



Making the most of Cork's renewable energy

Energy Cork Briefing Paper

Cork is the energy powerhouse of Ireland. The historic Kinsale gas field, coupled with the country's only refinery makes the location unique to Ireland. In tandem with this, there are large gas-fired electricity generators at Aghada and Whitegate providing energy security to the country. The county has excelled in terms of deployment of renewables. Recent reports by Wind Energy Ireland show that Cork is competing nationally in terms of wind production, and that there is also burgeoning solar production coming online¹. Energy Cork is the Region's energy industry cluster. The Cluster has over 90 corporate members active in the energy and climate action sectors in Cork.

Background

The clean power produced in Cork services a growing residential and industrial demand. Data published by the CSO shows that the county had a demand of 2.9 TWh in 2022 which equates to 10% of the national demand². Having access to clean, reliable electricity is essential to service industry in the county from food to pharmaceuticals, from medical devices to agriculture. This industrial load drives the heat requirements for the county too. According to the SEAI Cork has an industrial heat demand of 2.3 TWh³.

Problem

Even though the county is leading in terms of renewable energy production, how it uses that energy also has to be considered. In the last 12 months it is estimated that 345 GWh of renewable

¹<https://windenergyireland.com/latest-news/7726-wind-farms-provided-35-per-cent-of-ireland-s-electricity-in-first-five-months-of-2024>

² <https://www.cso.ie/en/releasesandpublications/ep/p-mec/meteredelectricityconsumption2022/keyfindings/>

³ <https://www.seai.ie/data-and-insights/national-heat-study/>

energy has been lost or dispatched down as described in the industry. 12% of the electricity needed in the county is therefore not utilised.

When the offshore renewable opportunity in Cork is developed this issue could be even more pressing. In 2030, one location alone, the Knockraha 220kV substation could see lost energy of 374GWh according to figures published by Eirgrid⁴.

This lost energy can occur due to several reasons – constraints, curtailment or oversupply. Regardless of the reason there is a cost associated with this electricity being unused.

With wholesale electricity costs over this period amounting to ~€100/MWh the cost to the Cork economy is at least €35million.

Market issues highlighted by Energy Cork

In all European electricity markets, there is a strong correlation between renewable generation profile (wind and solar) and the price of electricity in the day ahead market.

Where there is a mismatch between renewable generation capacity and electricity demand the surplus drives down the wholesale market price of electricity – in some instances to negative prices.

This mismatch is becoming more pronounced as more solar generation comes on-stream as there is an inevitable timing differential between peak solar generation and peak electricity demand leading to curtailment (waste) of renewable generation capacity.

This is being exacerbated in the Cork and Munster region as due to system and grid constraints some conventional generation capacity is being constrained on while renewables are curtailed off.

Solutions

There are means to alleviate this issue of lost energy and the following are positions that Energy Cork is advocating to maximise the resources that we have at our disposal in the county. Some of these are not just asks to support grid development but for policy changes which can be made to use our electricity as effectively as possible within the area and should be implemented immediately. Energy Cork and our members are keen to assist in the scoping and implementation of these solutions.

⁴ <https://cms.eirgrid.ie/sites/default/files/publications/ECP-2.2-constraint-forecast-formatted-results.xlsx>

- 1) **Delivery of Grid Improvements** - Eirgrid (the Transmission System Operator) has identified several projects within the Cork/South West area in their Transmission Development Plan⁵ in order that Ireland can reach its energy security goals and renewable targets. These projects must be successful delivered and the delivery of further, anticipatory projects proactively planned for. A non-exhaustive list of these projects includes:
 - a. Coolroe, Inniscarra and connected stations Protection Upgrade (CP1160)
 - b. Bandon – Raffeen 110 kV Line Uprate (CP1212)
 - c. New Ballyvouskill 220/110 kV Transformer (CP1247)
 - d. Knockraha Station Celtic Interconnector (CP1215)
 - e. Trabeg 110 kV Station (CP0741)
 - f. Kilbarry – Knockraha 110 kV No.2 Line Refurbishment (CP0901)
- 2) **Planning policy in the county** - development of key infrastructure needs coherent policy in all aspects of delivery. This goes from national policy to County Development Plans, from planning applications to planning approvals. To delivery essential energy infrastructure co-ordination and coherent policy is essential. Energy Cork notes that Cork County Council has identified an area suitable for an Energy Park in East Cork in their most recent County Development Plan.
- 3) **Implementation of European Law** – the Clean Energy Package provides that renewable energy assets should be compensated for redispatch of their position. We believe that this policy should be implemented to provide the financial incentive to reduce costs for the consumer.
- 4) **Incentivisation of electricity usage and reducing barriers to electrification** – sector coupling of the heat and transport sector has massive potential for Ireland, but there are barriers in place. The removal of these barriers would incentivise end users to use electricity in areas where it is being produced. The barriers to be considered would be allowing non-firm connection for demand, the adjustment of network & market charges to increase consumption of renewable power and the promotion of time of use system charges.
- 5) **Supporting flexibility in the grid** – storage has a massive part to play in helping Cork use electricity effectively. There are however regulatory hurdles that are impacting the

⁵<https://cms.eirgrid.ie/sites/default/files/publications/EirGrid%20Transmission%20Development%20Plan%20%28TDP%29%20December%202023.pdf>

deployment of storage. Allowing Maximum Export Capacity (MEC) sharing would facilitate more efficient use of the grid. Symmetrical MEC and Maximum Import Capacity (MIC) for storage would also boost the deployment of storage. Some of these policy changes are due from the Department of Environment and Climate Change as part of their Storage Policy and Energy Cork believe that they can unlock value in the wider economy.

- 6) **Energy Storage** - Energy Cork believes that there is a need for market-based energy storage solutions to address these issues. Battery storage is required to provide the first level of response but longer-term storage and demand response strategies to shift electricity usage to times of high solar production are also required.
- 7) **Hydrogen** – Cost effective long term storage should be investigated such as using power to hydrogen, which will also provide much needed back-up when renewable generation is not available. All electricity markets in EU recognise this as a key requirement to facilitate increased penetration of renewables. There is a newly-formed hydrogen cluster in lower Cork Harbour where over 1 GW of existing gas turbine generation capacity could be converted to hydrogen/hydrogen blends.
- 8) **Dynamic Electricity Tariffs for consumers** - As more micro generated solar capacity comes on stream, the timing mismatch discussed above will increase. One solution already identified by CRU⁶ in March 2024 is to introduce Dynamic Electricity Tariffing for consumers, incentivising increased demand when there is a surplus and incentivising decreased demand when there is a deficit.

How would this work in practice? - consumers could be incentivised to install and run heat pumps or used their existing tank heaters to generate and store hot water at times of surplus.

This is a similar concept to the Carbery case study (see appendix) but at domestic level

We believe that, if these policy initiatives are followed through on and delivered, Cork will continue to be the energy powerhouse for the country and continue to provide, secure and clean energy to the county and beyond.

To further highlight the potential of implementing these policies we have provided a case study of what can be achieved in the County with Carbery taken as an example (see appendix).

⁶ See link [Dynamic Electricity Price Tariffs | CRU.ie](https://www.cru.ie/en/research-and-analysis/publications/2024/03/dynamic-electricity-price-tariffs/)