpower
organised by CIR

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Changes of Energy Minister in 10 years

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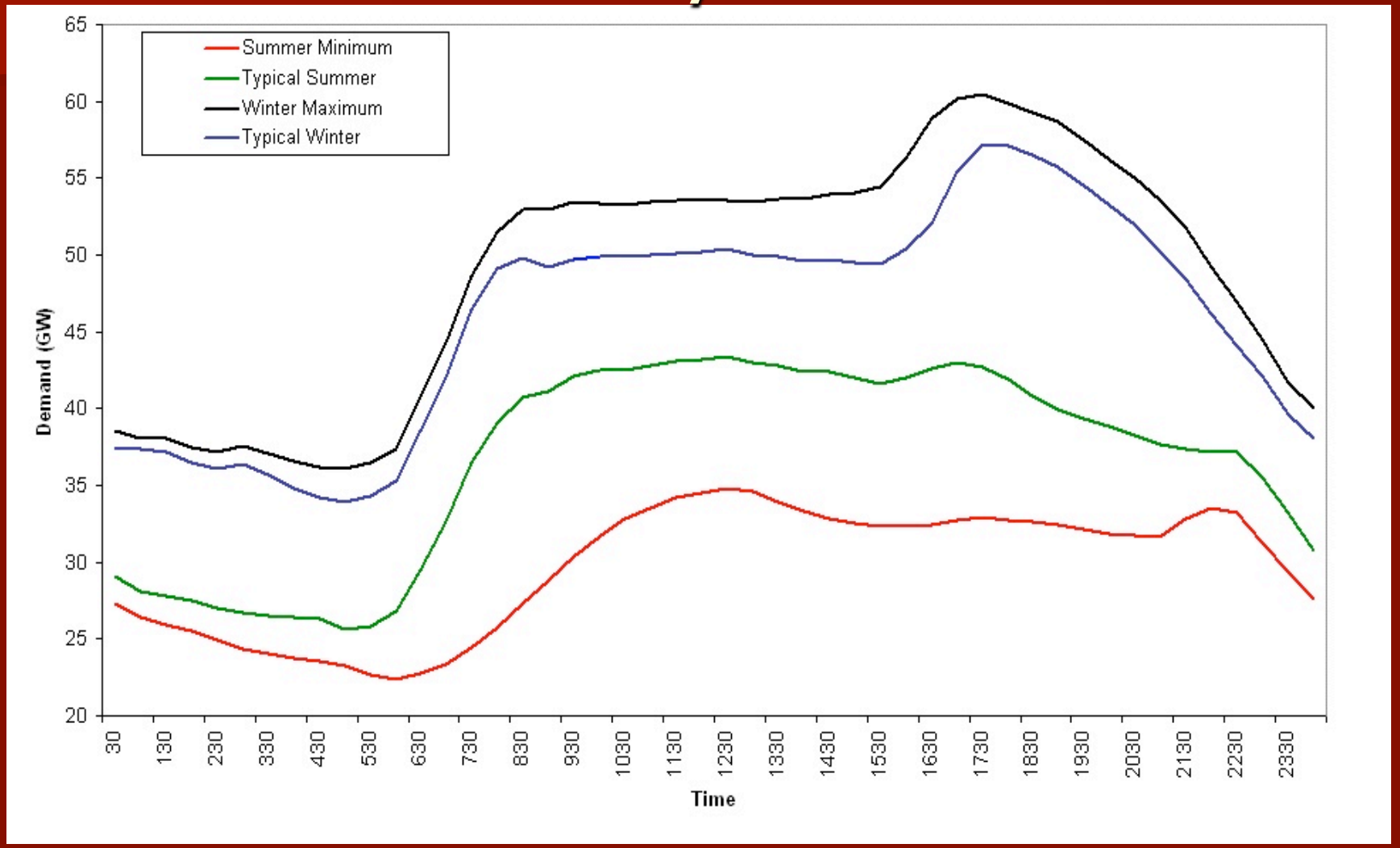
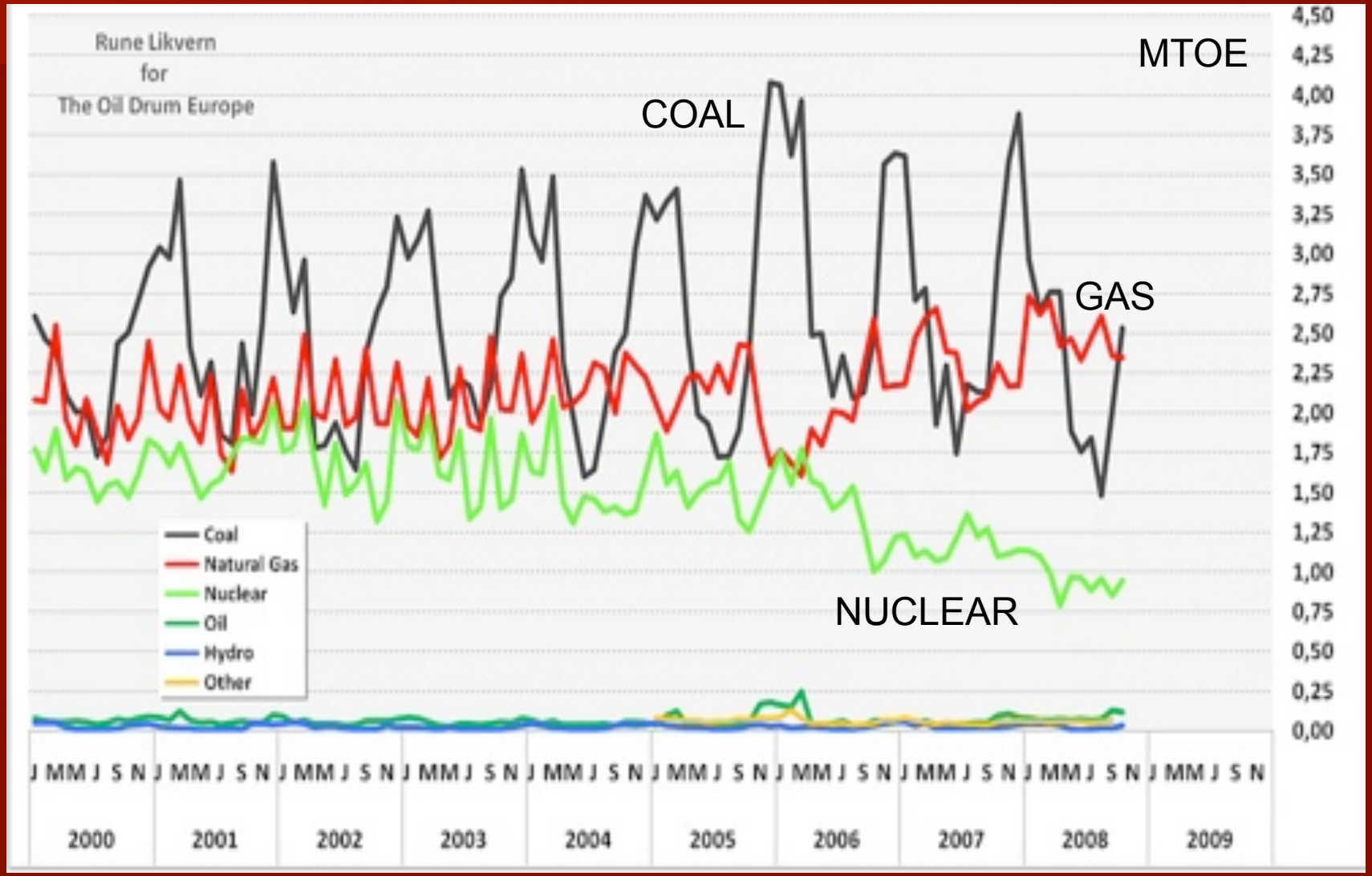
UK losing between 10 and 15 GW of generation capacity over next five years

