

The challenge of integrating demand response in Capacity Remuneration Mechanisms: providing a comprehensive theoretical framework

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Abstract-

The goal of this article is to define a comprehensive framework for the participation of demand resources in capacity mechanisms, identifying all potential participation modes and highlighting the inefficiencies that could arise from certain designs. The article first assesses the aforementioned two central design elements of CRMs for an efficient participation of demand resources, i.e., the methodologies to set the demand for firm supply and to allocate the costs of the CRM. Then it defines a classification of all potential participation modes, listing the benefits and the potential inefficiencies of each of them, but also highlighting which are being used in real CRMs. Finally, the article draws regulatory recommendations.

Index Terms- Demand response; Aggregators; Demand-side management; Resource adequacy; Capacity mechanisms; Capacity markets.

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