

# Storage

## Physics and Mathematics of Sustainable Energy

College of the Atlantic

1. The Tesla powerwall battery has a capacity of 13.5 kWh. The typical US home uses 900 kWh per month. For how many hours could the powerwall battery provide power to a house?
2. How many Tesla powerwall batteries would we need to get 35 GWh of storage? If each powerwall costs around \$10,000 (including installation) how much would 30 GWh of batteries cost?
3. The batteries in electric cars vary, but roughly 30 kWh seems to be a reasonable average for newer cars. How many such batteries would we need to get a storage capacity of 6 GWh?

Note: Raccoon mountain is a pumped storage facility with a capacity of 35 GWh. The cost to build the facility, in 2019 dollars, was 1.2 billion USD.