- Maximum winter demand ca. 60GW
- Minimum summer demand ca. 20 GW
- Demand met by
  - Long term supply agreements
  - short term bids to supply
  - price as low as possible
- Will demand increase or decrease?
  - Improved efficiency and energy saving

Annual & Diurnal Variation in UK Electricity Demand



Fuel Use: UK Electricity Generation 2000-2008



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  - Near term – meets demand over next five years
  - Longer term – develops an evolving system of sustainable electricity generation

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  - Flexible
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- Attracts investment
- Functions under BETTA (British Electricity Trading and Transmission Arrangement) - designed to minimize cost:
- Attaches value to non-commercial benefits
  - security
  - carbon

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- Grid
- Local distribution
- Inter-connectors
- Storage

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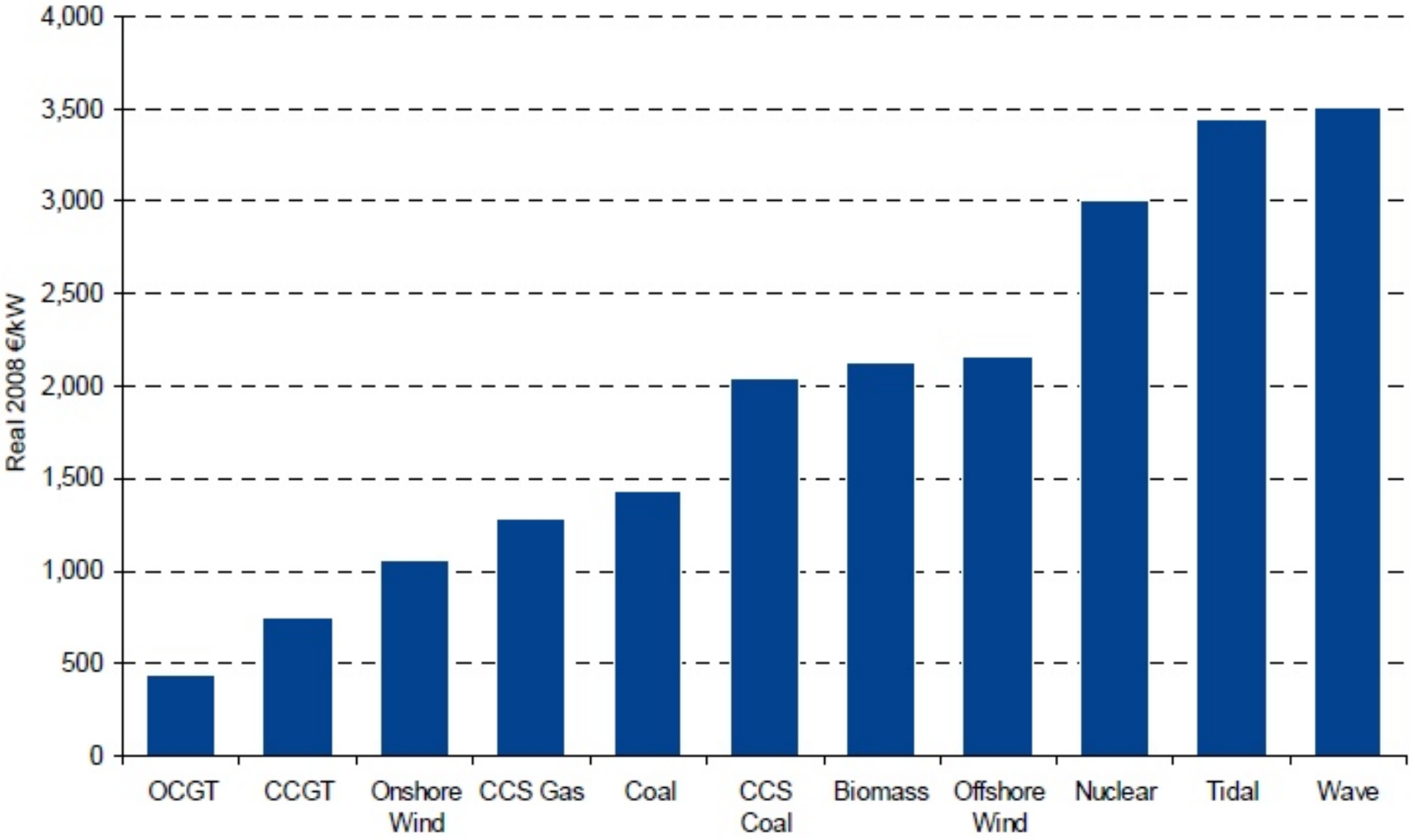
Capital Costs of Generation Technologies (Poyry,2010)



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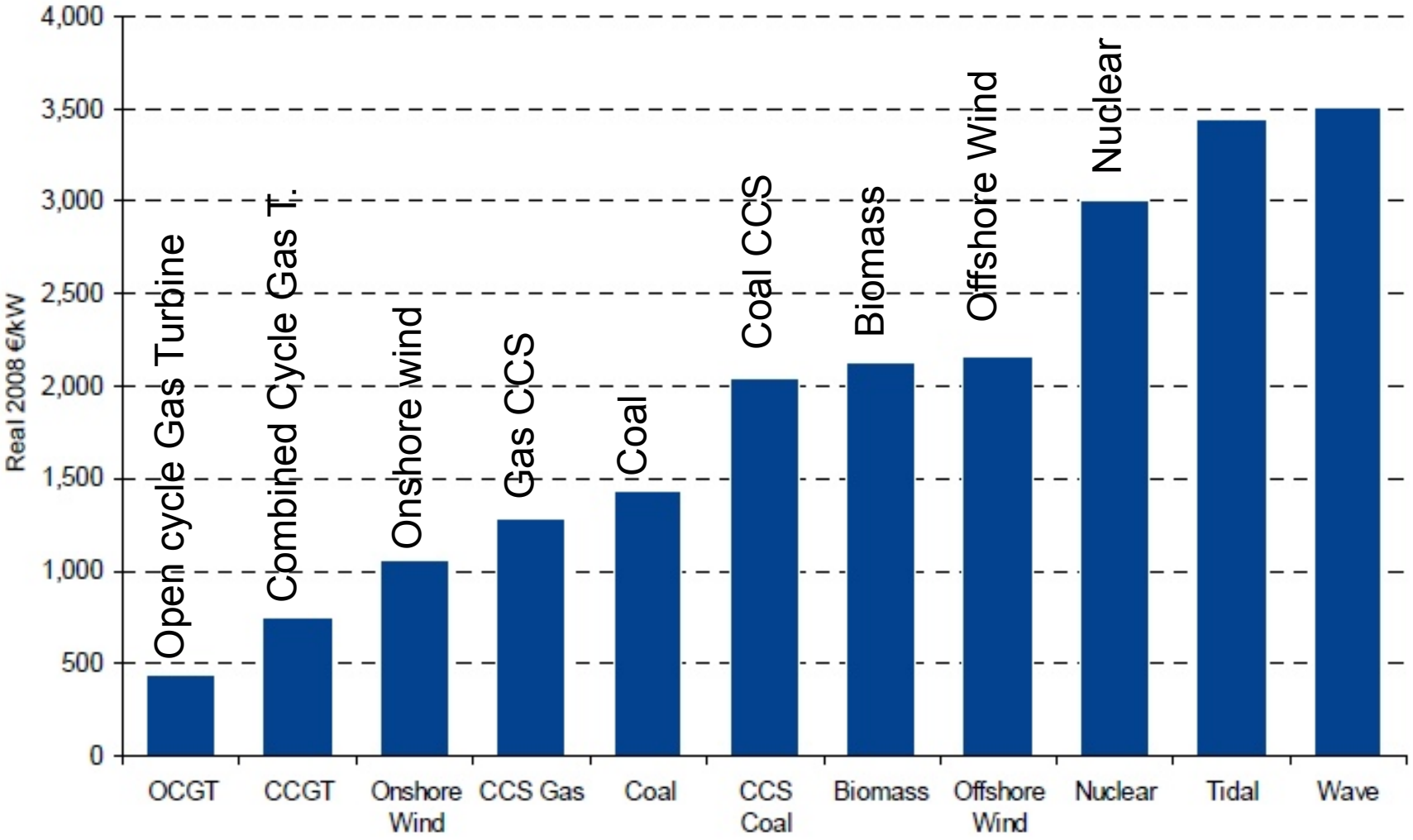

