Generation Portfolio Options Study

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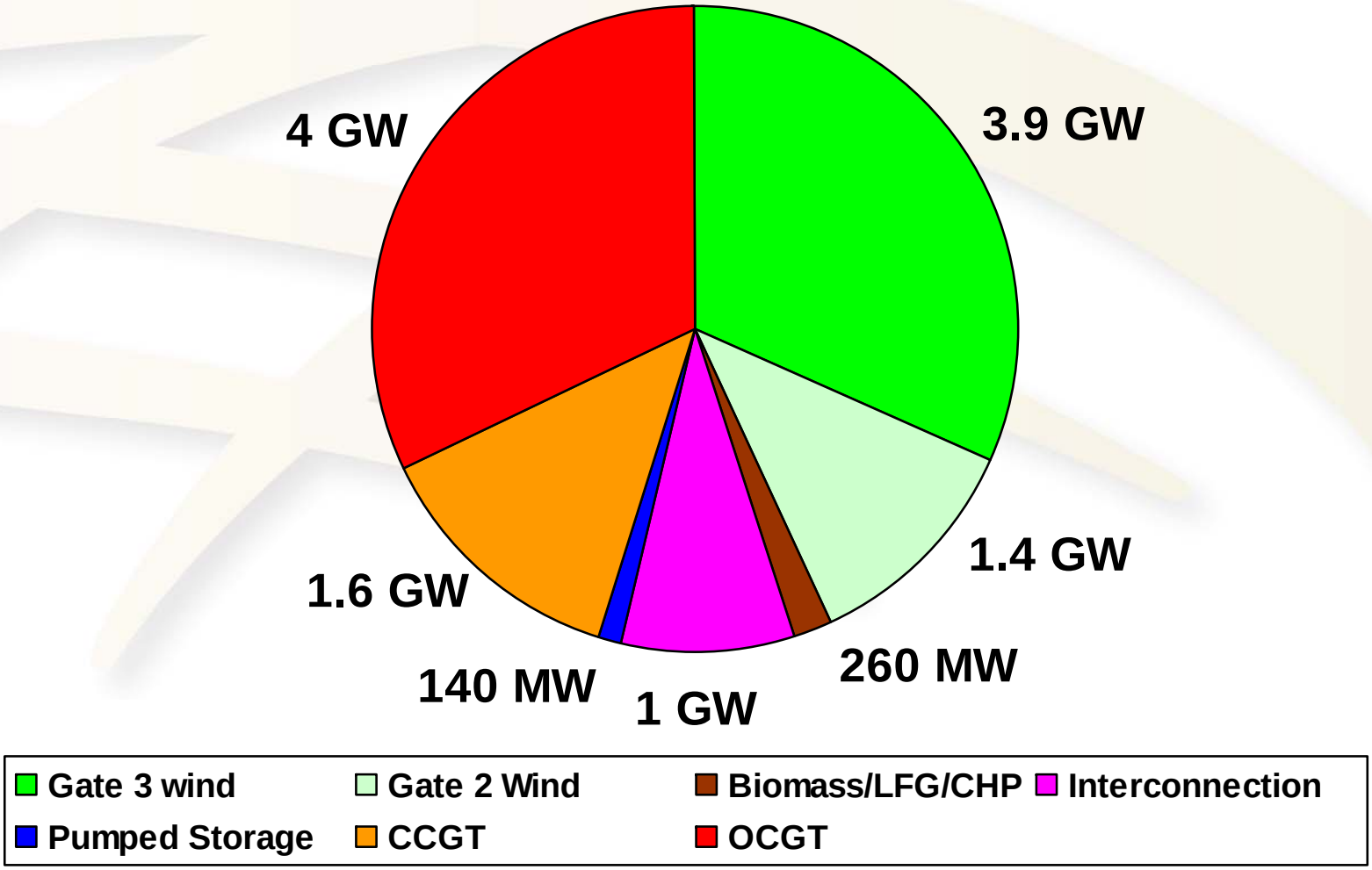
Context

