Solar Risk Assessment: 2019

Quantitative Insights from the Industry Experts

Introduction

"In God we trust, all others must bring data." *- American Statistician W. Edwards Deming*

Rarely does a single investment yield both significant social and financial benefit. In this way, solar is unique: this rapidly growing asset class offers the promise of substantial returns on investment in both.

While the financial community is—rightfully—focused on newly emergent risks of this asset class, such as managing the merchant tail and basis risk, it's important that the financial community remain vigilant on the question of solar production risk.

Over the past few years, it's become in vogue for financial investors and pundits alike to publicly dismiss the possibility of a solar power plant underperforming, with remarks like, "The sun will always shine," and "Panels always work because they have no moving parts." Success breeds complacency, and complacency breeds failure.

We are among the industry's leading experts on the measurement and management of solar production risk, cumulatively representing hundreds of years of experience in our respective fields. Each of us are risk specialists with in-depth data on a specific element of solar production risk.

Rather than publishing "yet another" opinion, we are committed to letting the data speak for itself. Designed intentionally for a non-technical financial community, this report will be refreshed every year to provide investors with the latest insights on the evolution of solar generation risk.

Fundamentally, it is our hope that this report will serve as a guide for investors who recognize the importance of allowing data-based insights to inform the deployment of capital.

We look forward to the shared work of advancing our solar industry.

Risk Management

kWh analytics

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Contents

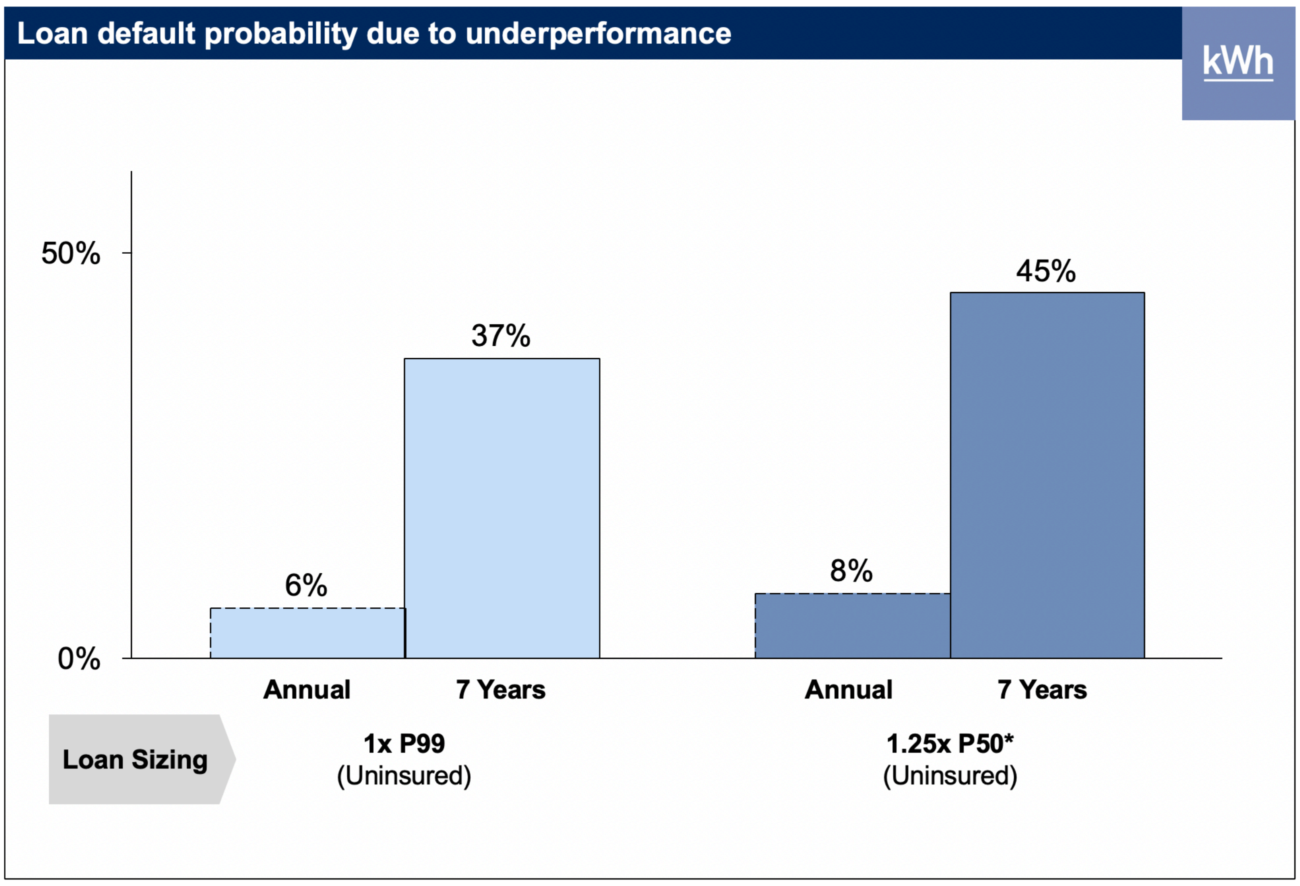
The “1-in-100 Years” Worst Case Scenario? It Occurs More than 1-in-20 Years

kWh Analytics

Executive Summary: Based on a statistical analysis of 200,000+ operating solar projects, kWh Analytics has found that the probability of a 1-year “P99” production estimate occurring is 6.3%, rather than 1%. Consequently, a 7-year loan sized at 1x P99 would have a 37% chance of breaching its coverage ratio, at least once over the loan life due to underperformance alone--necessitating reliance on credit support to avoid default. Similarly, a loan sized at 1.25x on P50 would have a 45% chance of breaching its coverage ratio due to underperformance alone.

Context: For our industry to continue improving, we need to learn from our past. Thankfully, there’s now a significant amount of solar deployed (10s of GW) over a significant amount of time (10+ years of grid-tied deployments), which allows our industry to compare the actual results to the modeled estimates.

This analysis draws upon the kWh Analytics database of operating solar projects. The database spans 200,000+ operating solar projects across the US. The geography represented in the database substantially resembles the overall geographic footprint of the US solar fleet, with projects in 36 states, with the majority of projects located in California, US Northeast, and US Southwest regions.



****Assumed back leverage structure:*** *Opex 25% of Revenue, Tax Equity Pref 13% of Revenue*

Why is this happening?

Underperformance is a multifactorial problem for which there are few universally applicable answers. While there are a number of known issues (elaborated upon by other co-authors), we observe two fundamental misperceptions common in the solar finance community that contribute to this result:

Misinterpretation of what an IE’s “P99” means: The P99 estimates provided by the Independent Engineer often reflects only the historical 1-in-100 year worst case irradiance scenario. In the real world, systems underperform for many reasons beyond irradiance shortfall (e.g. inverter failure, snow cover, excessive soiling). The downside scenarios for these other causes may not be accounted for in the P99 estimate.

Oversimplification of what “degradation” means: The industry’s standard assumption of 0.5% degradation is derived from a landmark study by NREL. Subsequent NREL research notes a difference between module-level and system-level degradation rates, although the financial community tends to assume they are both the same. NREL notes that “…module degradation rates are only part of the story.” Other parts of the plant can perform worse over time. The DOE recently funded a study to provide free analysis for investors interested in quantifying their project’s system-level degradation.

