The Spanish intraday market design: A successful solution to balance renewable generation?

J.P. Chaves, C. Fernandes

Abstract— The increasing penetration of renewable energy sources in Europe requires market mechanisms which allow an efficient balancing of these sources. This paper analyzes the participation of renewable generators in the Spanish intraday market. First, the organization of the intraday market and the short-term market mechanisms influencing intraday trading are described. After that, day-ahead and intraday market prices, as well as intraday trading volumes, are used to study the behavior of market agents in the Spanish intraday market. Regarding renewable generators, the influence of support schemes on the behavior of these agents in the intraday market is also analyzed. This paper shows that the Spanish intraday market has effectively contributed to renewable generation balancing. Despite this, market distortions have incentivized some renewable generators to arbitrate between the day-ahead and intraday markets, giving rise to higher system costs. Based on the presented analysis, it is argued that these distortions need to be removed from short-term markets to incentivize market parties, especially intermittent generators, to reduce forecast errors over time, improving economic efficiency and avoiding the use of costly balancing actions performed by the System Operator.

Index Terms— Intraday market; Renewable energy sources; Market designs