

Consultation on policy considerations for future rounds of the Contracts for Difference (CfD) scheme Marine Energy Council (MEC) response

Introduction

The MEC welcomes the opportunity to respond to the Government's consultation on future CfD rounds and its commitment to rapidly scaling up low carbon generation deployment.

The MEC is the voice of the UK's tidal stream and wave energy industries. Established in 2018, the MEC's membership spans technology and project developers, consultants, associations, manufacturers, and small and medium sized enterprises working in the supply chain. Our vision is for the marine energy sector to support a secure, cost-effective, and fair transition to net zero, enabling investment, exporting great British innovation, and levelling up with employment opportunities across the UK.

The Government is right to prioritise delivery of net zero in a manner that maintains energy security. This can be achieved through delivering a diverse generation portfolio, protecting households against fluctuating, and increasing costs of fossil fuels, overreliance on a single generation source or imported sources of energy.

Marine energy has a potential critical role in addressing these challenges:

- **Tidal stream energy** is entirely predictable and can provide 11%¹ of the UK's electricity demand. The predictability can reduce supply/demand mismatch in the energy system, arising from forecasting errors in other renewables which will reduce reliance on gas and imports. Tidal stream can be deployed rapidly, with the construction time of a consented tidal stream farm being less than three years.
- **Wave energy** could provide up to 22% of current electricity demand.² Wave energy supply has been shown to be complementary to wind and solar generation (both from a daily and seasonal perspective), with closer alignment to overall energy demand in the UK. Wave energy deployment will support a more cost-effective and efficient energy system.³

Predictable and consistent renewable generation, in a system that becomes increasingly reliant on intermittent sources, will be critical in delivering the UK Government's decarbonisation targets, and in ensuring economic growth opportunities are created and shared in coastal communities and beyond in the transition to net zero.

The following response focuses on CfDs on private networks, repowering, and in registering support for the Government to consult on non-price criteria in future CfD rounds.

¹ Coles et al (2021) 'A review of the UK and British Channel Islands practical tidal stream energy resource'. Available [online](#).

² Jin et al (2021) 'Wave energy in the UK: Status review and future perspectives'. Available [online](#).

³ In this response 'marine energy' is used to refer to tidal stream and wave energy.

Executive Summary

- **The MEC strongly supports the Government consulting on non-price criteria in future CfD rounds.**

The Government is right to note that the GB system has prioritised securing low costs for consumers. This has been successful in delivering increasing renewable capacity from 7% of the UK's electricity supply in 2010, to over 40% today. The UK Government should be aware that a great deal of the cost-reduction achieved was because of other countries supporting indigenous renewable sectors and supply chains. These countries are now benefiting from thriving export markets.

In the 1980s Denmark invested heavily in wind, delivering projects with high levels of local content, and developing its domestic market. In the process it gained first mover advantage and in exports alone its wind sector generates over £7bn annually for the Danish economy. By contrast the UK's wind sector, Europe's largest generator of wind energy, exports less than £0.5bn annually.⁴

Both tidal stream and wave energy will be significantly cheaper than new nuclear at 1GW of deployment.⁵ However, these technologies are not going to be the cheapest to deploy in the short term. To achieve cost reduction requires consistent policy support and foresight to understand the relationship between different renewable technologies and the need for a diverse generation portfolio.

Recent research from the Policy and Innovation Group at the University of Edinburgh that marine energy will deliver significant cost savings to the UK's energy system, particularly in scenarios with high wind and solar deployment. This is partly due to the complementary profile of marine energy and the avoidance of expensive peaking generation and improving the availability of renewables to the electricity system.⁶ The EVOLVE study found an up to £1.46bn cost reduction after 10GW wave and £1.35bn cost reduction p/a after 10GW of tidal by 2040, and £1.23bn from 10GW wave and £900M from 10GW tidal p/a by 2050.⁷ This system benefit is not valued in the current CfD mechanism nor the benefit of having a diverse range of technologies on the carbon intensity of the energy system.

