

Electricity market-clearing prices and investment incentives: the role of pricing rules

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Abstract— Pricing rules in wholesale electricity markets are usually classified around two major groups, namely linear (aka non-discriminatory) and non-linear (aka discriminatory). As well known, the major difference lies on the way non-convexities are considered in the computation of market prices.

According to the classical marginal pricing theories, the resulting market prices are supposed to serve as the key signals around which capacity expansion revolves. Thus, the implementation of one or the other pricing rule can have a different effect on the investment incentives perceived by generation technologies, affecting the long-term efficiency of the whole market scheme.

The objective of this paper is to assess to what extent long-term investment incentives can be affected by the pricing rule implemented. To do so, we propose a long-term capacity expansion model where investment decisions are taken based on the market remuneration. We use the model to determine the optimal mix in a real-size thermal system with high penetration of renewable energy sources (since its intermittency enhances the relevance of non-convexities), when alternatively considering the aforementioned pricing schemes.

Index Terms— Electricity market design; Marginal pricing; Long-term capacity expansion

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