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pv magazine webinars

How aerial data directs O&M crews to the right place, right time

22 August 2023

9:00 am – 10:00 am | PDT, Los Angeles
12:00 pm – 1:00 pm | EDT, New York City
6:00 pm – 7:00 pm | CEST, Berlin

Tristan Rayner
Editor
pv magazine

Mark Culpepper
General Manager of Solar
Zeitview

Robin Clark
Aerial Operations Manager
Nexamp

Welcome!

pv magazine webinars

Do you have any questions? ? 

Send them in via the Q&A tab.  We aim to answer as many as we can today!

You can also let us know of any tech problems there.

We are recording this webinar today. 

We‘ll let you know by email where to find it and the slide deck, so you can re-watch it at your convenience.  

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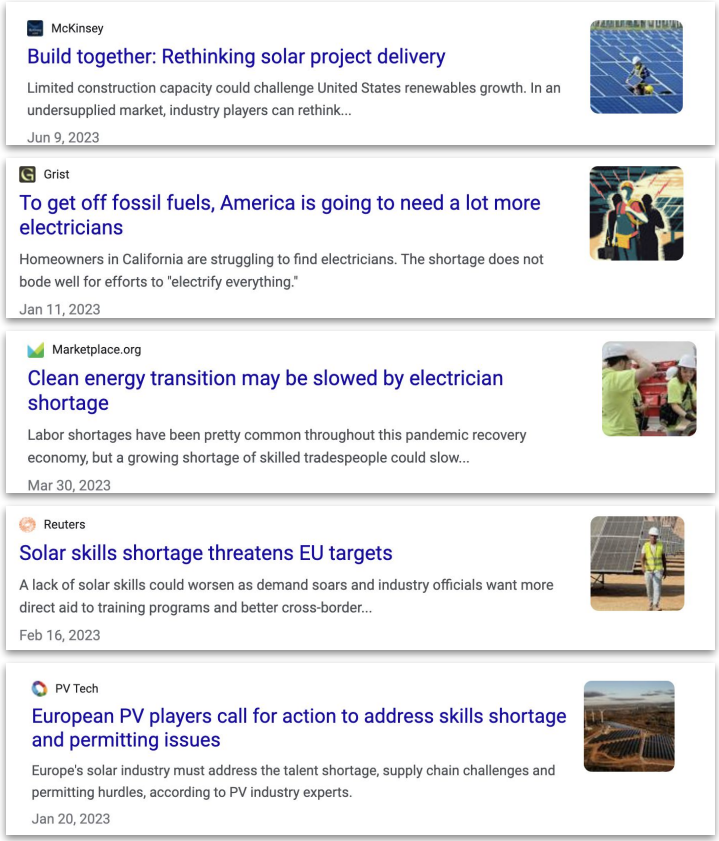
How Aerial Data Directs O&M Crews to the Right Place, Right Time

Today's Skilled Labor Market

The solar market is poised to grow like never before, but will labor shortages stand in the way?

"The passage of the Inflation Reduction Act (IRA) supports the growth of US renewables at an unprecedented pace. Solar, storage, and onshore wind capacity could reach more than 1,240 gigawatts (GW) over the next decade, growing **2.7 times faster** than projected before the IRA took effect"

- McKinsey & Company



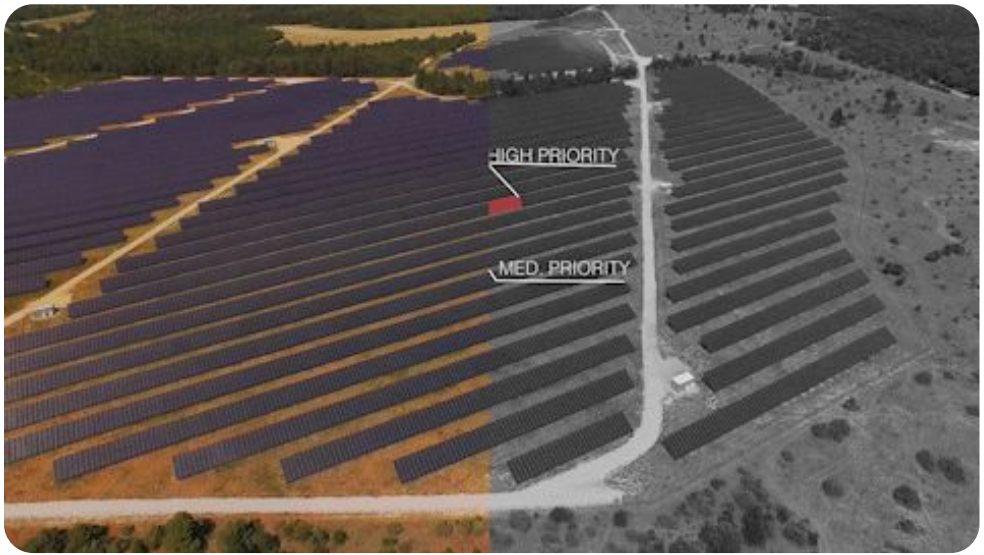
Poor Visibility & Tight Labor Markets

How can you improve what you can't see?

This is the challenge at the forefront of the U.S. solar market. With many asking:

- What are the conditions of my assets?
- Where are my biggest and most expensive issues?
- How do I reduce truck rolls and plan human power efficiently while improving asset performance?

