Annual Preventive Maintenance Checklist for Solar

61 items across 10 sections.

SITE

LOCATION

TECHNICIAN

DATE

Tick each item when it is verified. Write N/A where an item does not apply to your project, and use the right-hand column for notes, owner and due date.

1 Planning and Scheduling

NOTES / OWNER / DUE

Most of what makes a preventive visit efficient happens before the truck leaves. Schedule around the site's access constraints and the season, and give the crew the information they need to work rather than spend the morning finding things.

☐ 1.1	Schedule the visit in the season that suits the site, avoiding peak production months where practical	
☐ 1.2	Give the host or landlord the notice their lease or license requires, in writing	
☐ 1.3	Pull the prior year's report and open punch items so the crew can verify the repairs held	
☐ 1.4	Review the past year's alarm history and flag any recurring or unresolved fault for investigation	
☐ 1.5	Confirm gate, roof hatch, key and badge access arrangements before dispatch	
☐ 1.6	Verify site-specific safety requirements, including any host training or escort rules	
☐ 1.7	Check calibration status of torque tools, meters and the thermal imager	

2 Modules and Array Condition

NOTES / OWNER / DUE

The array walk is a visual inspection with a purpose. The crew is looking for changes since last year, not just obvious breakage, so the prior year's photos matter. Tie every documented defect to a position on the string map, because a photograph with no location is useless to a warranty claim.

☐ 2.1	Walk every row and record cracked, shattered, delaminated or discolored modules by string and position	
☐ 2.2	Inspect for backsheet cracking, bubbling or chalking and photograph any affected area	
☐ 2.3	Check junction boxes for loose lids, melted housings, moisture entry or discoloration	
☐ 2.4	Note soiling condition and any localized source such as bird droppings, sap, pollen or industrial fallout	
☐ 2.5	Record any new shading source, including tree growth, new construction or added rooftop equipment	
☐ 2.6	Perform infrared scanning of the array where the contract or suspected defects call for it	

3 Racking, Structure and Attachments

NOTES / OWNER / DUE

Structural items move slowly and then all at once. Wind and thermal cycling work fasteners loose over years, and galvanic corrosion progresses quietly. Re-torque a documented sample rather than every fastener, and widen the sample if the first set shows drift.

☐	3.1	Re-torque a documented sample of module clamps and structural fasteners, recording values found and values set	
☐	3.2	Inspect for corrosion at fasteners, splices and dissimilar-metal contacts	
☐	3.3	Check ballast blocks for movement, cracking or displacement from the layout	
☐	3.4	Inspect roof attachments and flashings for displaced sealant, ponding or membrane damage	
☐	3.5	Verify ground-mount posts for frost heave, settlement, erosion or exposed embedment	
☐	3.6	Confirm wire management clips and conduit supports remain intact and conductors are off surfaces	

4 DC Electrical

NOTES / OWNER / DUE

The DC side is where slow-developing heat problems live. Scanning combiner boxes and connections under load, on a clear day with the system producing, finds the high-resistance connection that becomes next year's arcing fault. Compare string currents against the prior visit rather than judging them in isolation.

☐	4.1	Open each combiner box and inspect for water entry, insect or rodent activity and corrosion	
☐	4.2	Thermal scan each combiner under load and record any connection running hot relative to neighbors	
☐	4.3	Measure and record string currents and compare against neighboring strings and against last year	
☐	4.4	Check fuses and fuse holders for discoloration, heat damage or looseness	
☐	4.5	Inspect accessible DC connectors for UV damage, separation, moisture or strain	
☐	4.6	Confirm enclosure seals, gaskets and drains function and close everything with correct hardware	
☐	4.7	Test rapid shutdown function and confirm the system responds as designed	

5 Inverters

NOTES / OWNER / DUE

Inverter service follows a manufacturer-defined procedure, and that procedure governs. Most of what fails is thermal: filters clog, fans fail, and the unit derates on hot afternoons long before it alarms. Intervals vary by model, so build the schedule from the manuals rather than a fleet-wide assumption.

