

# Why Hail-Resistant PV Modules are Critical for Mitigating Increasing Hail Risks

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For the past several years, hail damage to PV modules has been a significant concern for solar installers and owners. The increasing frequency and intensity of hail events, particularly in the central and southern United States, has led to a growing awareness of the need for hail-resistant PV modules. This is especially true for commercial and utility-scale solar farms, where the cost of downtime and replacement can be substantial. The industry is now looking for solutions that can withstand the impact of hail without compromising performance or efficiency.

## Biggest Hail Damage in Big Solar Data Page

Year-over-year, hail damage to PV modules has increased significantly. In 2023, the total cost of hail damage to PV modules in the United States is estimated to be \$540 million, a 200% increase from \$180 million in 2022. This is a significant increase, particularly in the central and southern United States, where hail events are more frequent and intense. The damage is not limited to residential solar panels; commercial and utility-scale solar farms are also experiencing significant damage. In fact, a recent hail event in the central United States caused an estimated \$106 million in damage to a large solar farm. The damage was caused by hailstones that were 1.5 inches in diameter and fell at a speed of 50 mph. The hailstones caused significant damage to the PV modules, including cracking and delamination. The damage was estimated to be 54% of the total value of the solar farm. This is a significant increase from the 1.4% damage rate in 2022. The damage was caused by hailstones that were 1.5 inches in diameter and fell at a speed of 50 mph. The hailstones caused significant damage to the PV modules, including cracking and delamination. The damage was estimated to be 54% of the total value of the solar farm. This is a significant increase from the 1.4% damage rate in 2022.

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S. G P

A 20 30 T

Ar PV

## I a ceC pa ie Ree a a i gHai Ri

T. 2023' S

W. EPC PV

## Mi ga i gU ii S a Ci e Ri i hHai-Re i a PVM d e

A T S PV PV

T PV U VDE A PV VDE' (AAL)

VDE T AAL 2/2 ( ) 3.2 / B T 3.2 /

2/2 T 3.2 /b

W 100MW \$0.51/W (M saved  
 more than \$1 million in AAL 2/2

RETG K PVEL

T 2/2 V no defects  
 | 45 50  
 | 55 65

T 3.2 /b V no defects  
 | 45 0  
 | 55 50  
 | 65 60

H T

PV R



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