
Chapter 14

Measurement and Verification of Demand Response: the customer load baseline

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Demand Response (DR) is a basic tool to achieve Power Systems flexibility in the short and medium terms. The effective deployment of DR and the engagement of new resources need both knowledge about how DR performs and how to evaluate their flexibility to give a **correct** economic feedback to customers and aggregators. DR verification requires a reference in absence of control: the customer baseline load (CBL). The aim of this chapter is to describe several baselines that provide an acceptable evaluation of load response as well as the use of different adjustment methods to improve the CBL. Some of these adjustment factors can be justified through the simulation of physical-based load models (PBLM), which are also used in DR for planning and **operational** tasks. The chapter discusses some issues reported by grid operators: detection of abnormal responses (before and after DR) that can be due to gaming or are reactions to maintain load service such as preheating, precooling or the change of tasks timeline. All these approaches have been illustrated using real data of an industrial customer. Results show that the adjustment of CBLs can improve several conventional approaches described in the literature.

Keywords: Customer Baseline Load, Physical-Based Load Modelling, Demand Response, Measurement and Verification, Electricity Markets

14.1 Introduction

Future Power Systems must be much more flexible than in the past because foreseen energy policies will involve a more significant participation of renewable resources in the generation mix. This new scenario means that the supply-side will decrease its controllability, which requires an increasing participation of demand-side.

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