# United Kingdom: Marine Energy

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Foreign, Commonwealth & Development Office

NHA National Hydropower Association

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# Background

- Large resource thanks to coastline
- Tidal stream resource potential ~11.5 GW. Could supply ~11% of UK electricity demand
- British Energy Security Strategy (2022) committed to 'aggressively explore' tidal energy
- 2008: first commercial-scale array (2x 600kW turbines) commissioned in Northern Ireland
- 2018: world's largest array operational in the Pentland Firth – SAE (6 MW)
- Unprecedented 11 contracts for over 53 MW awarded in AR5 in 2023
- Just over 10 MW deployed in the UK. Less than 10 MW deployed in the rest of the world


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# Revenue support – Contracts for Difference

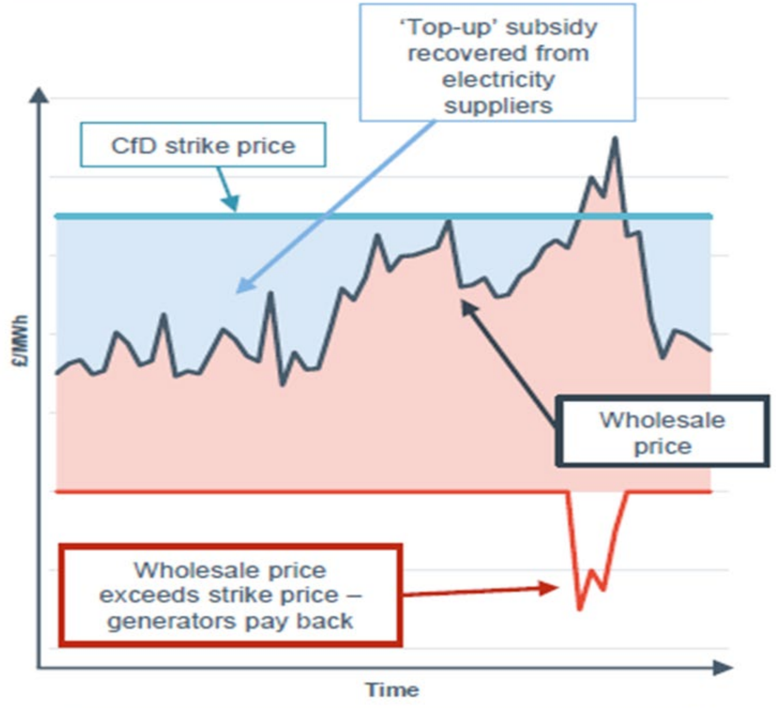
- First ringfenced support in AR4 in 2022 and AR5 in 2023
  - AR6 ringfenced an additional £10m (2012 £'s)
- Nearly 94MW in the pipeline through CfDs
- On track to 100 MW deployed in just 5 years (by 2028)

| | | AR4 tidal stream contracts (£20m ringfence) | | AR5 tidal stream contracts (£10m ringfence) | | Cumulative capacity (MW) |
|---|---|---|---|---|---|---|
| **Developer** | **Location** | **Name of the project** | **Capacity (MW)** | **Name of the project** | **Capacity (MW)** | |
| SAE Renewables | Scotland | MeyGen Phase 2 | 28 | MeyGen Phase 2 | 21.94* | 49.94 |
| Orbital | Scotland (EMEC) | Eday 1 & Eday 2 | 7.2* | Eday 3 & Eday 4 | 7.2* | 14.4 |
| Magallanes | Wales (Morlais) | GR3 | 5.62 | GR3 Extension | 3 | 10.12 |
| | Scotland (EMEC) | - | - | EMEC Berth 1 | 1.5 | |
| HydroWing Tidal Projects Limited | Wales (Morlais) | - | - | Ynni'r Lleuad | 10 | 10 |
| Verdant Isles | Wales (Morlais) | - | - | BL3 | 4.9 | 4.9 |
| QED Naval (bidding as Mor Energy Limited) | Wales (Morlais) | - | - | GO3 | 4.5 | 4.5 |
| **Total** | | | **40.62** | | **53.04** | **93.86** |

## Contracts for Difference

- Main mechanism for supporting renewable generation since 2014
- Auction winners rewarded with 15-year CfD contract
- Mechanism funded by placing an obligation on GB electricity suppliers to pay for CfD costs according to market share
- Provides investors with certainty by agreeing pre-agreed strike price and long-term contracts with protection from wholesale price volatility
- Strike Prices: **AR4**: 211 £/MWh (Tidal), 258 £/MWh (Wave); **AR5**: 202 (Tidal), 245 (Wave) **AR6**: 261 (Tidal), 257 (Wave)

