TWAICE | Battery Analytics Software
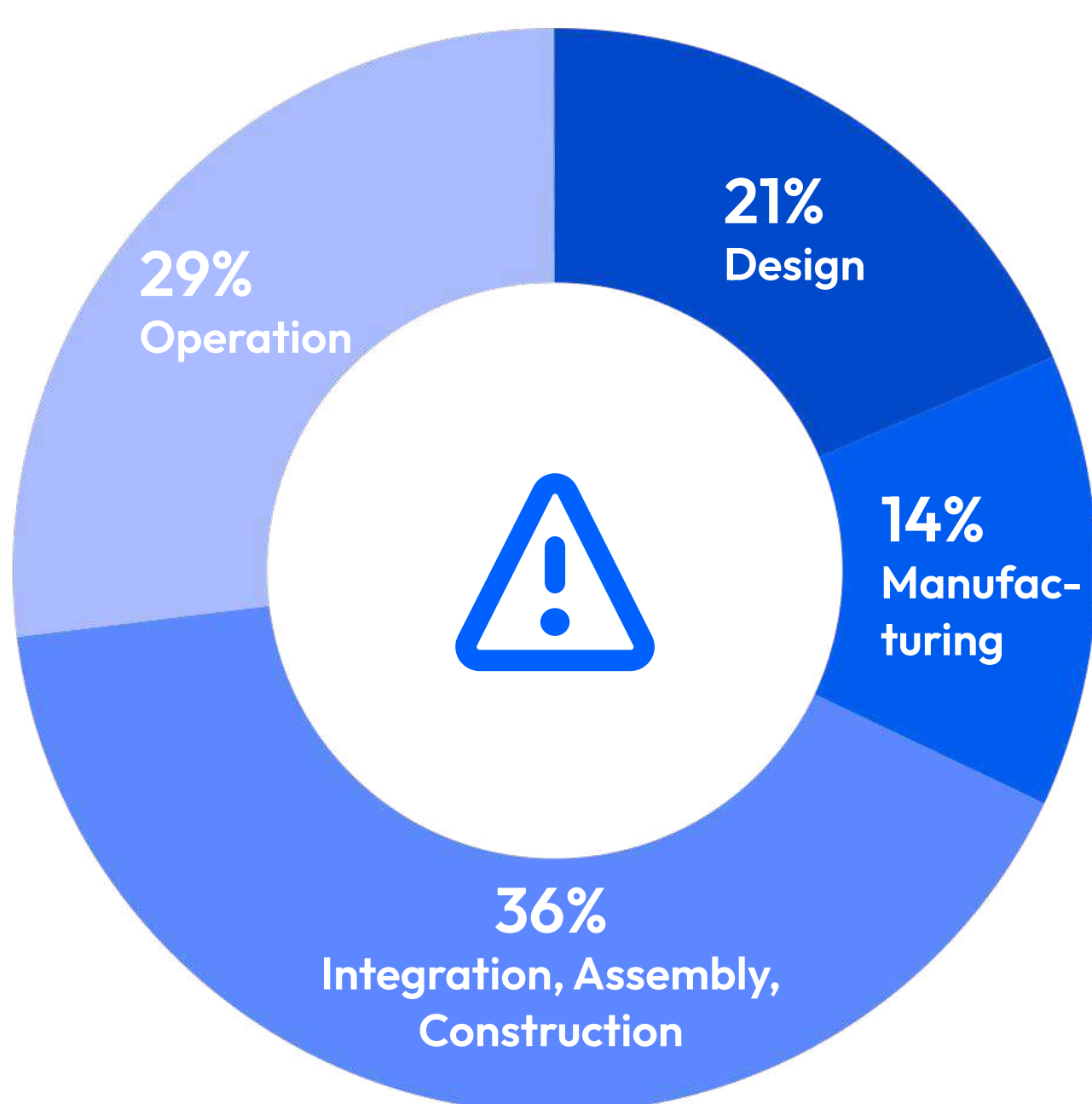
BESS failures: study identifies opportunities for battery