Narrowing the Performance Gap: Reconciling Predicted and Actual Energy Production

DNV GL

A robust and sustainable solar industry is dependent on solar projects achieving their anticipated return on investment. The primary input affecting the value of solar assets is modeled energy yield coupled to the corresponding uncertainty of achieving that yield over the system life. The process of producing high quality, low uncertainty estimates of future energy generation requires thorough evaluation of all inputs – component models, resource selection, loss analysis, system configuration – and ultimately the simulation of the expected energy yield. It is imperative that modeled results are benchmarked against operational data to validate and refine approaches over time.

DNV GL continuously validates energy estimates against operational data sets. Publishing the results of validation studies in an open and transparent manner serves to build trust between the many stakeholders involved in project development and financing. Comparing pre-construction energy assessments to observed project performance enables DNV GL to validate energy assessment methods, identify variations between actual and predicted performance, reconcile differences, and identify areas for future improvement.

DNV GL has completed a recent study, based on projects actively monitored in the U.S. larger than 1 MW ac with at least 1 year of operational data. For this study, DNV GL identified 39 projects, comprising 1.2 GW of solar project capacity, with suitable operational data from the 10+ GW of projects evaluated over the last 10 years. DNV GL continues to add validation data and will produce periodic updates.

One primary finding from the current validation assessment is presented in Figure ES-1 – solar energy assessments have a median performance gap of approximately 3.1%, with predicted energy being greater than measured production.

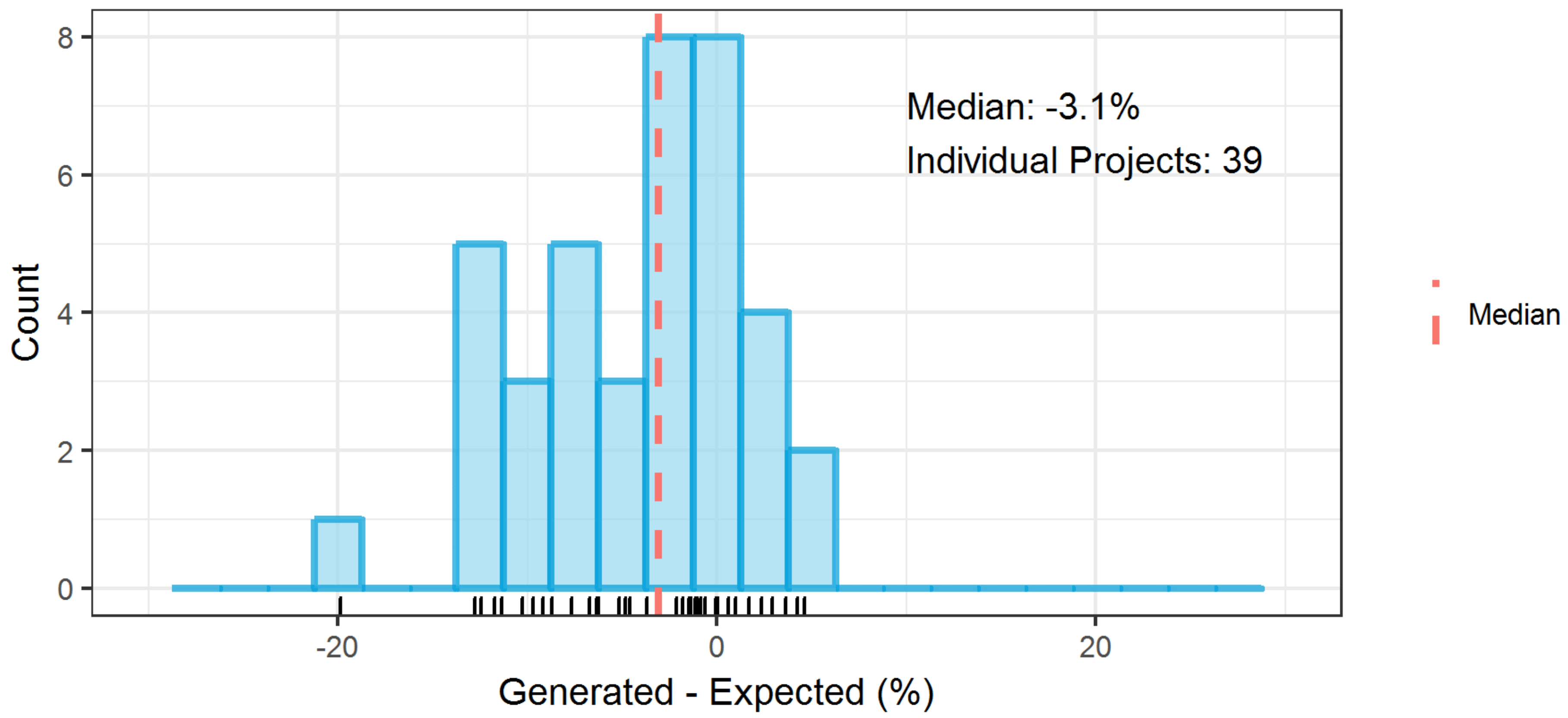


Figure ES-1 Project-average validation results, adjusted for interannual irradiance variability

The 3.1% gap narrows when the first year of production is omitted, suggesting that lower availability than modeled may exist in the first year of production data. One limitation of the current validation study is the fidelity of quantifiable data for factors such as plant and grid downtime, curtailment, as well as soiling and snow losses, which can have high interannual variability. As the validation dataset grows, the impact of these factors can be more accurately assessed. By regularly publishing these results, DNV GL believes more operators will contribute data for validation and more independent engineers will publish similar studies. By collectively evaluating project performance against pre-construction estimates, more accurate energy forecasts and improved uncertainties can reduce energy production risk for all stakeholders.

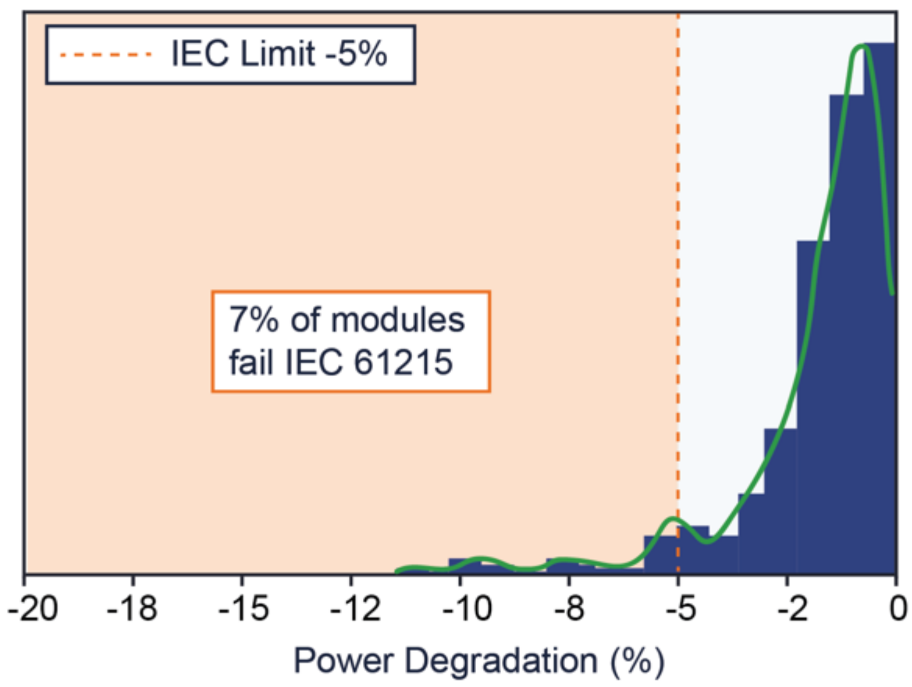
Over 5% of Commercial PV Modules Fail IEC Testing