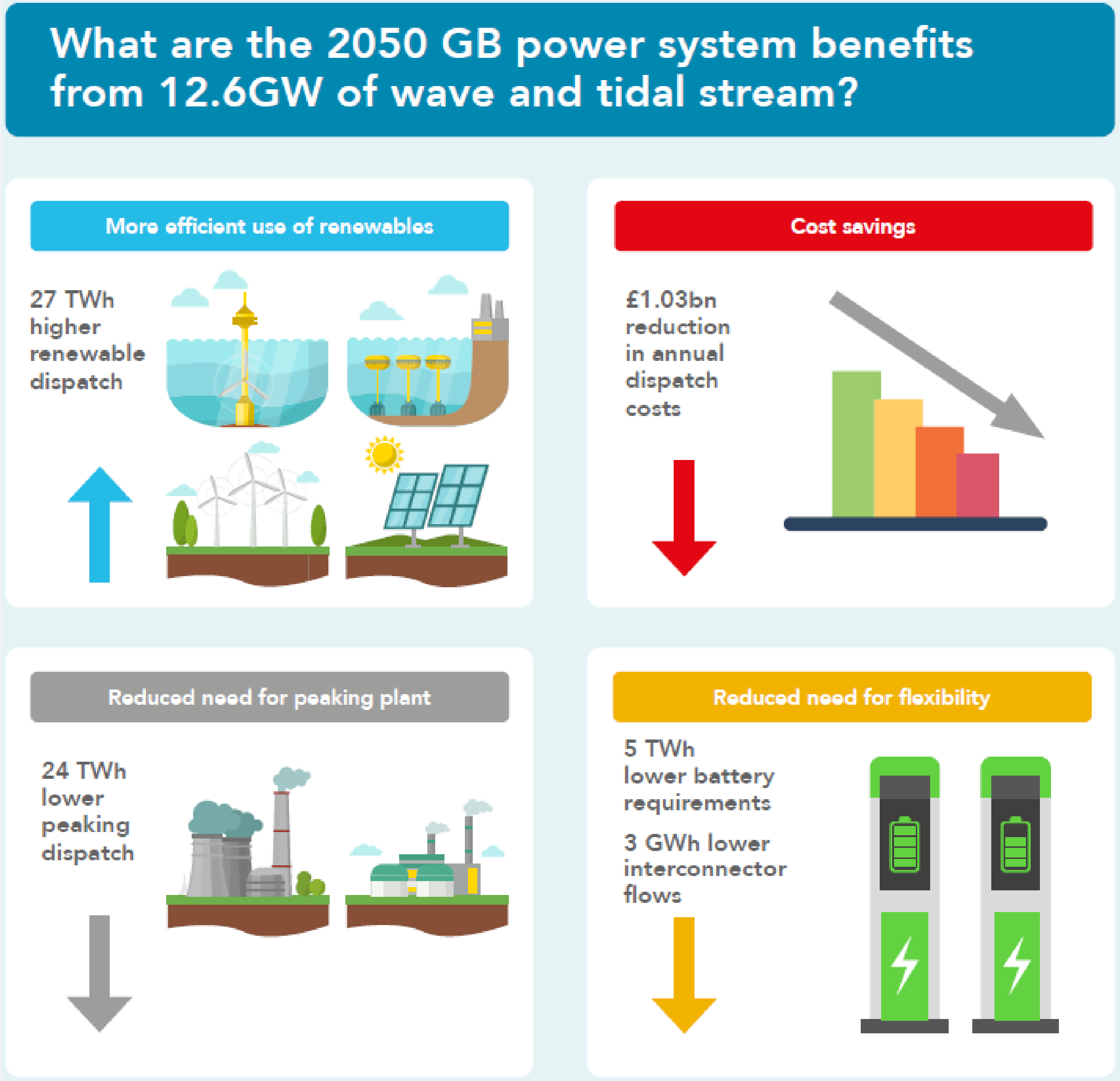
### Contracts for Difference




- Eligible low-carbon generators bid in an auction for a CfD
- 'Strike Price' determines the revenue the station should receive
- CfD generators 'topped-up' to strike price if wholesale market is lower
- Top-up is paid for by suppliers
- Designed to lower financing costs

# Tidal stream benefits

- **System benefits** due it being predictable and uncorrelated with wind and solar; could provide significant value to an energy system dominated by intermittent renewables. Deployment could reduce total energy system costs by reducing the amount of intermittent generation and/or dispatchable capacity needed, or as a hedge against delivery risk in the pipeline of such dispatchable technologies. More diverse system is more resilient.
- **Economic benefits** due to the UK's early mover's advantage, high local content and yet unestablished supply chains at scale. In 2023 the LSE published a report saying this [tidal stream] resource is an opportunity the UK cannot afford to miss.



