

Typical solar project installation phases



1. Mobilize & site preparation

- Mobilization: Equipment, personnel, and materials are brought to the site, including heavy machinery and temporary facilities.
- Land Clearing: Vegetation and obstacles are removed to make way for the installation of solar infrastructure.
- Survey & Staking: The site is surveyed, and key points are staked to mark boundaries, access roads, and placement of solar arrays.
- Erosion Control: Temporary measures, such as silt fences or drainage systems, are implemented to prevent soil erosion during installation activities.



2. Civil works

- Grading & Excavation: The land is leveled, and trenches are dug for cabling and foundations.
- Access Roads: Roads are formed to ensure that equipment and vehicles can move easily across the site.
- Drainage Systems: Infrastructure is put in place to manage water flow and prevent flooding or erosion on the site.
- Foundation: Foundations are laid, either in the form of concrete pads or driven piles, for supporting solar panel racks.



3. Racking/mechanical install

- Racking Assembly: The metal frames that hold the solar panels are assembled and installed on the pre-built foundations or piles.
- Alignment: Racking systems are aligned for optimal sun exposure, often using GPS-guided tools.
- Mounting Hardware: Components like brackets and fasteners are secured to the racking system to hold the solar panels in place.
- Structural Inspections: Inspections ensure that the racking systems meet safety and design specifications prior to panel installation.



4. Construction of a solar facility

- Panels: Solar panels are mounted on the racking system and secured with brackets.
- DC Wiring: Panels are wired in series or parallel to form arrays, which are connected to DC combiner boxes.
- Inverter Setup: Inverters, which convert DC power from the panels to AC power, are installed at designated locations.
- Cabling & Trenching: Trenches are dug for electrical conduits, and cables are laid to connect solar arrays to the inverters and then to the substation.



5. Substation & interconnection

- Substation Mobilization: A substation is built or upgraded on-site to manage voltage changes and connect the solar farm to the grid.
- Transformer Mobilization: Transformers are installed to step up or step down the voltage as needed for grid compatibility.
- Interconnection to Grid: The solar farm is connected to the local electrical grid, involving collaboration with utility companies for safe integration.
- Testing & Inspection: The interconnection system undergoes rigorous testing to ensure that it complies with safety standards and grid requirements.



6. Restoration & commissioning

- Site Restoration: Disturbed areas, such as access roads and land around the arrays, are restored with topsoil, vegetation, or gravel to prevent erosion.
- System Testing: Each component of the solar farm, from panels to electrical systems, undergoes commissioning tests to verify proper operation and efficiency.
- Permitting & Approval: Final inspections are conducted by local authorities and utility providers to ensure all regulations are met.
- Commissioning & Handover: Once fully operational, the system is commissioned, and the site is handed over to the operations and maintenance team for ongoing management.