

Financing considerations (1/2)

Type of Batteries

- **Li-ion based battery technology** is a **well proven** technology with 25+ years of commercial track record in the consumer electronics and EV industries; it is the only **currently bankable form** of electrochemical storage
- Currently not enough track record for project finance in non Li-ion technology; more amenable to equity investment

Revenue structure

- Merchant market for Batteries is currently too high risk
- A form of PPA, lease agreement or similar is required with a strong preference for fixed **capacity payments**
- For hybrid renewable plants with storage contracted to provide **firm power**, special attention to probability of meeting reliability tests, **sizing of batteries** and risk of seller default for non technical performance. Where risk is non mitigated through EPC/O&M contract, seek **mitigation via Sponsor support**

Financing considerations (2/2)

Tenor function of mode of use

- **Batteries don't have a Design Life so much as a Cycling Life.** For low cycling (one charge/discharge per day), lifetime can extend to 20 years. For frequent/multiple cycling, lifetime can drop to below 10 years. Same battery can last 15 years or 5 years depending on how it is operated.
- If tenor / revenue agreement is longer than 10-15 years consider **battery augmentation**/replacement (over time). This can be financed by building a maintenance reserve account or paying for a **Capacity Maintenance Agreement** with the Supplier. Battery oversizing from the onset is also an option.
- Similar to any renewable investment, requirement of minimum tail period under the PPA

Warranties

- **Conditions and duration (number of years)** is important
- Creditworthiness of vendor is critical
- Tie in warranties with key assumptions and terms in the revenue Agreement