How do I grow to meet demand with more work and fewer people



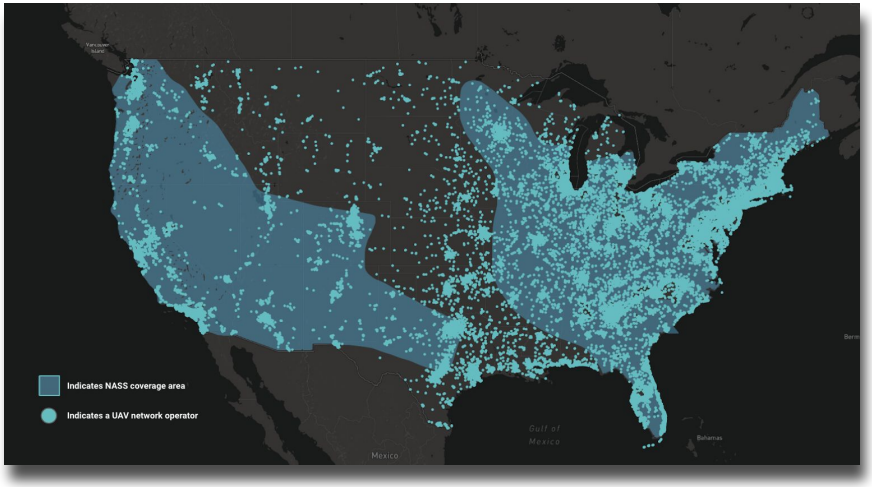
North American Solar Scan

North American Solar Scan: Efficiency & Industry-Wide Insights

Simple Solar Asset Ratings Create Instant Visibility for Prioritization of O&M

Zeitview has inspected every active solar project in the U.S. (1 MW+), creating industry wide transparency and empowering stakeholders to:

- Optimize O&M
- Stop inspecting well-performing assets
- Identify and compare asset condition across regions, technologies, service providers, and more.
- Evaluate and correlate asset condition with asset owners, vendors, and other stakeholders.



Industry metrics for Solar 1MW+

Capacity in US
100 GW

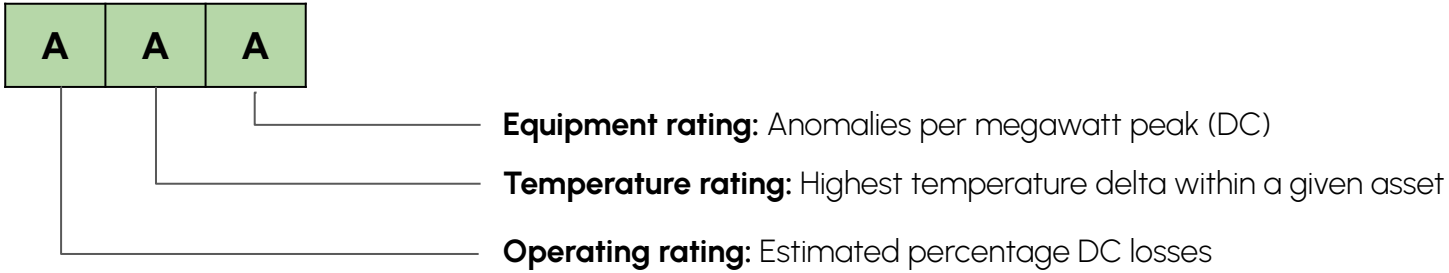
Total sites
7,000

Global industry scans 2021
~50 GW

How we build our ratings

We believe that objective ratings of solar assets will empower standardization, transparency, and responsible decision making across the industry.

Through thermal imaging & anomaly detection, each asset has a quantitative rating based on a three letter ranking method, each letter representing an aspect of the plant.



Equipment rating: Anomalies per megawatt peak (DC)

Temperature rating: Highest temperature delta within a given asset

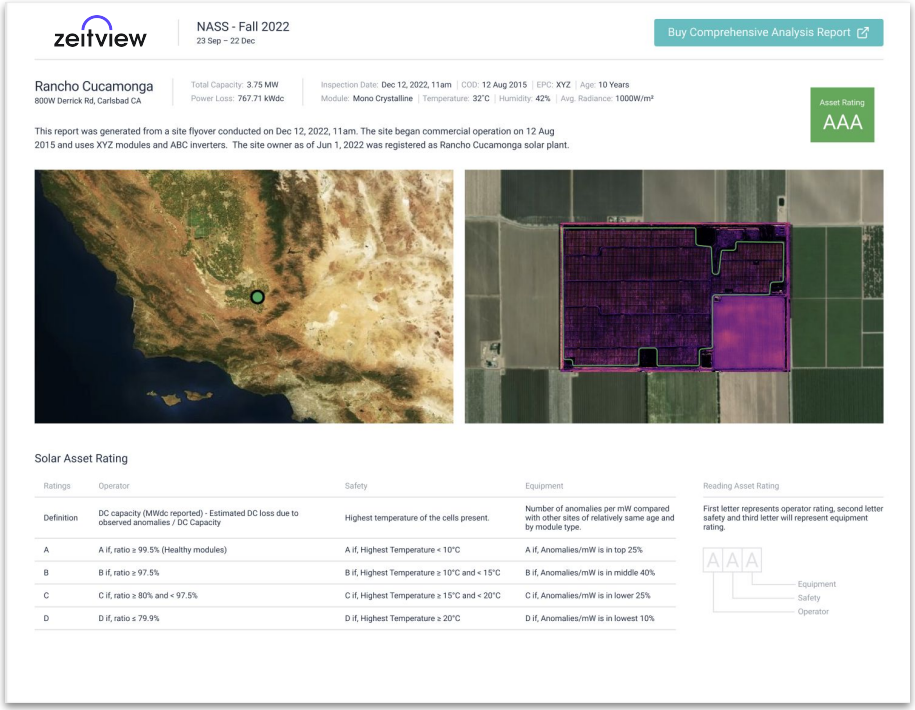
Operating rating: Estimated percentage DC losses

The Solar Asset Rating Report

Simplified inspection reporting at the scale of the industry.

