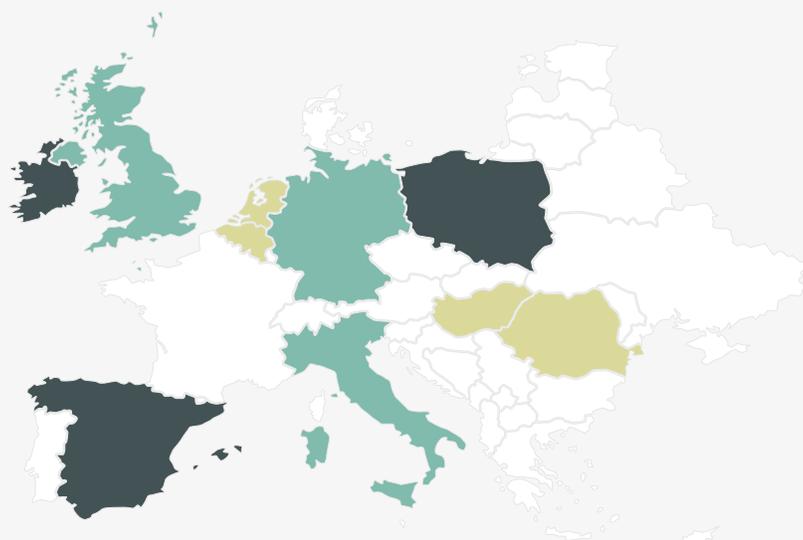


# Europe's Gridlock: The Shift to Behind-the-Meter Batteries

December 2025



## Europe's On-Site Battery Opportunities

- Active markets  
U.K., Germany, Italy
- Emerging markets  
Spain, Poland, Ireland
- Markets to watch  
Romania, Hungary, Netherlands, Belgium

## Executive Summary

**The European Power Squeeze:** Europe's power markets face structural stress. As baseload coal and nuclear plants retire, and renewable penetration surges, the region is left relying on expensive gas and LNG imports to add flexibility to the system. The result is persistently volatile markets that are heavily exposed to solar and wind resource intermittency, weather events and gas price fluctuations.

**The Supply-Demand Mismatch:** Developers have built large battery pipelines to capture the opportunity created by market volatility and reliability needs. But much of that capacity is stuck in interconnection queues, stalling supply just as new data centers in the U.K., Ireland, and increasingly in Spain eat up more power. This is putting more pressure on grids, keeping energy costs high and limiting industrial output.

**The Solution Lies Behind the Meter:** The immediate opportunity lies with adding batteries on commercial and industrial (C&I) sites with existing grid access. These allow large power users to profit from the very volatility that threatens the grid and keeps energy costs high. By monetizing price swings, as well as payments for grid services and capacity, industrial sites can lower their operational costs and ramp up production.

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## United Kingdom

Power demand is growing faster than new system flexibility capacity

Strong battery economics in the U.K. have sparked a wave of storage construction across the country. The National Energy System Operator's (NESO) [Clean Power by 2030](#) pathways expect the U.K. to have **four times more battery capacity by 2030**, reaching between 23-27 GW.

However, congested interconnection queues are slowing the much-needed battery buildout. Data centers are driving up demand for power, while new supply isn't keeping up, pushing grid costs higher for U.K. energy users. In response, regulators passed a [major reform](#) to alleviate queue backlogs by replacing inefficient 'first come, first served' grid connection study processes with 'first ready and needed, first connected.'

But these reforms will also prioritize interconnection requests from big power users designated as [critical national infrastructure](#), such as data centers. This could lead to a surge of new demand. About **100 GW of large load grid requests** are waiting in queues, equivalent to adding nearly two U.K. grids to existing infrastructure.

To address growing transmission needs, NESO already plans to [raise revenues by over 150%](#) in the next five years, via higher grid fees. Under the proposed tariff hikes, a 10 MW U.K. power user could pay **up to £4 million more by 2030**, 40-62% more than next year's fees, depending on the location.

### Key takeaways

Load growth is causing tariffs and volatility to rise. Industrial sites with existing grid access can get ahead by hosting on-site batteries to maximize factory output while cutting energy spend.

## Germany

Favorable market designs struggle to overcome grid constraints

Germany just slashed its new gas capacity target to 8 GW, down from 20 GW, with auctions expected in March 2026. Other **supply-side constraints** from the phase-out of nuclear power and imminent coal plant retirements, along with fast-rising renewable deployment, is **accelerating power price volatility**.

These imbalances create an opportunity. Batteries can get paid to provide the flexibility the system needs through ancillary services and upcoming capacity payments, just as new 15-minute settlement intervals sharpen price swings too.

