

A literature review of explicit demand flexibility providing energy services

T. Freire Barceló; F. Martín Martínez; A. Sánchez Miralles

Abstract-

Current power systems are characterized by the increase of renewable generation and distributed energy resources introducing more variability on the generation and enhancing the importance of the management in the consumption side. In this paper, a thorough review about the explicit demand flexibility (EDF) concept is addressed. This review, firstly, brings clarification over the different terms that have been used in the literature and the agents that are involved in the demand flexibility framework. Secondly, analyzes the different balancing services where EDF could participate, identifying the main barriers found for each market. In addition, it contributes to classify how mathematical models include EDF participation in ancillary services and congestion management, finding the main weaknesses and working lines for EDF integration in such models. Finally, a European overview is assessed to see where flexible resources have actual participation and how it is performed.

Index Terms- Flexibility; Demand; DER; Balancing services; Congestion management; Aggregator; Europe

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