

A person wearing an orange puffer jacket is seen from behind, sitting on the shoulders of another person. They are flying a colorful kite (red, blue, green, yellow) against a clear blue sky. The kite has a long yellow tail. The scene is bright and sunny, with some light clouds visible at the bottom.

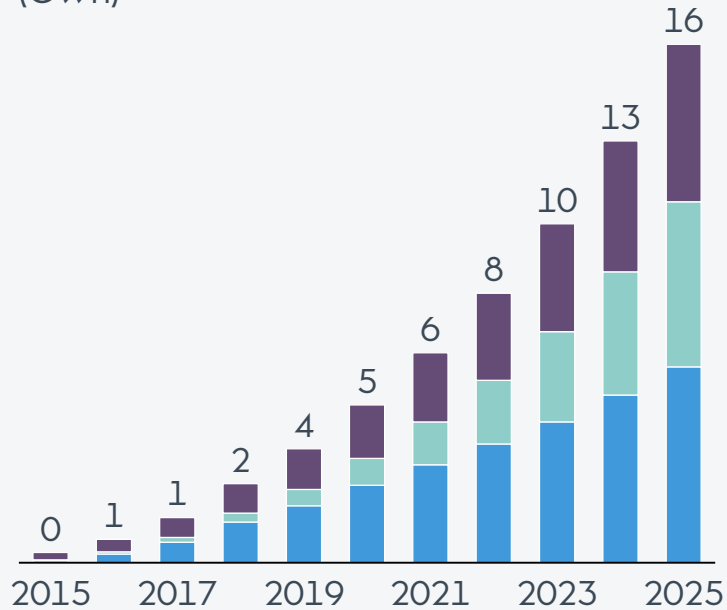
Electrochemical energy storage

Capabilities and perspectives

Michael Nylykke, Energy Storage
& Solar
August 2018

Storage market is small but growing rapidly

Cumulative NWE storage capacity by segment (GWh)



Residential



C&I



Utility-scale



Projects are reaching material scale

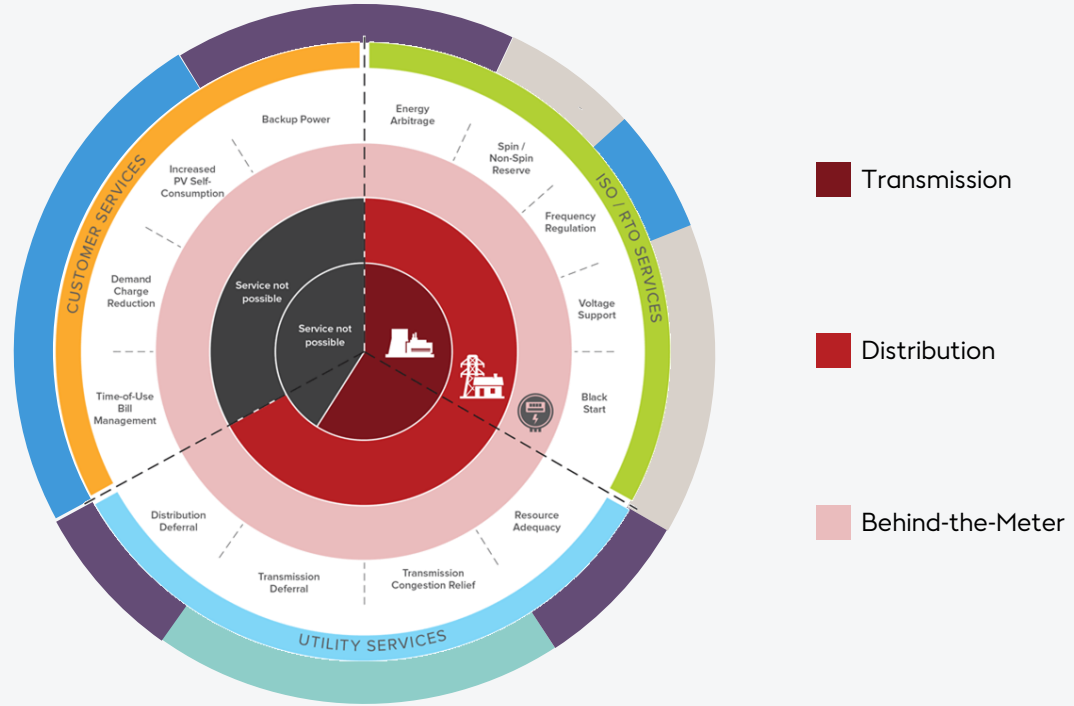


- 100MW / 129 MWh Horndale Power Reserve
- Purpose: Ancillary services & time shifting



