

2025

Policyholders' Conference

Stronger together.



Breakout Session

Property Losses – Lessons Learned

MODERATOR

Justin Weltscheff

Vice President,
Property Underwriting

AEGIS

John Kinneary

Executive General Adjuster,
Claims

AEGIS

Richard Eglin

Account Professional Loss Control Manager,
Loss Control

AEGIS

Example 1 – Solar Claim

Hail – An Adjustment Tale

- Significant hailstorm in Western USA, 2023
 - 30MW Photovoltaic (PV) solar plant
 - 250-acre site with 483,000 PV modules
 - First Solar Series 3, FS-377
 - 68,000 modules damaged (14% of site)
- Challenge of like kind replacement – Series 3 and 4 now obsolete (debut c. 2013 – 2017)
- Series 3 and 4 have same dimensions, but Series 4 has higher output – can't be mixed
- Sourced 55,000 Series 4 FS-4117 modules at a steeply discounted price
- \$6.5M preliminary PD estimate using Series 4



Example 1 – Solar Claim

Hail – An Adjustment Tale

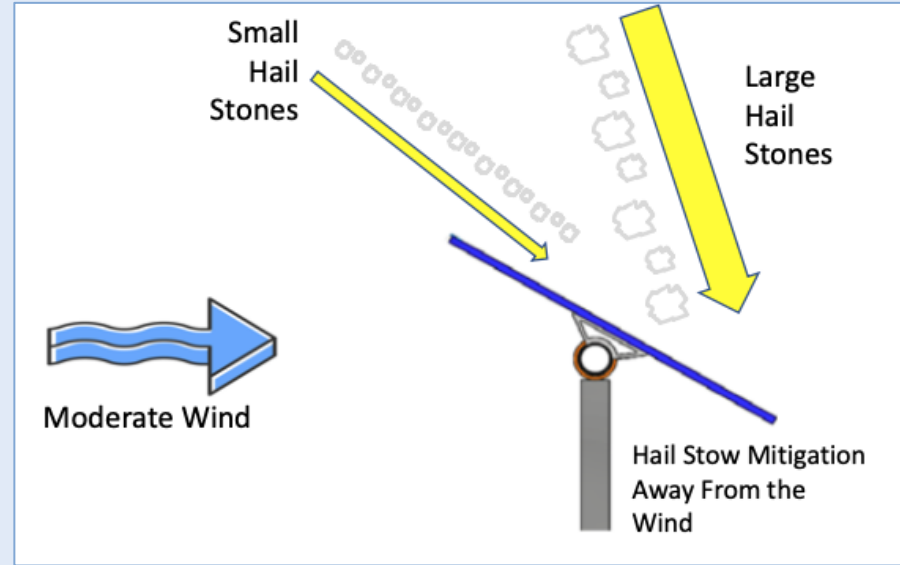
- However, labor-intensive work required to reposition modules in compatible series (Series 3 with Series 3 and Series 4 with Series 4)
- 55,000 new Series 4 modules installed and approximately 68,000 existing Series 3 modules relocated
- Labor-intensive = Labor-expensive!
- PD escalated from \$6.5M to \$10+M, primarily labor driven



Example 1 – Solar Claim

Loss Control Considerations

- Not much you can do with hail and fixed tilt. Legacy utility scale systems were installed on fixed racking
- Stow Early
 - Maximum stow angle possible for respective manufacturer
 - Larger OEMs can retrofit for a push button stow locally or from Remote Operations Center
 - Know how long it takes for maximum stow
 - Test emergency hail stow monthly in hail prone areas
- Backup power for stow
- Thicker 3.2mm glass
- Tempered glass stronger than heat treated





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Example 2 – Solar Claim

Wind – Is It The End?

