Battery Storage

Battery power and storage systems are emerging as one of the key solutions to sustainably and effectively integrating renewables into power grids worldwide.

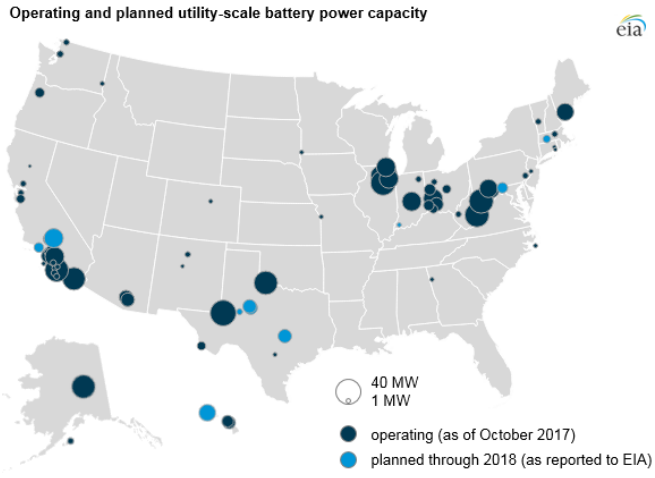
Overview

- The electricity grid is a complex system where constant **adjustments to the supply** are needed to match **changes in demand**.
- Energy storage plays a pivotal role in this balancing act. When there is more supply than demand, e.g. at night-time when low-cost power plants continue to operate, the **excess electricity generation** can be used to power storage devices. When demand is greater than supply, storage facilitates can **discharge their stored energy to the grid**.

- Various **storage technologies** exist: thermal storage, compressed air, hydrogen, pumped hydroelectric storage, flywheels, and batteries.
- Battery storage in particular is crucial to overcoming the **intermittency problem of renewables**, allowing energy to be stored and dispatched when the wind stops blowing or the sun stops shining.

Current Standing in the U.S.

- As of 2018, there were 125 systems for a total of 869MW of installed storage capacity. This will grow to **7.3GW by 2025.**
- Alaska and Hawaii, with comparatively smaller electrical systems accounting for 1% of total grid capacity in the U.S., account for **14% of large-scale battery energy capacity.**



Economics

- On average, battery storage costs $150MWh, but is expected to **drop 36% by 2030 and 53% by 2050.**
- In 2019, the market for battery storage was $712 million, and will **grow to $7.2 billion by 2025.**

What's Next for Battery Storage?

- The main challenges for battery storage are the **high cost and capacity**, with most batteries only being able to store 4 hours of energy. Moreover, most batteries currently come from **China**. With the support of government and industry, energy storage technologies can continue to develop and expand, and America can become a major leader in this field.