Utility-scale batteries are stalled in long interconnection queues and face high grid fees. The immediate opportunity lies with behind the meter distributed batteries. Industrial sites can use their existing grid access to install batteries now, capturing volatile wholesale prices and beating the 2029 deadline for fee exemptions.

### Key takeaways

Grid constraints are slowing Germany's battery buildout just as the system needs more flexibility. Industrials with grid access can monetize volatility and expand production without spending more on energy.

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## Italy

**MACSE auction draws aggressive price bidding with unrealistic expectations**

Italy held its [inaugural 10 GWh large-scale battery auction](#) (MACSE) in September 2025. Fierce bidding resulted in prices clearing at less than half the regulatory cap.

Such low prices may squeeze project IRRs enough to slow the buildout of Italy's first 10 GWh of utility-scale batteries under MACSE. Developers could also grow reluctant to bid into the remaining 40 GWh of MACSE capacity. Whether these low prices deter developers won't be clear until next year's auction.

A drop in utility-scale development threatens Italy's 70 GWh target for 2030. Commercial and industrial (C&I) batteries are finding a clearer path to profit. These systems can stack more revenues from published tariffs, wholesale markets, and Italy's well-established capacity market, a versatility that makes them far easier to finance than larger utility-scale assets.

### Key takeaways

Italy's rock-bottom MACSE prices could delay the battery buildout it needs. Next year's round will reveal how many developers are still willing to participate. If battery buildout stalls, grid stress and prices will surge.

## Spain

**Market reforms pass after grid failures, but storage targets remain out of reach**

After April's blackout, Spain passed laws in [October](#) and [November](#) 2025 to remove key market barriers for storage. Batteries can now participate in wholesale markets, and benefit from faster permitting if they're co-located with renewables.

The government also allocated [€520 million in battery grants](#), worth **€250/kWh**, **that covers a significant share of battery CapEx**. It also plans to create a capacity market that will offer much-needed long-term revenues for batteries.

Spain has set an ambitious 12.5 GW short-duration storage target by 2030, most of which will be batteries. Despite all the recent support for storage, analysts expect the country to fall short, with forecasts calling for less than 7 GW by 2030 due to market barriers for standalone batteries and sluggish peak demand growth.

### Key takeaways

Spain's primary priority is to strengthen grid resiliency after the blackout in April. New market designs and revenue mechanisms for batteries will benefit early-movers that secure sites and grid connection.

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## Poland

**Loss of long-term capacity market exposes the grid to reliability risks**

Poland has one of Europe's most volatile power markets. Heavy reliance on expensive coal and gas, plus rapid renewable growth, will drive further price swings.

Its capacity market has been a key mechanism to add future system flexibility by offering batteries high long-term payments. Batteries that cleared last year's auction will earn €170/MW-day over 17 years, or over **€0.6 million/year for a 10MW system**.

### Key takeaways

Structural power price volatility remains a near-term risk to big power users in Poland. Ending the long-term capacity scheme could freeze battery investment and lock in coal and gas reliance for longer.

But Poland will phase out its best tool for grid flexibility and hold its final long-term capacity auction in December 2025. After that, only quarterly one-year auctions will remain, designed to fill immediate gaps rather than build lasting resilience. Analysts doubt these short-term rounds will deliver enough capacity to stabilize prices.

Poland also issued a **€980 million state incentive program** targeting over 5 GWh of storage by 2028. Applications for most of the incentive scheme already closed in May 2025, however, with funding decisions expected soon.

## Ireland

**Data center load requires creative battery storage solutions**

In November 2025, Ireland opened its wholesale power market to batteries for the first time. Batteries can now stack three revenue streams: energy arbitrage, capacity payments, and DS3 ancillary services. The grid leans heavily on wind and gas, leaving power prices exposed to intermittent generation and volatile fuel costs.

Data centers already [consume more than a fifth](#) of Ireland's electricity and demand is set to rise another 23% to [8.6TWh by 2030](#). New facilities are adding on-site batteries to speed grid connections or look to contract firm power from existing industrial sites nearby.

### Key takeaways

Data center growth is pushing the grid to its limits. Batteries, either on-site or contracted from nearby industrials, offer firm power premiums while stacking capacity payments and wholesale revenues.

Reliability in Ireland is expensive, and batteries get paid to provide it. The last capacity auction cleared at €411/MW-day, or **€1.5 million/year over ten years** for a 10 MW battery. The next auction will be in March 2026 for delivery in 2030. Gas benefits from the rules, but four-hour batteries are already breaking through.

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