PV Evolution Labs

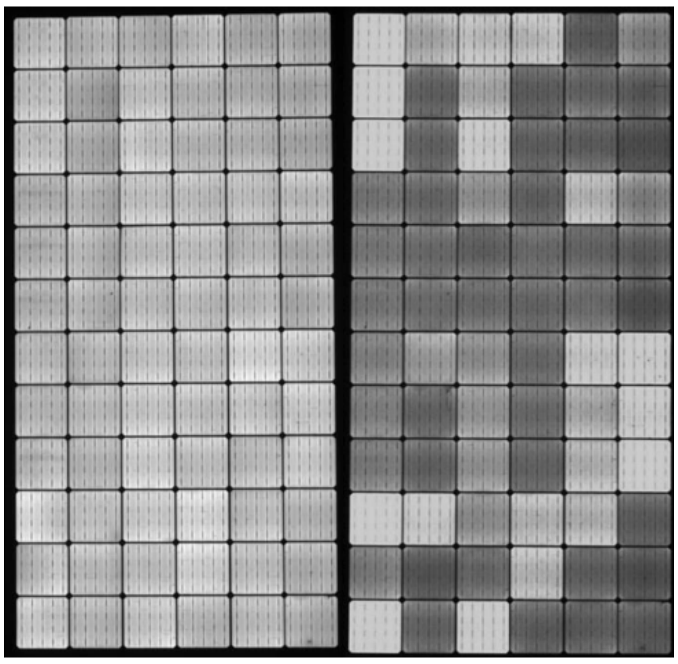
With PV manufacturers under cost pressure as technology advances, technical due diligence is critical for mitigating risk in solar investments. IEC 61215 and UL 1703 certifications are minimum test standards that help the industry avoid only the most failure-prone equipment. Certification does not guarantee field performance. Long-term trends, recent testing and field observations demonstrate that leveraging third party extended reliability testing to specify Bills of Materials (BOMs) and factories in PV module supply agreements is a far more effective risk mitigation strategy. PVEL routinely provides 3rd party approved BOM exhibits for use in module supply agreements.

PV Evolution Labs (PVEL) analyzed nearly a decade of test results for thousands of modules and found that 7% did not meet even minimal IEC standards for humidity freeze. Higher degradation rates were observed in damp heat testing for PVEL's Product Qualification Program (PQP) in 2018 versus 2017. In Q1 2019, PVEL observed higher damp heat failure rates for modules with PERC cells.

The majority of the 300+ Bills of Material (BOMs) tested were IEC certified. Many were from "Tier 1" manufacturers. The humidity freeze test simulates field exposure to heat, humidity, rain, and snow. Damp heat focuses on high heat and high humidity. Modules that fail either test have a higher risk of early lifetime failure from delamination or degradation.



7% of PV modules tested by PVEL for humidity freeze degraded by over 5%.



EL images of a PERC module before (left) and after (right) damp heat testing show severe degradation.

Manufacturers are under intense pricing pressure and regularly seek opportunities to reduce cost. For example, a backsheet based on a cheaper or thinner polymer can reduce costs by roughly $0.003 USD/watt. But changing materials and manufacturing processes can introduce new risks. Only testing beyond certification standards would reveal that risk.

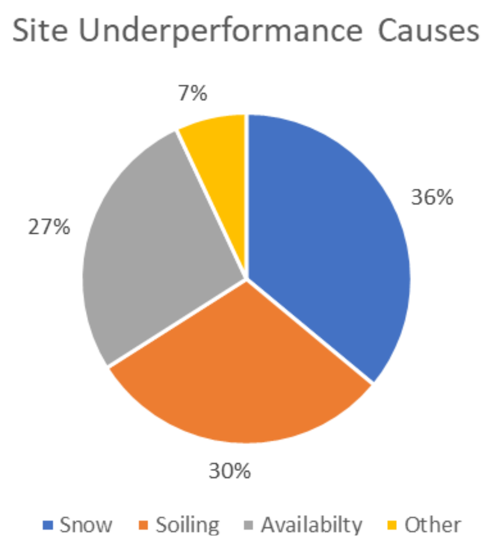
Field observations prove IEC testing omits emergent degradation types, such as Light and Elevated Temperature Induced Degradation (LeTID). LeTID impacts advanced cell architectures (i.e.: PERC) and causes as much as 5% to 10% degradation within months of operation. PVEL routinely performs batch level LeTID testing and generates values that can be integrated directly into project financial models.

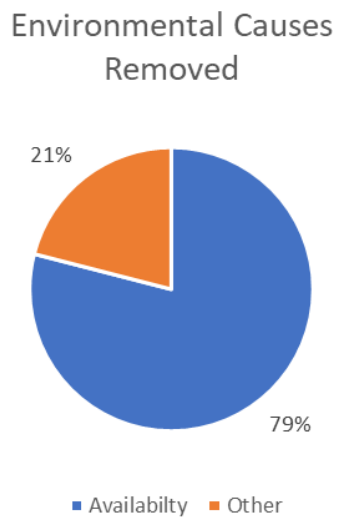
Technical due diligence that goes beyond certification standards helps investors evaluate the reliability of specific BOMs and better forecast lifetime energy yield. Given the rapid pace of PV innovation and drive to reduce costs with high-efficiency technology, independent extended testing and BOM specification is the most effective risk mitigation tool.

Thoughtful Inverter Procurement Can Prevent 25% of Lost Revenue: Inverter Warranty Management

Borrego Solar

Executive Summary: A 2018 performance review of a subset of Borrego Solar managed plants found that 25% of under-performance not related to environmental factors is associated with the Return Merchandise Authorization (RMA) process of an inverter/inverter component or for service provided by an inverter original equipment manufacturer (OEM). Negotiating a strong warranty when procuring inverters can substantially mitigate or eliminate this risk.



