Impact on CO2 emission due to Electric Vehicle charging and distributed wind generation

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To reduce the greenhouse gas emission and fossil fuel dependency, electric vehicles (EV) are becoming viable options. EV charging is seen as an extra load on the electric power distribution system, and if not properly coordinated, it could increase the greenhouse gas emission from the electric power generators. This extra burden can be relieved by use of renewable distributed generation. By introducing distributed generation to support EV charging loading on traditional generation will be reduced and hence reducing the CO2 emissions. Type of distribution generation will result in variable CO2 emission levels due to their limited availability. This study focuses on the impact of wind generation on electric vehicle charging. There are three levels of electric vehicle (EV) charging. Level-1 is slow AC charging, level-2 is fast AC charging and level-3 is fast DC charging. This work analyzes the AC charging (both level-1 and level-2) and its effect on overall CO2 emissions of traditional generation with the presence of distribution generation.