

# Case Study

## Doubling Portfolio Capacity While Tripling Technician Productivity

### Executive Summary

A leading U.S.-based solar asset owner overseeing utility-scale and distributed solar portfolios across 12 states) successfully doubled its managed solar portfolio from 650 MW to 1.3 GW under active operations while simultaneously improving the technician-to-MW ratio from <22 MW per technician to 55 MW per technician. This 150% productivity gain was achieved without increasing headcount and delivered an estimated 32% reduction in annual OPEX savings.

### The Challenge

Prior to the initiative, the organization faced rapid growth driven by acquisitions and new PPAs. However, operations was fragmented:

- Regional teams operated with 6+ different preventive maintenance (PM) protocols, work-order systems, and safety checklists.
- Technician productivity varied widely (18–24 MW/tech) due to inconsistent tooling, spare-parts inventory practices, and performance tracking.
- Managers lacked unified KPIs, leading to siloed decision-making and reactive firefighting rather than proactive optimization.
- The technician-to-MW ratio stagnated below 22 MW/tech, creating headcount pressure and margin erosion as the portfolio scaled.



Without standardization, further growth risked operational breakdowns, safety incidents, and escalating costs.

### Developed Standardized Processes



A cross-functional task force (led by the VP of Operations and including field techs, engineers, and regional leads) conducted a 90-day process audit.

Consolidated 14 disparate PM schedules into a single, risk-prioritized 5-tier maintenance matrix using failure-mode analysis and historical outage data.

Implemented a unified digital work-order platform (customized CMMS) with mobile-first checklists, automated spare-parts reordering, and drone/IR thermography integration.

Standardized safety, quality, and handover protocols, reducing administrative time by 40%. All processes were documented in a living “Playbook”

### Cross-Functional Learning with Regional Teams



Regional teams were intentionally paired for “knowledge sprints” (bi-monthly 2-day rotations and virtual peer reviews):

High-performing Southwest desert teams (expert in dust mitigation and extreme-heat protocols) trained Southeast teams on maintenance.

Built timelines for key maintenance scopes, similar to vehicle or HVAC maintenance.

A digital “Lessons Learned” repository captured best practices, with mandatory monthly cross-regional webinars.

This created a culture of continuous improvement: technicians and supervisors became internal consultants,

### Manager Training & Business Performance



All operations managers completed a “Performance Leadership Academy” (blended online/in-person):

Core curriculum: KPI dashboard mastery, variance analysis, and predictive maintenance forecasting using standardized metrics (Mean Time Between Failures, Availability %, O&M cost/MWh, Technician Utilization %).

Managers learned to run weekly “Ops Scorecard” reviews using a single enterprise dashboard that rolled up every site’s performance in real time.

Training included scenario-based simulations and peer coaching circles so managers could translate metrics into actionable field decisions.



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Portfolio Scale:  
**Managed capacity doubled**



**Productivity Leap:**

Technician-to-MW ratio improved from <22 MW/tech → 55 MW/tech (150% gain)



O&M cost per MWh  
**dropped 28%.**



**Preventive maintenance completion rate** rose from 68% → 97%.



### Key Drivers of Success

- Executive sponsorship with quarterly steering reviews.
- Technology backbone (CMMS + centralized KPI dashboard).
- Operational alignment: technicians and managers received raises tied to performance targets.
- Iterative rollout: pilot in two regions, measure, refine, then national scale in 9 months.

### Transferable Lessons

The Organization proved that dramatic productivity gains in solar O&M are achievable through disciplined standardization, cross-pollination of regional expertise, and manager fluency in performance metrics. The model transformed a fragmented, growth-constrained operation into a lean, scalable platform capable of absorbing future portfolio doublings with minimal incremental cost.

For other solar organizations facing similar scale challenges, the takeaway is clear: **process before people, learning before technology, and metrics before intuition.** Standardized excellence is the ultimate competitive advantage in the grid resilience and stability.



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