



TRANSMISSION ENGINEERING · STEP 02 · ROUTE & SITE ENGINEERING · MEMO

Substation Site Selection Memo

Comparative evaluation of candidate substation plots against technical, statutory and cost criteria with a recommended site.

Worked example (anonymised): 132 kV D/C Transmission Line & Switching Station · 50 MWac solar park evacuation, single circuit initially, D/C ready · Maharashtra, Western India. 18 km greenfield 132 kV line connecting a solar park pooling substation to the nearest DISCOM switching station, routed through mixed agricultural land and a short forest patch requiring diversion approval.

Sample excerpt · Site Comparison Matrix

Criterion	Site A (Recommended)	Site B	Site C
Land area available	4.2 acres, single owner	3.8 acres, 3 owners	5.0 acres, government land
Distance to grid tie-in point	1.2 km	3.4 km	0.8 km
Flood risk (100-yr contour)	Outside	Outside	Marginal, within buffer
Forest/CRZ clearance needed	No	No	Yes, minor patch
Estimated land cost	■1.4 Cr	■1.1 Cr	■0.9 Cr (lease)
Overall ranking	1	2	3

Notes

- Site A recommended despite higher land cost due to single-owner acquisition and no forest clearance dependency
- Site C excluded primarily on clearance timeline risk to project schedule

What happens in this step

1. Desktop corridor screening using satellite imagery, forest/eco-sensitive zone maps and existing RoW data to shortlist 2-3 viable alignments
2. LiDAR/DGPS or drone-based topographic survey along the shortlisted corridor to build a 3D terrain and vegetation model
3. Tower spotting and profile plotting on the surveyed terrain to optimise span lengths, angle points and tower type selection
4. Geotechnical investigation (trial pits/boreholes) at representative tower locations and the substation site to classify soil bearing capacity
5. Substation site selection and comparison across candidate plots on land availability, flood/seismic risk, access road distance and grid-tie feasibility
6. Stakeholder and statutory mapping - private land parcels, forest patches, water bodies, protected structures - with a preliminary crossing schedule
7. Consolidated route alignment drawing, tower schedule and site selection memo issued for client sign-off before detailed design

Outcomes

- Land acquisition and forest clearance risks identified and quantified before detailed design commitment
- Optimised tower count and span design reducing overall line cost by minimising unnecessary angle points
- Geotechnically validated foundation strategy avoiding costly design changes during construction
- Substation site selection backed by a defensible, criteria-based comparison for internal and lender approval

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.