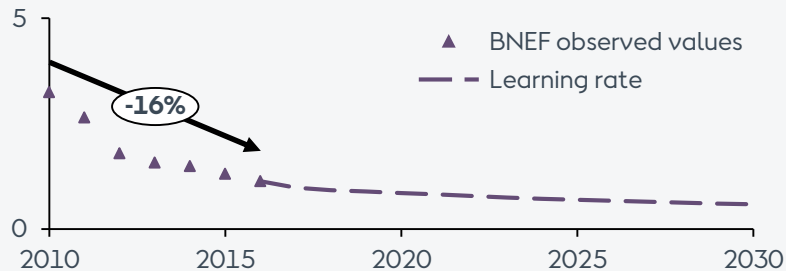
- Up to 250MW / 650MWh South Australia virtual power plant
- Purpose: Provide grid stability during peak hours

Storage use cases are becoming increasingly viable

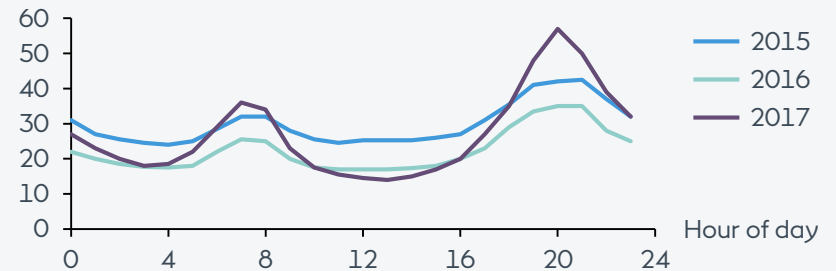


Decrease cost makes renewables and storage pairing increasingly attractive

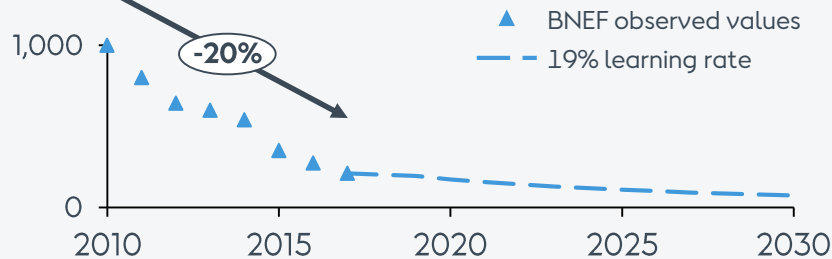
Solar PV system cost (\$/W)¹



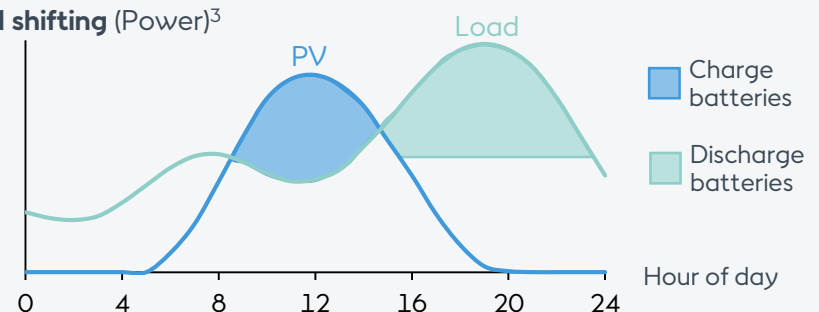
Average hourly day-ahead market prices in California (\$/MWh)²



Lithium-ion battery pack prices (\$/kWh)



Load shifting (Power)³



Source: BNEF, U.S. Energy Information Administration

1. Utility scale system cost including module, inverter, balance of plant, engineering, procurement and construction 2. January through June average 3. Illustrative

Ørsted is actively engaged in storage and solar

