

## **SolarInnovate Energy Solutions**

# Wholesale price of energy storage vehicles in Aarhus Denmark





#### **Overview**

Can energy storage units be installed in the Danish power system?

Elsystemansvar A/S (subsidiary of Energinet) has asked Ea Energy Analyses to analyse the benefits and main drivers for the installation of storage units in the Danish power system. This will supplement the technology aspects in the recent Technology Catalogue on Energy Storage (DEA and Energinet, 2019).

How are energy services delivered in Denmark?

Some of the services are delivered through energy markets in Denmark (they are referenced in each of the subsections); certain are remu-nerated in other countries, e.g. in the US, or are not linked to any compensa-tion at all.

Is a storage facility a challenge in Denmark?

In Denmark, a storage facility can by definition (Energinet, 2019): The participation of storage assets in different markets may be a challenge. These challenges might be just as much a consequence of regulatory design as technical limitations.

What are the costs derived from the Danish technology catalogue?

Cost figures are derived from the Danish technology cata-logue (DEA and Energinet, 2019); operation and maintenance costs are ne-glected as their effect is limited. The figures do not include costs and revenues from arbitrage activities (i.e. from the charging pattern in the proposed strat-egy).

Which storage demonstration projects have been carried out in Denmark?

As reported in Table 1, two significant storage demonstration projects were carried out in Denmark in the past years. The batteries installed in Nordhavn (Copenhagen) were tested mainly for the provision of primary regulation (TSO service) and peak shaving (DSO service).

Are there opportunities for value-stacking in Danish electricity markets?



After going over the main features of the Danish electricity markets – with a focus on the provision of ancillary services – opportunities for value-stacking (utilizing opportunities across markets) are identified and examined for the year 2025 at the transmission grid level.



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