analytics to prevent incidents
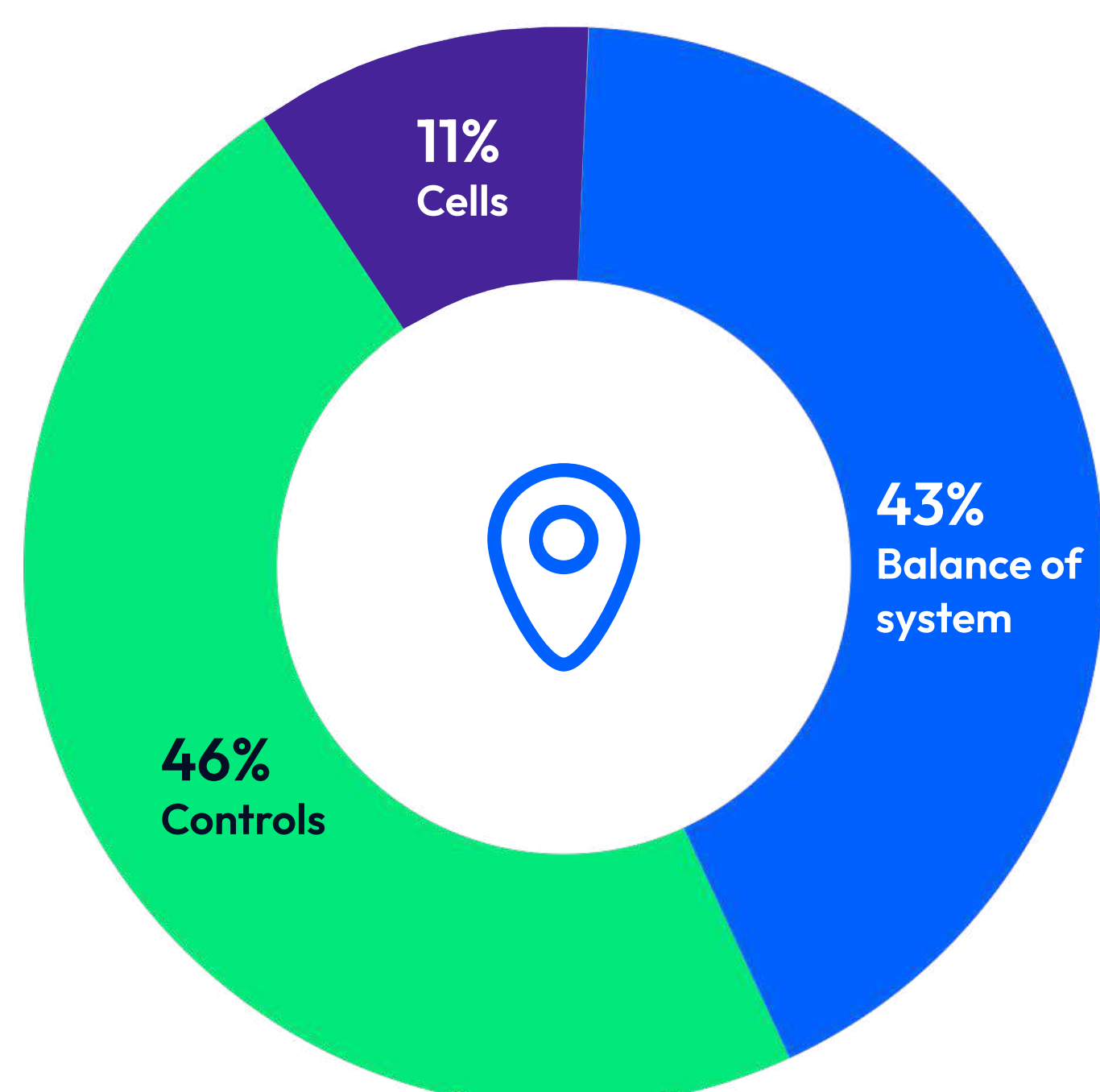
EPRI's BESS failure event database used for the analysis

