RE & STORAGE ADVISORY · STEP 03 · DETAILED ENGINEERING · REPORT

Grid-Connection Study Report

Load flow, short-circuit, transient stability and voltage-ride-through studies supporting STU/CTU connectivity approval.

Worked example (anonymised): Example: Standalone BESS Detailed Engineering · 150 MW / 300 MWh, LFP-based, 33 kV collection · Western India. Illustrative intra-state open-access BESS project requiring 132 kV interconnection studies, protection philosophy and procurement-ready EPC tender documents.

Sample excerpt · Study Scope & Compliance Checklist (Extract)

Study	Standard/Code	Base Case	Result Summary	Status
Load Flow	CEA Grid Code	N-1 peak load	Voltage within ±5%	Compliant
Short Circuit	IEC 60909	3-phase fault, 132 kV bus	31.5 kA breaking capacity	Compliant
Transient Stability	CERC LVRT/HVRT norms	Grid disturbance event	Ride-through confirmed	Compliant
Harmonics	IEEE 519	Full PCS output	THD < 3%	Compliant
Reactive Power	STU technical standard	0.95 lag-lead range	Within droop capability	Compliant

Notes

• Studies submitted alongside connectivity application to the state transmission utility
• Sensitivity cases included for future capacity addition at the same interconnection point

What happens in this step

1. Develop electrical SLDs for AC/DC architecture, PCS/inverter blocks, MV collection, and interconnection switchyard
2. Prepare general arrangement and cable/trench layouts for BESS containers, PCS skids, transformers and control room
3. Define protection philosophy: relay coordination, arc-flash study, differential/distance protection settings
4. Run grid studies — load flow, short-circuit, transient stability, harmonic and voltage-ride-through per CEA/STU requirements
5. Draft technical specifications and BoQ for PCS, batteries/modules, transformers, switchgear, SCADA and civil works
6. Coordinate with STU/CTU and DISCOM for connectivity/LTA approval and interconnection agreement inputs
7. Compile a bid-ready procurement dossier with drawings, specs and evaluation criteria for EPC tendering

Outcomes

• A procurement-ready engineering package accepted by EPC bidders and lenders without major clarification rounds
• Grid-connection studies aligned with STU/CTU requirements, reducing connectivity approval delays
• Protection and safety philosophy validated ahead of equipment ordering, minimising rework risk
• Clear BoQ and specifications enabling like-for-like EPC bid comparison and faster contract award

Want this for your project? Write to info@growthifye.com or use the Contact page — we will scope the real deliverable set for your capacity, state and lender requirements.