- Many existing plant are due for retirement by 2025 including Moneypoint.
- If no action is taken, portfolio will be most likely be predominately Gas and Wind.
- This may not be desirable or optimal:
  - fuel security of supply
  - Appropriate plant to balance intermittent generation
- EirGrid has initiated a study to examine generator portfolio options post 2025.
- What portfolio options are there?
- What are their characteristics?
- How do the portfolio options rate against the following criteria?
  - Environmental impact
  - Cost / Competitiveness
  - Security of Supply

Gate2, Gate 3 and other accepted/live offers



Terms of Reference for Study

- Develop a range of generation portfolios that represent a broad range of future technology options
- Provide detailed information on the characteristics of each generator technologies:
- Evaluate the generation portfolio options against a number of criteria.
  - Cost
  - Emissions
  - Security of supply implications
  - Health & Safety
  - Public Acceptability
  - Technical and financial risks
  - Compatibility with relevant policy
  - Consistency with Ireland's general strategic direction
- Evaluate on how robust are these portfolios to alternative trajectories of demand, fuel price, renewable growth and how future-proof are they?
- Propose a timetable of milestones when decisions should be made on particular technology.

Study Aims

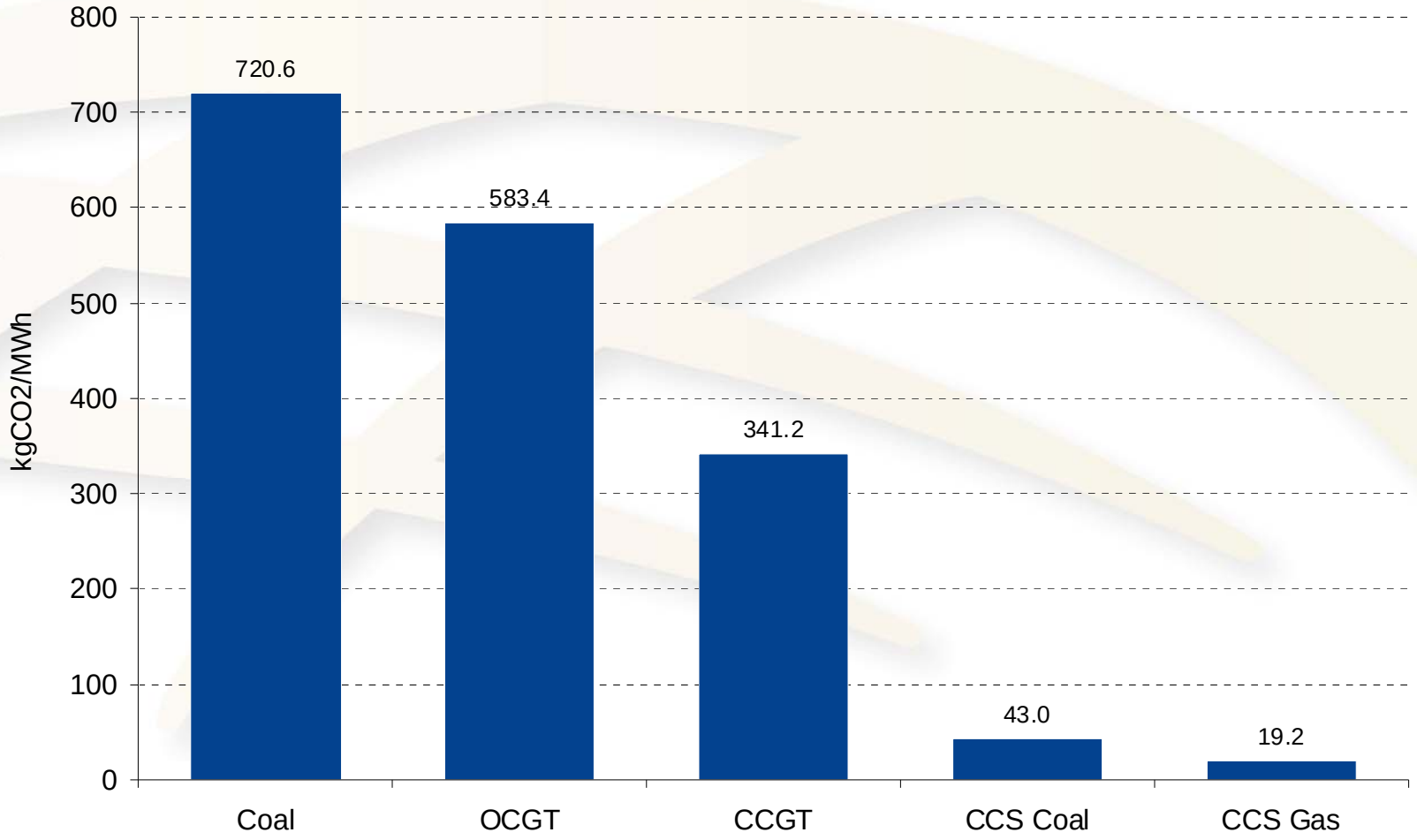
- Factual and objective
  - No preferred position
  - Identify where opinion is stated e.g. cost uncertainty, technical outlooks on CCS.
- Provide source of reference for use in energy policy debate
- Accessible and readable to non-technical readers.
- It will identify some system operator issues:
  - Security of supply.
  - Balanced portfolio (appropriate mix of plant).
  - But transmission or locational issues will not be considered.

