## A strategic production costing model for electricity market price analysis

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## Abstract-

Production costing models (PCMs) have been extensively used to analyze traditional power systems for decades. These tools are based on the costs of production, but in oligopolistic electricity markets market prices can not be explained attending just to marginal costs but instead bid prices have to be considered, since market participants seize their dominant position in the market looking for higher profits. Thus, the merit order composition criteria applied in traditional PCMs has to be somehow reconsidered in order to be able to represent the agents\' strategic bidding. The objective of the strategic production costing model (SPCM) presented in this paper is to evolve the PCM approach to adapt it to the actual wholesale electricity markets without losing its typical advantages. The generalization proposed allows to represent an oligopolistic hydrothermal electricity market and provides the system price-duration curve as well as the income and expected costs of every generating agent. Compared with other oligopolistic models, the main advantage of the SPCM is its potential computational speed, which makes it very suitable for risk analysis studies that require considering a large number of scenarios.

**Index Terms-**

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