- Developed in 2021, global scope, all battery chemistries
- Utility-scale and C&I stationary failures resulting in safety hazard
- Sourced from public information
- Data limitation: out of 81 incidents, only with 26 cause could be identified

Failure root causes were classified by root cause and physical location of the failure

Root cause:
- 21% Design
- 14% Manufacturing
- 36% Integration, Assembly, Construction
- 29% Operation

Physical location:
- 11% Cells
- 43% Balance of system
- 46% Controls

Root cause

Physical location

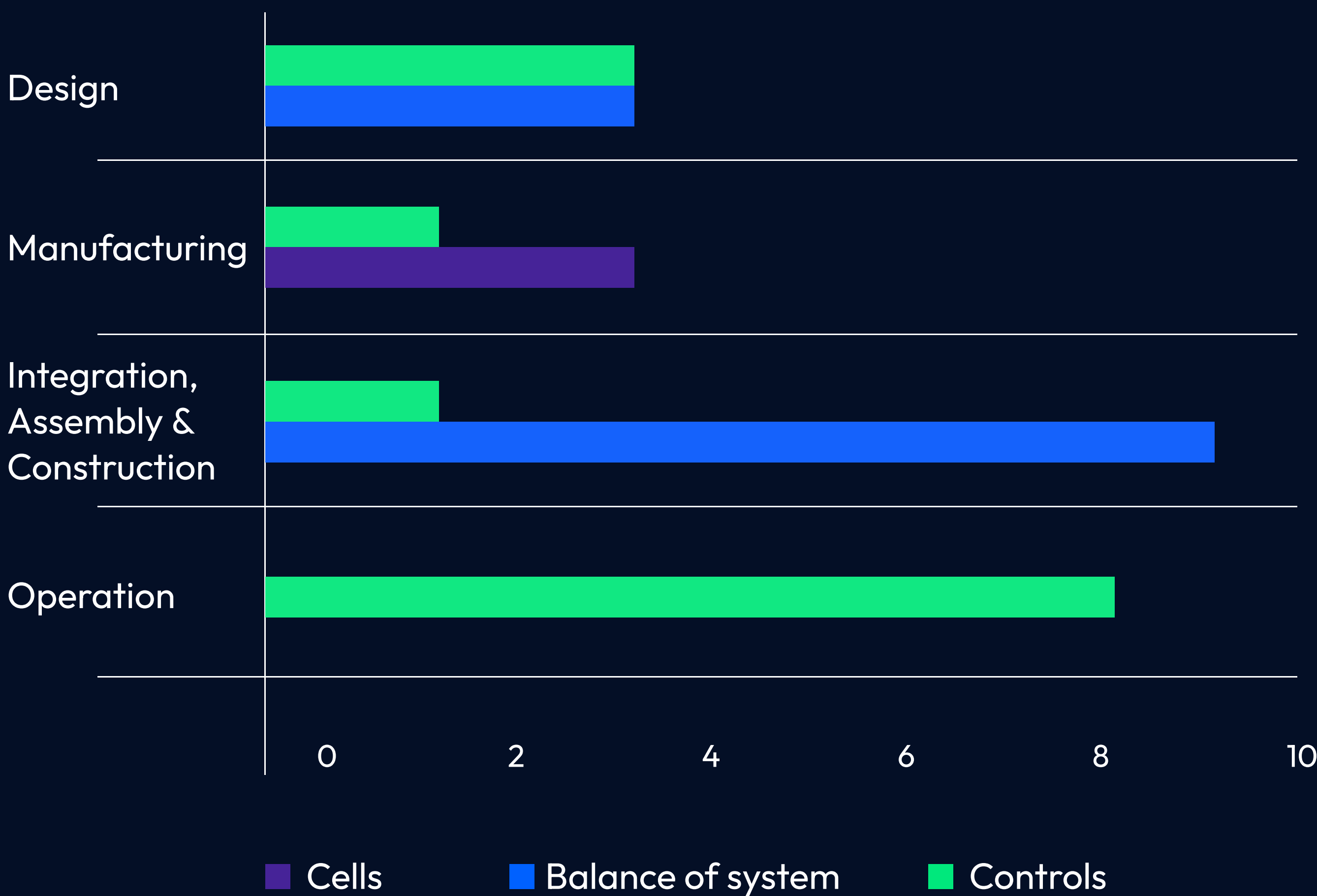EPRI ELECTRIC POWER RESEARCH INSTITUTE

Pacific Northwest NATIONAL LABORATORY

Relationship between root cause and failure element

