RE & STORAGE ADVISORY · STEP 02 · CONCEPT, SIZING & RTC/FDRE MODELLING · MEMO

Degradation & RTE Stress-Test Memo

25-year energy-delivery stress test under low-RTE and accelerated-degradation cases, with augmentation trigger points flagged.

Worked example (anonymised): Hybrid RTC Supply Portfolio · 300 MW solar + 150 MW wind + 300 MW/1,200 MWh BESS · Western India. Illustrative round-the-clock supply portfolio modelled for a state DISCOM tender requiring 85% annual availability against a flat RTC schedule.

Sample excerpt · Degradation & RTE Stress-Test (illustrative, Year 1-25 excerpt)

Year	Capacity Retention (%)	RTE (%)	Augmentation Trigger	Residual Energy (MWh)
1	100	88	No	1,200
5	94	87	No	1,128
10	86	85	Yes - Tranche 1	1,032
15	79	83	No	948
20	72	81	Yes - Tranche 2	864
25	68	79	Monitor	816

Notes

• Stress case assumes 1.5x manufacturer-warranted degradation rate
• Augmentation tranches sized to hold contracted energy floor above penalty threshold

What happens in this step

1. Translate Step 01 resource/load outputs into candidate technical configurations (solar:wind:BESS ratios, power-to-energy ratios)
2. Run BESS power/duration optimisation across tariff, ancillary and contract structures to find the least-cost MW/MWh combination
3. Build 8760-hour hybrid RTC/FDRE dispatch model incorporating curtailment, forecasting error and peak-shortfall penalties
4. Layer in degradation curves (solar, wind, cell) and RTE fade over project life to test 25-year energy delivery
5. Stress-test the configuration against low-RTE, high-degradation, and adverse-weather-year scenarios
6. Benchmark augmentation strategies (capacity top-up years, replacement cost timing) against contract penalty exposure
7. Issue sizing recommendation with sensitivity grid, LCOE/LCOS and compliance-probability outputs for investment decision

Outcomes

• A financially optimised BESS power/duration and hybrid capacity mix, backed by scenario and sensitivity analysis
• Quantified RTC/FDRE compliance probability and penalty-risk exposure ahead of PPA signing or financial close
• A degradation- and RTE-tested 25-year energy delivery profile accepted by lenders and internal investment committees
• A clear, costed augmentation roadmap that protects contracted output without over-sizing capex upfront

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.