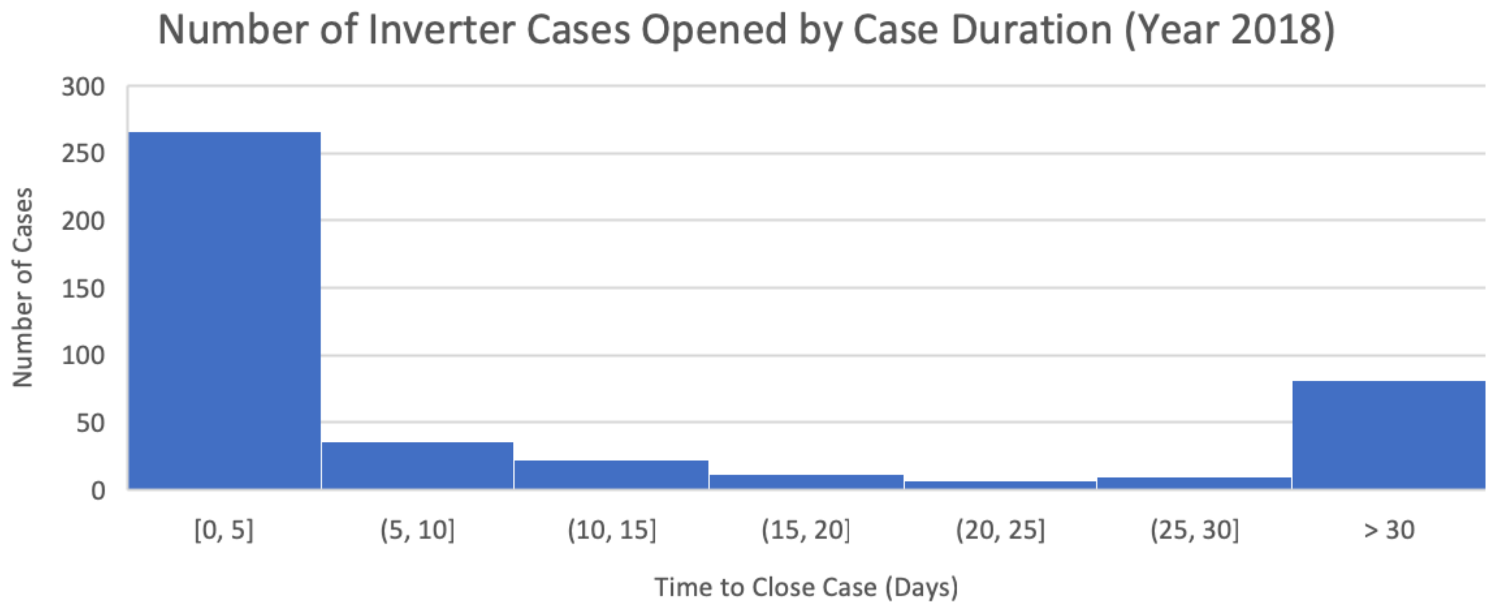


2018 performance data for 117 plants, totaling 161MW, primarily in California and the Mid Atlantic/Northeast on which Borrego Solar holds a performance guarantee were analyzed for under performance.

5,500MWh of lost generation was identified, of which the primary cause was environmental, soiling due to snow and dirt, and the secondary cause was inverter and system availability.

As the environmental impacts should be accounted for in the performance model of the system, underperformance within the control of the O&M team was reduced to 1870MWh, the majority related to inverter or system availability. Analysis of the case data associated with the events causing this unavailability found that the majority of cases were resolved in less than 5 days, however the next major category took longer than 30 days to resolve. These cases were analyzed in detail and approximately half were found to be related to inverter failures.

These cases were responsible for 25% of underperformance after adjusting for environmental impacts. All of these cases had a common element; a dependence on an inverter OEM for the RMA of the inverter/inverter component or for troubleshooting under their warranty. Between RMA approvals and waiting for parts to ship downtime is increased significantly. Similarly, in order to maintain warranties, OEMs normally require that the O&M provider coordinate troubleshooting and repair with them or perform the repair themselves. In many cases the delays are from repeated failed attempts at remote troubleshooting by the OEM and/or long delays for dispatch of manufacturer technicians.

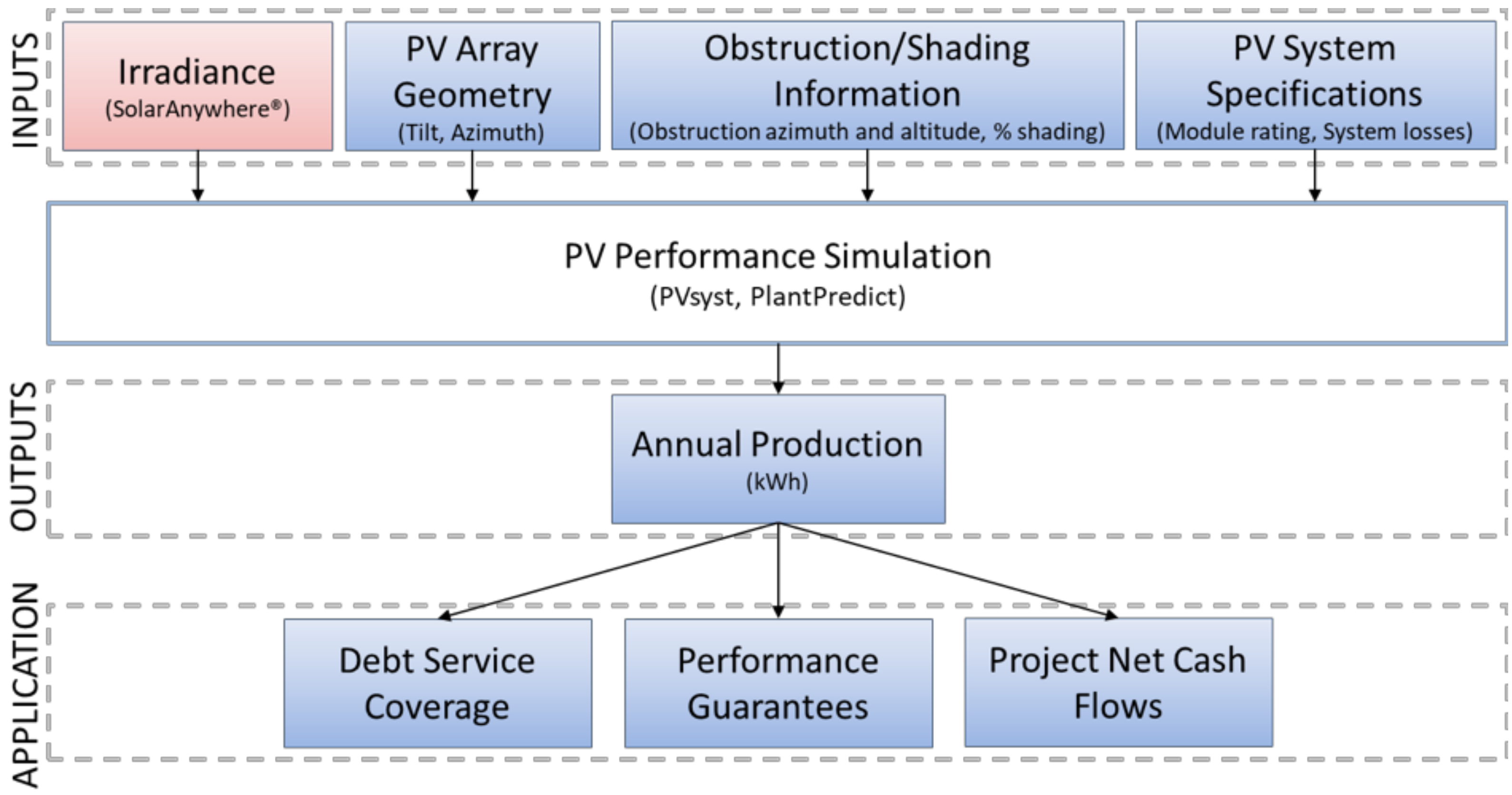


The driver of this problem is that warranties for inverters typically 1) have no performance requirements or liquidated damages for the OEM under the warranty and 2) restrict what repairs or work can be done by third parties without invalidating the warranty. Owners typically only realize the negative impact of this limited warranty language long after they've lost the leverage they have at the time of procurement.