Solar asset rating reports allow solar professionals to:

- Quickly understand asset condition and easily prioritize comprehensive scans.
- Instantly order and view comprehensive analysis reports for most at-risk solar plants.
- Rank and compare all North America based assets based on owner, O&M, size, age and more.
- Prioritize O&M activities and derive associated OPEX.



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NASS - Fall 2022
23 Sep – 22 Dec

Buy Comprehensive Analysis Report

Rancho Cucamonga
800W Derrick Rd, Carlsbad CA

Total Capacity: 3.75 MW | Power Loss: 767.71 kWdc | Inspection Date: Dec 12, 2022, 11am | COD: 12 Aug 2015 | EPC: XYZ | Age: 10 Years | Module: Mono Crystalline | Temperature: 32°C | Humidity: 42% | Avg. Radiance: 1000W/m²

Asset Rating
AAA

This report was generated from a site flyover conducted on Dec 12, 2022, 11am. The site began commercial operation on 12 Aug 2015 and uses XYZ modules and ABC inverters. The site owner as of Jun 1, 2022 was registered as Rancho Cucamonga solar plant.

Solar Asset Rating

Ratings	Operator	Safety	Equipment
Definition	DC capacity (MWdc reported) - Estimated DC loss due to observed anomalies / DC Capacity	Highest temperature of the cells present.	Number of anomalies per mW compared with other sites of relatively same age and by module type.
A	A if, ratio ≥ 99.5% (Healthy modules)	A if, Highest Temperature < 10°C	A if, Anomalies/mW is in top 25%
B	B if, ratio ≥ 97.5%	B if, Highest Temperature ≥ 10°C and < 15°C	B if, Anomalies/mW is in middle 40%
C	C if, ratio ≥ 80% and < 97.5%	C if, Highest Temperature ≥ 15°C and < 20°C	C if, Anomalies/mW is in lower 25%
D	D if, ratio ≤ 79.9%	D if, Highest Temperature ≥ 20°C	D if, Anomalies/mW is in lowest 10%

Reading Asset Rating

First letter represents operator rating, second letter safety and third letter will represent equipment rating.

AAA
Equipment
Safety
Operator

A Solution for the Entire Solar Workforce

Executive Teams
How do I optimize the performance of my entire solar fleet, while managing a slim workforce & tight economic conditions?

Operations Managers
How do I best ensure my specific plants are performing to their fullest extent, and when they are not, how do I prioritize O&M with low visibility into project issues?

Field Teams
With a limited team and limited hours in a day, distributed projects and every growing sites, how do I be the most effective and ensure that time spent creates the largest ROI

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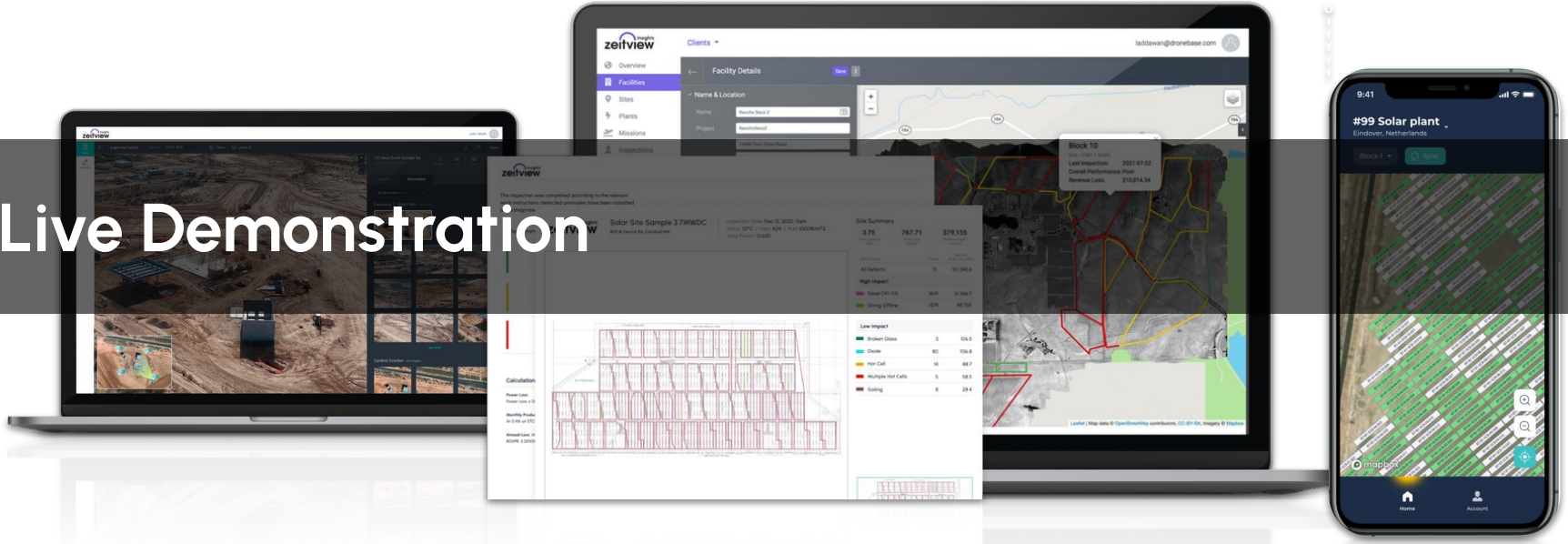
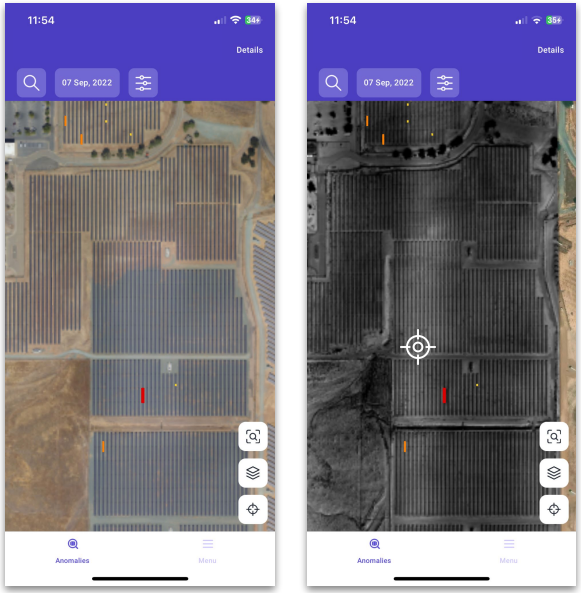
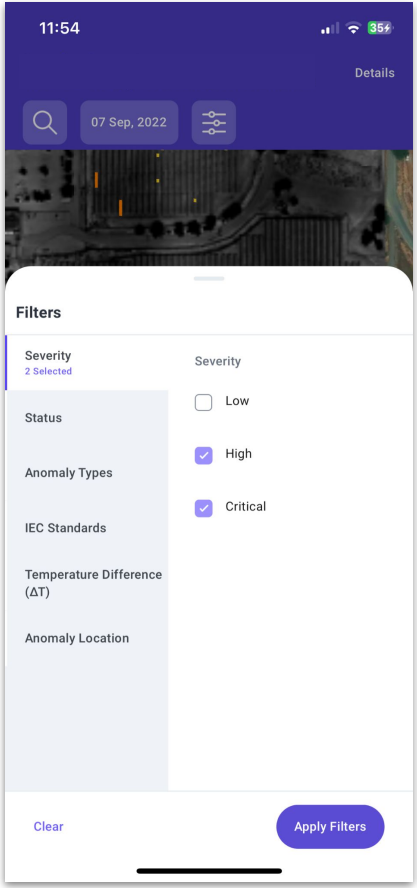
Live Demonstration