Different Generation Modes

	Capex Euro/ kW	Opex	Flexible ?	CO2?	Fuel Secure	Availa bility?
Wind & Intermit. R	1000 – 2200	Low	Nil	Almost none	N/A	25-35%
Nuclear	3000	Low	Low	V. Low	N/A	90%
Gas	750	Intermed	High	High	Fair	90%
Coal & Biomass	1450	Intermed	Fairly	VV High (Coal)	Good	90%

No account taken of connection costs

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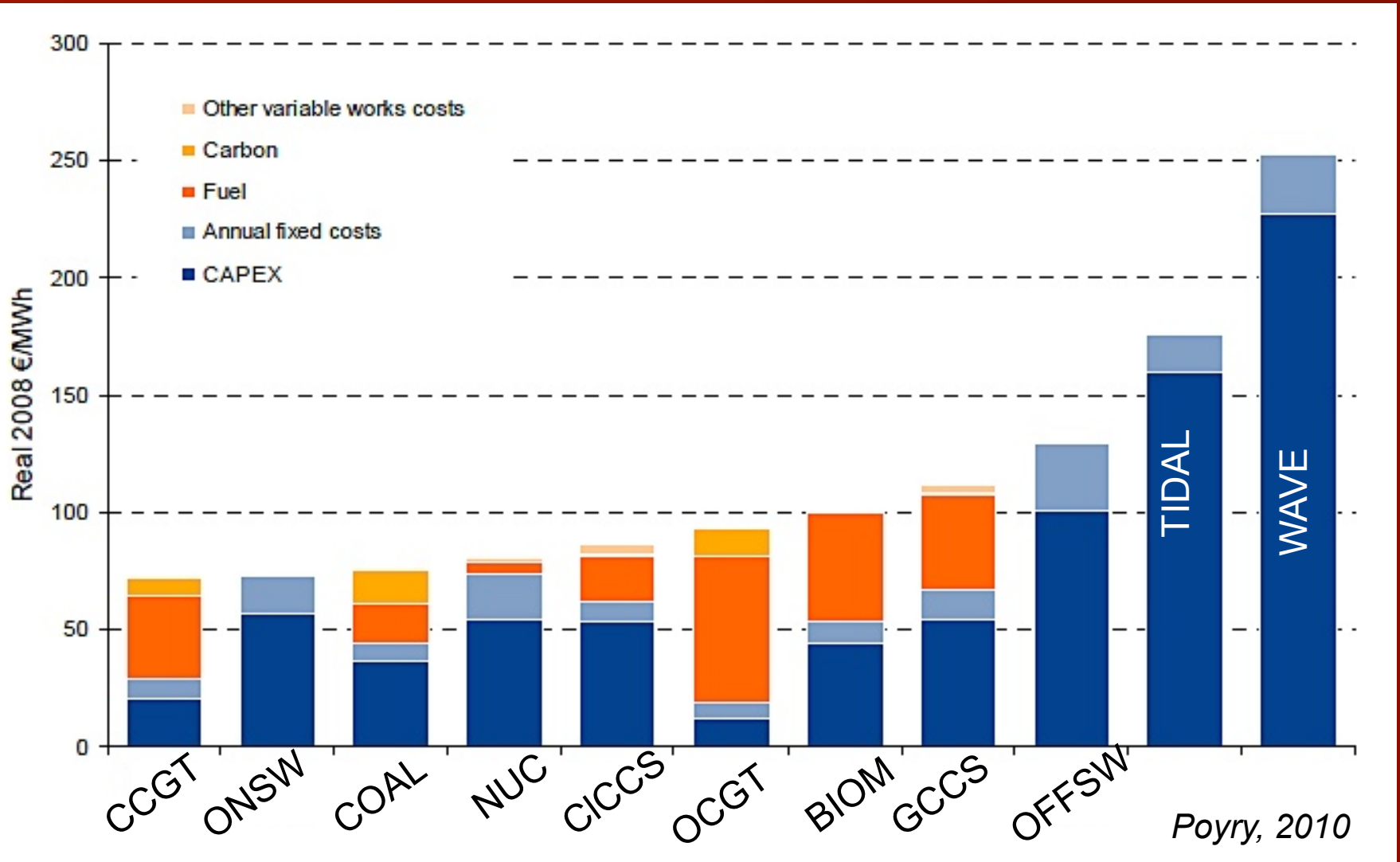
- Balancing
  - Inter-connectors?
  - Electricity storage
  - Gas back-up
  - Gas storage