Successful strategies to mitigate this risk are for owners to negotiate with inverter OEMs during procurement, the point of maximum leverage, for warranties to include:

1. liquidated damages or performance requirements, and
2. authorization for their O&M provider to perform these repairs without invalidating warranties.

Accurate forecasts of solar photovoltaic (PV) performance can make the difference between millions in losses or a profitable project. Irradiance data is important to a project's bankability because it has a direct and large impact on expected energy production and therefore expected value. Shopping for data with the highest irradiance is an easy way to inflate projected cash flow – but, how does shopping affect project bankability? Here are three questions to ask when performing due diligence a project.



Question #1: Are you using various or averaged irradiance data sets?

The first sign of irradiance shopping is use of varied or averaged irradiance sources. Varied sources from project to project can indicate that the developer reviewed several sources and picked the most optimistic. While averaging might seem like an approach to reduce overall uncertainty, it ignores how satellite irradiance models exhibit uncertainty. Instead, the developer should keep analysis of each source separate.

Question #2: What is the irradiance resolution?

At least hourly temporal resolution irradiance data is required for accurate PV simulations. Longer averages mask important affects of project design including inverter clipping and the time of day that power is produced (critical if the PPA has time of delivery rates). Spatial resolution matters because irradiance is driven by cloud cover, which exhibits low correlation at distances as near as 1-km in many climates. Thus, using monthly average and low resolution or off-site irradiance data should be avoided.

Question #3: What is the irradiance measurement uncertainty?

Lastly, the validated uncertainty of the data source is a key driver of bankability. The uncertainty can be trusted when evaluated on a statistically significant, independent sample and not by just comparing satellite to the nearest ground station.

While a high irradiance value may make a project look attractive, if that irradiance value has an unknown uncertainty, low resolution or is made up by averaging multiple sources, the value of the project is probably much less than the seller wants you to think.

Recoverable Degradation: How to avoid 0.1%/yr Losses

Heliolytics

PV systems are a potent reminder that not everything gets better with age. In every system pro forma there is a value, usually set between 0.5%/yr to 0.65%/yr, which accounts for the degradation of system performance over time. The determination of this factor is usually the depth of discussion about long-term system reliability at the system financing stage. The real story, however, is much more complex.

Defining degradation: It is very important to understand what is being modeled when assessing "degradation", as it does not refer to a constant and inherent degradation of solar panels. The number which is used in a pro forma generally encompasses two modes of degradation: Recoverable and Non-Recoverable.

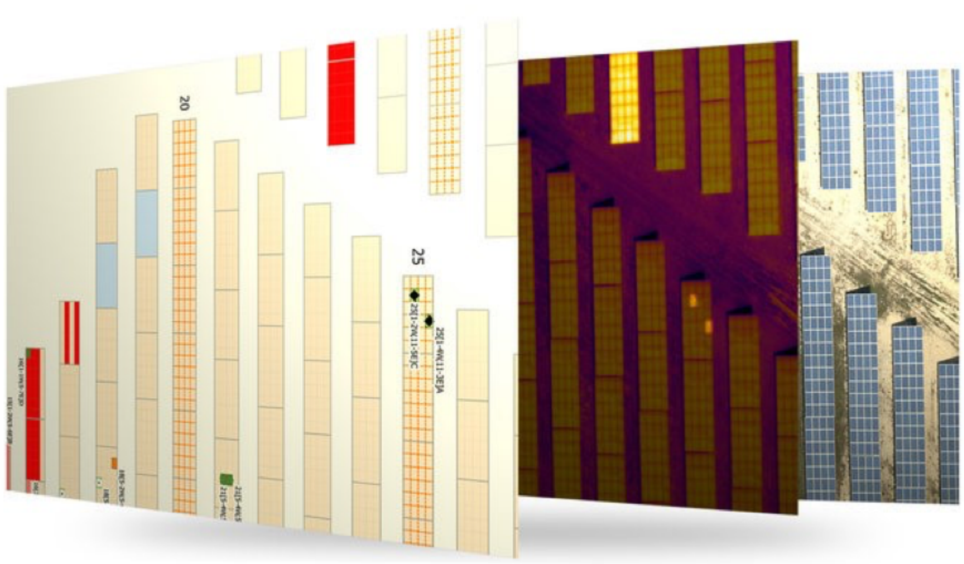
Non-Recoverable degradation refers to degradation in the array where there is not a large enough concentration of degradation to warrant an economic replacement of the module - for example: EVA discoloration, metal contact corrosion, Anti-Reflective (AR) coating degradation, micro cracking, and other long-term degradation modes. Although the loss can be measured over time, the only way to bring this energy back into the system would be a full DC repower, which is unlikely to be economically viable.

Recoverable degradation, on the other hand, refers to faults where energy loss is centralized in a given module or system component. If the energy loss net present value over the module's lifetime exceeds the cost of equipment and labor to address the issue - for example when a third of the module is deactivated - the energy loss in the system can be economically recovered, and can be considered Recoverable degradation. Recoverable degradation also includes DC availability losses like fuse failures, connector failures and other small accumulating outages.

The opportunity: Aerial inspections can pinpoint Recoverable degradation in a system. From a subset of our data, encompassing over 10GW and 1,400 sites with construction dates from 2011-2019, we have observed that accumulation of Recoverable degradation of system capacity in utility scale systems increases at a rate of ~0.1%/yr.

The most common causes of these accumulating faults are distributed and non-remediated string failures and module and sub-module faults where more than ⅓ of the module is deactivated. When these Recoverable degradation items can be effectively detected and economically remediated on a continual basis, the accumulation of faults can be decreased, reducing long-term energy degradation.

Therefore, including proven advanced technologies like aerial inspections throughout project life can minimize system degradation, and can have impacts at the project financing stage.



Aerial inspections can detect accumulating faults such as module and string failures which can be a major contributor to recoverable energy loss

Aerial inspections are rapidly becoming the industry standard for detection of Recoverable system degradation

Aggregate Factory Report Shows High Levels of Major (35.5%) and Critical (1.3%) Findings Among Suppliers

Clean Energy Associates

While solar PV is a proven technology with immense potential for investors, it is important to understand the manufacturing side of the industry is still relatively young.

Even the largest global Tier 1 suppliers are still perfecting their manufacturing processes and the level of quality from one factory to the next is often inconsistent, especially when compared to more established automated industries such as the automobile industry.

