

Iberian Peninsula Blackout: A Trade-Off Between Operational Risk and Consumer Cost*

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Abstract

Ensuring sufficient energy availability to meet demand—while operating resources within their own physical constraints and those of the grid—is fundamental to the secure and reliable functioning of any power system. Under the European short-term wholesale market design, system operators must reactively adjust (redispatch) market schedules originating from an assumed unconstrained (“copper plate”) network. This sequential market-clearing approach can complicate real-time operations and may increase the operational risk. We perform an event study analysis using hourly market and system data from 2019–2025. We find that after the 2025 Iberian Peninsula Blackout the Spanish system operator responded by prioritizing reliability, procuring greater volumes of gas-fired generation and reducing anticipated real-time output from wind and solar resources. However, this more conservative approach to operational risk, focused on ensuring secure and reliable real-time operations, has also led to higher redispatching costs and redispatch-induced CO₂ emissions.

Keywords: Congestion Management; Physically Feasible Schedules; Redispatch Market; Renewable Energy Curtailment; System Security

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