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Iberian-day-ahead-market-simulator: A Python package to simulate the MIBEL day-ahead market clearing

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Abstract-

The day-ahead market is the largest electricity market in Europe by traded volume, yet up-to-date simulation methodologies for reproducible research remain limited. This paper presents iberian-day-ahead-market-simulator, a Python package to reproduce and analyze day-ahead market clearing in the Iberian market (which includes Spain and Portugal), with out-of-the-box compatibility with public data. It enables reproducible experimentation with real day-ahead market data and provides a foundation for research on price formation, counterfactual scenarios, and policy analysis. We validated the package with more than 190 day-ahead market simulations, showing close agreement with observed outcomes in terms of prices, volumes, and cross-border exchanges.

Index Terms- Electricity markets; Python; Day-ahead market; Euphemia; Market clearing; Reproducible research

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