RENEWING
WHAT'S POSSIBLE

Risky Business: Planning, Engineering, Insuring, and Maintaining Projects

Moderator: Ryan Egly– Senior Project Development Engineer, Schneider Electric

Panelist: Adam Polis– Director of Performance Engineering, Sol Systems

Panelist: Jaspreet Singh – Director- Products & Solutions, Qcells

Panelist: Piper Wilder– Founder/CEO, 60Hertz Energy

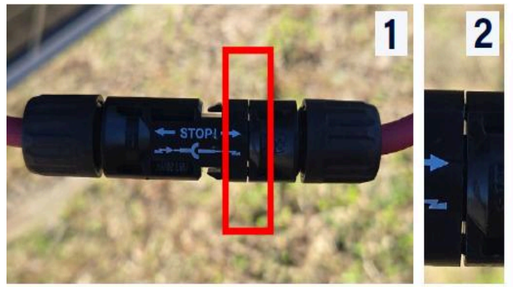
Panelist: Carol Stark – North American Renewable Energy Practice Leader, Aon

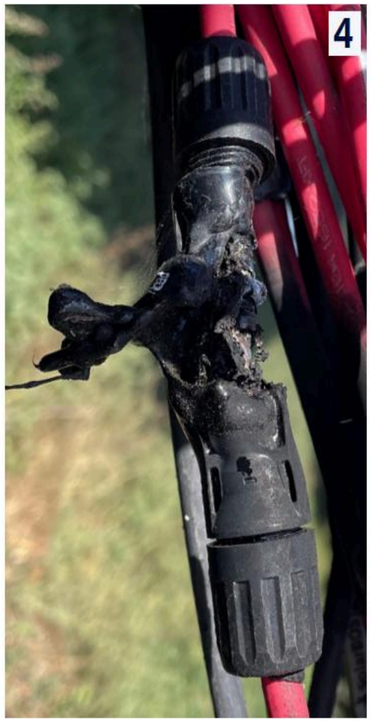
POWERED BY SEIA Solar Energy Industries Association® Smart Electric Power Alliance

Natural Disasters- Hail, Hurricane, Fire & others

https://www.renewableenergyworld.com/solar/community-solar/solar-farm-pelted-by-giant-hail-as-severe-storm-ripped-through-nebraska/
https://www.pv-magazine.com/2024/10/17/tornado-rips-through-solar-farm-in-florida/