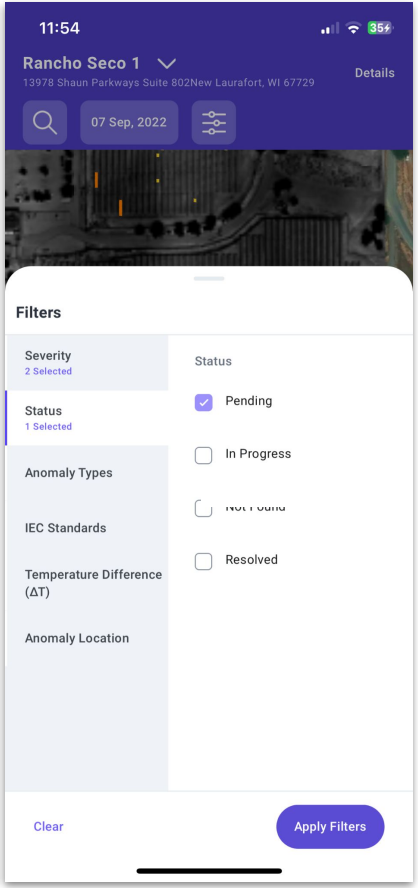


Mobile Application

Simplified mobile app makes it easy to navigate the sea of glass from your smartphone








nexamp

Who Is Nexamp?

Nexamp is harnessing positive power and funneling it back into communities across the country. As one of the largest clean energy developers in the U.S., we're maximizing our social and environmental impact daily.

- National, vertically integrated solar energy and storage company
- We develop, manage, and maintain community solar farms across the country
- We lead with inclusivity and equity — it is the foundation of our business model

250+
completed projects

480
Nexampers across 12 offices

1 GW
operational and deployment projects

#1
Community Solar Company*

*Solar Power World Magazine

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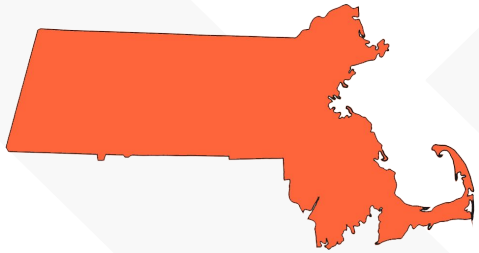
The Process



1

Locate

We started by assessing more than 100 assets in our home state of MA. ~70% of which are 1 MW or greater.

2

Filter

We specifically targeted assets with a “D” rating in any of the three rating categories.

3

Compile

We easily exported CSV files from the Insights platform to compile a list of assets that would be targeted for inspection

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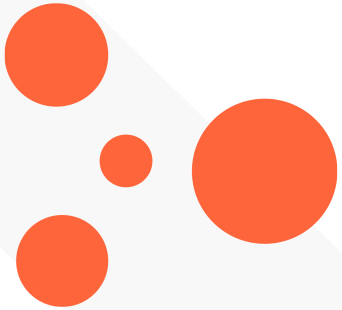
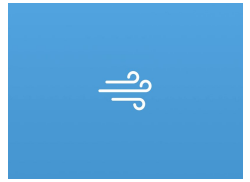
The Process





4

Sample Size

We narrowed down our long list to only 12 assets which ranged from 1 MW – 7 MW

5

Planning

We prioritized the smallest sites and those that were in proximity to one another.

