

## A Decentralized Storage Strategy for Residential Feeders with Photovoltaics - DTU Orbit (09/11/2017)

### A Decentralized Storage Strategy for Residential Feeders with Photovoltaics

This paper proposes a decentralized voltage support strategy for LV residential feeders with high roof-top PV capacity installed. The proposed strategy is capable of increasing the local consumption at private households with PV during high generation periods, by the use of locally controlled domestic energy storage systems (ESS). The traditional way of operating a domestic ESS to increase the local consumption rate does not take into account the need of voltage support in a feeder; the proposed storage concept improves the traditional one, by mitigating voltage rise due to PV in the feeder. The power sizing of the ESSs is performed with linear programming (LP) method, based on voltage sensitivity analysis. A Belgian residential LV feeder with private PV systems is used as a case study to demonstrate the effectiveness of the proposed strategy. Quantification of the required energy levels for the ESSs and estimation of LV grid losses is performed by means of time-series simulation using 1-year load and generation profiles.

### General information

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Organisations: Department of Electrical Engineering, Center for Electric Power and Energy

Authors: Marra, F. (Intern), Yang, G. (Intern), Træholt, C. (Intern), Østergaard, J. (Intern), Larsen, E. (Intern)

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