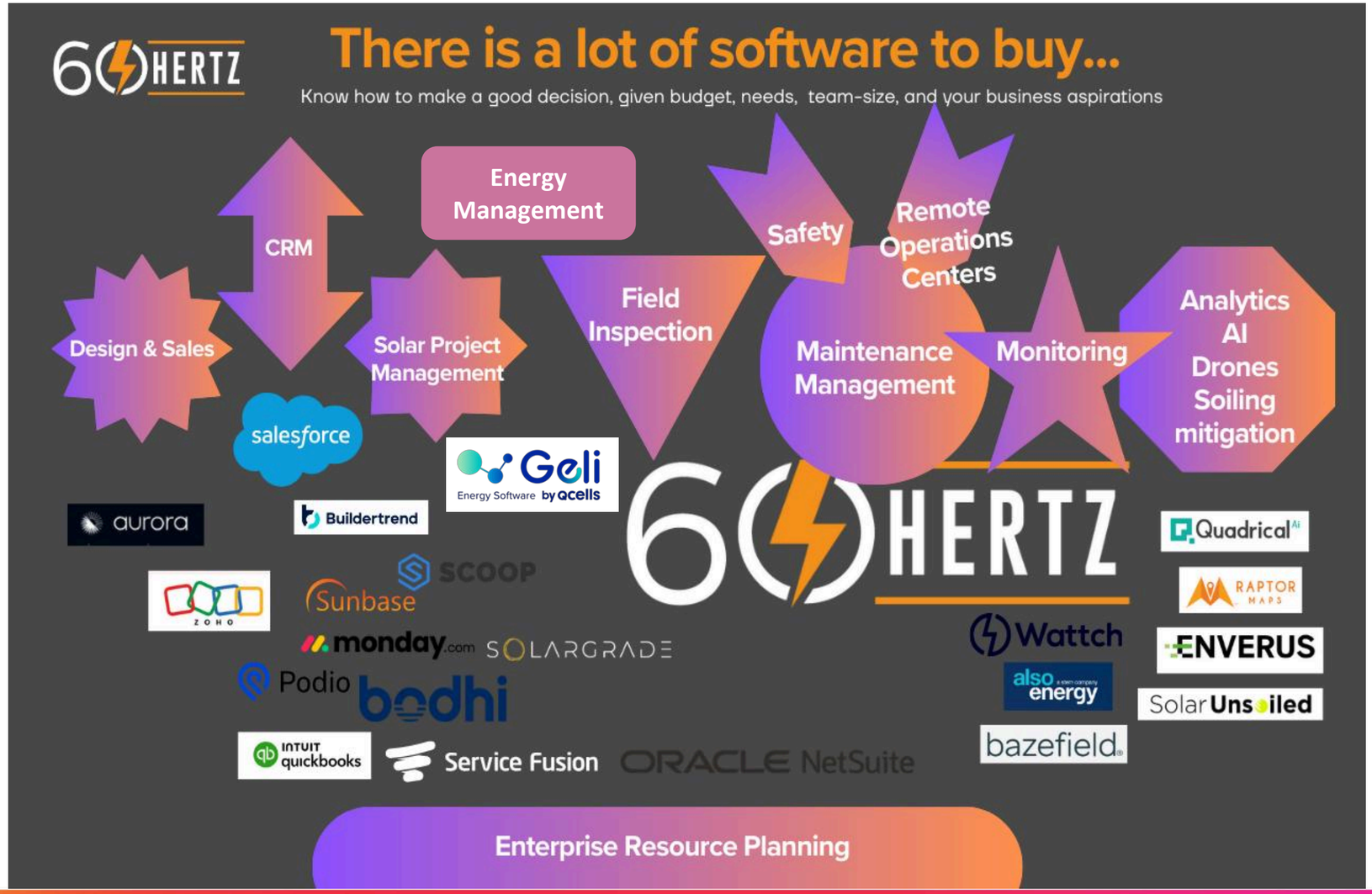
Technology Risk – Hardware





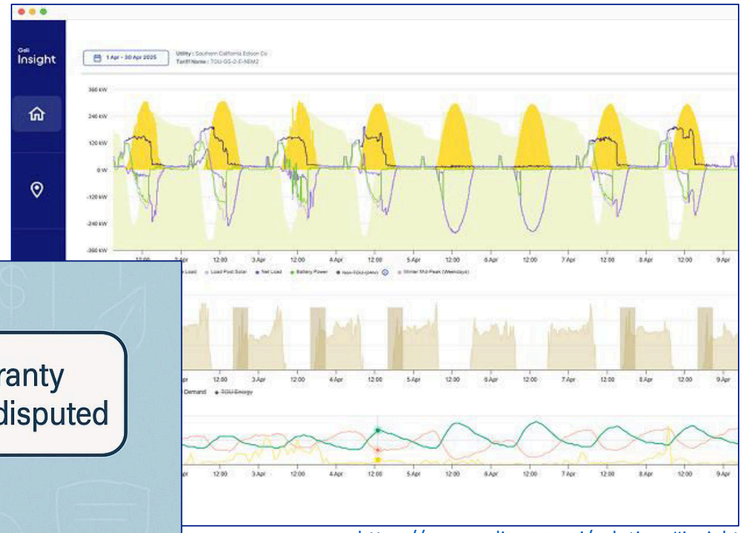
https://www.firehouse.com/operations-training/news/55138200/fire-at-escondido-ca-battery-storage-facility-could-burn-for-two-days
https://www.heliovolta.com/resources/pv-health-report-2025

Technology Risk – Software



Asset Management– O&M, Warranties & Service

https://us.qcells.com/blog/southern-powers-south-cheyenne-sol



https://www.gelienergy.ai/solutions#insight

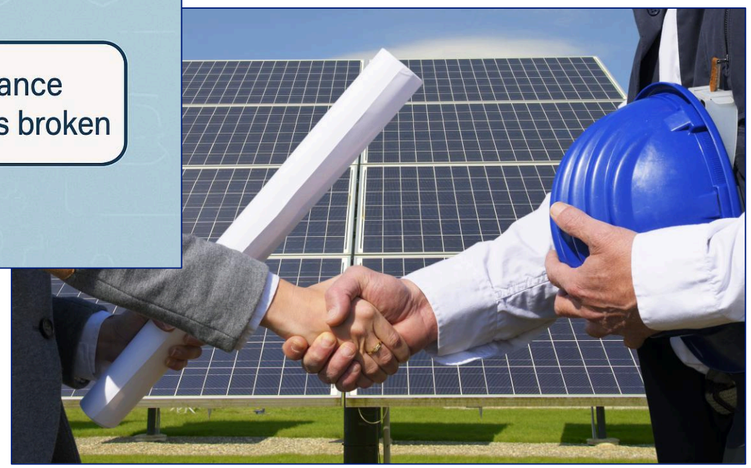
Maintenance costs increase

Warranty claims disputed

Service provider default

Performance guarantees broken

https://www.canarymedia.com/articles/climatetech-finance/the-cleantech-companies-that-didnt-make-it-through-2024



https://solarbuildermag.com/news/solar-om-presents-long-term-profitability-challenges/