6

O&M Data Requirements

Sky Cover < 50%
Humidity < 60%
Irradiance ≥ 600w/m²
Wind < 15 MPH (6.7 M/S)

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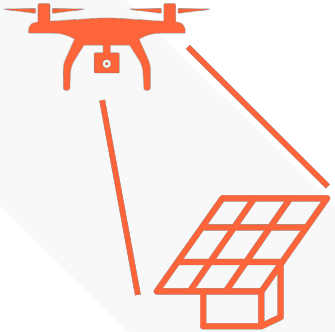
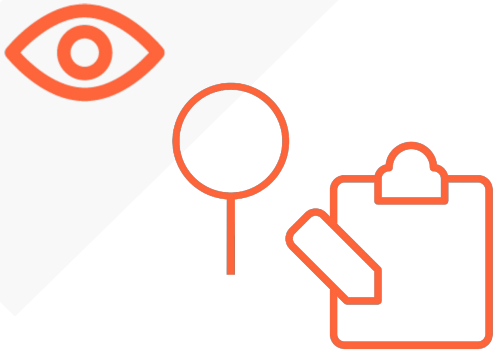
The Process



7

Execution

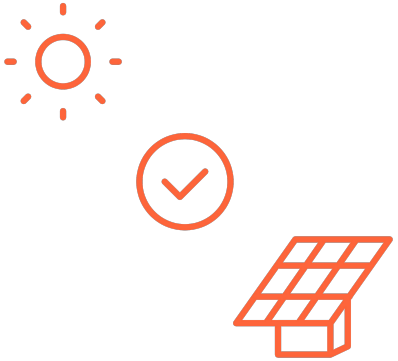
Drones conducted high overlap overflights of targeted assets. We collected detailed imagery that enabled us to create mosaics and analyze the condition of the assets using various software.



8

Observations

- Reduced truck rolls
- Increased productivity
- Improved Mean Repair Time
- Field findings correlated with report ratings



9

Resolution

We were able to rectify underperforming assets by relaying anomaly locations to repair teams using various methods.

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Tracker Mount NASS Report

EXAMPLE

zeitview Insights

Buy Comprehensive Analysis Report

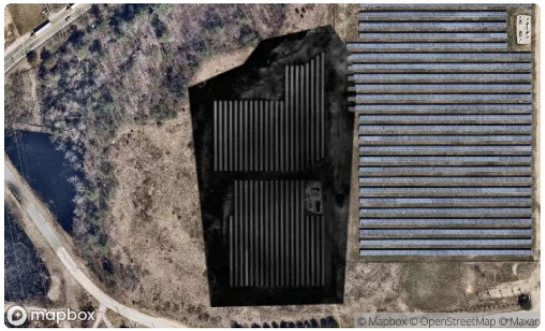
Tracker Mount Name
Street, **City** Massachusetts

Total Capacity: 1 MWp

Inspection Date: 21 May 2023 4PM | COD: 30 Jun 2020 | EPC: N/A
Age: 3yr | Module: crystalline | Temperature: 20.0 | Humidity: 49.0 | Avg. Radiance: 837W/m^2

Asset Rating
BDB

This report was generated from a site flyover on 21 May 2023 4PM. The site began commercial operation on 30 Jun 2020 and used crystalline modules and central inverters. The site owner as of today was registered as Nexamp Inc..



Solar Asset Rating

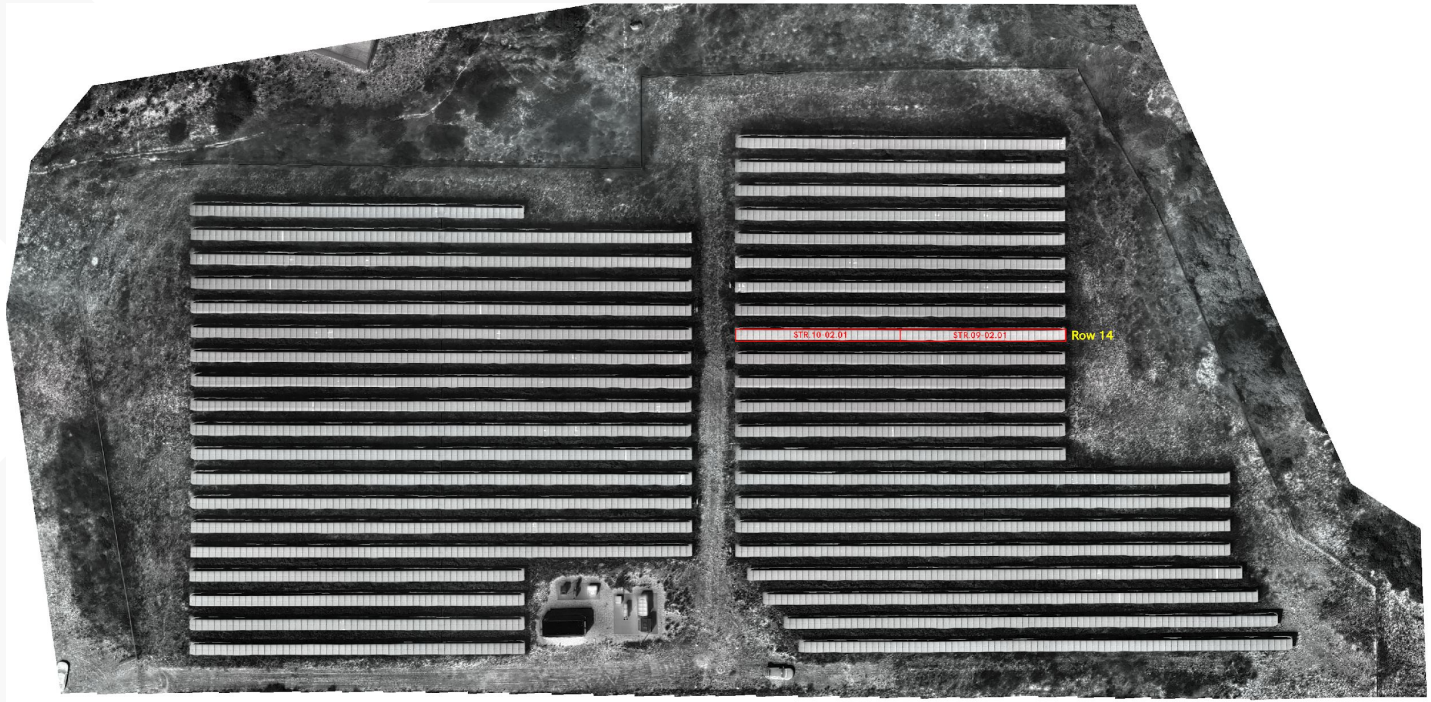
Ratings	Operating	Temperature (may be indicative of safety)		Equipment
		Roof mounted &/or capacity is < 2MWdc	Ground mounted &/or capacity ≥ 2MWdc	
Definition	DC capacity (MWdc reported) - Estimated DC loss due to observed hot cells / DC Capacity	Highest delta temperature of the hot cells present ($\Delta T = T_{HOTSPOT} - T_{NORMAL}$)	Delta temperature of the hot cells present ($\Delta T = T_{HOTSPOT} - T_{NORMAL}$)	Anomalies/MWp
A	If ratio is ≥ 99.5%	If $\Delta T_{Highest}$ is < 10˚C	If ΔT is 10˚C for less than 10 hot cells / MW	0 - 19.9
B	If ratio is ≥ 97.5%	If $\Delta T_{Highest}$ is ≥ 10˚C and < 15˚C	If ΔT is 5˚C-10˚C for 10-30 hot cells / MW and/or ΔT is 10˚C-15˚C for 5 hot cells / MW	20 - 84.4
C	If ratio is ≥ 80% and < 97.5%	If $\Delta T_{Highest}$ is ≥ 15˚C and < 20˚C	If ΔT is 10˚C-15˚C for 10-30 hot cells / MW and/or ΔT is 10˚C-15˚C for 5 hot cells / MW	84.5 - 148.9
D	If ratio is ≤ 79.9%	If $\Delta T_{Highest}$ is ≥ 20˚C	D if, ΔT is < 20˚C for more than 5 hot cells / MW and/or ΔT > 15˚C for more than 10 hot cells / MW	149+

