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Study the challenges facing the development of renewable energy and electric vehicles

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Abstract

Although renewable energy sources have their importance in providing clean environment friendly power and are the necessary component of a viable energy mix for any distribution utility, they come with certain challenges for grid stability and power quality which need to be handled effectively in order to ensure reliable, economical and quality power supply to the consumer. On the other hand, electric vehicles are also posing a challenge to utilities like high system losses due to harmonics, overloading of the distribution system during peak hours and premature degrading of the distribution equipment due to over-heating because of loading, thus impacting the reliability of the power system (Salameh et al., no date). However, if the electric vehicle charging is done through renewable energy it will be a win-win situation for the distribution utilities, renewable energy generators and electric vehicle owners. The purpose of this paper is to enumerate the challenges faced by the Rajasthan electric utilities due to integration of renewable sources especially wind generation and electric vehicles with the grid. The study explores the possibility of using renewable energy to charge electric vehicles and other alternative solutions.

Keywords: Renewable Energy, Challenges, Utilities, Wind generation, Electric Vehicles, Peak Demand.