- **Private network generators should not be able to access CfDs for electricity that is not exported to the grid. The UK Government should consider introducing a separate scheme that focuses on opportunities associated with decarbonising offshore assets.**

The MEC supports the UK Government making electricity provided by private wire to oil and gas (O&G) facilities ineligible for CfD payments. However, alternative approaches should be considered to increase the amount of renewable energy decarbonising O&G facilities. Wave energy converters (WECs) are strongly positioned to decarbonise subsea applications, particularly those further offshore, cutting costs and emissions from locally available clean power, and support the UK's transition to net zero.

These applications can provide a robust route to development and increased deployment in the short term, enabling cost reductions and eventual deployment for larger grid-connected farms. Islanded power applications that can benefit from wave energy powering offshore assets are numerous: from decommissioning of aging North Sea platforms, brownfield and greenfield sites, and CCS projects.

The introduction of a separate support scheme focussed on the decarbonisation of subsea activities could be funded through the Energy (Oil and Gas) Profits Levy, to support O&G companies investing in

⁴ State of Green (2021) *The economic benefits of wind energy*. Available [online](#).

⁵ Catapult ORE (2018) *Tidal Stream and Wave Energy Cost Reduction and Industrial Benefit*. Available [online](#)

⁶ Supergen (2023) *What are the UK power system benefits from deployments of wave and tidal stream generation?* Available [online](#).

⁷ EVOLVE Consortium (2023) *The system benefits of ocean energy to European power systems*. Available [online](#).

the companies, technologies and solutions that will drive decarbonisation in subsea activities, and the subsequent benefits for the UK to be realised.

- **Repowering key marine energy sites will be critical in the future. This must be supported in a way that does not prevent new build sites being delivered at the pace the UK's net zero ambitions demand.**
 - **Sites with strong tidal stream potential should be supported through the repowering process.**

Repowering assets will be crucial in a cost-effective and secure transition to net zero. Tidal stream energy is heavily site specific with resource concentrated in small geographic areas around headlands and straits. Creating the right conditions to allow assets at these sites to continue to participate in the UK energy system in future CfD rules is imperative.

Sites and marine energy projects that come to the end of CfD contracts should be supported to continue to generate entirely predictable renewable energy. To ensure that there is not a gap in funding support, the government should seek to allow projects to bid in for repowering support whilst still receiving support from existing CfDs.

- **Providing a route to market for repowered sites should not unfairly disadvantage new build renewables.**

Allowing repowered projects to compete alongside new build projects could distort competition. The MEC believes that repowered assets should have a separate mechanism (which could maintain the auction structure of the CfD) to address this risk. To strike the right balance the Government could set targets and divide the desired allocation across the concurrent schemes. It should also be noted that without CfD support sites that are being repowered can more easily participate in the open market, than a site that is seeking assurances required to be developed.

- **Repowering arrangements should consider the distinct service that a site may provide to the energy system.**

The consultation is right to include consideration of whether the timing of when projects repower is beneficial for the wider system. While the CfD mechanism has been successful in encouraging renewable deployment it has done so with no regard to general system benefit or need. System benefits can be secured through valuing the different services that different technologies will provide in a net zero energy system. It is critical that distinctions are made between repowered assets in the future based on technology types, as is the case through different Pot structures in the current CfD mechanism, and to consider the inclusion of ringfences.

- **Project developers should be incentivised to undertake innovative approaches to optimise existing sites.**

The Government should introduce a definition of repowered that accounts for generation type and location. It is important that innovation in the transition to net zero is encouraged. There is significant potential for collocation of offshore wind and wave assets. One route to encourage project developers to explore whether they can make a site more efficient (in terms of yield and use of existing network assets), would be if a collocated asset could participate in the standard allocation round and not be defined as a repowered asset.