Between 2015 and 2019, Clean Energy Associates conducted detailed audits at the factories of 39 Tier 1 suppliers around the world. In general terms, three clear themes emerged from the aggregated results of those audits:

- Quality can vary significantly among Tier 1 suppliers (see **Image 1**)
- Even at the same factory, quality can fluctuate from year to year
- Quality can differ between factories owned by the same supplier

Aggregate weighted findings for 4 Tier 1 manufacturers (2015-2019)

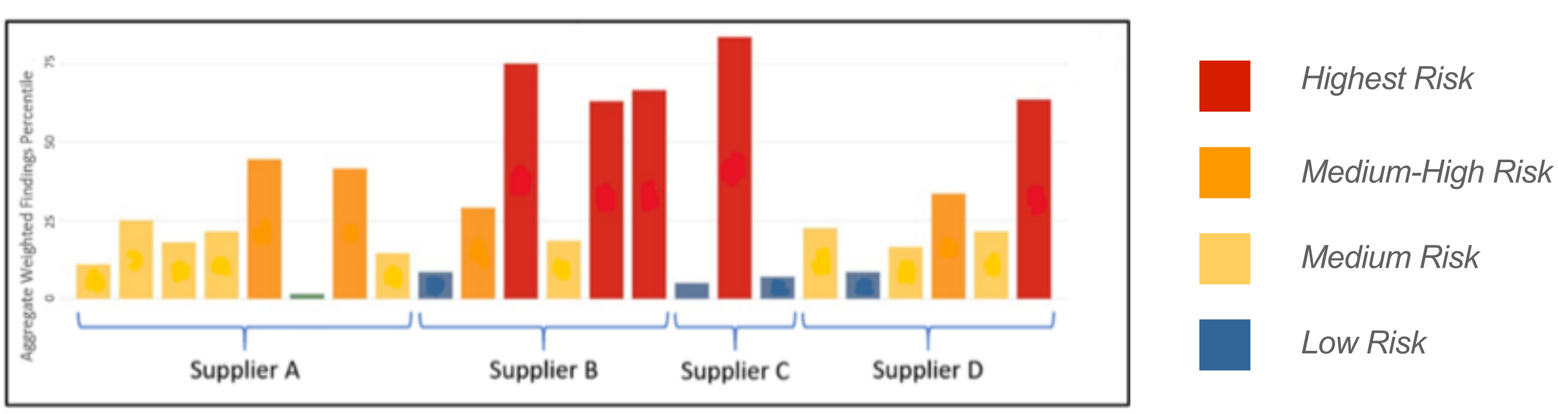


Image 1

In more specific terms, the aggregate factory report showed the levels of Major and Critical findings were unacceptably high at 35.5% and 1.3% respectively (see **Image 2**).

Critical findings included BOM and Certificate violations while Major findings included incorrect junction box IQC testing method, poor cell cutting controls, poor raw material expiry controls, and poor junction box soldering controls. Examples of Minor findings (63.2%) were poor raw material expiry time controls and poor glass stacking height.

Ideally, there should be no Critical findings and the level of Major findings should be as close to 0% as possible. Also found to be unsatisfactorily high were the Major findings discovered during pre-shipment inspections (see **Image 3**) and rejection rates (see **Image 4**).

Investors are strongly advised to insist suppliers fix all the Critical and Major findings discovered during factory audits before the manufacturing process begins to ensure a quality product with long-term reliability.

FA Audit Findings

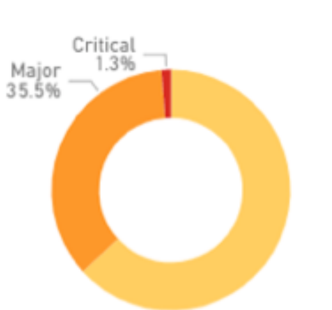


Image 2

PSI Audit Findings

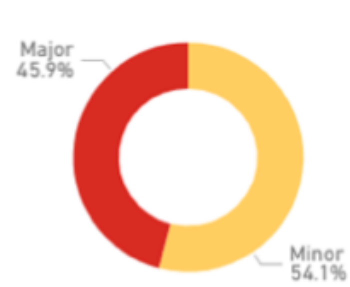


Image 3

Aggregate Rejection Rate

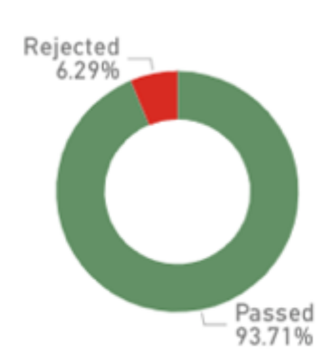


Image 4

Force Majeure & Energy Modeling: 1 Hurricane, 81 PV Plants Down

Strata Solar

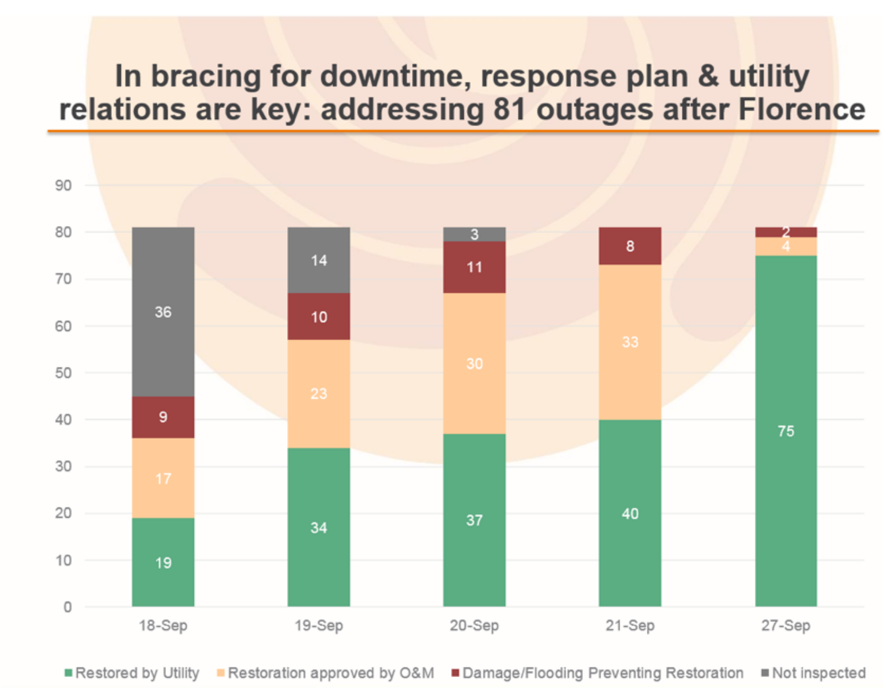
On September 14, 2018, Hurricane Florence made landfall on the Carolina coast, and would ultimately take 81 of the 205 PV plants maintained by Strata Solar Services offline in the coming hours.

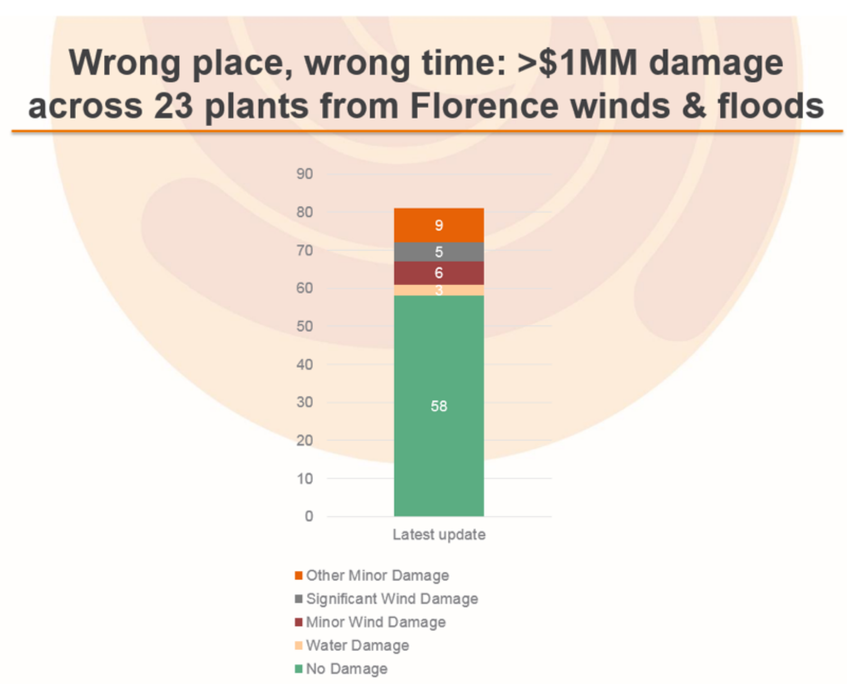
When a PV power plant is designed, constructed and finally launched, the assumption is that it will generate the MWs projected by the energy model. The truth of the matter, however, is that many PV plants fall short of projected performance metrics. Sometimes this under-performance is due to overly optimistic projections, other times the projections could be matched, even exceeded, if not for one factor. This single factor will, unfailingly, create the most damaging results to your plant's performance.