System Design: Microgrids & Utility Compliance

On-site renewables, energy storage and power generation facilities utilized in parallel with grid

Grid-tied

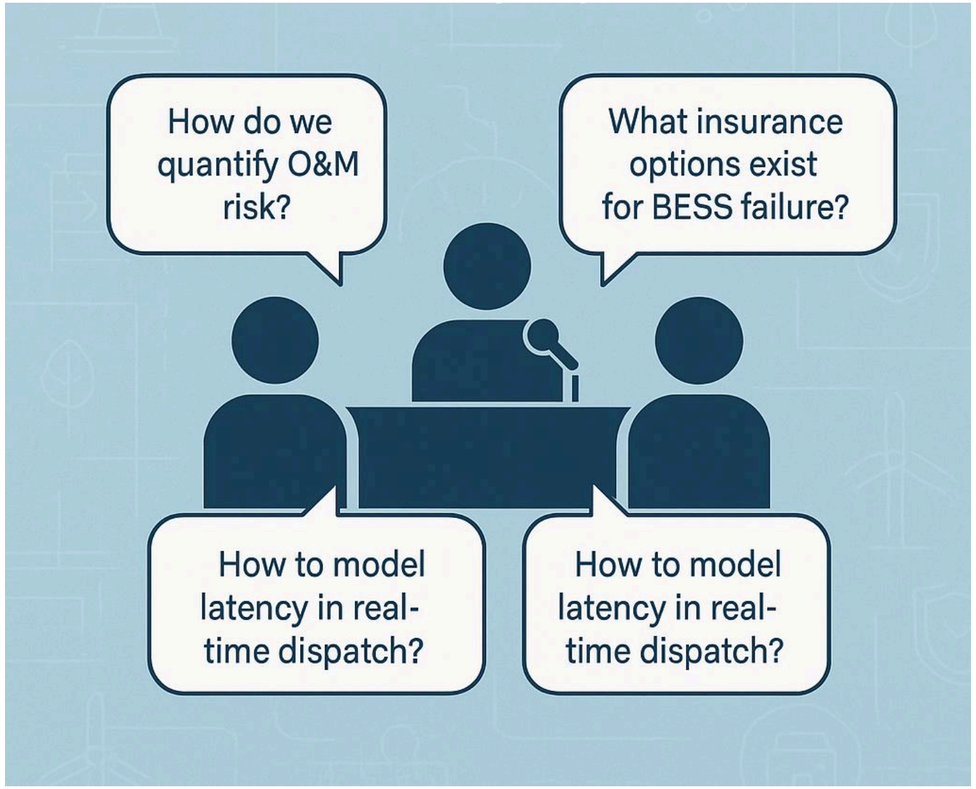
Microgrid will generate energy from local sources in the case of a grid outage OR other external.

Island-able

Microgrid will generate energy from local source

Off-grid

Q&A


How do we quantify O&M risk?
What insurance options exist for BESS failure?
How to model latency in real-time dispatch?
How to model latency in real-time dispatch?

Mitigating 6% Annual Revenue Loss from Wildfire Smoke:

Data-Driven Asset Management Strategies

September 9, 2025

Collision course:

Fires, smoke, ash and solar

- By 2050, solar will ***increase from 3 - 45% of US electricity generation.***
- CAISO: Saw ***a 67% decrease in solar generation during the Campfires of 2020*** over a 2 month period.
- 60Hertz's 24 months of study indicate ***double-digit loss of generation even for fires > 100mi away***
- Generation loss varies widely across a portfolio, depending on particulate, location, season, point source: not as simple as "3% loss expected."

AMERICA'S SEED FUND SBIR

POWERED BY NOAA

AI generated image for descriptive purposes

Smoke is just one particulate that’s on the rise

- By 2050, land use changes and land cover changes predicted to increase Sulfate, Nitrate, Organic Carbon, Black Carbon with 20-40% increases depending on type
- Haboobs are also on the rise, depositing large amounts of dust, sand and loose dirt.
- Fine dust levels predicted to increase by 57% and coarse dust levels increase by 38% by 2099 across Southwest
- Pollen season is 10-40 days longer with 16-40% increase in quantity of pollen.
- Clean Power Research identified that between 2020 and 2021 smoke impacted solar on twice as many days.