Questions

CfD for Private Network Generators

Question 1 - The Government welcomes views on its proposal to make electricity that is supplied via private wire to offshore oil and gas facilities ineligible for CfD payments from Allocation Round 6 onwards. What would be the likely impact of this approach, and should any alternative approaches be considered?

The MEC supports the UK Government making electricity provided by private wire to oil and gas (O&G) facilities ineligible for CfD payments. However, alternative approaches should be considered to increase the amount of renewable energy decarbonising O&G facilities, which can be a key pathway to cost reduction and de-risking wave energy technology ahead of larger scale grid-connected projects.

Wave energy converters (WECs) are strongly positioned to decarbonise subsea applications, as well as grid-scale power. This potential is currently being explored through a partnership between Mocean Energy, Verlume, and oilfield services company Baker Hughes.⁸ These companies are collaborating on opportunities for integrated wave power and energy storage around electrification of subsea assets. This collaboration will demonstrate how WEC technology can be coupled with underwater energy storage to provide reliable low carbon power and communications to subsea equipment and autonomous underwater vehicles. The combined system is expected to be deployed in Orkney waters imminently (February 2023). Crucially, this is a joint industry project involving multiple O&G companies who are actively participating via funding and steering committee activities, evidencing the growing momentum of wave powered solutions in this space.

The MEC does not believe that the CfD mechanism is appropriate for developing off-grid deployment of marine energy and supports the Government's proposal that projects should only receive CfD payments for electricity exported to the grid. Working with industry on a separate scheme for decarbonising O&G assets would be a sensible way forward.

Decarbonising O&G is beneficial to the UK in the short-term, supporting innovation and investment in renewables, and in creating a pathway for technologies to develop over the commercial readiness levels to bid into future CfD auction rounds. The MEC would therefore support the introduction of a separate support scheme focussed on the decarbonisation of subsea activities. This could be funded through the Energy (Oil and Gas) Profits Levy, to support O&G companies investing in the companies, technologies and solutions that will drive decarbonisation in subsea activities, and the subsequent benefits for the UK to be realised.

A separate scheme for off-grid decarbonisation, alongside maintaining an attractive administrative strike price within the CfD mechanism for wave energy, will send a strong signal to private investors, who are keen to see a long-term vision and wave energy included in national strategies when making near-term investment decisions.

⁸ Energy Voice (2022) *Mocean, Verlume and Baker Hughes announce subsea wave energy link-up*. Available [online](#).

Treatment of repowered projects

Question 11 - Is the CfD an appropriate mechanism through which to support repowered assets, or are there other appropriate routes to market? If participating in the CfD, should these projects compete alongside new build projects? Please, provide details and/or evidence for your reasoning. We are particularly interested in evidence on the impact of supporting repowered projects on decarbonisation, and the relative cost competitiveness of repowered projects.

- **Sites with strong tidal stream potential should be supported through the repowering process.**

Repowering assets will be crucial in a cost-effective and secure transition to net zero. Tidal stream energy is heavily site specific with resource concentrated in small geographic areas around headlands and straits. Creating the right conditions to allow assets at these sites to continue to participate in the UK energy system in future CfD rules is imperative.

The consultation is right to identify that the issue of repowering is most applicable to onshore wind in the short-medium term. However, any changes or the introduction of principles that are established now should be done so in a manner that is considerate of different technologies reaching the end of a CfD contract or engineered life.

The UK has over 11GW of tidal stream energy potential and has only recently begun the process of realising this potential through the ringfence in Allocation Round 4. Sites and projects that come to the end of CfD contracts should be supported to continue to generate entirely predictable renewable energy. To ensure that there is not a gap in funding support, the government should seek to allow projects to bid in for repowering support whilst still receiving support from existing CfDs.

- **Providing a route to market for repowered sites should not unfairly disadvantage new build renewables**

The CfD mechanism could be an appropriate mechanism for supporting repowering, however the MEC is concerned that allowing repowered projects to compete alongside new build projects could potentially distort competition. Existing assets will not only have existing infrastructure but a more nuanced understanding of yield of a given site. Therefore the MEC believes that repowered assets should have a separate mechanism (which could maintain the auction structure of the CfD) to address this risk.

