Intraday Trading of Wind Energy

In this paper, we tackle the problem of a wind power producer participating in a short-term electricity market that allows for the continuous, but potentially illiquid, intraday trading of energy. Considering the realistic case of a wind farm operating in the western Danish price area of Nord Pool, we build a simple but effective algorithm for the wind power producer to fully benefit from the Elbas intraday market. We then investigate the sensitivity of the obtained benefits to the maximum volume of energy the wind power producer is willing to trade in the intraday market, the ultimate aim of the trade (either to decrease energy imbalances or to increase profits) and to the installed capacity of the wind farm. Our numerical results reveal that the wind power producer can substantially increase his revenues by partaking in the intraday market but with diminishing returns to scale—a result that we attribute to the low liquidity of Elbas.

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Contributors: Skajaa, A., Edlund, K., Morales González, J. M.
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