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Optimal Operation and Valuation of Electricity Storages

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We apply computational techniques of convex stochastic optimization to optimal operation and valuation of electricity storages in the face of uncertain electricity prices. Our approach is applicable to various specifications of storages, and it allows for e.g. hard constraints on storage capacity and charging speed. Our valuations are based on the indifference pricing principle, which builds on optimal trading strategies and calibrates to the user's initial position, market views and risk preferences. We illustrate the effects of storage capacity and charging speed by numerically computing the valuations using stochastic dual dynamic programming.

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