AI generated image for descriptive purposes

R&D Partners

SOLV ENERGY

lightsource bp

bp

Hanwha Convergence

CleanCapital

ACEP
Alaska Center for Energy and Power

Solar Unsoiled

SunShare
COMMUNITY SOLAR

GREENSPARK
Loyal to People. Loyal to Planet.

fracsun

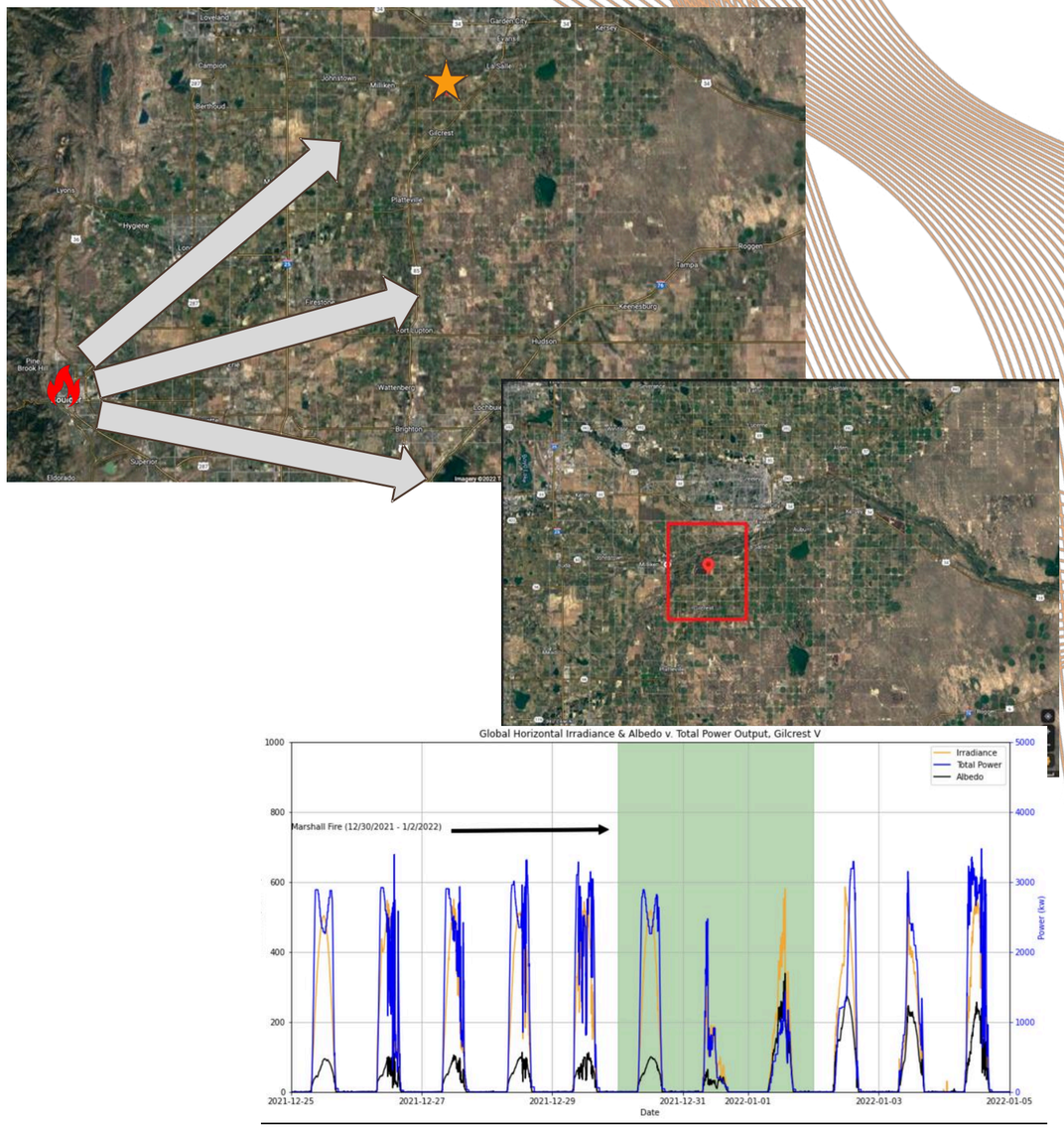
KSI KENDALL SUSTAINABLE INFRASTRUCTURE

Cedar Energy Investors LLC

Case Study #1

Marshall Fire in Boulder

- **Overview**
  - Marshall Fire - Boulder, Colorado - 12/31/2021 - 1/2/2022
  - SunShare Gilcrest V 5 MW facility Northeast of Boulder
  - SolarScada Power and MET Data
  - NOAA GOES-16 and GOES-17 ABI Data
- **Initial Findings**
  - 60H developed a proxy for soiling using atmospheric conditions and production
  - 60H developed a relationship between atmospheric events and production at a nearby PV site as a proxy for soiling
  - 60H developed an initial model for the prediction of soiling and impact to production based on ash, dust, and other particulate matter in the atmosphere
  - **43% drop in generation during period of the fire**



