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Dear Mr Hendry,

Citizens Advice is the statutory body responsible for representing consumers' interests in the energy sector. We are grateful for the opportunity to contribute to your review of tidal lagoon generation.

When DECC initially consulted in 2015 on contract for difference support for the first proposed tidal lagoon project, Citizens Advice [responded](#) to the call for evidence. That response outlined three main concerns with the proposal:

- That the financial support being sought by the project was poor value for consumers in comparison with other available technologies
- That there is insufficient scope for technological learning to justify support of that size
- That energy consumers should not be asked to support, through levies charged on bills, the claimed non-energy system benefits of the proposals, such as provision of recreational facilities.

While statements from the first proposed developer have made public some extra detail about their projects, those concerns remain. This response explains Citizens Advice's concerns, in respect of the current review's terms of reference.

Cost effectiveness

As an external observer, we are not privy to tidal developers' commercial calculations. In the absence of complete information, and of any means of putting developers' information into the public domain, we must judge their proposals on the partial information contained in their public statements. In respect of early tidal lagoon developments, this has not been encouraging. Initial documents released by Tidal Lagoon Power (TLP) and the [consultants Pöyry](#) described a price of £168/MWh over 35 years, which would make their first project the most expensive power station

per unit of output of significant scale to be built in the UK. Subsequent suggestions that support could instead be drawn out over [90 years](#) (Columns 69 and 75WH) at an unspecified but presumably lower price per MWh have reinforced our concerns about the overall cost of the project to current and future consumers.

These costs should be considered against the backdrop of costs for other low carbon electricity generation technologies. Auctions in recent years have revealed consistently decreasing prices for onshore and offshore wind and solar. The world has moved on, but the asking price for tidal does not appear to have. As a result, the premium being requested above the price paid for other low carbon technologies is higher than ever. To be clear, our objections to the currently visible proposals are to their cost, not to the technology or its location. If developers can bring costs closer in line with other alternatives, it should be given greater consideration. But to the degree can be observed outside the negotiation process, this has not occurred.

We recognise there are some differences in output characteristics between tidal and solar and wind generation; tidal is less dependant on favourable weather conditions and has long-range predictability (although improvements in shorter-term weather forecasting means the differential between the predictability of tidal and, say, wind over a 5-day time horizon is no longer as marked as it once was). However, this increase in predictability does not come with an increase in control - we may know when the tides will fall a century from now but we have no more ability to change them to match power demand than we do the time the wind blows or the sun shines. In any case, the introduction of a capacity market in the UK means there is an additional revenue stream available for generating capacity. If the developers believe that it is the capacity provision that is the main economic benefit of the project, they could opt for support via that avenue instead. If, as seems likely, tidal projects cannot provide this capacity resource competitively compared to other alternatives, it again raises the question of why they should be given preferential support.

Recent suggestions that tidal lagoon projects be made eligible for a 90-year contract for difference (something not presently available to any other type of generator) are also concerning. We acknowledge this is an attempt to recognise the durability of tidal and hydro dams. However, projecting the energy system a decade or two into the future is tough enough; trying to estimate the value of power nearly a century away is impossible. Furthermore, by 2050, and probably earlier, the UK should have

fully decarbonised its electricity system. Beyond this time, low-carbon power should not command a premium price. Normally price security of this kind comes with a discount - a generator takes less money but knows it will be able to sell. Only if the strike price negotiated for such a length of time were purely for this 'price stabilisation' purpose could it be justified.

Driving down the costs

Tidal developers have however argued, that the cost-effectiveness case should not be judged on the price of the first project alone, but instead based on the prices for a programme of bigger and cheaper projects. This is, at face value, reasonable. Even then, the targeted cost reduction that TLP has spoken of in public statements does not provide great comfort. Interviewed by the Guardian, the TLP chief executive said he believes bigger follow-on projects could deliver power "below £100/MWh". This opportunity should be compared with other low-carbon generation. The Hinkley Point C nuclear power station, which has been heavily criticised by a broad swathe of energy stakeholders for its expense, as things stand will command a guaranteed price of £92.50/MWh over 35 years as well as some additional government-backed loan guarantees. Offshore wind has set itself a target to come under £100/MWh before 2020, for a 15-year guaranteed price (in the last month a project in the Dutch North Sea [has been approved](#) at an approximate €75/MWh). The best way to test the value for money offered by future tidal lagoon projects is to ensure that they are placed in competition with other low carbon technologies, with the ones most able to affordably provide low-carbon electricity being selected.

At minimum far greater clarity about further projects than currently exists (at least in the public domain) is needed before the cost-effectiveness of a fleet of tidal lagoons can be satisfactorily appraised. This is discussed in the next section.