Analytics & environmental data collected by Zeitview and system data by Enverus

nexamp

Tracker Mount NASS Report

EXAMPLE



Rooftop Mount NASS Report

EXAMPLE

zeitview Insights

Buy Comprehensive Analysis Report

Rooftop Mount Name
Street, City Massachusetts

Total Capacity: 1 MWp

Inspection Date: 29 May 2023 2PM | COD: 30 Dec 2014 | EPC: **N/A**
Age: 8yr 6mo | Module: crystalline | Temperature: 17.6 | Humidity: 47.0 | Avg. Radiance: 854W/m^2

Asset Rating
ADA

This report was generated from a site flyover on 29 May 2023 2PM. The site began commercial operation on 30 Dec 2014 and used crystalline modules and central inverters. The site owner as of today was registered as American Capital Energy.

Solar Asset Rating

Ratings	Operating	Temperature (may be indicative of safety)		Equipment
		Roof mounted &/or capacity is < 2MWdc	Ground mounted &/or capacity ≥ 2MWdc	
Definition	DC capacity (MWdc reported) - Estimated DC loss due to observed hot cells / DC Capacity	Highest delta temperature of the hot cells present ($\Delta T = T_{HOTSPOT} - T_{NORMAL}$)	Delta temperature of the hot cells present ($\Delta T = T_{HOTSPOT} - T_{NORMAL}$)	Anomalies/MWp
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C	If ratio is ≥ 80% and < 97.5%	If $\Delta T_{Highest}$ is ≥ 15˚C and < 20˚C	If ΔT is 10˚C-15˚C for 10-30 hot cells / MW and/or ΔT is 10˚C-15˚C for 5 hot cells / MW	84.5 - 148.9
D	If ratio is ≤ 79.9%	If $\Delta T_{Highest}$ is ≥ 20˚C	D if, ΔT is < 20˚C for more than 5 hot cells / MW and/or ΔT > 15˚C for more than 10 hot cells / MW	149+

