# **Inspection Report: DesertPeak Solar Farm (Phase I)**

**Prepared for:** Luma Infrastructure Partners LLC  
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 **Date:** September 12 2025  
 **Inspector:** James El-Sayed, P.E.  
 **Site Visit:** September 9–10 2025

## **1️⃣ Scope of Inspection**

Visual and operational inspection of photovoltaic arrays, trackers, inverters, and balance-of-plant systems at the 62 MW AC DesertPeak Solar Farm located in Maricopa County, AZ.  
 Objectives:

1. Assess physical condition of equipment three years post-COD.
2. Review generation performance vs. baseline.
3. Identify maintenance or warranty issues requiring follow-up.

## **2️⃣ Summary Findings**

| **Category** | **Status** | **Comment** |
| --- | --- | --- |
| Array Structures | ⚠️ Fair | 11 trackers misaligned; torque tubes show corrosion > industry average. |
| PV Modules | ⚠️ Fair | ~1.8 % cracked or delaminated glass; hot-spot thermography flagged 34 modules. |
| Inverters | ✅ Good | Efficiency 98.3 % avg; minor harmonic distortion (THD < 2 %). |
| Cabling / Connectors | ⚠️ Fair | UV browning on DC cables in Blocks 4–5; recommend re-sheathing. |
| Transformers | ✅ Good | Oil samples within limits; fans operational. |
| SCADA System | ⚠️ Fair | Offline for 3 hours during power outage; no redundant backup server. |
| Perimeter Fence / Access | ✅ Good | Compliant; minor gate rust. |

Overall Condition: **“Fair / Operational but Degrading.”**

## **3️⃣ Performance Analysis**

| **Metric** | **Year 1** | **Year 2** | **Year 3 (YTD)** | **Variance vs. P50** | **Comment** |
| --- | --- | --- | --- | --- | --- |
| Annual Generation (MWh) | 138 220 | 136 970 | 132 540 (est.) | −4.1 % vs P50 target | Soiling and tracker downtime main drivers |
| Performance Ratio (PR %) | 83.5 | 82.6 | 80.9 | −2.6 pp YoY | Gradual efficiency drop |
| Availability (%) | 99.1 | 98.7 | 97.8 | −1.3 pp YoY | Mostly scheduled downtime |
| Soiling Loss (%) | 2.8 | 3.1 | 3.9 | +1.1 pp YoY | Cleaning frequency insufficient |

*Observation:* Generation shortfall of ~1 900 MWh (~$94 k revenue impact at $49.5/MWh).  
 Asset still cash-positive but margin erosion ~2 pp per year.

## **4️⃣ O&M Assessment**

* **Preventive Maintenance:** records incomplete for Apr–Jun 2025; subcontractor missed monthly IR scan.
* **Corrective Actions:** pending tracker motor replacement (27 units back-ordered since July).
* **Spare Parts Inventory:** below recommended threshold (only 2 % modules on site vs 4 % contracted).
* **Vegetation Control:** adequate but not uniform; Block 7 showed grass height > 12 in near cables.

## **5️⃣ Recommendations**

1. **Tracker Motor Procurement:** expedite replacement and negotiate credit for delays.
2. **Soiling Mitigation:** increase cleaning from 4 → 6 cycles per year (May–Sept priority).
3. **SCADA Backup:** install redundant server to avoid data loss events.
4. **Module Replacement:** execute batch swap of damaged modules under warranty Q4 2025.
5. **Documentation:** reinstate full preventive maintenance log tracking in CMMS.

## **6️⃣ Conclusion**

DesertPeak Solar remains fully operational and compliant with safety and environmental standards.  
 However, declining PR and incomplete maintenance records suggest deteriorating O&M discipline.  
 Unless corrective actions are implemented within 6 months, annual revenue loss could exceed $120 k and debt-service coverage fall below 1.25 ×.