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Abstract

Title: Electricity Arbitrage and Peak Shifting Technologies

This tutorial is designed to be highly practical and engaging, particularly for those who have prosumers and buy electricity from the market. In Scandinavia, electricity supply is based on the NordPool market. Around 2 pm, hour-by-hour electricity prices for the next day, 24 hours ahead, are available. These prices can fluctuate from minus prices up to 4000 €/ MWh. This price volatility, especially recently, has led to decreasing revenues from PV parks. The main reason for this is the increasing PV electricity in the balance of the Estonian network. On days of clear sky in the summertime, mainly on the weekends, only the PV electricity production exceeds the country's total consumption. Neighbour countries are also developing PV solar and wind energy simultaneously. To navigate these challenges, we explore using batteries for electricity arbitrage. When electricity prices are low, it is reasonable to buy, and in hours when the price is expensive to sell. PV panels in the composition of prosumers introduce new challenges to electricity arbitrage. We discuss different ways to set the price levels of charge/ discharge batteries. This tutorial is a practical guide, sharing our findings and insights.