Low Carbon Targets

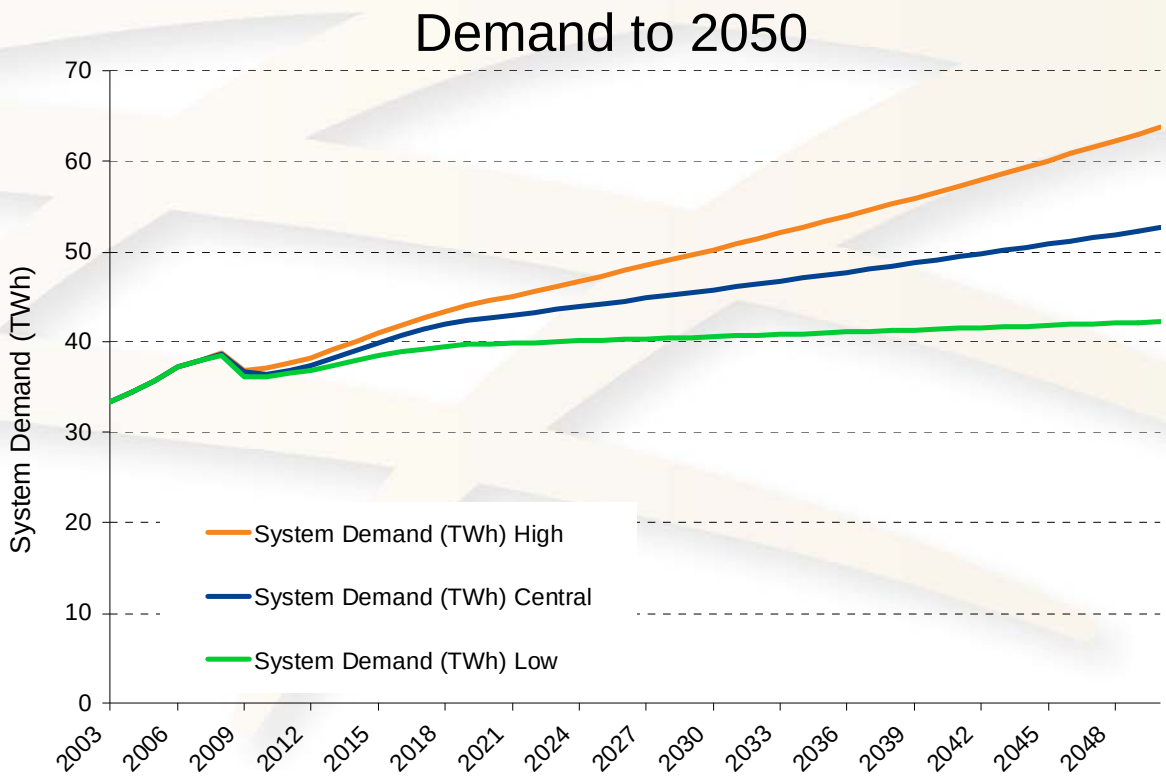
- It is likely that long term targets will be based on low carbon power generation. Possible low carbon targets include:
  - No carbon generation.
  - 80% reduction in carbon emissions.
  - Less than 100g/kWh CO2.