☐	5.1	Perform the manufacturer's scheduled service items for the specific model and service interval	
☐	5.2	Clean or replace air filters and clear heat sinks and intakes of debris	
☐	5.3	Verify cooling fans operate and replace any that are noisy, slow or failed	
☐	5.4	Download and review the fault and event log since the last visit	
☐	5.5	Check and record firmware version, and apply updates only with owner approval and documented grid settings	

5 Inverters

			NOTES / OWNER / DUE
☐	5.6	Verify grid-support and protection settings still match the approved interconnection profile	
☐	5.7	Inspect and clean enclosure interiors, and confirm door seals and locks function	
☐	5.8	Thermal scan AC and DC terminations inside the inverter under load	

6 AC Equipment and Interconnection

AC equipment gets fewer findings per visit but the findings are expensive. Anything requiring an outage or medium-voltage work needs planning and a qualified crew, so coordinate it with the visit rather than discovering it on the day.

			NOTES / OWNER / DUE
☐	6.1	Thermal scan AC disconnects, panelboards, switchgear and transformer terminations under load	
☐	6.2	Re-torque a documented sample of AC terminations to manufacturer specification	
☐	6.3	Inspect transformers for oil level, leaks, temperature and audible abnormality, as applicable	
☐	6.4	Verify production and revenue meter readings and reconcile against the monitoring platform	
☐	6.5	Confirm protective relay settings and test intervals where a relay is present	

7 Grounding and Bonding

Grounding rarely changes on its own, but corrosion, theft and repairs made during the year can compromise it. A short verification each visit is cheap insurance.

			NOTES / OWNER / DUE
☐	7.1	Spot-check equipment grounding continuity at array sections and major equipment	
☐	7.2	Inspect grounding conductors and lugs for corrosion, theft damage or loosening	
☐	7.3	Verify bonding restored at any section disassembled for repair since the last visit	

8 Monitoring, Sensors and Communications

Monitoring hardware drifts and degrades like everything else, and a bad sensor corrupts every performance number the site produces for the rest of the year. Verify the instruments, not just the dashboard.

			NOTES / OWNER / DUE
☐	8.1	Clean and level irradiance sensors and verify readings against expected clear-sky values	
☐	8.2	Confirm sensor calibration is current and schedule recalibration or replacement as required	
☐	8.3	Reconcile monitoring energy totals against the revenue meter for the past year	
☐	8.4	Confirm all channels, inverters and strings are reporting and correctly named against the string map	
☐	8.5	Test communications equipment, check signal strength and confirm data gaps are explained	
☐	8.6	Review alarm thresholds and notification lists and update for staffing changes	
☐	8.7	Replace data logger backup batteries and storage media on the recommended interval	

9 Site, Vegetation and Civil

NOTES / OWNER / DUE

Ground-mount sites carry obligations that have nothing to do with electricity and everything to do with permits and safety. Erosion and drainage problems compound, so a finding here should get a date rather than a mention.

☐	9.1	Verify vegetation height meets the contract standard and no growth shades the lowest module row	
☐	9.2	Clear woody growth from fence lines, equipment pads and access roads	
☐	9.3	Inspect stormwater controls, swales and outfalls for function and sediment buildup	
☐	9.4	Check for erosion, rutting or washouts around posts, roads and equipment pads	
☐	9.5	Inspect fencing, gates, locks and signage for damage and confirm required warning signs are present	
☐	9.6	Confirm access roads remain passable for service vehicles and emergency response	
☐	9.7	On rooftops, clear drains, gutters and scuppers and check walkway pads and fall protection anchors	

10 Records, Reporting and Closeout

NOTES / OWNER / DUE

The visit is not finished when the crew drives away. The deliverable is the record, and a report that lists tasks as complete without recorded values, photographs and open items is not worth filing.

☐	10.1	Issue a report with measured values, photographs, thermal images and defect locations tied to the string map	
☐	10.2	List every open finding with a recommended action, priority and cost estimate	
☐	10.3	File warranty claims for defects found, within the applicable notice period	
☐	10.4	Update the as-builts and string map for any change made during the year	
☐	10.5	Feed findings into the replacement reserve and the next operating budget	

+ Additional Findings	NOTES / OWNER / DUE
Items found that are not covered above.	
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SIGN-OFF

TECHNICIAN

SIGNATURE AND DATE

SUPERVISOR

SIGNATURE AND DATE

This checklist is a structure for making sure nothing obvious is missed. It does not replace the judgment of qualified professionals, the governing documents or the advice of counsel, engineers and other advisors.