



February 5th, 2020

Dear Committee,

SUBMISSION: THE SIXTH CARBON BUDGET AND WELSH EMISSION TARGETS

Tidal Lagoon Power (TLP) welcomes the opportunity to contribute to this consultation on the Sixth Carbon Budget and Welsh emission targets. The first tidal lagoon power plant in Swansea Bay, and the fleet of future tidal lagoons across Wales and the rest of UK, will contribute significantly towards reaching net zero by 2050 and meeting the carbon budgets. We therefore consider our work to be of direct relevance to this call for evidence, and the wider remit of the Committee's work.

The following pages set out in more detail the contributions that tidal lagoons can make in reaching the UK's and Welsh long-term national and international commitments. Respectfully, we also refer to the 2016 Hendry Review into the Strategic Role of Tidal Lagoons to further inform your advice on the Sixth Carbon Budget and Welsh emissions targets.

We would welcome an invitation to discuss our responses and proposed plans with Committee members. If you have any queries, or would like more detail, please don't hesitate to contact me.

Yours faithfully,

Tidal Lagoon Power



Current status of Swansea Bay Tidal Lagoon

The decision by the UK government in June 2018 not to offer the Swansea Project a subsidy in the form of a Contract for Difference was a surprise to the public, stakeholders and politicians alike, particularly in light of Charles Hendry's endorsement of the technology in his independent review of tidal lagoons commissioned by the UK Government.

Despite that decision, we remain passionate about bringing the world's first tidal lagoon enabling Swansea Bay Tidal Lagoon to play its part in the UK's future strategic energy mix as a complementary carbon neutral, UK centric solution to our long term energy needs that once built, will be a wholly domestic green energy source for the next 120 years.

Since 2012 we have been working to realise this and our achievements to date include:

- Securing planning permission for a first-of-a kind tidal lagoon which will herald the start of a new industry and source of UK electricity generation;
- Creating a first-of-a-kind tidal project that requires less subsidy support than the historical equivalent stage of offshore wind and less subsidy per unit of electricity generated than new nuclear power;
- Driving the turbine manufacturers to reconsider how technology is designed and deployed in low range tidal applications to maximise energy production for bidirectional generation;
- Designing a project delivery programme utilising innovation at the forefront of the UK construction industry including design for manufacture and assembly;
- Having the support of all major political parties, including in their historic election manifestos, as well as being a component of the Government's National Infrastructure Plan;
- Creating a subsequent programme of tidal lagoons to follow Swansea, all capable of delivering 84% UK content and delivering electricity with a lower subsidy than new nuclear power.

We disagree with the conclusions drawn by the UK Government leading to their decision in June 2018 not to issue a Contract for Difference to the Swansea Project and, in our view, the rationale to deliver lagoons remains as strong as ever. The Welsh Government and the Local Authorities have expressed a willingness to consider providing financial support to get the Swansea Project built and operational.

We have developed two alternative plans and associated financial models to deliver the Swansea Project. The first assumes that the UK Government provides the Swansea Project a Contract for Difference ("CfD") in line with that offered to Wylfa nuclear power station and significantly below that offered to Hinkley Point C. The alternative assumes that no such subsidy is forthcoming and we are required to secure long term power purchase agreements with private and public offtakers.

Delivering Carbon Budgets and net zero by 2050

Our vision for a tidal lagoon industry is aligned with the aspirations in Wales, and the rest of the UK, for a low carbon economy. Power output of tidal lagoons is zero carbon, flexible, year



round and entirely predictable. The project in Swansea Bay alone will generate electricity sufficient for nearly 155,000 homes per year.

Besides the project in Swansea Bay, we have already scoped four additional full-scale UK projects. We are actively progressing planning on the most advanced of these, an £8bn project between Cardiff and Newport planned at equal capacity to Hinkley Point C. The five scoped projects as a fleet can secure 8% of UK electricity, or power for 30% of UK homes.

The potential domestic market for tidal lagoons is bigger still. A total of nine viable sites have been identified within the Severn Estuary and Liverpool Bay & Irish Sea deployment zones alone. Built out in full, these projects would secure an estimated 25,000MW of new electricity generation capacity, for over a century.

Lifecycle GHG analysis

At this stage of the Project's design of the project in Swansea Bay, it is not possible to carry out a project-specific lifecycle greenhouse gas inventory analysis, as detailed specifications of the Project elements would be required to complete such an exercise.

We have, however, conducted [a comparative analysis](#) of the most representative studies find that electricity from hydro power has a life-cycle carbon footprint of between 2 and 50gCO₂e/kWh with run-of-river schemes which are most similar to the technology employed on the Project tending towards the lower end of this scale. This is heavily weighted to the seawall construction and the materials manufacture stage and particularly the extraction and processing of iron ore into steel for the turbines, foundations and cabling. Other life-cycle stages such as installation, operation and transport were found to be much less significant contributors to the lifecycle footprint. At the end of the marine turbines' life, they can be recycled or reused, making a beneficial contribution to the carbon footprint, as it avoids the need for the extraction and processing of virgin materials for the application they are put to.

Conclusion

In conclusion, we believe strongly that tidal lagoons are a crucial element on the path towards net zero. The size of the potential market, and the fact that it can provide near-baseload supply once all sites are built out in full, mean that tidal lagoons are a low carbon, flexible and predictable replacement for the UK's aging fleet of coal and nuclear power plants that are nearing retirement. Long-time predictability of the tides can help manage price volatility and strategic system planning, which remains difficult for other renewable capacity on the grid.