Case Study: Highway 70 Fire

Fire Impact Report

Site Name:
Site Location:
Date Range: 2025-06-27 - 2025-07-26

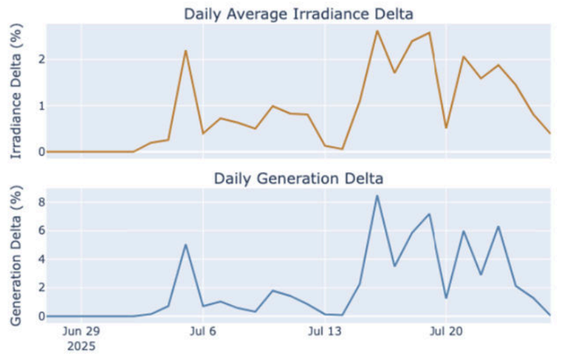
Summary

Fire-derived Generational Loss	Hours of Generation Affected	Lost Revenue Due to Fire	Fire Impact Score
195MWh	303hrs	$5,853	6

Summary

The dataset highlights the impact of the Hwy 70 wildfire on the solar site over a month-long period in 2025. During the initial days, no impact is recorded, but starting from July 3, significant disruptions occur. The site experiences variations in irradiance and a noticeable decrease in power generation which corresponds to financial losses. The frequency of fires remains constant at one fire per day during impacted days, reflecting ongoing challenges in the region. There are distinct peaks in generation loss and revenue loss around mid-July, with the most severe losses on July 16 and 19. The overall pattern shows a significant effect on energy output, particularly during peak impact days. Future concerns include maintaining consistent power generation during wildfire events, indicating the need for mitigation strategies to handle similar situations. The trend indicates recurring disruptions due to wildfires, necessitating resilience planning for future operations.

Fire Impact



Week by Week Fire Impact Breakdown

Week Start	Average Irradiance Loss (%)	Total Generation Loss (%)	Hours Impacted	# of Fires	Revenue Lost
2025-06-23	0.0	0.0	0	0	$0
2025-06-30	2.0	7.0	43	1	$645
2025-07-07	1.0	6.0	98	1	$598
2025-07-14	3.0	29.0	89	1	$2,790
2025-07-21	3.0	19.0	73	1	$1,821

6/26/25 —7/26/25

Fire Weather

Fire weather: Fire weather is increasing.

Fire weather is defined as sustained winds > 15 MPH; Relative humidity at 25% or less; Temperature > 75° F

NOAA predicts a 600% increase in fire (median burned acres per year in US West) for every 1°C increase in temperature

Nationally: Not just in the West, but across the country, up to 2 more months of fire weather days.

Urban conflagrations on the rise: Los Angeles, Lahaina, Jasper, Boulder, Fort McMurry

Technology: Software

Customer support offered by Original Equipment Manufacturers
Risk of untenable conditions to accomplish basic tasks

- Call waiting times to file a warranty claim or get support: billable?

Risk of Legacy software and hardware mix as procurement and portfolio management changes

- “Tab Jockying”

Risk of time to navigate procurement decisions

- It’s time-consuming and complicated

Service: Operational Risks (Maintenance)

- Dispatch and Scheduling: Growing fleet of C&I portfolios and growing GW of solar/storage/wind: scheduling is complex and beyond what a human can efficiently accomplish.
- Complexity includes:
  a. SLA compliance
  b. Original Equipment Manufacturer schedules and recommendations
  c. Personnel qualifications, certs
  d. Travel time
  e. Weather; natural hazards; Air Quality index

Story #1 Andreas and the White Board

Microgrids: operational risks

1. Vermin and pest issues: Microgrid sites can attract various pests like flies, bees, and rodents that can damage or interfere with equipment.
2. Battery and energy storage failures: Issues with batteries, inverters, and other critical components can cause the entire system to shut down.
3. Improper system design and sizing: If cables, connections, and other components are not properly sized and installed, it can lead to failures down the line.
4. Lack of training and maintenance knowledge: If operators and technicians don't have the right training and skills to maintain the microgrid, it can result in poor performance and downtime.
5. Accessibility and logistics challenges: Remote microgrid sites can be difficult to access, making it hard to quickly respond to issues and perform maintenance.

Scan to take our short survey!