- Named Windstorm – Florida 2024
 - **Multiple** 75MW PV solar plants
 - 500-acre sites, 700,000 PV modules
 - First Solar Series 4 panels
 - Mix of single axis tracking and fixed racking
 - CAT 3, max sustained winds 120 mph
- Challenge of like kind replacement – Series 4 now obsolete (debut c. 2013 – 2017)
- Preliminary PD estimate – \$25M plus \$19M for racks
- Was able to source used like kind Series 4 modules



Example 2 – Solar Claim



- Root Cause Analysis
 - Tracking systems were reportedly designed to withstand windspeed of 140 mph
 - Max wind speeds at the sites were upwards of 60 mph with gusts up to 85 mph
 - Tracking system's purlins were under-sized and not sufficient to handle wind forces
- Subrogation deemed nil due to contractual terms
- Tracker company honored warranty for repair or replacement of the tracking systems (not modules)
- Preliminary PD estimate using Series 4 \$25M plus \$19M for trackers and racks
- Sourcing of Series 4 panels coupled with warranty cover on trackers and racks significantly reduced the exposure, potentially to a range of \$5M

Example 2 - Solar Claim

Loss Control Considerations

Below design wind speed failures sum up the bulk of the events and these are good examples of what we are seeing

- **Fastener types**
 - Through bolt fasteners with locking nuts are preferred – clips and clamps speed install but don't provide resiliency
- **Tracker Configuration**
 - Double Portrait (2P) tracker configurations are a significant design challenge. OEMs are universally moving away due to these low wind speed failure events
- **Stowing protocols**



Example 3 – Transformer Claim

My Transformer No Performa

- 300 MW Windfarm
 - 139 Vestas V110-2.0MW and V120-2.2MW
 - Site equipped with two, 165MVA Main Power Transformers (MPT)
- Both MPTs failed within three (3) days of each other, site derated then non-operational
- Failures occurred during first year of multi year warranty, transformer repair costs covered
- Single leased replacement transformer located and operational 4 months post loss – mitigated some of the business income loss
- MPT-1 had repeat failures during testing, not back in service for 19 months
- MPT-2 returned to service 9 months post loss



Example 3 – Transformer Claim

My Transformer, No Performa

- Property Damage claim - \$1.5M
 - Transformers covered under warranty
 - Substantial costs for preservation of property. Installed windsocks to mitigate wind turbine blade damage. Turbines unable to yaw into wind without power
- Business Income loss estimated at \$33M including generation revenue and Production Tax Credits (PTCs)
- Leased MPT covered under Increased Cost of Working (ICOW) at an additional cost of \$3.6M
- Leased MPT saved another \$11M in Business Income loss

