Inside the rise of solar remediation and repowering

As solar assets age and performance expectations rise, remediation and repowering are emerging as critical strategies for extending project life and protecting returns. In this interview, Candace Wood, Tyler Goodell, James Timmins and David Grobe of Everpoint Services share practical insights into how complex solar recovery projects are assessed, planned and delivered, and why they are increasingly favoured over conventional maintenance or full rebuilds.

PES: We appreciate the opportunity to gain your insights into this evolving sector. To begin, could you provide an overview of what solar remediation and repowering involve and how they differ from standard operations and maintenance (O&M) or repair work?

Candace Wood: Solar remediation and repowering typically involve a greater level of labor, planning and execution compared to standard O&M or routine repair work. While O&M activities are generally focused on preventative maintenance and addressing isolated issues, remediation and repowering deal with broader, system-level challenges that impact overall site performance.

Remediation usually focuses on identifying and correcting widespread or recurring issues within an existing system, such as defective components, installation-related problems, or underperforming strings. This often involves large-scale panel replacements, rework of electrical connections, and ensuring that all strings are properly configured to restore optimal performance without introducing additional faults.

Repowering, on the other hand, goes a step further by replacing or upgrading major system components, such as modules, inverters or other key infrastructure, to improve efficiency or extend the asset's life. This process can significantly increase system output but also requires more extensive design considerations and integration efforts.

In contrast to standard O&M or minor repairs, both remediation and repowering demand more time, resources, and coordination due to the scale of work involved and the need to ensure that all system components function correctly and reliably once the project is complete.

PES: What does a comprehensive project look like in practice, from inspection and assessment through to full restoration?

Tyler Goodell: A comprehensive project will always have the tailored approach that meets the time and technical, economic needs of the asset owner. The initial introduction will lay out the problem and all the constraints that must be addressed and worked through. The pre-estimation, follow-up questions and clarifying assumptions are an important step before submitting a first draft and final technical and commercial proposals to the asset owners' team.

Capabilities and solutions can swiftly become irrelevant with misunderstandings that were never addressed, which become obstacles during each phase of the remediation and repower work.

During the inspection phase, the Everpoint team is documenting all aspects and physical locations of the electrical and mechanical components that need to be replaced. We relay this documentation with recommendations to the asset owner so modules can be ordered for delivery before the remediation phase of the project. Some modules and equipment take time for delivery. We want to plan for success and eliminate known risks.

The remediation phase may include several thousand modules or over 100,000 models, depending on the severity of the rebuild at the solar site. The inspection phase documentation will be the source material for the scope of work, procedures, and each plan of the day activities for the team to execute day after day for the entirety of the project.

PES: In your experience, what makes remediation a better choice than simple repairs or a full rebuild, and how do you decide whether a full repower is necessary?

CW: This question can be nuanced, as the appropriate approach depends on the severity and scale of the issues at a given site. In general, routine maintenance and minor repairs are always the most cost-effective and least disruptive options when problems are caught early. However, when a site requires outside contractors, it often indicates that the issues have progressed beyond what onsite personnel can efficiently address, either due to labor constraints or the need for specialized expertise.

Remediation typically becomes the preferred option when there are widespread or recurring issues that go beyond isolated repairs but do not justify a full system rebuild. One advantage of remediation is that the existing site conditions are already well understood. This allows contractors to target specific problem areas, resolve known deficiencies, and restore performance more efficiently without introducing entirely new variables.

In contrast, a full repower involves replacing major components or redesigning portions of the system, which can introduce new challenges. These may include compatibility issues, unforeseen installation complexities, additional warranty considerations, and extended downtime. Repower projects can also require infrastructure upgrades, such as substation improvements, to handle increased generation capacity, further increasing cost and project timelines.

PES: Many people assume that rebuilding a solar site from scratch is simpler. What economic, operational and environmental advantages make remediation or repowering a more effective solution?

David Grobe: There are obvious direct cost savings from the reuse of installed materials and structures, as well as working within an existing facility footprint with established access and infrastructure. Everpoint also likes to think in terms of risk mitigation, and from both a safety and economic perspective, there are more moving pieces and more chances for failure on a new project. Indirect cost risk related to permitting and land is much higher for greenfield projects.

Remediation allows us to effectively and efficiently focus on and eliminate known risks to an existing site. Everpoint aims to leave everything better than we found it, improving construction practices and implementing lessons learned to mitigate challenges experienced at a site with confirmed operating and environmental conditions. Production data following the repower validates the success of Everpoint's completed remediation projects and provides a proven economic model that operators can repeat at all their facilities.

PES: When your team arrives onsite, which areas do you focus on first, and how do you establish priorities to make the remediation both safe and efficient?

DG: When the Everpoint team arrives on site, communication with the site manager is essential. Developing an understanding of the site's critical areas, safety procedures and current operations allows the team to format a comprehensive strategy that encompasses what areas are prioritized, what safety concerns need to be addressed, and how Everpoint can work with or around the daily operations and obstacles at the site. Through communication between the client and Everpoint ensures a remediation project can be completed safely and efficiently.

PES: From your work, what are the most common issues caused by manufacturing defects, installation errors or normal wear, and how do these typically affect the performance of a solar asset?

James Timmins: Manufacturing defects, installation errors and normal wear and tear most commonly lead to physical damage in solar panels, particularly cracks in the solar cells. These cracks can originate anywhere on the panel, sometimes starting at the edges due to manufacturing flaws, or forming near mounting points where clamps may have been over-tightened during installation.

Improper installation can also create larger systemic issues, including the failure of entire rows of panels. This can result in electrical faults that not only reduce performance but may also impact neighboring panels within the same string.

