**Meeting 1: Exploring research ideas and directions**

Step1: Finite horizon. Charge/Discharge efficiencies

Step2: if I charge/discharge again and again, for a year, how well it’s going to work? (Resource adequacy). Also, efficiency is different for winter/summer

Step3: - Constraints on daily scale: create instability flicker too often.

-Constraints on annual scale: do we enough or more batteries? Also, in the case, we go green, how many more do we need. Now, considering going green, what is price impact on yearly basis?

Step4: Mean field games model as in [An Extended Mean Field Game for Storage in Smart Grids](https://arxiv.org/pdf/1710.08991.pdf)

**Possible objectives:**

(1) maximize reliability,(2) min cost and max benefit, (3) battery to decarbonize(run when carbon sources run high) (4) Optimal bidding (\*\*\*)

Sensitivity analysis: Sizing is control , parametric solve, double battery what will happen, half battery, what happen, OU process parameter changes for mean-reversion.

Some misc questions:

How do we generate electricity? In day, solar, wind, nuclear, gas, coal How about bidding?

If you have battery storage system, what is good for? Many different objectives!!!!

**ASSIGNMENT**: Read assigned references from [Energy storage literature review](https://ieeexplore.ieee.org/abstract/document/9513574)

Focus on Energy arbitrage, ancillary services .

Ideally, ancillary services combined with energy arbitrage.