

WCCTV

How to Create an Effective Security Plan For Your Solar Farm

The UK's renewable energy sector continues to expand rapidly, with thousands of solar sites already generating around 13 GW of capacity that powers millions of homes across the nation.

Existing solar sites and those under construction are key to hitting the UK's Net Zero target, **cutting greenhouse gas emissions by 68% by 2030**, and represent billions in investments.



But this growth has exposed the sector to escalating security threats, particularly copper cable theft, vandalism and trespassing. Without proper security measures in place, solar farms and development sites are easy targets for this criminal activity.

So, how do you protect your site and avoid costly losses? The solution lies in a well-thought-out solar farm security plan.

In this guide, we'll explain why solar sites require security, how to conduct comprehensive risk assessments and how to choose the right security solutions that address these concerns.



Why Solar Sites Need Comprehensive Planning

Both established solar farms and those under construction are subject to unique security threats that require specialised planning and solutions. Here are 4 key reasons why solar security planning is a business necessity:

1

Valuable Equipment

Solar panels, copper cabling, inverters, and battery storage units have high resale value on illicit markets, making them prime targets for thieves and organised crime groups.

2

Remote Locations

Most solar farms and development sites are situated in isolated, rural areas with minimal surveillance. Their distance from populated areas means emergency response times are slower, giving criminals ample time to operate undetected.

3

Operational Disruptions

Even minor security breaches can disrupt clean energy generation, with just a 10% loss in capacity costing thousands annually. Cable theft can cause weeks of downtime, and operators risk PPA penalties for missed energy targets.

4

Insurer Demands

Many insurance companies require specific security measures before providing coverage. Without proper surveillance, sites risk higher premiums, rejected claims or no coverage at all.

Step 1: Conduct a Proper Risk Assessment

Effective security planning starts with understanding your site's specific vulnerabilities. Each faces different risks based on its location, layout and operational factors.

Site-specific Threat Evaluation:

Begin by mapping potential access routes & identifying vulnerable areas such as:



Analyse your perimeter security



Document asset zones where high-value equipment is placed and stored



Assess your site's location



Identify potential blind spots where criminals could operate undetected

Step 1: Conduct a Proper Risk Assessment

Geographical Crime Rates:

Research historical crime patterns in your area:

- **Contact the local authorities or police for crime statistics and analyses.**
- **Review insurance industry reports on renewable energy theft.**
- **Contact neighbouring solar farms for local insights.**

Operational Risk Factors:

Consider how your operations affect security:

- **Construction phases:** Uninstalled equipment can allow thieves to steal in bulk.
- **Seasonal vulnerabilities:** Consider weather conditions that could affect visibility, such as fog, heavy rain and snow.
- **Staff access points:** Check entrances & exits where staff gain access to your site.

Step 2: Define Clear Security Goals & ROI



Successful solar farm security planning involves having a clear threat prevention strategy that aligns with your business priorities. Here's how to define your objectives and calculate the financial benefits of investing in security:

Primary Security Objectives:

Establish clear security goals for your critical infrastructure investments:

- **Asset protection:** Prevent theft, damage and unauthorised site access.
- **Operational continuity:** Minimise false alarms, generation losses and downtime.
- **Evidence gathering:** Establish adequate incident reporting for insurance claims.
- **Physical deterrents:** Create visible deterrents to discourage criminal activity.
- **Compliance:** Meet insurer, regulatory and ESG reporting requirements.



Step 2: Define Clear Security Goals & ROI



Return on Investment (ROI):

When evaluating security solutions, consider both the direct costs of potential losses and the broader business impact of security failures. Calculate potential ROI on security installation investments using these factors:

- **Asset replacement costs:** Replacing stolen equipment from solar farms is costly - a single commercial-grade inverter can cost £3,000–£10,000, while 15 km of copper cabling may cost around £40,000 to replace.
- **Revenue losses:** A 1 MW solar farm generating 4,000 kWh daily can lose £2,000 every 5 days it's offline due to crime, based on a 10p/kWh rate.
- **Regulatory risks:** Solar farm operators can face Power Purchase Agreement (PPA) penalties if green electricity targets are not adhered to.
- **Higher premiums:** Insurers may hike your insurance premiums (or reject cover) if proper solar farm protection is not in place.
- **Professional security vs manned guarding:** Professional security systems, like CCTV cameras with remote monitoring services, can potentially save operators 88% compared to security personnel.

Step 3: Choosing the Right System & Provider

Choose a solar farm security system based on your risk assessment findings and operational requirements. Let's go over various security measures you can implement and briefly cover what to look for in a professional security provider.

Physical Barriers:

Strong physical deterrents can prevent unauthorised access:



Security Fencing



Secure Access Control



PID Systems



Tamper-proof Fixings



Clear Signage



Motion-Sensor Lights

Step 3: Choosing the Right System & Provider

Advanced Surveillance Systems:

Modern CCTV technology serves as both a physical deterrent & a live monitoring tool.



Surveillance cameras



Redeployable CCTV



AI-Video Analytics



Rapid Deployment CCTV Towers



Temporary Security Solutions

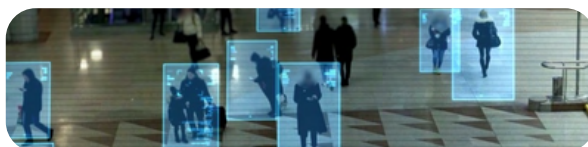
Step 3: Choosing the Right System & Provider

Remote Monitoring Services

Fully-managed security systems linked to professional remote monitoring services ensure security breaches are promptly attended to without burdening you or your operations team:



24/7 Surveillance



Built-In Diagnostics



Mobile Keyholding and Alarm Response

Step 3: Choosing the Right System & Provider

What to Look for in a Security Provider:

The importance of a reliable security provider makes all the difference between preventing threats and falling victim to costly security breaches. Here are the key criteria to look for:

- Experience in solar farm security in remote locations.
- Proven track record of success in robust solar farm security solutions.
- Nationwide coverage to ensure quick installations, maintenance & support.
- Cost effectiveness with flexible rental options.
- Remote monitoring services with keyholding teams.
- Easy-to-use software for remote surveillance.



Step 4: Implement Your Solar Farm Security Plan



Phase 1: Asset Protection

- Invest in high-quality perimeter security to secure boundaries and prevent unwanted access.
- Add controlled access points and signage.
- Install motion-sensor lights to illuminate blind spots.
- Integrate perimeter security with PID systems for full site coverage



Phase 2: Install CCTV

- Install CCTV cameras with HD, PTZ 4K cameras with thermal imaging and IR night vision.
- Link surveillance cameras to 24/7 remote monitoring services.
- Rent Temporary CCTV Towers during construction phases or in times of heightened crime.



Phase 3: Ensure Compliance

- Ensure your security system meets environmental and regulatory compliance (e.g., Section 61).
- Go a step further: Invest in site condition monitoring sensors to prove ESG due diligence.
- Document security measures for all insurance policy requirements.

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