Annual Costs of Electricity Generation Technologies



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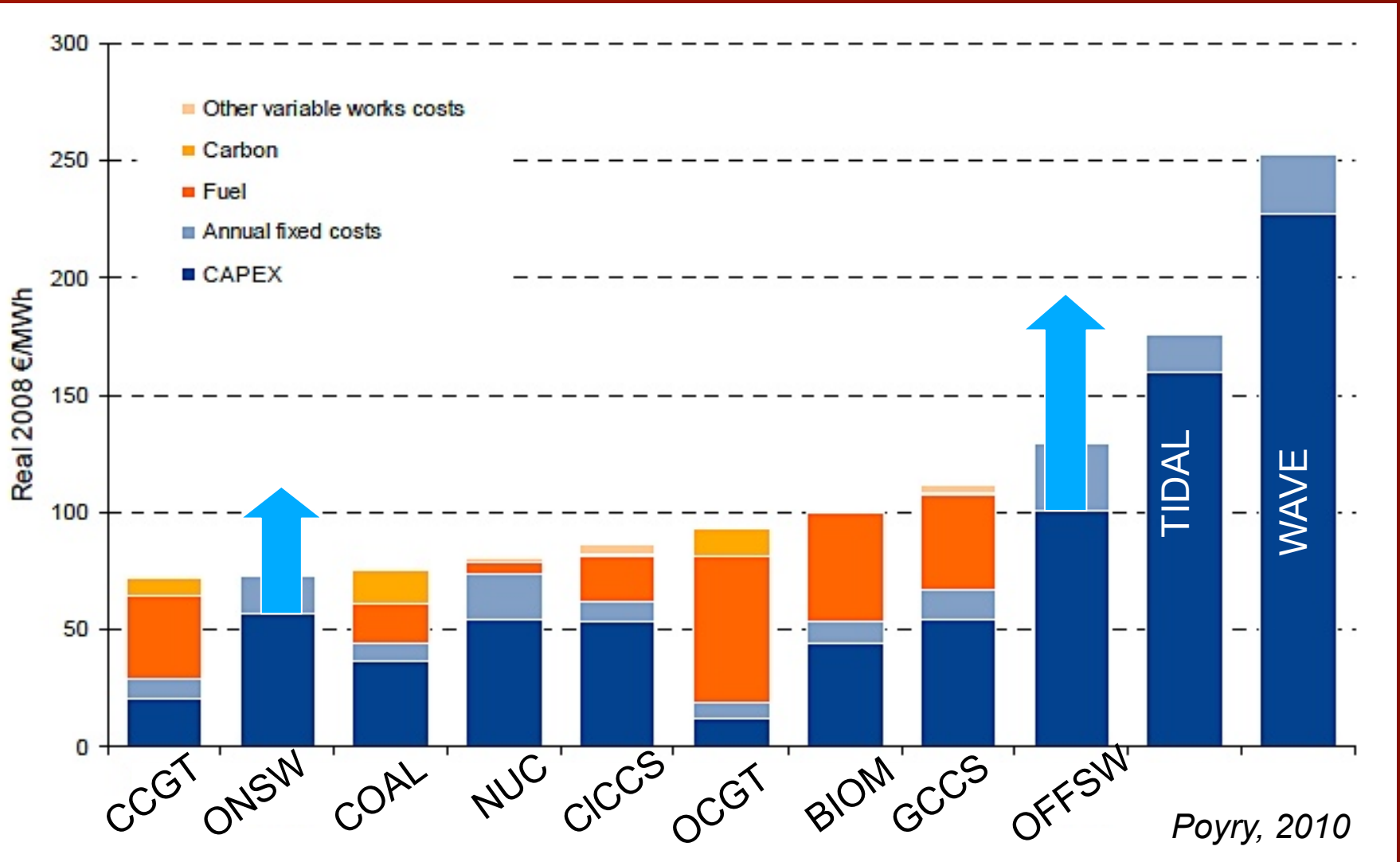