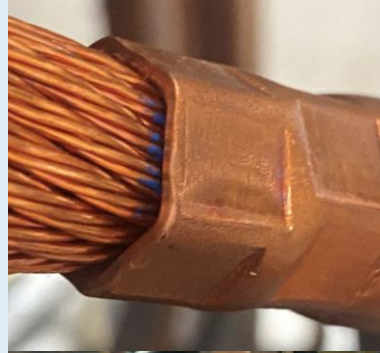


Example 3 – Transformer Claim

My Transformer, No Performa

- **Root Cause Analysis**

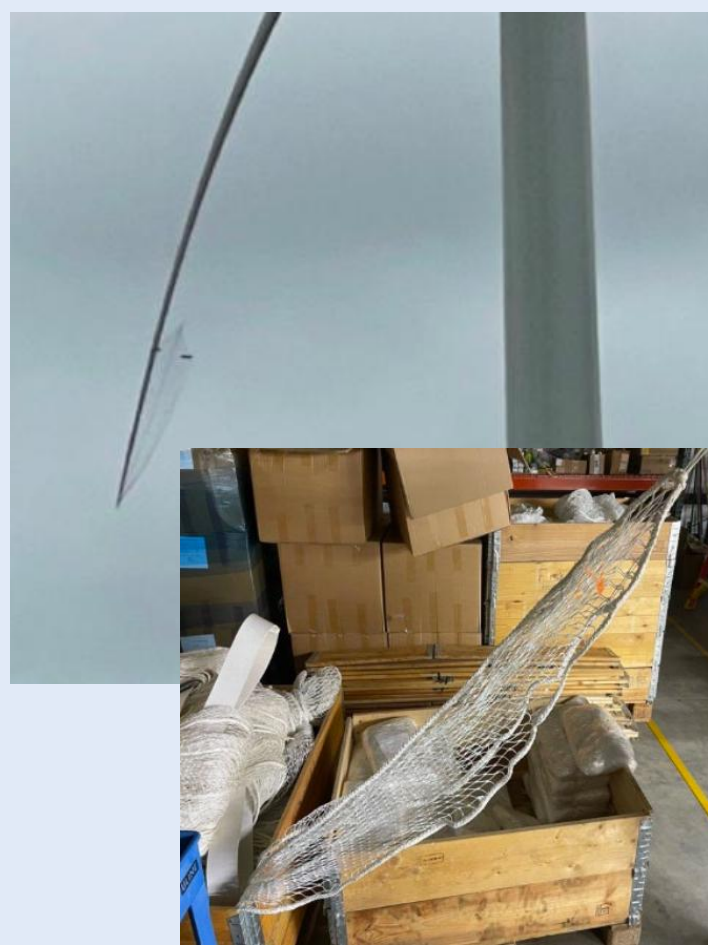
- Lack of quality assurance, quality control
- Conductors attached to tap changer spaced too close to one another resulted in arcing
- Other leads were spaced well below the minimum clearance



Example 3 – Transformer Claim

Loss Control Considerations

- An outlier loss
 - Installed redundancy at roughly 50%
 - Normally consider this to be a conservative set up
 - Lost Estimate consideration would not include failure of both Main Power Transformers
 - Only mitigation for an event such as this is a spare transformer or possibly a contractual contingency plan
- Without grid power available turbines cannot yaw into the wind
- Required windsocks on all blades to mitigate damage due to edgewise vibration
- Enormous undertaking considering three blades per turbine and on 139 turbines



Example 4 – Transformer Claim

My Transformer, No Performa

- 200MW Battery Energy Storage System (BESS)
 - Builders Risk Project
 - Medium Voltage Transformer failed upon being energized
 - Collateral damage to adjacent transformer
 - Root Cause Analysis underway
 - A 2nd transformer failed during commissioning two weeks later
 - Property Damage costs estimated at \$750K per unit
 - Delay in Start-Up (DSU) loss possible



Example 5 – BESS Claim

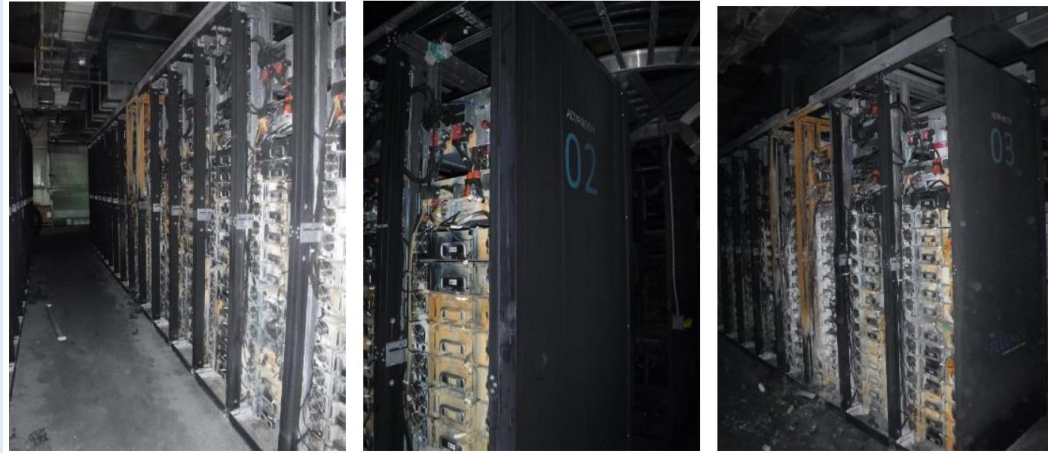
Warehouse BESS Can Be A Mess!



