

Optimal placement of hydrogen fuel stations in power systems with high photovoltaic penetration and responsive electric demands in presence of local hydrogen markets

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Abstract-

In this research, a computationally-inexpensive stochastic hydrogen fuel stations (HFSs) in electrolyzer and a discharge mode for batteries to be able to sell more electricity and make more profit; on the other hand, in times with lower hydrogen prices, system operator commands shift-up in electricity demands and charge mode for batteries. The results show that curtailment. The impact of the participation in hydrogen market on system profit is assessed. The sensitivity of HFS profit to the number of HFSs, size of electrolyzers and demand response participation factor is assessed.

Index Terms- Hydrogen; Green hydrogen; Hydrogen fuel station; Electrolyzer; Demand response

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