

In this paper, a novel approach for recharging electric vehicles (EVs) is proposed based on managing multiple discrete units of electric power flow, named energy demand particles (EDPs). Key similarities between EDPs and fluid particles (FPs) are established that allow the use of a smoothed particle hydrodynamics (SPH) method for scheduling the recharging times of EVs. It is shown, via simulation, that the scheduling procedure not only minimizes the variance of voltage drops in the secondary circuits, but it also can be used to implement a dynamic demand response and frequency control mechanism. The performance of the proposed scheduling procedure is also compared with alternative approaches recently published in the literature.