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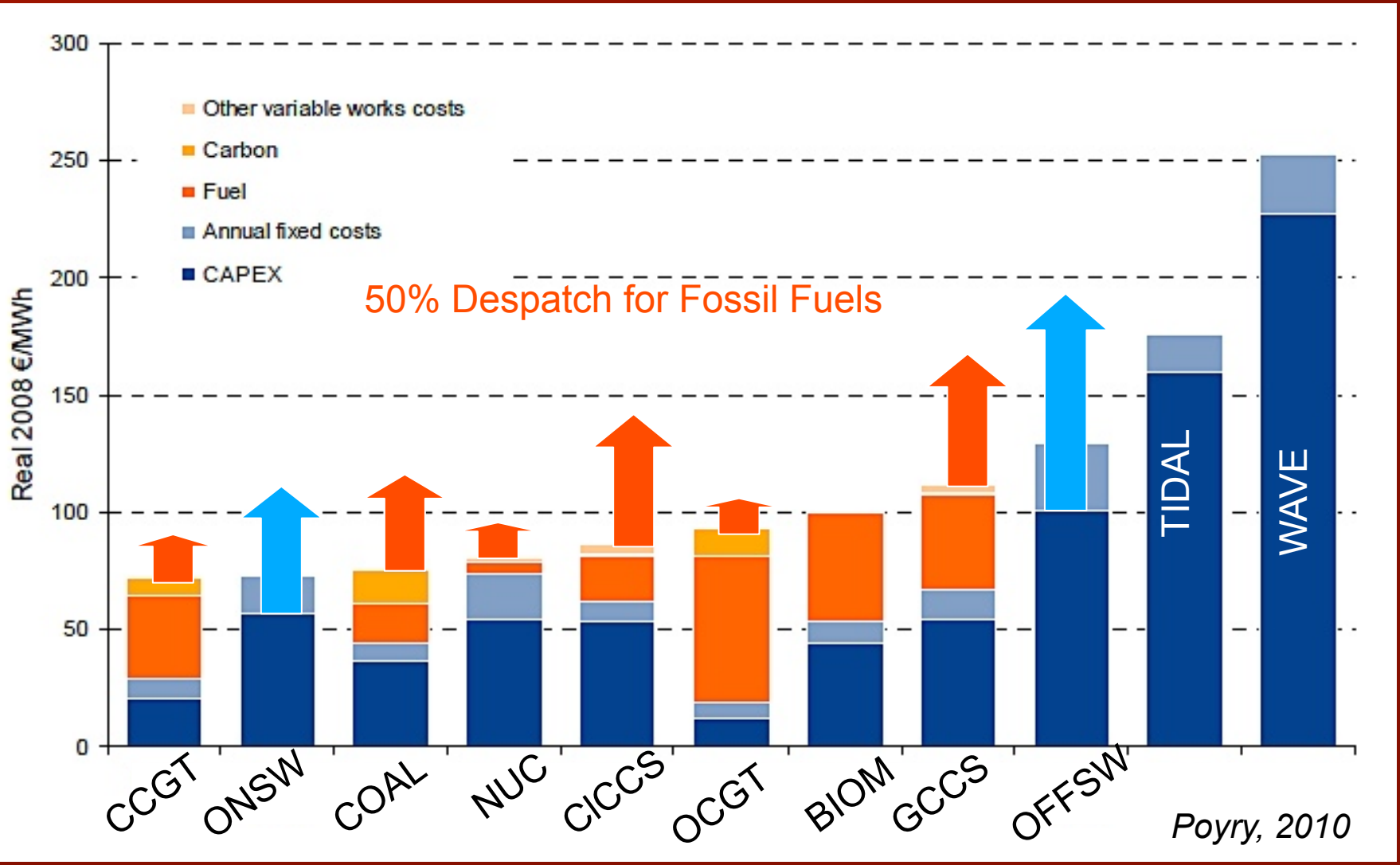