- Proposal is to use target <100g/kWh CO2
  - What portfolio options have the potential to achieve this?

Carbon emission intensity



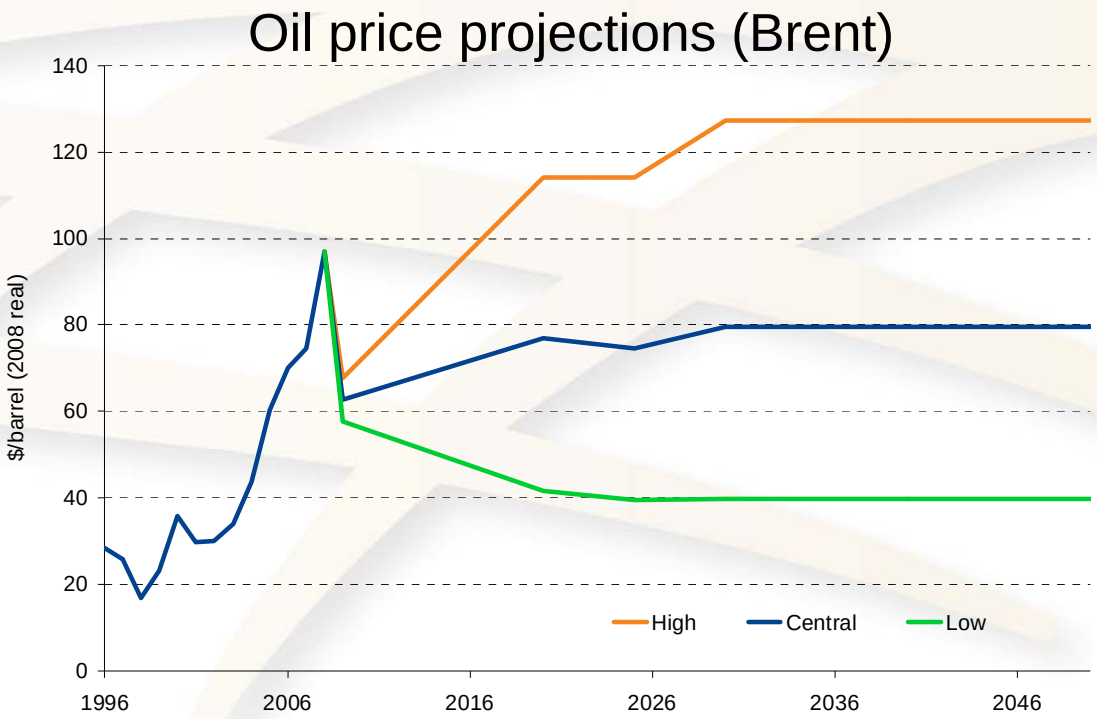
Input assumptions: Demand Forecast



- Peak demand and total demand grow at the same rate.
- To minimise scenarios, central demand considered only.
- Central year studied = 2035