Analytics & environmental data collected by Zeitview and system data by Enverus

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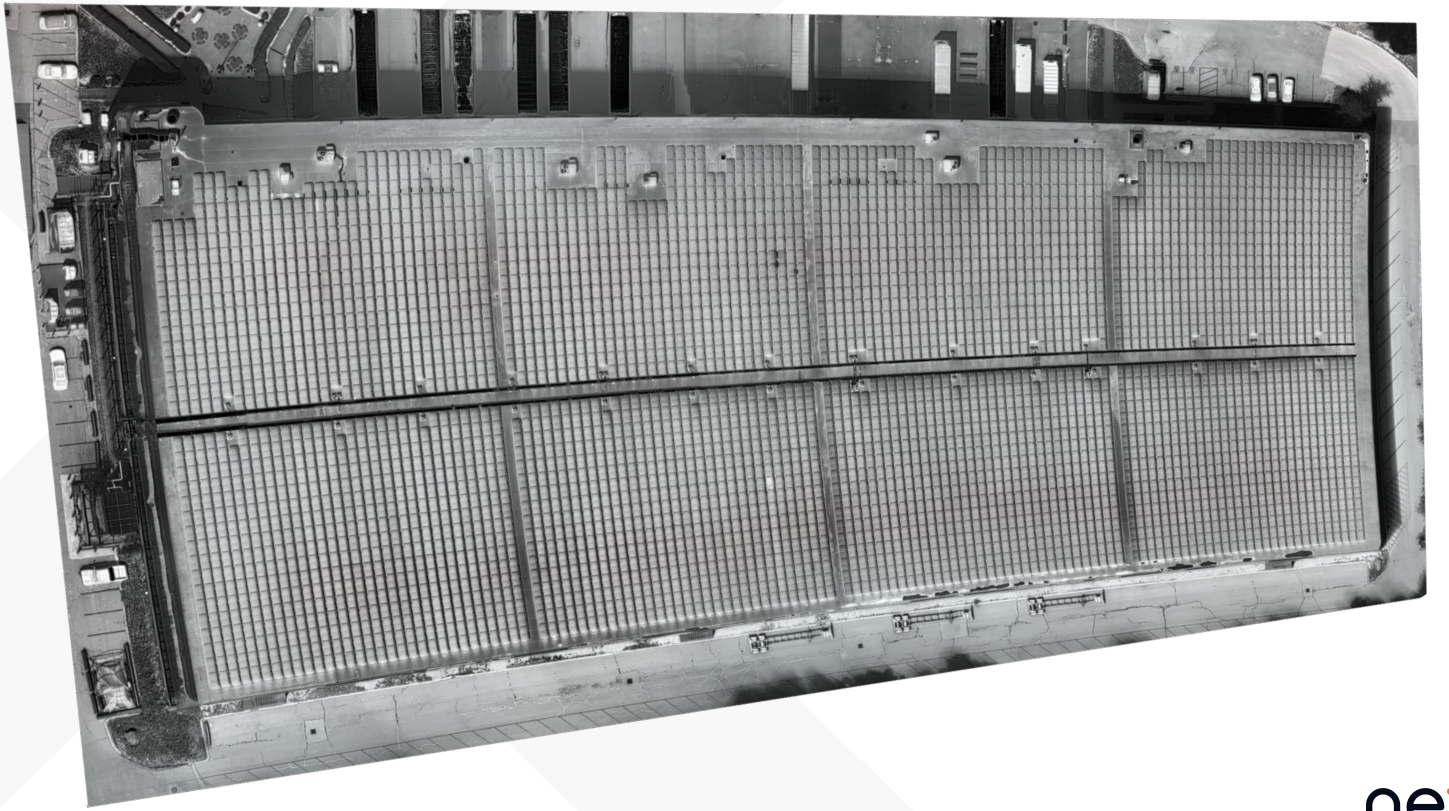
Rooftop Mount NASS Report

EXAMPLE



Ground-Mount NASS Report

EXAMPLE

zeitview Insights

Buy Comprehensive Analysis Report

Ground Mount Name
Street, City Massachusetts

Total Capacity: 2 MWp

Inspection Date: 30 May 2023 11AM | COD: 28 Dec 2021 | EPC: N/A
Age: 1yr 6mo | Module: crystalline | Temperature: 14.8 | Humidity: 51.4 | Avg. Radiance: 816W/m^2

Asset Rating
CAD

This report was generated from a site flyover on 30 May 2023 11AM. The site began commercial operation on 28 Dec 2021 and used crystalline modules and central inverters. The site owner as of today was registered as N/A.

Solar Asset Rating

Ratings	Operating	Temperature (may be indicative of safety)		Equipment
		Roof mounted &/or capacity is < 2MWdc	Ground mounted &/or capacity ≥ 2MWdc	
Definition	DC capacity (MWdc reported) - Estimated DC loss due to observed hot cells / DC Capacity	Highest delta temperature of the hot cells present (ΔT = $T_{HOTSPOT}$ - T_{NORMAL})	Delta temperature of the hot cells present (ΔT = $T_{HOTSPOT}$ - T_{NORMAL})	Anomalies/MWp
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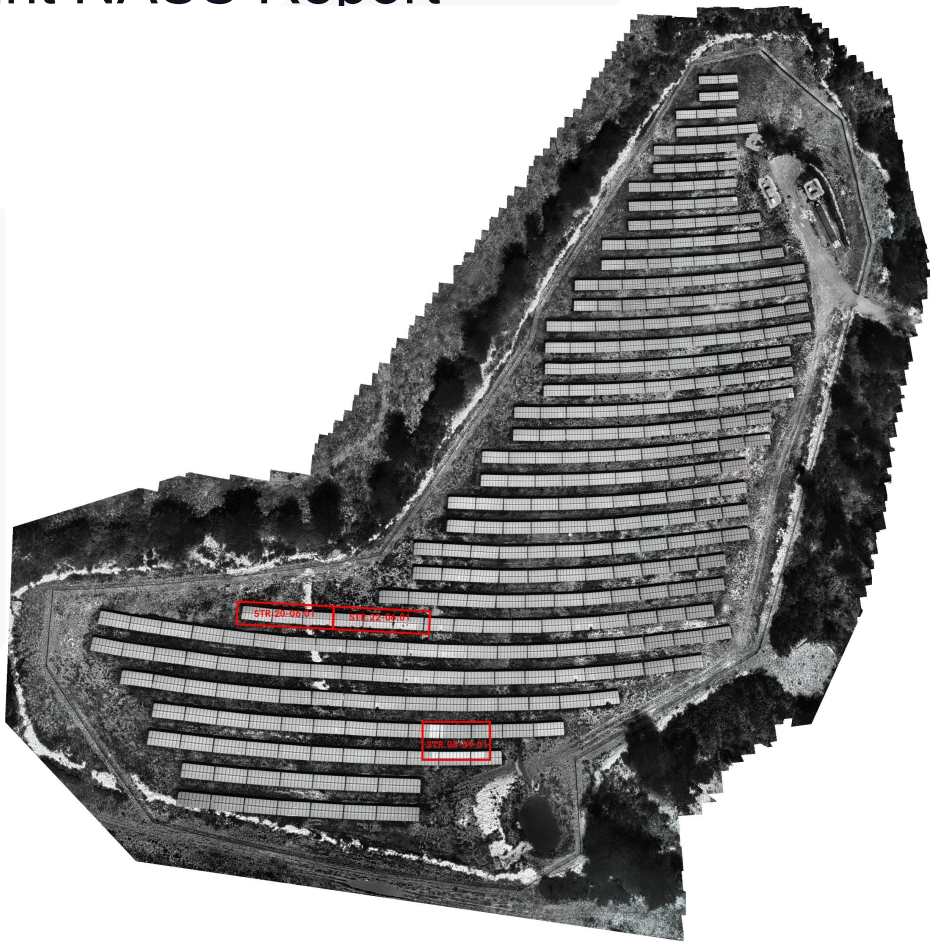
Ground-Mount NASS Report

