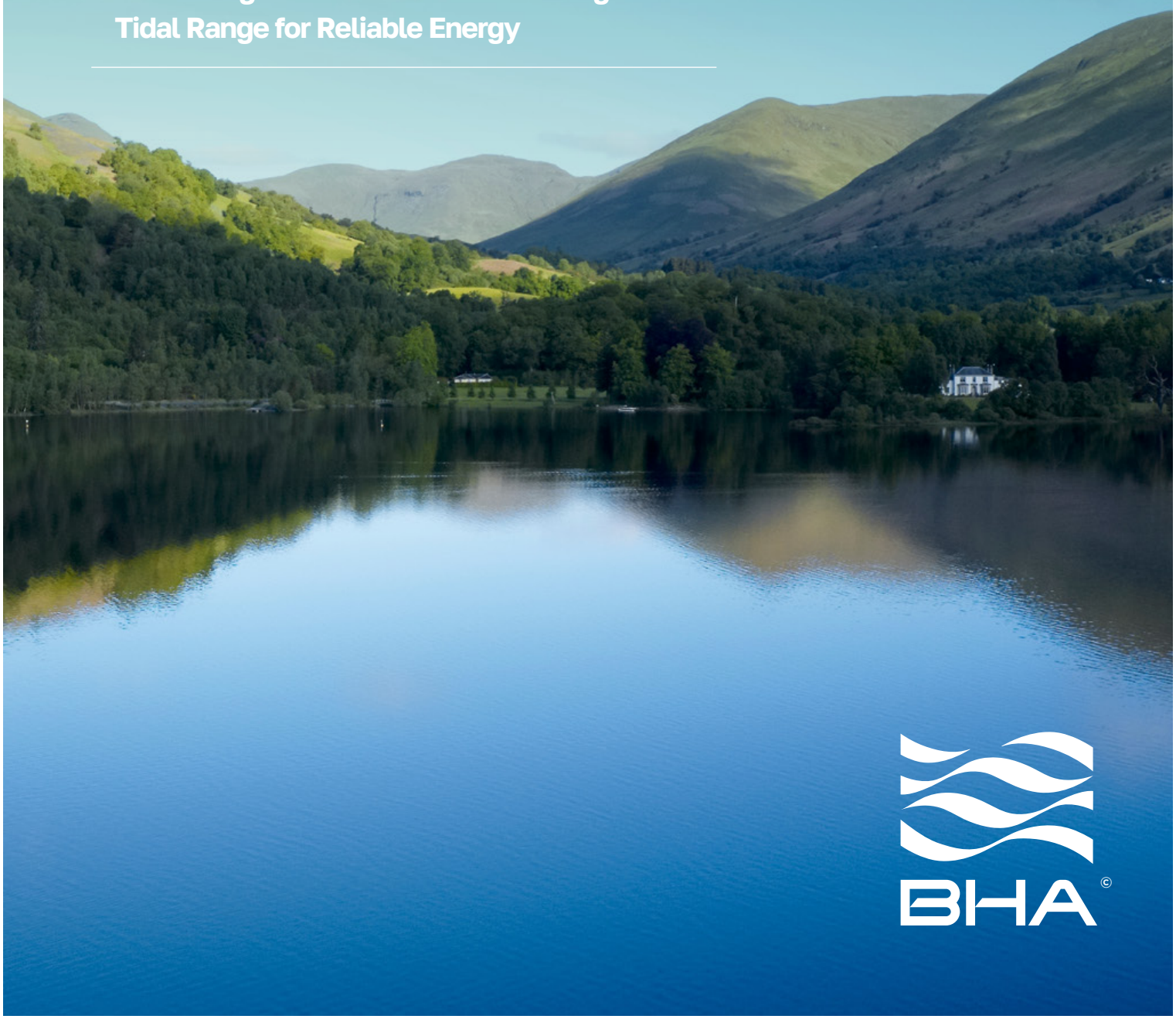
Spotlight

Spring
2025

- **BHA Event Spotlight - Hydro Network 2025**
- **Buckny Hydropower - Membership Showcase**
- **Time is Right to Harness the UK's Largest Tidal Range for Reliable Energy**



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Contents

Message from the CEO

Welcome to the spring edition of the BHA Spotlight Magazine.
I'm sure you're all pleased to see the days getting longer and have enjoyed the prolonged spell of sunshine – although perhaps less welcome for our hydropower operators!