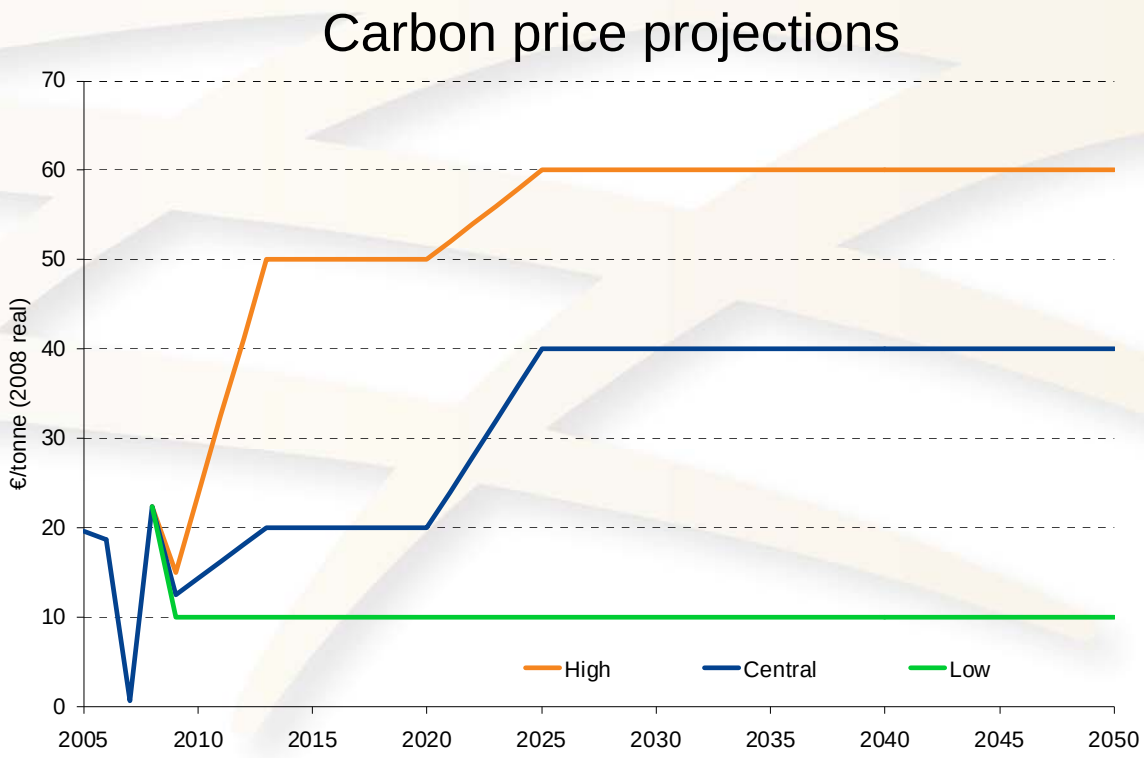
%/yr	Demand growth
High	1.20
Medium	0.70
Low	0.20

