

# **Economic inefficiencies of cost-based electricity market designs**

F.D. Muñoz, S. Wogrin, S. Oren, B.F. Hobbs

**Abstract—** Some restructured power systems rely on audited cost information instead of competitive bids for the dispatch and pricing of electricity in real time, particularly in hydro systems in Latin America. Audited costs are also substituted for bids in U.S. markets when local market power is demonstrated to be present. Regulators that favor a cost-based design argue that this is more appropriate for systems with a small number of generation firms because it eliminates the possibilities for generators to behave strategically in the spot market, which is a main concern in bid-based markets. We discuss existing results on market power issues in cost- and bid-based designs and present a counterintuitive example, in which forcing spot prices to be equal to marginal costs in a concentrated market can actually yield lower social welfare than under a bid-based market design due to perverse investment incentives. Additionally, we discuss the difficulty of auditing the true opportunity costs of generators in cost-based markets and how this can lead to distorted dispatch schedules and prices, ultimately affecting the long-term economic efficiency of a system. An important example is opportunity costs that diverge from direct fuel costs due to energy or start limits, or other generator constraints. Most of these arise because of physical and financial inflexibilities that become more relevant with increasing shares of variable and unpredictable generation from renewables.

**Index Terms—** Electricity market design, market power, equilibrium modeling, opportunity costs

Due to copyright restriction we cannot distribute this content on the web. However, clicking on the next link, authors will be able to distribute to you the full version of the paper:

[Request full paper to the authors](#)

If your institution has an electronic subscription to Energy Journal, you can download the paper from the journal website:

[Access to the Journal website](#)

**Citation:**

*Muñoz, F.D.; Wogrin, S.; Oren, S.; Hobbs, B.F.; "Economic inefficiencies of cost-based electricity market designs", Energy Journal, vol.39, no.3, pp.51-68. July, 2018.*