



## Energy Management in Energy Communities with Participation in MIBEL

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### Summary

The European energy landscape has evolved to include the concept of energy communities in most countries. In order to fully benefit the entire value chain, from consumers to producers, particularly including renewables, integration with electricity markets should be considered and further explored. This paper presents the results of methods and simulations conducted within the scope of the TRADERES project, which aims to develop "New Markets Design & Models for 100% Renewable Power Systems". The focus is on the operational context of energy communities in Portugal, including integration with MIBEL (Iberian Electricity Market). The implemented methodology involves energy management of an energy community, considering available renewable-based generation, storage, and flexibility. The numerical case study considers actual bidding scenarios in MIBEL, with real bids and prices.

### Highlights

- Energy communities need integration with electricity markets to optimize renewable energy benefits.
- Proposed model minimizes costs by managing flexible loads and shifting consumption to low-load periods.
- Results on a community with 100 reducible and 20 flexible loads show cost savings, reducing supply costs from 67.76 to 61.85 euros using consumption flexibility.



Info

The TradeRES project will develop and test innovative electricity market designs that can meet society's needs of a (near) 100% renewable power system. The market design will be tested in a sophisticated simulation environment in which real-world characteristics such as actors' limited foresight into the future and risk aversion are included.



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