Size of opportunity

As has been previously discussed, much of the economic case behind supporting tidal lagoon generation rests on the premise that multiple, larger and cheaper facilities could be built, once the first one has demonstrated the technology. This case is comprised of two main strands - the opportunity to develop further tidal facilities in Britain, and the opportunity for Britain to become an exporter of tidal lagoon technology to other countries.

Investment in projects that are not immediately cost-effective low-carbon generating sources could be justified in cases where learning creates useful public value by lowering the cost of cutting carbon, in the UK or overseas. It is far from clear that the tidal lagoon programme project would accomplish this. Pöyry, consulting for the first project's developers, have stated that they expect cost reductions to come from "moving to bigger sites with greater tidal range rather than on an assumption of technology learning". As they [point out](#) (pp. 2-5), tidal generation technology is not new. While it has not been previously used in 'lagoon' constructions, the types of seawall needed to set up such a lagoon are also not new. It seems that is the cost, rather than the availability, of technology that has prevented others from pursuing tidal lagoon schemes.

The international export potential for tidal lagoons demands particular scrutiny, as it is one of the most difficult factors to reliably ascribe a value in a cost-benefit assessment. The developers appear to expect that successful demonstration of tidal lagoons in the UK will enable them to sell technology and knowhow to other countries looking to decarbonise their energy systems. But, again, it is unclear how either the access to larger UK resources nor the establishment of a local supply chain, on which the UK cost reduction case rests, would improve the technology's international competitiveness. Therefore it is unclear how the requested public support might lead to or sustain the export-related jobs claimed by the industry. Given the inherently speculative nature of these claims, they should be disregarded or weighted very lightly when judging the case for subsidy.

The impact on overall carbon reduction from developing tidal lagoons also needs serious scrutiny. Since the UK tidal lagoon sector does not expect to make a contribution to any global improvement in the technology, it should only be considered in terms of UK domestic decarbonisation, and specifically the ability to meet the carbon budgets established under the Climate Change Act. It is also unclear that the project can make a material contribution to this, much more limited objective. Speculation from the developers that costs could eventually come down are predicated on access to much larger future sites. This creates difficulties for the decision-making process. Usually for a project to be approved for a CfD or other subsidy funding, projects would have to be well on their way to having secured all the necessary environmental, planning and connection permits. In the case of tidal, it appears the projects' backers are seeking commitments at a much earlier stage,

making an equal basis for competition with other technology types more difficult and risking occupying a portion of the low carbon budget before construction can be guaranteed thus blocking other low carbon projects from going ahead. This is one of a number of features of the current CfD policy framework which impedes the most cost-effective allocation of resources. It also has left the system struggling to handle previously unanticipated technology types including tidal lagoons.

If the case for tidal lagoons is predicated on building four or five, that the decision on whether to commission the first one must take into account whether budget, access to suitable coastal areas, and environmental approvals will be available for follow on projects.

Assessment of the viability of a continuing programme of lagoons should take into account not only technical and geographical limits, but also the availability of funding. However, this is presently made difficult by the absence of a levy control framework or equivalent low-carbon support budget set out beyond 2020, and before 2020 the budget is very tight, recent adjustments notwithstanding. Setting out the future for the levy control framework (or a replacement designed to achieve equivalent outcomes) will be necessary before any further significant low-carbon investment decisions, for tidal and all other technologies, can be taken.

Financing structures

Impact on the levy control framework

Currently, under the levy control framework (LCF), there is competition for resources even if it is not directed through the formal auction process. Low carbon technologies are not simply in competition with fossil fuel generators but also with each other. Given limited budgets under the LCF, money which is spent on the tidal projects is taken from the same pot which other Contract for Difference (CfD) applicants wish to access. If the LCF is fixed, spending on more expensive projects reduces the total volume of low-carbon power that can be purchased with the LCF. This has been demonstrated by the cancellation of 2015/16 CfD auctions. Because available financing is finite, decisions to choose higher cost technologies where lower cost ones are available will, in the short term, result in consumers receiving less decarbonisation for their money. This deferral of emissions reduction may or may not be made up in the future if that technology comes down in cost

considerably. Consumers today are being asked to *definitely* accept less, so that consumers tomorrow *may* receive more.

The commendable purpose of both the LCF, and the recently introduced auctions for CfDs, was to focus government's attention on the most cost-effective technologies to meet long-term climate objectives. Devoting (considerable) resources to expensive technologies can only be justified with the limited funds available to address climate change if there is a credible expectation the technology will improve as a result of the investment. Funding tidal lagoons (or any other projects of similar expense) risks reducing the amount of decarbonisation that can be achieved if it costs more than alternative methods for cutting carbon. Auctioning of CfDs was introduced to ensure that procurement bought the most decarbonisation for consumers' money. All low-carbon investment should be procured through auctions if maximum value for consumers is to be achieved..

