

## Modelling Framework and the Quantitative Analysis of Distributed Energy Resources in Future Distribution Networks - DTU Orbit (09/11/2017)

### Modelling Framework and the Quantitative Analysis of Distributed Energy Resources in Future Distribution Networks

There has been a large body of statements claiming that the large-scale deployment of Distributed Energy Resources (DERs) could eventually reshape the future distribution grid operation in numerous ways. Thus, it is necessary to introduce a framework to measure to what extent the power system operation will be changed by various parameters of DERs. This article proposed a modelling framework for an overview analysis on the correlation between DERs. Furthermore, to validate the framework, the authors described the reference models of different categories of DERs with their unique characteristics, comprising distributed generation, active demand and electric vehicles. Subsequently, quantitative analysis was made on the basis of the current and envisioned DER deployment scenarios proposed for Sweden. Simulations are performed in two typical distribution network models for four seasons. The simulation results show that in general the DER deployment brings in the possibilities to reduce the power losses and voltage drops by compensating power from the local generation and optimizing the local load profiles.

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