Turning to the political weather, the global geopolitical storm clouds continue to impact the UK and our ability to deliver on Net Zero ambitions. Reports have come out stating that Orsted's Hornsea 4 wind farm expansion is being 'discontinued' due to increased challenges, including higher costs. Global inflation continues to put pressure on pumped storage hydro projects looking to submit applications for the Long Duration Energy Storage Cap (LDES) and Floor mechanism, with two projects pausing their applications.

At home, local elections and a Reform wave have shown that there is a growing threat from the anti-net zero movement, which belies the real and tangible benefits of electrification and the energy evolution currently underway.

However, on a positive note, despite these pressures, the latest figures on global trends in electricity generation tell us that China's march to decouple their economy from oil, (they are the world's largest importer of oil) and improve their energy independence and resilience continues at a phenomenal pace.

This is driving further cost reductions in solar, wind and batteries leading to the global south countries following in their footsteps. How does this help hydropower? With a continued drive to power the grid with intermittent renewables, grid stability and resource efficiency get increasingly important. As a winter generator that provides inertia, hydropower plays a critical role. Are we seeing this recognised in policy? Not yet but momentum is building, and the role of 'local' in energy policy is steadily climbing the agenda.

In my role as a non-executive director for GB Energy, I am focused on delivering of the Local Power Plan, creating an environment that will allow embedded generation to be both sustained and delivered. Without policy enablers, the government's ambition to deliver 8GW of local energy will be thwarted. It is therefore a key policy area that I'm currently able to feed into.

I was delighted to attend the first 'Shadow' GB Energy board meeting at the end of March – 'shadow' refers to the fact that the Great British Energy Bill has yet to receive Royal Assent.

The Bill, which establishes Great British Energy as a publicly owned company to drive clean energy and energy security, has completed its passage through both Houses of Parliament and was last considered on 30 April 2025. Royal Assent is expected shortly, with the first formal Board meeting of the legal entity scheduled for the end of June.

As ever, please get in touch if you have any queries, thoughts or ideas. I hope to see you at one of the upcoming events, such as All Energy in Glasgow on the 14th -15th May, BHA Hydro Network in Derbyshire on the 4th June and Evaluating Risk in Pumped Storage Hydropower in London on the 20th June.

Kate Gilmartin
Chief Executive Officer

The British Hydropower Association sponsoring members:

Maximising Hydroelectric Profitability: New revenue opportunities as the sun sets on subsidies

In the face of rising operational costs and the withdrawal of key subsidies, UK hydroelectric generators face mounting financial pressure. Jamie Storry, UK Commercial Lead for Flexibility Services at Enel X, reveals how these generators can unlock new revenue streams by participating in the Capacity Market.

By 2028, over 400MW of UK hydropower generators will transition away from subsidies as a large share of Renewables Obligation (RO) and Feed in Tariff (FiT) contracts are set to expire. Other factors, such as inflation and the lack of a wholesale market price stabilisation method suitable for hydro, are worsening the situation. Without replacement income streams, hydro operators are concerned that once these assets lose their subsidies, some sites may become too expensive to operate. However, the loss of these subsidies will open other revenue streams that were previously inaccessible.

The Capacity Market

The Capacity Market is the primary mechanism through which the National Energy System Operator (NESO) secures future electricity capacity to meet peak demand. It works by compensating energy users and energy generators for making electrical capacity available when the grid is under stress. By doing so, the Capacity Market, and the businesses that participate in it, ensure that the UK maintains a secure and stable electricity grid. Hydropower generators that currently benefit from Renewables Obligations or Feed in Tariffs cannot take part in the Capacity Market. The end of these subsidies will change that. When a scheme's subsidy contract ends, it will then be eligible to participate in the Capacity Market.

How it works

Hydropower plants that meet the necessary criteria can participate in the Capacity Market:

- Hydro plants with a generating capacity of at least 1MW can participate directly. Smaller plants can aggregate with others to meet this threshold.
- Both pumped storage and run-of-river hydro are eligible.
- New build and existing hydro plants can take part, provided they are not in receipt of government subsidies including ROs and FiTs.

If the Capacity Market is called upon to support the grid during a stress event, plants with capacity agreements will receive at least four hours' notice to prepare to generate their contracted capacity. If the plant is already generating at contracted levels, their obligation is met, and no further action is required.

The benefits of the Capacity Market for hydropower generators

The service provided by Capacity Market participants is a critically important component of Great Britain's energy security, which is why participants are paid for their support. Payment is based on a fixed annual rate (£/kW), regardless of an actual dispatch occurring. As a fixed revenue stream, this holds additional weight with prospective investors and financial institutions.

