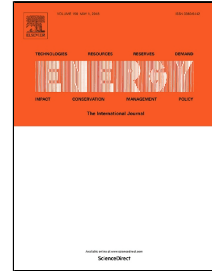


# Accepted Manuscript

An Improved Incentive-based Demand Response Program in Day-Ahead and Intra-Day Electricity Markets

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# An Improved Incentive-based Demand Response Program in Day-Ahead and Intra-Day Electricity Markets

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**Abstract:** By advancement and vogue of smart grid technologies, there is a strong attitude toward utilizing different strategies for participating in demand response (DR) programs in electricity markets. DR programs can be classified into two main categories namely incentive-based programs (IBPs) and time-based rate programs (TBRPs). In this paper, an improved incentive-based DR (IBDR) model is proposed. In our proposed IBP, the concept of elasticity is improved where it depends not only on the electricity price, but also is a function of consumption hour and customer type. In this program, the incentive value which is paid to the participating consumers is not a fix value and relates to the peak intensity of each hour. The proposed IBP can participate in both of day-ahead and intra-day electricity markets. The property of considering intra-day market enables consumers to provide maximum DR if possible. The proposed model is implemented on peak load curve of Spanish electricity market and a 200-unit residential complex. Different scenarios are considered to show effectiveness of the proposed DR model from various aspects including peak shaving as well as economic indices.

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