Electric Vehicle Smart Charging using Dynamic Price Signal

With yearly increases in Electric Vehicle (EV) sales, the future for electric mobility continues to brighten, and with more vehicles hitting the roads every day, the energy requirements on the grid will increase, potentially causing low-voltage distribution grid congestion. This problem can, however, be resolved by using intelligent EV charging strategies, commonly referred to as "Smart Charging". The basic approach involves modifying the default vehicle charging scheme of "immediate charging", to a more optimal one that is derived from insight into the current state of the grid. This work proposed in this paper, involves a real-time control strategy for charging the EV using a dynamic price tariff, with the objective of minimizing the charging cost. Two different charging scenario are investigated, and the results are verified by experiments on a real Electric Vehicle. Finally, the costs of the proposed solutions are compared to the default charging scheme.