This factor is known as force majeure. Often thought of as natural disasters—floods, wildfires, mudslides, hurricanes, tornadoes, et al, force majeure also includes human-generated events to include, for example, a train derailment or a dam breach.

The Realities of Downtime and Physical Damage
A force majeure event, whether triggered by the weather or by human forces, can very easily lead to lost power generation through either direct impact to a plant or the unavailability of the power grid to which it is connected. A top-shelf insurance policy, while costly, might very well cover most or all of the lost power generation through its business interruption coverage. However, there have been well-documented cases where an asset owner experienced an unrecoverable loss due to certain exclusions in their insurance coverage.

Physical damage that's quick to fix is also the easiest to imagine—a handful of damaged modules or a power line that is down. But if modules were exposed to extreme conditions, the scale and timeline of repairs can skyrocket. And if electrical components were exposed to floodwaters or fire, or if weather conditions compromised the stability of soils and vegetation, theremay be far more costs-to-calculate than first assumed. And oftentimes these extenuating costs are difficult to accurately quantify to an insurance company.





Preparation Can Mitigate Force Majeure Losses
Here are some things to consider in order to be as ready as possible for the unexpected:

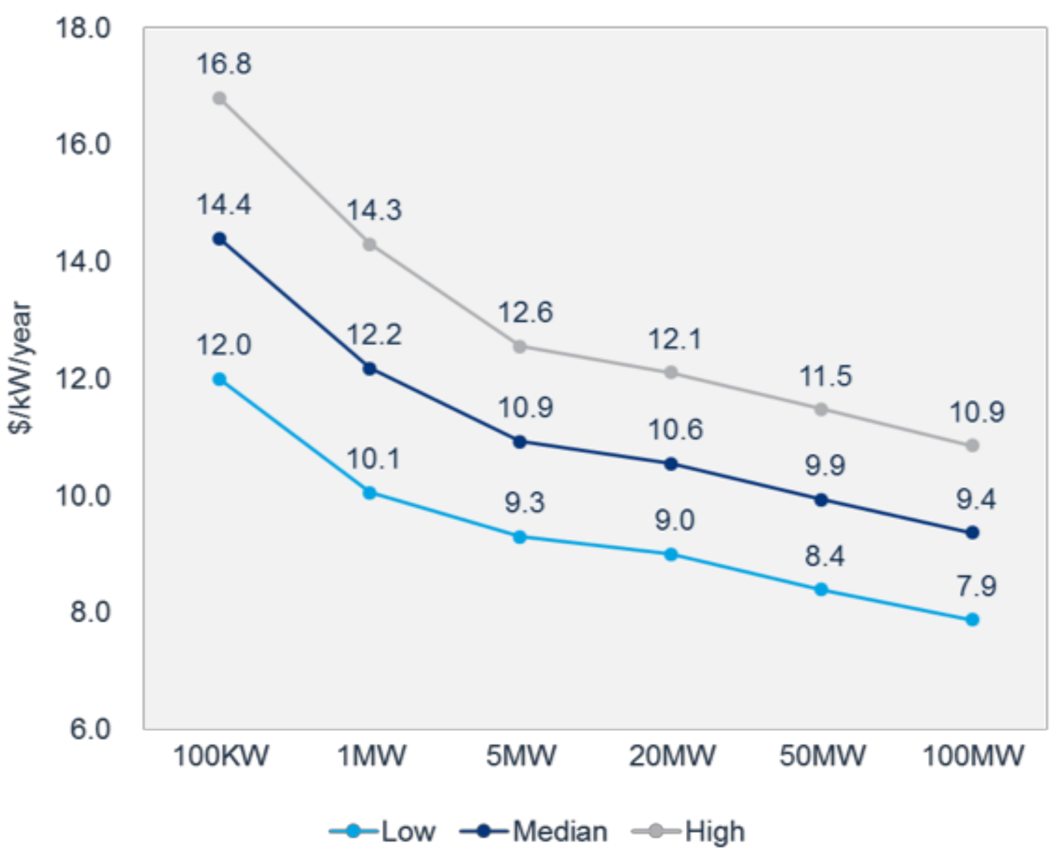
- Test the assumptions in the base case energy model. Contemplate if 30 years of purchased data or several years of measured data is enough to protect the investment.
- Have a disaster preparedness & readiness plan in place before the event occurs. Know what the best practices are in asset and revenue recovery.
- Work with service providers who are experienced and understand how to file insurance claims and the importance of getting the plants back up and running after an event occurs.
- Collaboration with key stakeholders, up front and during operations, is key to ensuring projected revenue numbers are realistic and attainable while at the same time preparing for potentially damaging events.

Solar O&M Pricing has Dropped ~60% with More to Come

Wood Mackenzie Power & Renewables

The total market for solar O&M services continues to grow, with the U.S. growing 17% from 2017 to 2018. But as the market expands, pricing for O&M services has declined dramatically. As of a few years ago, pricing for O&M services in the U.S. was in the $12 to $14/kW/year range; prices today are closer to the $5 to $6/kW/year range. Vendors report that they have been driven toward rock-bottom prices, making it difficult to provide necessary services while remaining profitable.

U.S. O&M Service Prices by System Size, 2018



Source: Wood Mackenzie Power & Renewables

Note: Although prices today are reported in the $5 to $6/kW/year range, this does not reflect the full price to the asset owner, which is fully reflected in the chart.

"Pricing pressure continues as prices have dropped by approximately 58% in 2018 compared to just a few years ago."

- Lindsay Cherry, Wood Mackenzie Power & Renewables

Since 2010, solar PV capex has dropped by 80%, leading some solar asset owners to assume that O&M prices will follow a similar trend. This price drop is in part due to technological advancements and economies of scale. However, O&M is a service-based, labor-intensive industry. And labor costs — if anything — will increase, not decrease, over time. Additionally, O&M services differ by project size, with O&M services decreasing for larger projects.

Falling O&M contract prices are primarily caused by the "slimming down" of average contract scopes and lengths. With fewer third party O&M providers offering corrective maintenance, asset management and other services, costs can be chipped away.

In this competitive environment, some companies may choose to offer a reduced scope of their services, meaning customers take on riskier, but less expensive contracts and pay for unplanned corrective maintenance as it occurs. O&M companies may offer rock-bottom prices for service contracts with the intent of making their margins on corrective maintenance.

There are three main drivers to reduce long-term O&M costs, including advancements and integration of automation, system density, and reductions in hardware costs.