Where possible competitive auctions should try to maintain a level playing field, and avoid unfairly benefiting existing rather than new sites. The Climate Change Committee forecasts that electricity demand could increase threefold by 2050, therefore changes the UK Government make should strike the right balance between supporting and maintaining investor confidence in the delivery of new projects, while providing a clear route for existing projects to be supported through repowering.

To strike the right balance the Government could set targets and divide the desired allocation across the concurrent schemes. It should also be noted that without CfD support sites that are being repowered can more easily participate in the open market, than a site that is seeking assurances required to be developed.

- **CfD arrangements should consider the distinct service that a repowered site may provide to the energy system.**

The consultation is right to include consideration of whether the timing of when projects repower is beneficial for the wider system. While the CfD mechanism has been successful in encouraging renewable deployment it has done so with no regard to general system benefit or need. Recent

research from the Policy and Innovation Group at the University of Edinburgh has found that 12.6GW of marine energy deployment would provide up to £1.03bn per annum of system benefit through the avoidance of expensive peaking generation and improving the availability of renewables to the electricity system.⁹ If the UK delivers 10GW of wave capacity by 2040, annual cost savings could be up to £1.46bn.¹⁰

System benefits can be secured through valuing the different services that different technologies will provide in a net zero energy system. Tidal stream is an entirely predictable renewable source of firm power. Dependability of repowered sites can be more accurately understood and a distinct mechanism should ensure this is valued. For example, modelling carried out by Imperial College London shows that tidal stream can reduce natural gas capacity required by about 40%.¹¹ Therefore it is critical that distinctions are made between repowered assets in the future based on technology types, as is the case through different Pot structures in the current CfD mechanism, and to consider the inclusion of ringfences.

Question 12 - In your opinion, how should a “repowered” project be defined? How does this definition align with current CfD eligibility?

- **Project developers should be incentivised to undertake innovative approaches to optimise existing sites.**

The Government should introduce a definition of repowered that accounts for generation type and location. It is important that innovation in the transition to net zero is encouraged. There is significant potential for colocation of offshore wind and wave assets. One route to encourage project developers to explore whether they can make a site more efficient (in terms of yield and use of existing network assets), would be if a collocated asset could participate in the standard allocation round and not be defined as a repowered asset.

The UK Government has provided support for research into co-location of floating offshore wind and wave energy converters.¹² Marine Power Systems is developing floating platform technology for wind that also acts as a wave energy converter. This represents an exciting development and could support decreased power variability as wave and wind generation work in a harmonious nature. This in turn will allow for a more efficient use of critical network infrastructure.

Colocation of wave and wind does not have to be on the same physical platform. Locating WECs with offshore wind will make better use of physical space. The installed capacity per km² for stand alone point absorbers, such as CorPower Ocean, is 15MW/km² whereas offshore wind is 3-5MW/km².

Waves provide a more consistent generation profile than wind and can be harnessed 3-8 hours after the energy is initially harnessed by wind farms. The UK should build on its initial support for co-location and provide a route to commercialisation through allowing enhanced sites to bid through the normal CfD process.

Optimising sea area will leave to cost reductions in DEVEX, CAPEX and OPEX, as well as providing a more stable energy output from the same geographical area.

⁹ Supergen (2023) Ibid.

¹⁰ Evolve Consortium (2023) Ibid.

¹¹ Frost (2022) Quantifying the benefits of tidal stream energy to the wider UK energy system, available [online](#).

¹² Marine Power Systems (2022) *MPS lands £3.5m of funding from UK Government*. Article available [online](#).

13. What are the main barriers to repowering projects in relation to the CfD? Are there any additional factors that are not outlined in the above text?

The MEC does not propose additional barriers to the ones that the Government sets out in its consultation, however, would emphasise the importance of continuing to consult with industry on any proposals around the definition of a repowered project.