Input assumptions: Fuel Forecasts - Oil



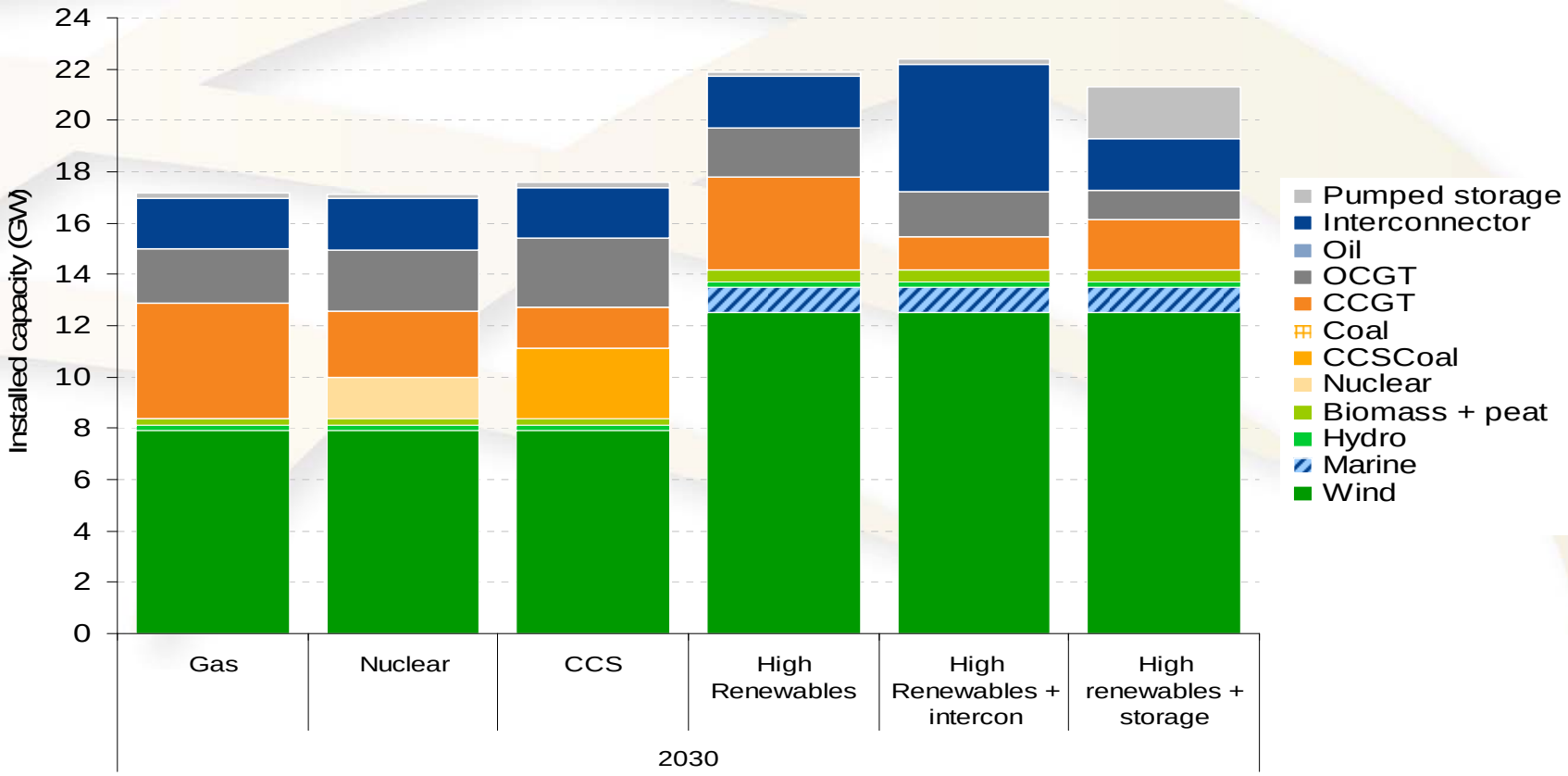
- High degree of uncertainty over future oil prices.
- Expensive to develop but large unconventional sources are assumed to set an upper boundary on prices.
- We are using the central and high projections