In the end, it is challenging to make an apples-to-apples comparison with O&M prices as they are quite dependent on the scope of work, length of the contract, location, labor costs, and technology that's involved. This confusion further exacerbates price pressure.

Incomplete EPC Punch-listing Results in 1.2% Performance Loss in Year 1 Operations

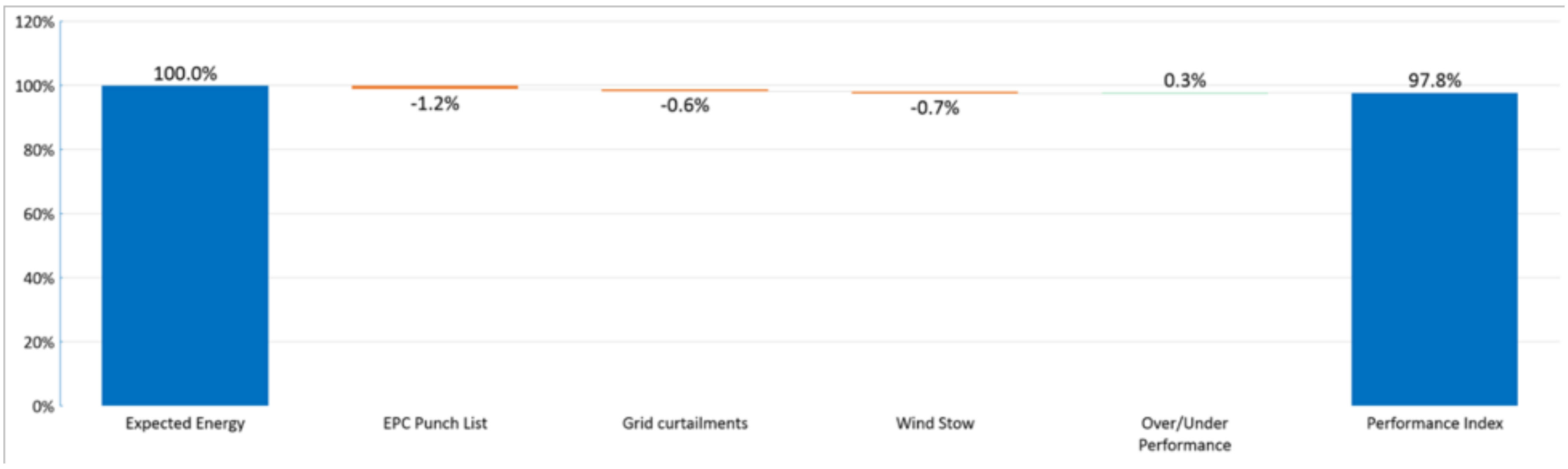
SunPower

There is no question that a company strives to produce a high quality product, however when a solar project is up against project schedules and budget, the quality of the workmanship can often suffer. EPC (Engineering, Procurement, and Construction) project teams are rewarded based on budget and schedule but they can often set the O&M (Operations and Maintenance) team and owner of a project up for difficult challenges after COD (Commercial Operation Date) even though the EPC team technically met their objectives. After the celebrations end for completing a project and the project team demobilizes, people do not think of the ramifications and increased costs associated with the rework needed to correct what was left behind.

With experience at a utility scale project of >100MW where a 10% QA/QC verification from our O&M team resulted in over 400 punch-list items (a 20x increase from punch list items identified by the project team), the O&M team supported 607 man-hours and numerous site equipment outages to support contractor rework after COD. This resulted in increased O&M operating expenses due to subcontracting work in order to maintain the preventative maintenance schedule. After correcting the deficiencies during the first year of operation the O&M team could reduce costs by self-performing maintenance. If these items were left unaddressed, the effect would be a reduction of performance and availability into the future years of operation. If lucky, many items could be discovered during year 1 annual preventative maintenance and hopefully still fall under warranty provisions, but the impact to performance and availability would be the same or worse as it would be increasingly difficult to coordinate the respective contractors and OEM's (Original Equipment Manufacturer) in a way to minimize the number of equipment outages needed for rework.

The overlooked fact is that the rework after COD is more than just cost of the contractors work and materials, but includes the cost of the O&M team coordinating with the PPA offtake/ISO, coordinating contractors as well as increased outage time which affects energy production after COD. In most utility scale plants most of the rework can be accomplished at night to minimize the impact to energy production, however this pulls the technicians away from being available during daylight production hours to respond to equipment outages, resulting in lost energy revenue and decreased performance metrics. In the solar facility used in this case study, this represented a 1.2% reduction in year 1 performance. During the construction phase there are no energy production revenue metrics that must be met and site access to perform repairs is a simpler process due to reduced safety requirements as compared to the O&M phase of operation. The cost of addressing QA/QC rework during the construction phase is therefore much less due to not consuming the O&M team labor hours and eliminating any lost revenue from energy generation.

Year 1 Performance Metrics (>100MW Solar Photovoltaic Project)



Contributors

kWh Analytics: kWh Analytics is the market leader in solar risk management. By leveraging the most comprehensive performance database of solar projects in the United States (20% of the U.S. market) and the strength of the global insurance markets, kWh Analytics' customers are able to minimize risk and increase equity returns of their projects or portfolios. Website

DNV GL: DNV GL is a global quality assurance and risk management company. Driven by our purpose of safeguarding life, property and the environment, we enable our customers to advance the safety and sustainability of their business. Website

PV Evolution Labs: PVEL is the leading independent reliability and performance testing lab for downstream solar project developers, financiers, and asset owners and operators around the world. With nearly ten years of experience and accumulated data, PVEL enables efficient solar project financing and development by replacing assumptions about solar equipment with quantifiable metrics, reports and BOM exhibits that are complimentary for its downstream partners. Website

Borrego Solar: Established in 1980, Borrego Solar Systems, Inc. is one of the nation's leading financiers, designers and installers of commercial and utility solar power systems. Borrego Solar's photovoltaic systems are efficient, reliable and cost-effective. Website

Clean Power Research: Clean Power Research has delivered award-winning cloud software solutions to utilities and industry for more than 20 years. Our PowerClerk, WattPlan® and product families allow our customers to make sense of and thrive amid the energy transformation. Website

Heliolytics: Heliolytics is the leading provider of aerial inspections with 18+ GW serviced across over 2,500 projects . We ensure maximum solar asset performance with innovative sensor systems, analysis, and reporting services combined with deep sector experience. Website

Clean Energy Associates: Clean Energy Associates (CEA), a solar and storage technical advisory firm, provides quality assurance and independent engineering solutions worldwide. We serve financial institutions, project developers, EPCs, IPPs, and power plant owners. Website

Strata Solar: Strata Solar is a leading provider of utility-scale, commercial and industrial solar photovoltaic systems. Strata has constructed over 1 gigawatt (gW) in total solar capacity and maintains a development pipeline of over 3gW. Website

Wood Mackenzie Power & Renewables: GTM research delivers actionable insight into the state and the future of the global electricity sector backed by GTM Research’s unparalleled level of depth due to exclusive relationships with industry partners, proprietary models, and ever-expanding executive network. Website

SunPower: As one of the world's most innovative and sustainable energy companies, SunPower (NASDAQ: SPWR) provides a diverse group of customers with complete solar solutions and services. Residential customers, businesses, governments, schools and utilities around the globe rely on SunPower's more than 30 years of proven experience. Website