Improvement of Local Voltage in Feeders with Photovoltaic using Electric Vehicles

In low-voltage (LV) feeders with high penetration of photovoltaic (PV), a major issue to be solved is voltage rise due to the active power injection. If no measures are taken, this may lead to generation's interruptions and to the malfunctioning of domestic appliances due to non-standard voltage profiles. This paper proposes a storage strategy to alleviate voltage rise in feeders with PV, using coordinated electric vehicle (EV) load as the storage solution. The voltage support strategy is easy to implement practically and it is demonstrated on a test feeder emulating a household with roof-mounted PV and an EV. The results show the effectiveness of using coordinated EV load in feeders with PV to mitigate voltage rise problems.

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