# Tidal stream cost reduction potential

System benefits are subject to cost reductions.

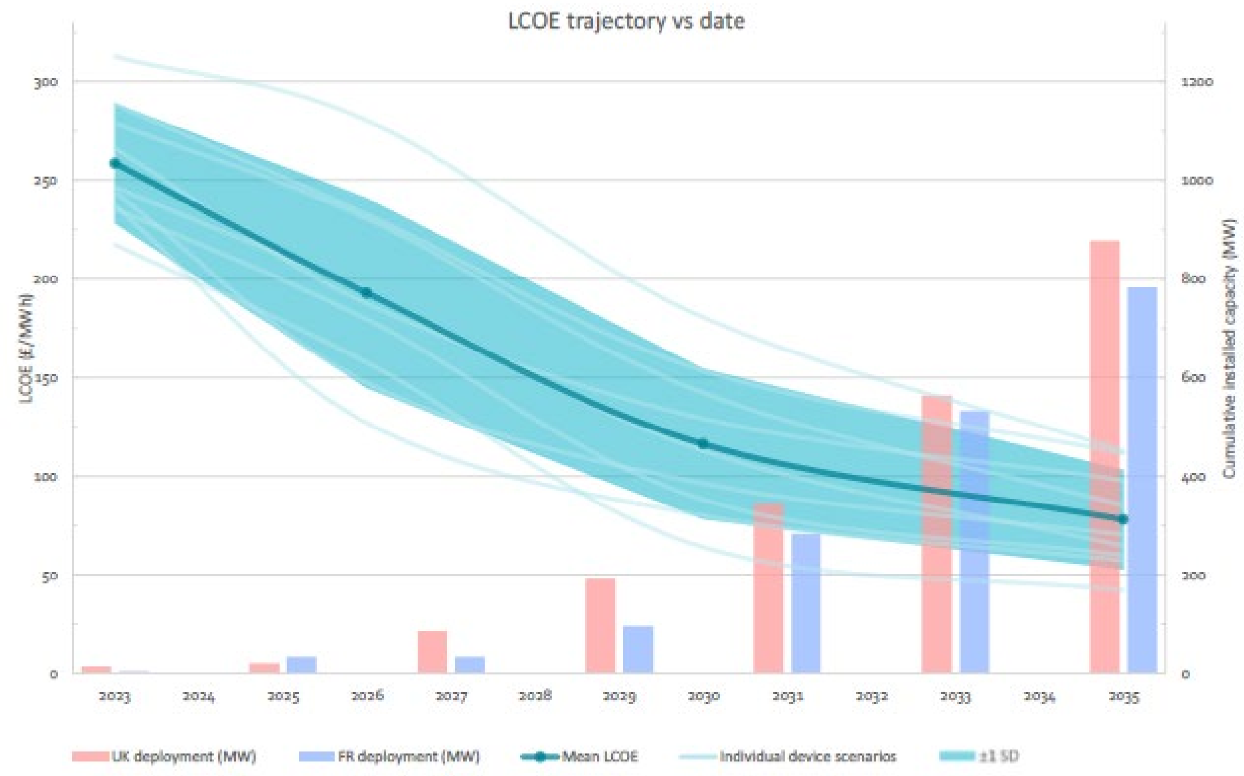



Figure 4 – UK and French TSE market projection and associated LCOE trajectories for the three devices and nine cost scenarios examined.

# Marine energy in the UK – what's next

In 2024 UK Department of Energy Security and Net Zero assessed a strategic case to support tidal stream in the UK.

**To industry:**

Consider how to communicate ambition and embed tidal stream better in the cross-cutting NZ narrative.

Making a case for tidal stream not simple: Remains expensive and the case is more complex – it is about the system benefits a reliable green source of energy provide


*Magallanes Renovables Source: Magallanes Renewables*

# UK Marine Energy community

**Industry**

Developers, The Marine Energy Council

**Academia & research:**

OREC, EMEC, Wave Energy Scotland

Supergen, incl. University of Edinburgh

LSE – Sustainable growth opportunities


*Orbital Marine Power's O2. Source: Orbital Marine Power*

# Thank you!

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