Input assumptions: Carbon Price Forecasts

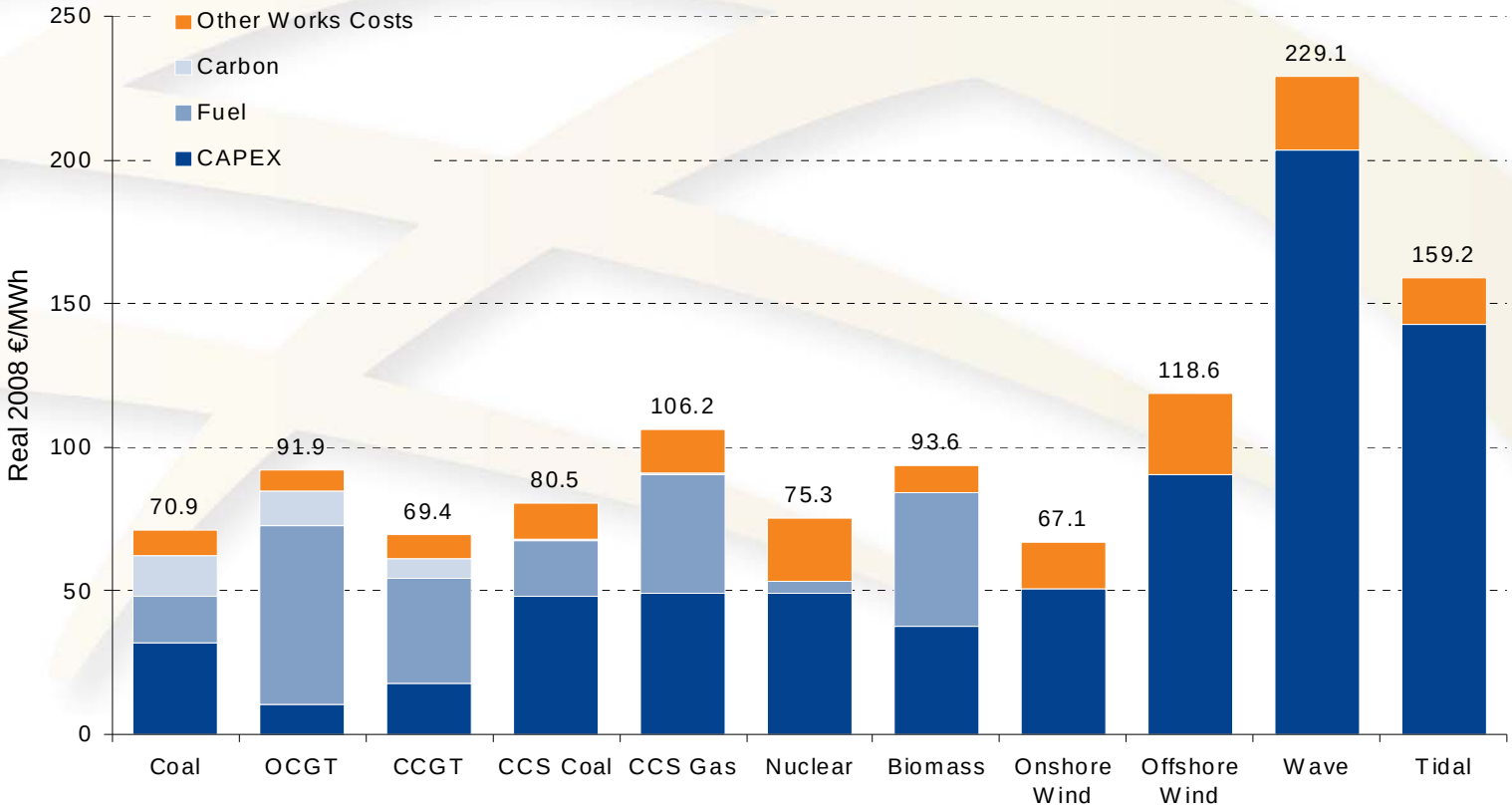


- The price of carbon is the main driver for the adoption of low emissions generation technology
- Current EU policy seems to point towards a higher carbon price in the future
- We are using the central and High projections

Plant portfolios



Lifetime Generation Costs



Further Interconnection

Status

- Study contract awarded to Poyry
- Workshop with stakeholders held 3rd September
- Initial results due soon
- Report due to be published in November

International Experience

- A European Commission report* finds that for a sustainable portfolio to develop, the following must occur:
  - Sustained high CO_2 prices (>34-55 €/tCO_2)
  - Commercialisation of CCS technology
  - Medium-High fossil fuel prices prevail (Oil > $50/barrel)
- Other studies:
  - UK Energy Research Centre (http://www.ukerc.ac.uk/support/tiki-index.php?page=UKERC2050homepage)
  - IEA Energy Scenarios 2050 (http://www.iea.org/textbase/nppdf/free/2000/2050_2003.pdf)
  - IIASA World Energy Council (http://www.iiasa.ac.at/Research/ECS/docs/wec_orderbook.html)

* http://ec.europa.eu/dgs/jrc/downloads/jrc_reference_report_200907_fossil_fuel_electricity.pdf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