

عنوان مقاله:

CHARGE/DISCHARGE OF PEVS FOR PEAK SHAVING AND VALLEY FILLING IN THE LOAD PROFILE IN A SMART GRID BY USING SARSA ALGORITHM

محل انتشار:

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خلاصه مقاله:

Considering the load growth, limitations related to new generation capacities as well as available generation capacities, demand-side management has become a link between two sides of the demand in the smart grid, throughout the world. On the other hand, considerable influence of Plug-in Electric Vehicles (PEVs), Plug-in Hybrid Electric Vehicles (PHEVs) and Electric Vehicles (EVs) has increased the complexity of this issue. However, PEVs have created beneficial opportunities for power systems. Battery of PEVs can act as a power storage resource and impact on the stability as well as the reliability of the power grid. Appropriate charge/discharge scheduling of PEVs based on Vehicle to Grid (V2G), Grid to Vehicle (G2V) and Vehicle to Home (V2H) technologies can result in effective peak shaving and valley filling in the load profile of the power grid. In this paper, charging/discharging management of PEVs has been studied based on SARSA learning algorithm. The SARSA learning algorithm is one of the most common methods to solve problems based on the Reinforcement Learning (RL) framework. On this basis, the agent will learn to make optimal decisions to achieve a specific goal through interactions with the environment. Simulation results have revealed how an efficient demand response schedule can manage charge/discharge of PEVs. Also, it has been shown that the proposed approach can eliminate peaks and valleys in the demanded load profile and stability of the power grid can be ensured.

کلمات کلیدی:

Vehicle to Grid; Grid to Vehicle; Vehicle to Home; peak shaving; valley filling

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