

Strategic bidding in sequential electricity markets

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Abstract- Wholesale electricity markets can be organised into different types of markets; energy markets and ancillary services markets; that are cleared sequentially. The paper proposes a stochastic-optimisation model to obtain the distribution of the electricity resources of a generation firm among the different sequential markets within a wholesale electricity market. Market power is modelled by linear approximations of the residual-demand curves. In addition, the model obtains the bid curves of a generation firm that are submitted for every hourly period of each market comprising the sequence. A methodology to estimate the stochastic residual-demand curves for every hour of each market based on decision trees has been designed. The model has been developed for a Spanish utility to operate in the Spanish electricity market. A case study illustrates the performance of the proposed model.

Index Terms- Strategic bidding; wholesale electricity market; stochastic-optimisation model; electricity resource distribution; power generation firm; linear appro

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Citation:

Ugedo, A.; Lobato, E.; Franco, Á.; Rouco, L.; Fernández-Caro, J.; Chofre Álvarez, J.; "Strategic bidding in sequential electricity markets", IEE Proceedings-Generation Transmission and Distribution, vol.153, no.4, pp.431-442. July, 2006.