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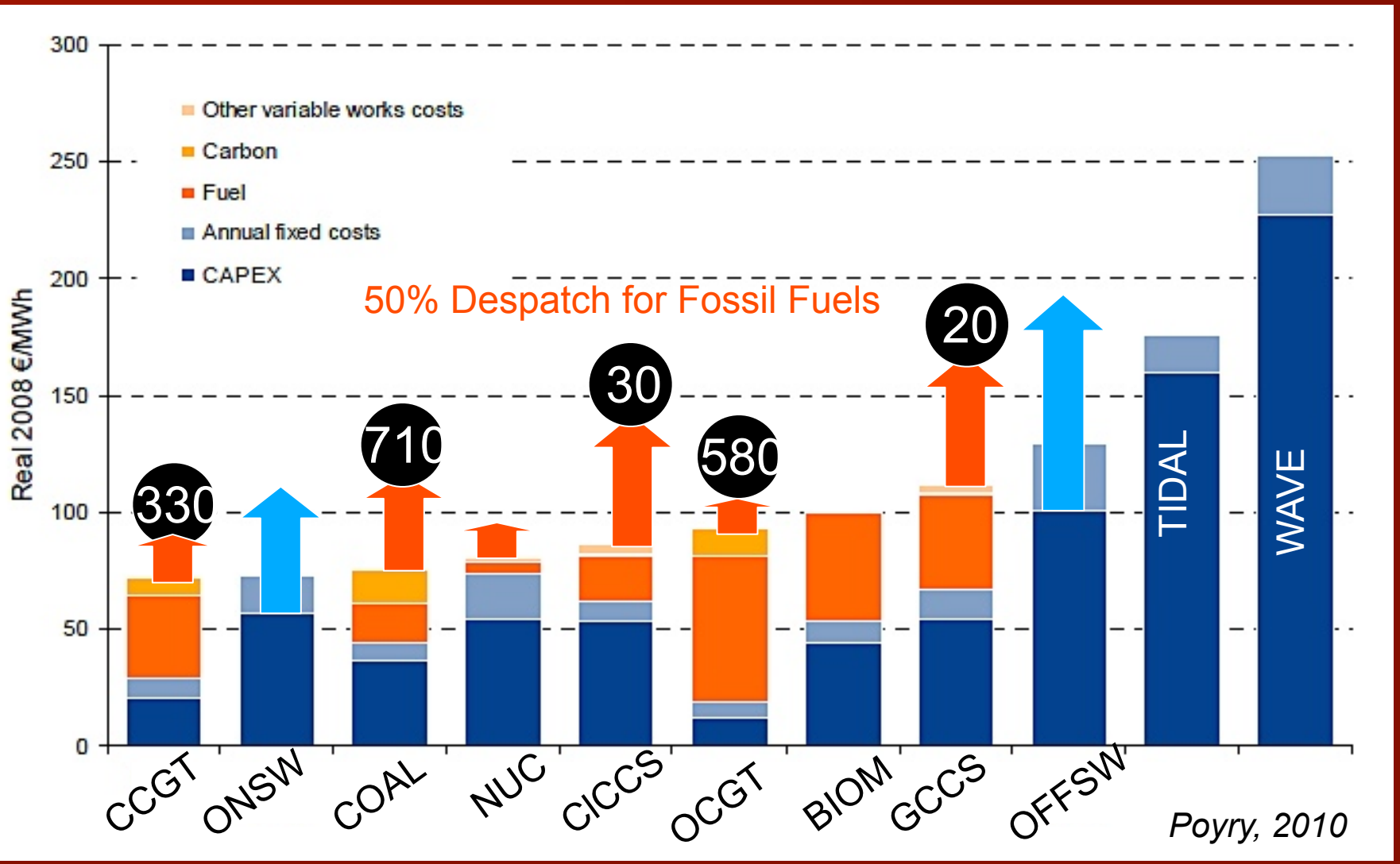

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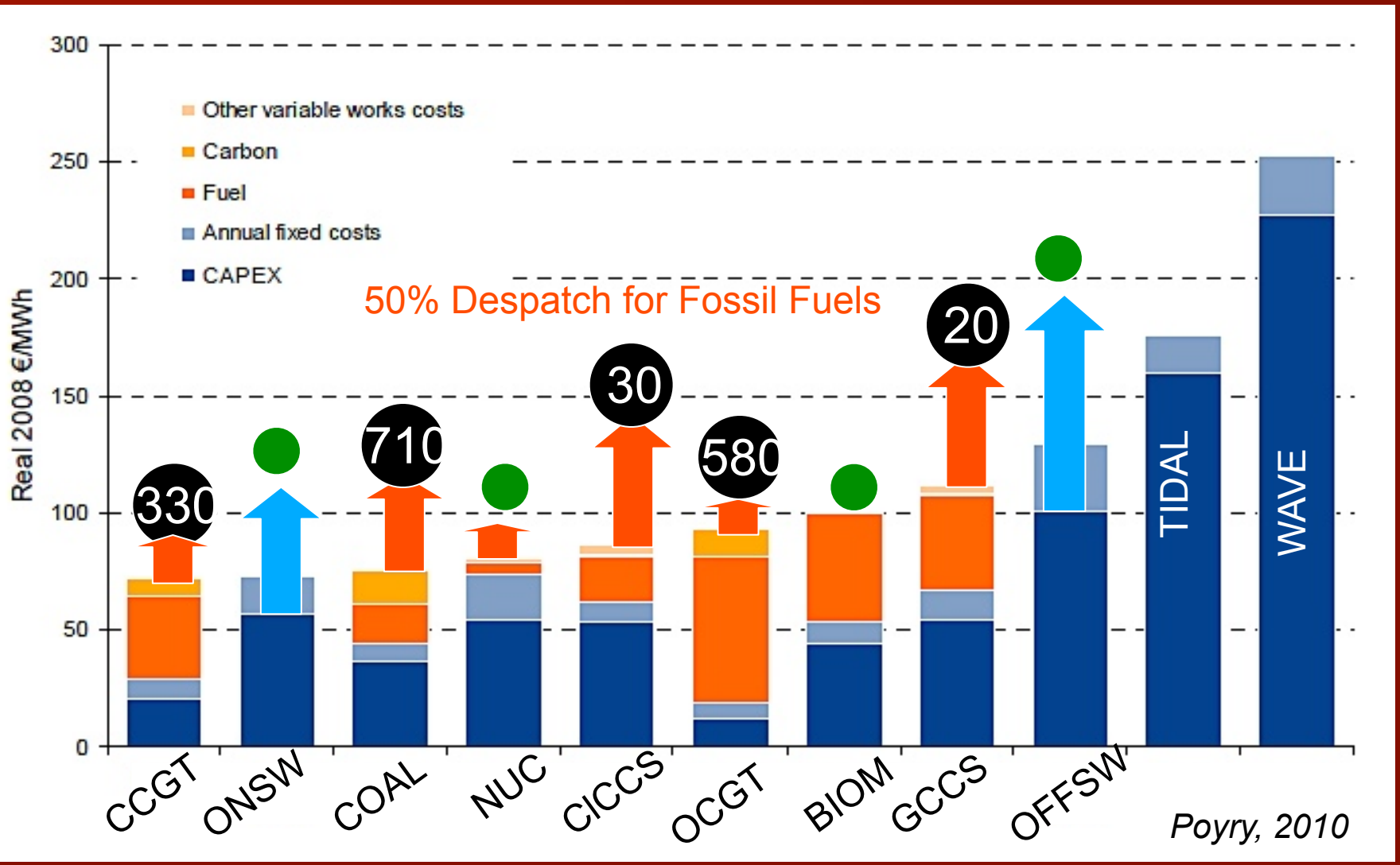