EXAMPLE

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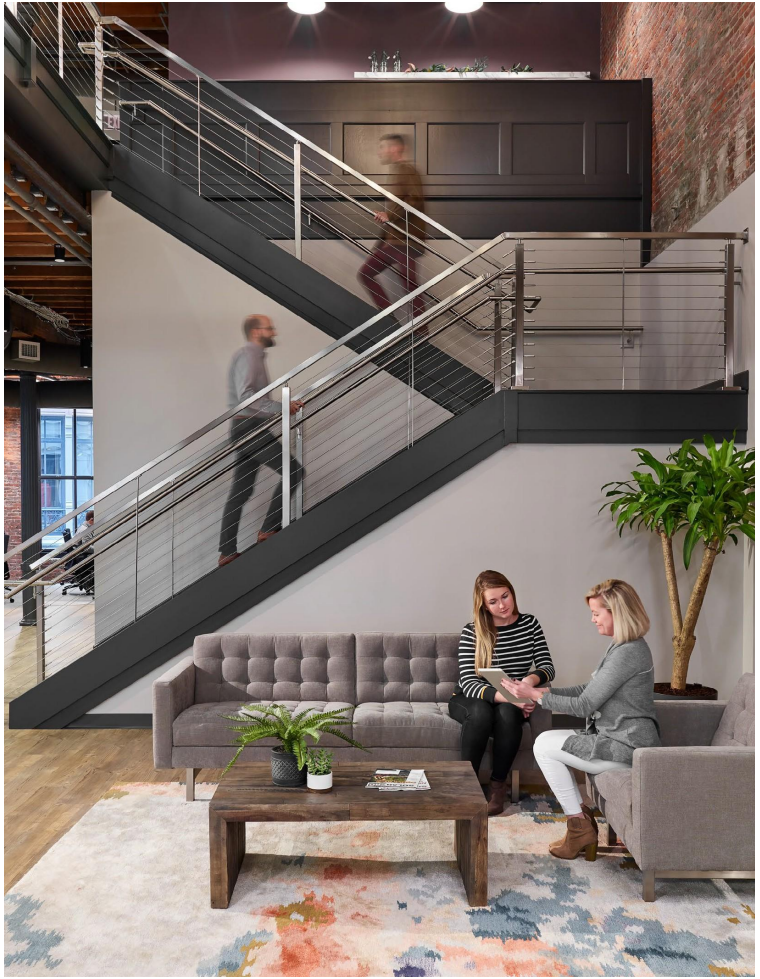
3
FA3YWWFRCL

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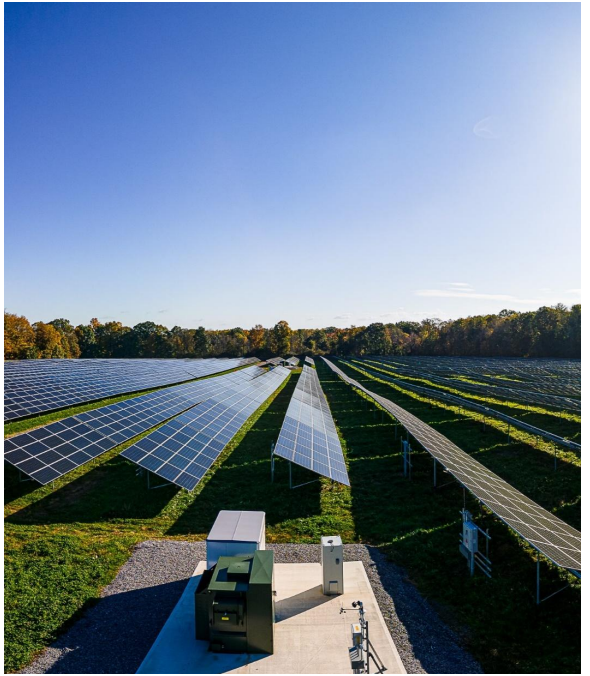
September Equipment Outage Loss by Site



Meet with
Zeitview at

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11–14
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pv magazine webinars

How aerial data directs O&M crews to the right place, right time

Q&A

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Wednesday, 30 August 2023
2:00 pm – 3:00 pm EDT, New York City
8:00 pm – 9:00 pm CEST, Berlin

Ensuring safety under UL3741

Monday, 18 September 2023
10:00 am – 11:00 am BST, London
11:00 am – 12:00 pm CEST, Berlin

Evolution of the “1+X” modular inverter

Many more to come!

In the next weeks, we will continuously add further webinars with innovative partners and the latest topics.

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www.pv-magazine.com/webinars

Registration, downloads & recordings are also be found there.

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Tristan Rayner
Editor
pv magazine

Thank you for joining today!