

# Central- versus Self-Dispatch in Electricity Markets

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**Abstract** In centralized day-ahead markets, producers submit detailed cost data to the market operator that decides how much should be produced in each plant. This differs from decentralized day-ahead markets, which rely on self-commitment, and where producers send less detailed cost information to the operator. Ideally, centralized electricity market would be more effective, as the allocations account for more detailed cost factors, such as start-up costs and no-load costs. On the other hand, the information that the market operator receives is imperfect. The relative simplicity of the bidding format still does not allow producers to express all relevant details of their costs. Moreover, producers have incentives to exaggerate their costs because of the uplift payments that are used in centralized markets to compensate for start-up and no-load costs. Decentralized electricity markets tend to be less detailed, which makes it more straightforward to organize intra-day trading. Iterative intra-day trading can be used to sort out those coordination problems related to non-convexities in the production that a decentralized day-ahead market does not deal with very well. A disadvantage is that an increased possibility to coordinate increases the risk of collusive outcomes. Currently, the US has centralized wholesale electricity markets, while most of Europe has decentralized wholesale electricity markets. Some centralized markets in the US have recently introduced intra-day trading, which is a significant improvement. Centralized markets in the US consider all network constraints already in the day-ahead market. Decentralized day-ahead markets in Europe can be improved by considering network constraints in more detail.

**Keywords** wholesale electricity markets, market clearing, centralization, decentralization, unit-commitment, self-dispatch

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