Contract terms

As has been discussed, several of the claimed benefits of tidal lagoons emerge not with the construction of a first facility but only after a programme of up to 5 facilities has been built. The linkage of benefits to future development could be reflected in contractual terms, such that, for example, if the company does not build the proposed future projects at either acceptably low subsidy rates, or better yet, with the commitment to seek funding through multi-technology auctions, the rate received for the first project decreases. Any deal should be structured to incentivise the developers to live up to their claims for both future capacity and future cost reduction, avoiding the risk of 'orphaned' projects continuing to receive subsidies in the long term having failed to deliver wider benefits..

Using energy bills for non-energy benefits

In recent months, TLP have set out to show that not only will their proposed project bring energy system benefits, but that it will also become a major [tourism hub](#). We do not intend to appraise this claim. However, we do believe that if a significant purported benefit lies outside the energy system, levies charged on energy consumers' bills are an inappropriate method of support.

TLP have also argued that the creation of a tidal lagoon industry would create [up to 70,000](#) jobs. If jobs are created as a byproduct of energy policy this is very welcome. But the principal focus of energy policy must remain the trilemma: keeping bills

affordable; keeping the lights on; and reducing emissions. If specific energy investments are motivated more by job creation than tackling the trilemma then those costs should not be met through energy bill funded levies.

Since the change of government in the last few weeks, there have been some hints that energy infrastructure may be supported using government-backed loan guarantees, or with direct funding based on the government's access to lower cost capital than the private sector. While our concern about the cost of the proposed tidal projects is not diminished, these would appear to be more appropriate than contract for difference. This would also need to be reflected in a revised LCF accounting framework. While the cost-control objectives of the LCF would still be relevant and necessary for consumer protection, it is not designed to report a mixture of bill-based and non bill-based low carbon support.

Scope for competition

Over the past 6 years, governments have improved the value for money of low carbon investment in the UK by introducing more rigorous competition for subsidy support. This has led to considerable savings to consumers. The CMA concluded in their recent [energy investigation](#) (p. 13) that competition for offshore wind subsidies had reduced costs to consumers by 30-60%.

Competition for subsidy allocation can take place on a technology-by-technology basis, or in a way which encourages projects from all technologies to compete against each other. As we explored in our 2015 report '[Generating value?](#)', the best consumer outcomes occur when inter-technology competition is used and applied to as much of the allocation budget as possible. Intra-technology competition may still be advantageous where inter-technology competition is unachievable, but it requires that government demonstrate the reasons for choosing to restrict competition and drive up costs. The segregation of technologies into mature and immature for the purposes of CfD auctions already costs consumers [£1bn](#) per auction (p. 35). A bespoke contract for tidal (effectively creating a dedicated funding pot) would raise costs even further. While it is understandable that the projects' backers would want to avoid such competition, the government's responsibility lies not to them, but to the billpayers or taxpayers who will foot the bill. (It should be noted that other decisions unrelated to tidal development are also driving up costs in this field. In

particular, suspending auctions for mature technologies and the barring of onshore wind developments mean that money will not be spend in the most cost-effective way, irrespective of the future of a tidal sector).

In this context, it is concerning that, so far at least, the immature technologies auction route has still been seen as providing insufficient revenue for it to be worth tidal developers participating in competitive funding allocation. Bilateral contract negotiations between government and developers have been rightly criticised, by the National Audit Office and others, for being a poor way of ensuring value for consumers' money. The government should try to minimise the occasions in which bilateral negotiating procedures are used. Where bilateral negotiation is pursued, the government should follow the CMA's [recommendation](#) (p. 16) to carry out "clear and rigorous analysis of the impact of doing so and consults on this basis before reaching a final decision".

One way to shed more light on the process would be for all aspects of CfDs or other publicly-backed low carbon contracts that may materially affect future consumer liabilities to be made public. This has not happened in the case of other bespoke CfD deals like the Hinkley Point C project where key contractual terms are either undisclosed or redacted. Commercial confidentiality is invariably cited as the reason for non-disclosure, yet the counterparty to these deals is the consumer, who bears the liability. It is hard to think of another circumstance where the counterparty to a contract is forbidden from knowing what is in that contract. We would caution very strongly against pursuing a similarly opaque approach with tidal support.

I trust that this response is clear. We would welcome the opportunity to discuss these matters in more depth with you and your team if that would be helpful.

Yours sincerely

Simon Moore

Policy manager, Strategic Infrastructure