For larger hydropower generators, in particular pumped storage hydro, Capacity Market participation requires very little extra effort. For smaller, run-of river plants (less than 1MW), the case is harder to justify unless flexible capacity is available across multiple sites and waterflow is consistent year-round.

It is important to note that Capacity Market positions are limited each year. Hydro plant operators who want to transition seamlessly from RO/FiT payments to Capacity Market income should not delay as the application process itself can take more than six months.

Simplifying the process

Participating in the Capacity Market can be lucrative and low effort with the support of the right energy partner. Enel X is part of the Enel Group, a global energy company with a rich history spanning over 60 years. In the UK and Ireland, we specialise in enabling commercial and industrial scale energy generators and energy users to access new revenue streams while supporting a greener, more resilient electricity grid. We have been helping customers benefit by participating in the Capacity Market since it was introduced 10 years ago. Our customers enjoy unmatched expertise in the UK and Ireland's energy markets, energy flexibility programmes and regulatory affairs. Enel X is a member of the BHA.

Get in touch with our hydropower experts to learn more about this opportunity.

Article by Jamie Storry

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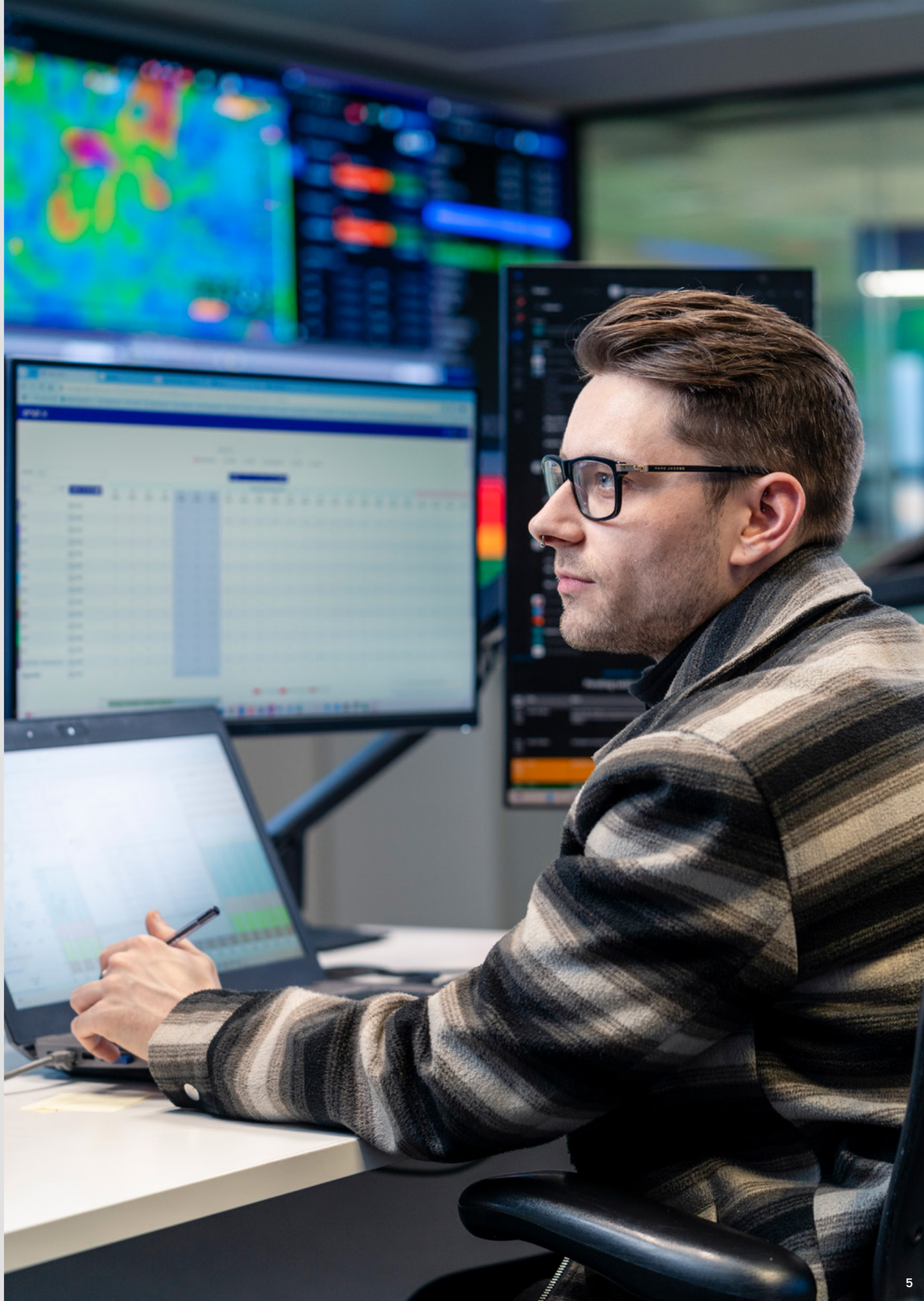
https://www.enelx.com/uk/en



