

Energy Storage Ireland is a representative body for the energy storage industry in Ireland and Northern Ireland. We represent 70 member companies from across the energy storage supply chain, and all energy storage technologies that will play a vital role in decarbonising Ireland's electricity sector.

Our aim is to deliver the energy storage technologies needed to support Ireland's Climate Action Plan and ultimately to enable a secure, carbon free electricity system on the island of Ireland by 2035.

The Climate Action Plan has set ambitious targets for carbon emission reductions in the electricity sector by 2030. However, the EPA have recently projected that we will overshoot our carbon budgets this decade by nearly 5 Mt CO₂ even with onshore & offshore wind and solar PV providing 80% of our electricity by 2030.¹ These missed targets will be factored into the post 2030 carbon budget which means that the electricity sector will need to be zero-carbon well before 2035.

As more and more wind farms and solar PV are built out, this will bring significant challenges to the power system in terms of accommodating large volumes of intermittent renewable electricity. EirGrid's Shaping our Electricity Future analysis, which modelled the 2030 power system, projects significant renewable surplus as there will be many periods where supply of renewables exceeds demand. Their analysis shows that without substantial investment in solutions such as energy storage nearly one third of all renewable electricity will go to waste.²

There is also the issue of congestion which occurs where the grid cannot carry the available renewable electricity and it must be turned off or turned down. Grid congestion is a significant issue today in several areas of the grid, most notably the west and north-west, where renewable generation tends to be located far away from demand. The grid needs to be upgraded but these reinforcements will take substantial time and even the projects that are planned will not fully solve the congestion issues that many areas are facing.

All this means that, without appropriate solutions, the cost of renewable electricity will be higher than it needs to be, and we will not remove our dependence on fossil fuels during those times when we cannot access our abundant renewable energy resources.

With the volumes of onshore and offshore wind and solar PV which the Government has targeted to deliver by 2030, it is very likely that we will be able to generate enough renewable electricity in aggregate to enable a fully decarbonised power system by the end of this decade or very soon after. The problem is that this renewable electricity is dependent on weather

¹ <https://www.rte.ie/documents/news/2024/05/epa-report.pdf>

² This is without additional measures including a second Celtic interconnector to France and long-duration storage of up to 8 hours. Even with these measures, surplus is still projected over 20% - https://consult.eirgrid.ie/en/system/files/flipbook_pdf/LDES%20Call%20for%20Evidence%20EirGrid.pdf

patterns, is not always being generated at the exact times and at the exact quantities we need and is often generating more than we could feasibly use.

Energy storage is a key piece of the solution that bridges the gap between renewables and zero-carbon electricity.

Energy storage is any technology that can store renewable electricity when there is surplus or when the grid cannot accommodate it and move it to another time when we can use it. This ability to time-shift large amounts of renewable electricity means we can remove our reliance on fossil fuels and deliver a secure, carbon free system.

Wind and solar will get us to 80% renewable electricity and energy storage can provide the majority of the remaining 20% of electricity we need to decarbonise.

The Irish market has seen a very successful deployment of short duration lithium-ion battery storage with 750 MW of batteries currently operational providing important grid stability services via EirGrid's DS3 framework. These batteries are helping to remove our reliance on fossil fuel generators for fast acting reserves that ensure electricity supply remains stable through any potential short-term system instability issues.

However, these batteries have relatively limited energy durations. The length of time they can supply their full power is between 30 minutes to two hours on average. They were also not built to absorb large volumes of renewable energy.

As such, we need storage which can absorb large volumes of energy and can supply power over long periods of time ranging from several hours to days and potentially even weeks. There are a variety of established technologies such as pumped hydro storage and lithium-ion batteries as well as emerging technologies such as liquid air, compressed air, green hydrogen and new batteries using sodium or iron to name a few.

It is unlikely that any one of these solutions will meet Ireland's long-term storage needs alone, rather a portfolio of storage solutions will likely be required.

The issue in Ireland is that there is no investment signal today for long-duration energy storage. The electricity market was designed around short-term price signals and optimising the costs of fossil fuel generators. Large infrastructure projects require certainty to secure financing. The RESS scheme exists for wind and solar PV and the capacity market for conventional generation to provide this certainty. We need to do the same for energy storage as a national strategic asset.

The Climate Action Plan 2024 contains a KPI to have long-duration energy storage (defined as storage of 4 hours plus duration) operational by 2025. Action EL/24/24 also specifically calls out the need to 'Create a route to market for medium and long duration storage facilities which can provide flexible demand' by Q3 this year. This action lists the CRU and EirGrid as lead stakeholders (with the Department of the Environment, Climate and Communications as a reporting lead).

We are concerned that this action will not be achieved given the timelines still needed to develop a robust route to market framework, including consultation with industry. EirGrid published a call for evidence on long-duration storage procurement in Q4 last year, to which we submitted a response, but we have yet to see a follow up to this paper in terms of a subsequent consultation or procurement approach. EirGrid have noted in recent engagements with industry that they are awaiting a direction on next steps from the CRU. We are also aware that the Government's Electricity Storage Policy Framework is expected to be published this summer which will be important to ensure clarity on the future direction of long-duration storage policy.

Given there are a variety of storage solutions that have different capabilities and costs the procurement process needs to be well-designed to achieve the best outcomes for the system and for consumers, ensuring decarbonisation at least cost. This should procure the right projects, in the right locations, at the best value for consumers. Given the lead times for project development can take several years, to deliver long-duration storage by 2030 we need to start designing the procurement process now and put the appropriate time and resources into it. The aim should be to hold the first auctions for these technologies in 2025 with delivery before the end of the decade.

In conclusion:

- We have a significant problem emerging with excessive wastage of renewable energy as we seek to fully decarbonize our power system.
- Long duration storage can solve this problem but there is no investment signal at present.
- We are asking for the coordination of Government, EirGrid, the CRU and industry to put in place the necessary resources and design-work on a framework that ensures the successful delivery of energy storage that can support our Climate Action Plan targets and ultimately a zero-carbon power system.