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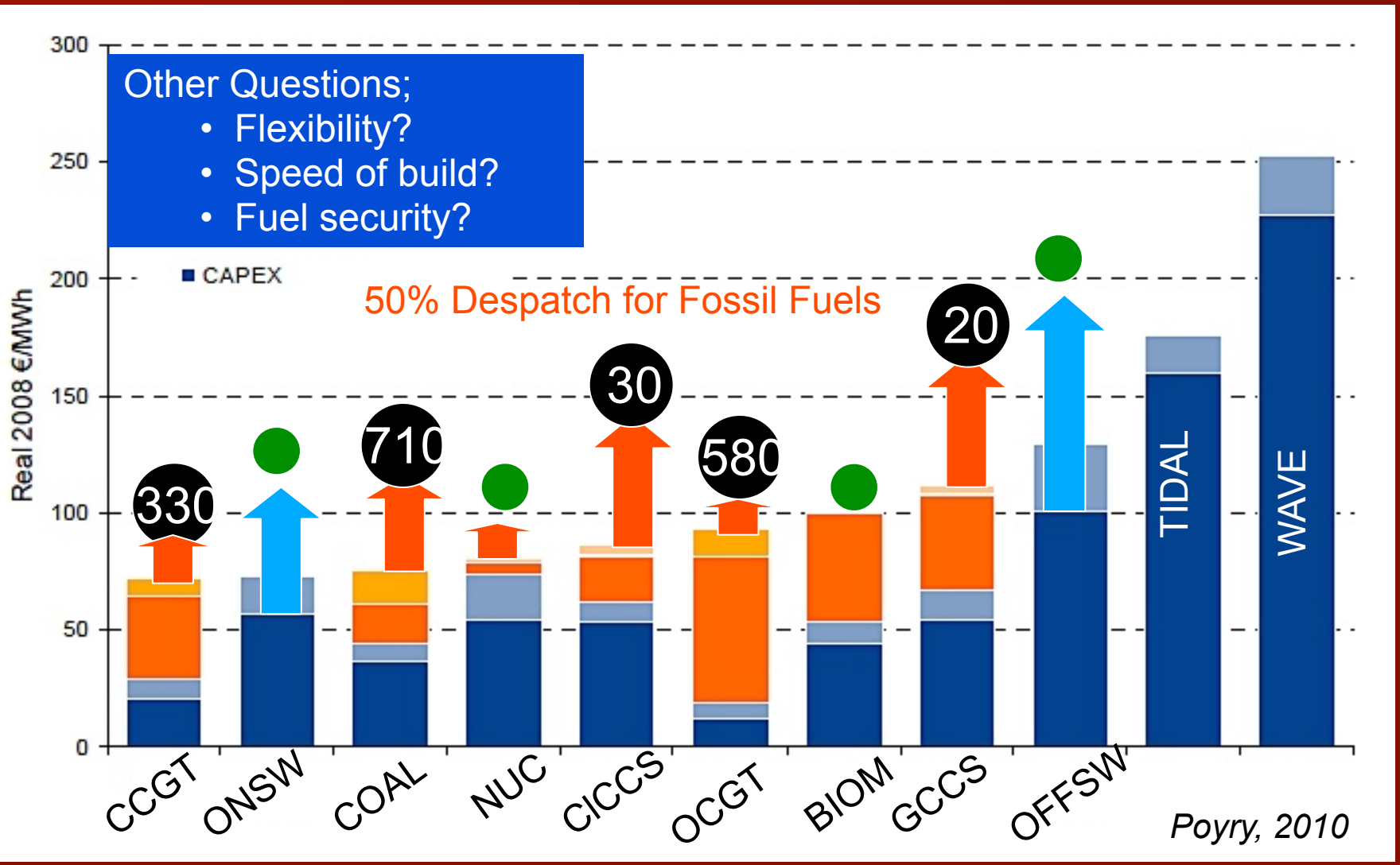

Costs & Emissions of Generation

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- Cost of electricity & CO2/kwh are for system as a whole
- Depend on;
  - Demand profile
  - Depend on despatch policy
  - Capacity payments

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- Urgency leaves little immediate alternative to gas - gas availability? – shale gas

Wind Variation in N Germany, Christmas 2004