While some of this damage may initially appear minor or cosmetic, it often worsens over time. Cracks can allow moisture to penetrate the panel, leading to corrosion, insulation breakdown and more significant electrical faults. Ultimately, these issues reduce energy output, compromise system reliability, and can shorten the overall lifespan of the solar asset.

PES: Solar sites involve more than just panels and wiring. Can you talk us through the civil and structural challenges you often encounter, such as foundations, drainage or terrain, and how these influence your remediation strategy?

CW: Solar sites often present a range of civil and structural challenges that go beyond the electrical scope of work. Many utility-scale projects are built on former agricultural or pasture land, which can introduce variability in grading, soil stability, and overall terrain. Uneven elevations and inconsistent compaction can lead to erosion issues, particularly during heavy rainfall, where water creates natural channels that impact both access and infrastructure.

Drainage is one of the most common challenges we encounter. Poor or undersized drainage systems can result in standing water that persists for extended periods. This not only delays work due to safety restrictions, since crews cannot operate effectively in saturated or flooded conditions, but can also contribute to long-term risks such as soil shifting, foundation instability and increased wear on structural components.

From a structural standpoint, these conditions can affect pile integrity, racking alignment, and

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James Timmins

tracker performance over time. In remediation scenarios, this means we often have to account for underlying site conditions before addressing surface-level issues. For example, recurring electrical faults or mechanical misalignment may actually be symptoms of ground movement or water-related damage.

These factors directly influence remediation strategy. Work must often be sequenced around site conditions, with crews mobilized to stable, accessible areas when others are temporarily unworkable. In some cases, remediation efforts may also include coordination with civil teams to improve drainage, stabilize access roads or mitigate erosion to prevent repeat failures.

Ultimately, successful remediation requires a holistic approach, addressing not just the equipment, but the environmental and structural conditions that impact long-term site performance

PES: Severe weather can create real challenges. How do events like hailstorms, flooding or high winds shape your approach, and what measures are most important to protect the asset?

TG: The most expensive part of any project is always time. Severe weather is real and you can't always plan for it. But knowing the seasonal trends and tracking weather patterns are a part of our project planning. We know certain areas will encounter averages of hailstorms, rain, and severe wind events. Baking in these averages helps the entirety of the project planning.

PES: Supply chain reliability is crucial in this line of work. How do you ensure replacement components, including specialised or legacy parts, are available when needed, and what challenges have you had to overcome?

CW: Ensuring the availability of replacement components, particularly legacy or specialized parts, requires proactive planning, strong supplier relationships, and thorough market awareness. We rely heavily on established vendor networks, as well as industry contacts, to help locate hard-to-find components or identify alternative sourcing options when standard supply channels fall short.

When possible, we evaluate whether newer, readily available components can be used as direct replacements. However, compatibility constraints and system design limitations do not always allow for straightforward substitutions, which can introduce additional complexity and extend project timelines.

In some cases, sourcing becomes particularly challenging. For example, on one project involving double-jacketed string wiring, the required connectors were no longer widely manufactured or stocked. To resolve this, we had to identify and work with a smaller, specialized supplier that still carried compatible components. Situations like this require significant time investment, technical verification and coordination to ensure the parts meet both performance and safety requirements.

Overall, maintaining flexibility, leveraging industry relationships, and dedicating time to detailed sourcing efforts are critical to overcoming supply chain challenges and keeping projects on schedule.

PES: Documentation is often essential for asset owners and insurance purposes. What types of reports or evidence do you provide, and how do they support claims or regulatory requirements?

JT: In most cases, clients approach us with identified issues at their site, and we respond by defining a clear scope of work. Throughout the process, we thoroughly document all activities, including detailed photo evidence and testing results. This includes verification of corrected issues, such as post-repair test results confirming that affected strings are performing as expected.

We provide daily reports to ensure full transparency, giving clients a clear view of progress, workflows, and all testing performed. Before any portion of the site is returned to the client, it must meet strict performance criteria; every test result is evaluated on a pass/fail basis, with no ambiguity.

One of the primary diagnostic tools we use is I-V curve tracing, which allows us to validate that each string is operating in accordance with manufacturer specifications and datasheet expectations. This level of documentation and verification not only demonstrates that issues have been properly resolved but also provides the evidence required to support insurance claims and meet regulatory compliance standards.

Coordinating electrical, mechanical and civil work on the same site can be complex. How do you keep multi-disciplinary teams working smoothly together throughout a project?

TG: Coordinating the different skill sets that are arriving and departing for tasks is thoughtful and deliberate. An example of a potential breakdown can come with a module delivery and inbound traffic of modules that were loaded differently at the manufacturer's site. Not all forklifts and equipment are standardized and the last thing you want is to be unable to unload at the laydown yard, causing a gridlock of trucks stuck in limbo, then pushing back electrical teams that were planned for several days later, which may cause unnecessary costs to the project.

PES: Technology plays a crucial role in inspections and repairs. Which tools, such as drones, thermal imaging or specialised monitoring, have proved most valuable in identifying issues and guiding remediation?

TG: From our experience, drones with thermal imaging have been the largest contributor to finding defects in solar strings. These images have shown things such as small cracks, bad junction boxes, reversed polarities, and failed strings that are just not adequately producing power.

PES: Looking ahead, how do you see the solar remediation and repowering sector evolving over the next five years, and what trends or challenges do you expect as sites become larger and more technologically advanced?

TG: Everpoint is working on some exciting costing and operational models that allow us to plan and rebuild sites that would not have been possible a few years ago. Economic viability makes everything work. If the solar service companies can't remediate and repower for the asset owners' benefit, we will no longer exist.

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