Example 5 – BESS Claim

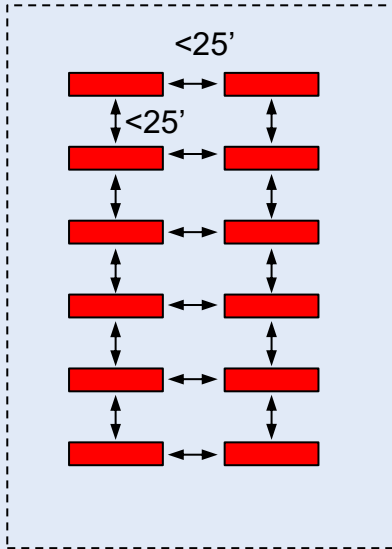
Warehouse BESS Can Be A Mess!

- 10MW / 40 MWH BESS
- 3-year-old facility
- Thermal runaway event due to likely internal fault in cells
- Sprinkler system activated over an 11-day period to control flare-ups
- 2 million gallons of water discharged
- Fire, heat, smoke, and water damage to 100% of modules
- Replacement modules 18 month lead time
- Property Damage ~\$20M
- Business Interruption ~\$3M



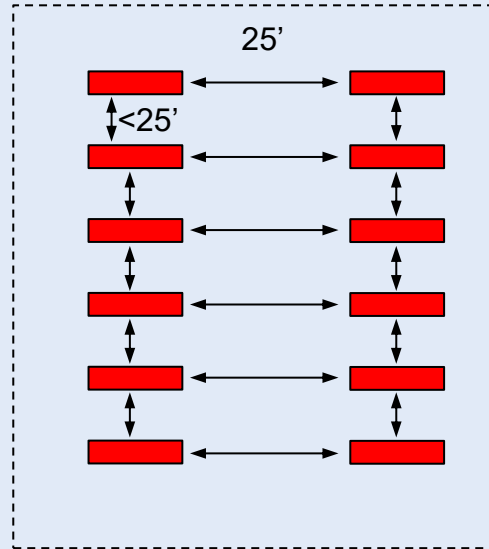
25' Separation – Value at Risk

Site 1



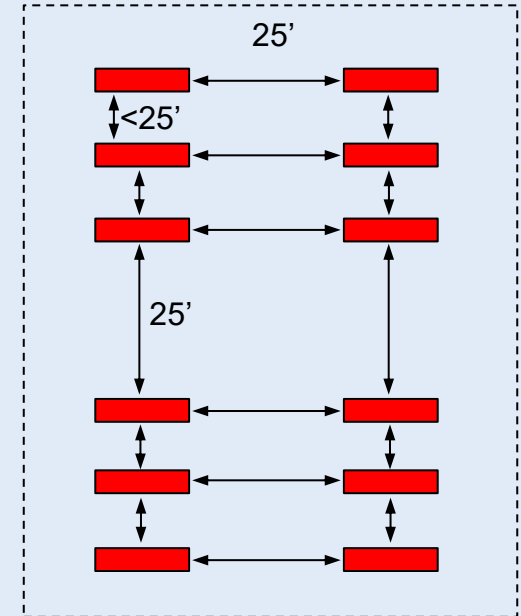
PML = MFL = All Containers*

Site 2



PML = MFL = 6 Containers

Site 3



PML = MFL = 3 Containers

* Unless explosion potential is properly managed and a specific separation distance is validated by fire testing.

Loss Control Member Support

Focused Analysis

- Combustion Turbine Fleet Status
- Steam Turbine Sequential Trip Protection
- Steam Turbine Water Induction Protection
- Large Transformer Fleet Status
- Battery Energy Storage Systems Project Review
- Fire Protection Plan Review

Working Groups

- Prime Movers
- Renewables
- Energy Storage
- Electrical
- Fire Protection
- Gas Operations
- Documentation

White Papers & Quick Tips

- Steam Turbine Overspeed Protection Systems
- Steam Turbine/Generator Emergency Shutdown
- Precursors of Water Induction
- Wildland Fire Hazard Risk Reduction for PV Solar Sites
- Design Considerations for Solar Photovoltaic (PV) Sites
- Lithium-ion Battery Energy Storage Systems
- Steam Turbine Sequential Tripping Protection