RheEnergise BHA Site Visit

On April 24, 2025, Tim Montagu and Kate Gilmartin from the BHA had the opportunity to visit the RheEnergise demonstrator site in Devon, which showcases their innovative High-Density Hydro® (HD Hydro) energy storage system. This closed-loop, pumped hydro scheme utilises a high-density fluid, R-19, to enable energy storage on sites with lower elevations, making it a promising solution for scalable and sustainable energy storage.

The upper reservoir is constructed using three 2.5m x 60m GRP buried containers, linked via a manifold to a single underground penstock. Descending the hillside, the powerhouse contains a 500kW adapted Francis turbine built by Hydropower Engineering in Turkey, optimised to handle the unique properties of the high-density fluid. The system operates with an 80m hydraulic head, but the use of R-19 fluid—2.5 times denser than water—effectively simulates a 200m head, enhancing energy output without the need for significant elevation.

The lower reservoir is discreetly integrated within a building not dissimilar to a nearby agricultural barn, minimising the visual impact on the surrounding landscape. Adjacent to the turbine, the powerhouse also contains a 500kW pump, originally designed as a slurry pump and manufactured in Japan. This pump is capable of both pumping and generating, allowing it to return the high-density fluid to the upper reservoir during periods of lower electricity prices.

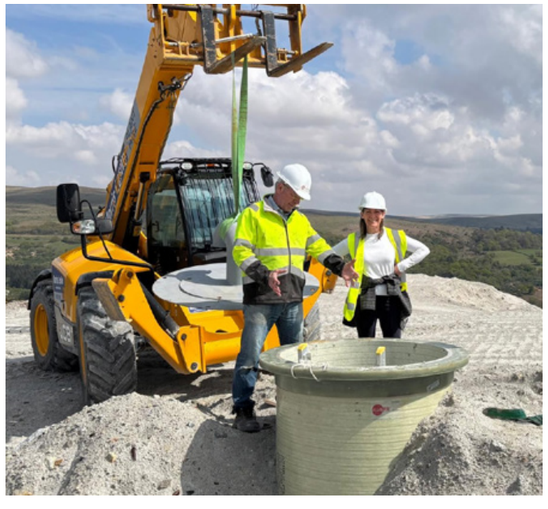
Currently, the demonstrator is connected behind the meter at a local quarry, which has a 3MW import and 1MW export capacity. This setup aims to optimise electricity costs on-site by storing energy during off peak periods and releasing it during peak demand. Final works are underway, including electro-mechanical testing, on-site snagging, and finalising the connection to the distribution board. The mixing of the high-density fluid is scheduled to take place within the next 4-6 weeks, with commissioning anticipated as early as July.

Visiting the site before lids were sealed and areas off limits gave valuable insight to the practical challenges of constructing HD Hydro technology. The system is designed to provide up to 4-20 hrs of energy storage in the 10MW-100MW power range, and the 500kW demonstrator project highlights its potential as a modular and scalable solution for long-duration energy storage. This project has received funding through the UK Government's Longer Duration Energy Storage (LDES) Demonstration Programme, under the Net Zero Innovation Portfolio.

RheEnergise's HD Hydro system represents a significant opportunity in energy storage technology. By enabling efficient energy storage in locations with modest elevations, it offers a flexible and environmentally benign solution where higher head traditional pumped hydro systems cannot be sited.

As with all hydropower – this is a solution with longevity and reliability - something that cannot be underestimated as we look to build energy resilience in the UK.

We look forward to a return visit when the site is commissioned and operational. RheEnergise shows how Hydropower technology can innovate and continue to play a crucial role to deliver a decarbonised and resilient energy system in the decades ahead.



Spotlight

Please visit the BHA website where there is a wide range of information, industry news, technical support and details of forthcoming events.

All BHA members receive our monthly News Bulletin featuring current industry news from the UK and internationally. If any member is not currently receiving these bulletins but would like to, please contact the BHA.
On a monthly basis, other than in April, July and November, members also receive Spotlight Plus which is a regular digest of the key work that the BHA is undertaking on your behalf.

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