



Optimal Sizing of ESS Co-Located with Solar PV

To help a leading developer of grid scale solar and storage craft a response to a RFP, CES performed modeling and financial analysis to determine optimal sizing and configuration of grid scale solar and storage project in Midcontinent ISO

Client Needs

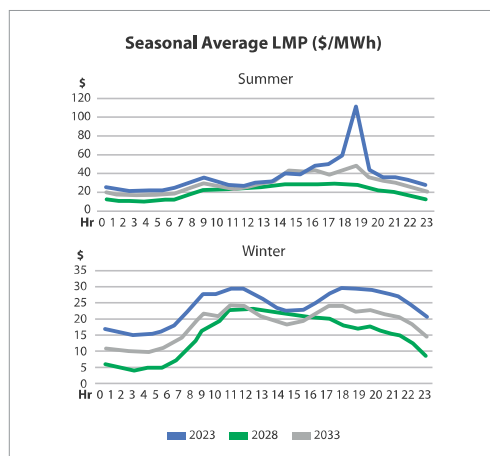
- Optimize the sizing and configuration of a co-located solar and storage system to maximize project revenues
- Model the expected dispatch and performance of the resources over a 20 year forward period
- Build a full financial model with sensitivities to help craft a competitive response to the RFP

Analysis Highlights

- Created forward price curves for the MISO market accounting for renewable penetration and its impacts on seasonal and diurnal price variations
- Developed multiple sensitivities from varying solar irradiance and system availability, DC/AC ratios, DC vs AC coupling options, Investment Tax Credit (ITC) scenarios, restrictions charging from solar and ESS sizes
- Emphasized the maximization of UCAP, as a key project requirement in the RFP
- Methodically shortlisted a set of potential options that maximize overall project revenues

Outcomes

- CES provided the client with a full financial model for the co-located solar and storage project
- Included sensitivities for solar production, ESS power rating and solar charging to capture ITC benefits
- Recommended the most preferred combination of storage size, inverter rating and coupling option that maximized overall project revenues



Primary Requirements

Initial shortlist of mandatory requirements such as location of co-located project with various storage configurations as % of solar MW



Operational Requirements

Candidate combinations of interconnection and operational requirements such as inverter specifications, DC/AC ratios conversion and coupling options



Dispatch Scenarios to Optimize Revenues

Financial modelling using various combination of parameters such as market participation, ITC, UCAP, solar variability to optimize returns by creating various dispatch cases



Final Configurations