Root cause and failure elements pairs point to vulnerable areas requiring further safety advancements
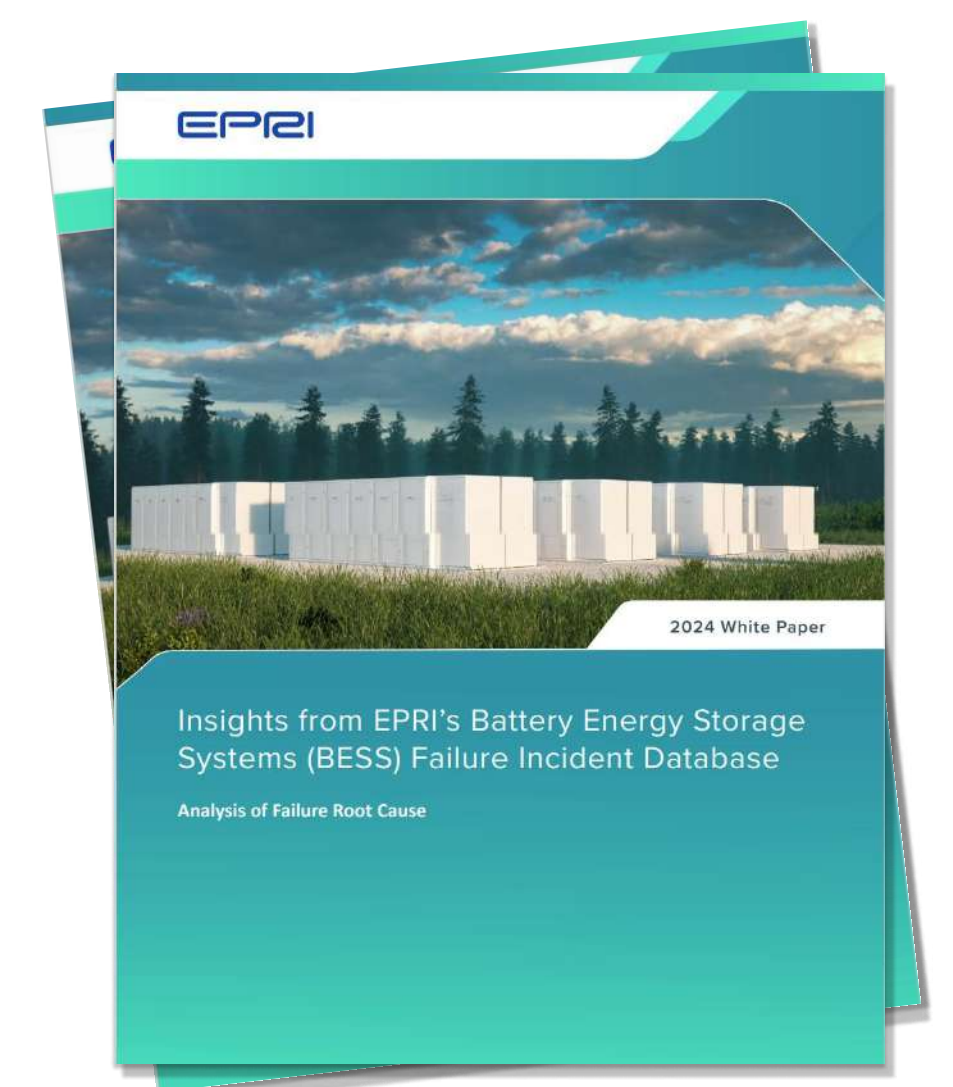

Legend: Cells | Balance of system | Controls

Recommendations

✓ BESS safety is a complex task. Safety must be embedded at every scale and at every phase of a project lifecycle.

✓ Battery monitoring and analytics is needed to augment BMS operation, generate trends and predictive analyses, and identify potential failures early.

✓ Commissioning is key. Most failures happen in the first years of operation. Site-specific hazard assessments, monitoring, and procedures during commissioning are recommended to avoid failures.

" Battery safety is not a place to compete on, it's a place to collaborate on.

Read the full study

The joint report from EPRI, PNNL & TWAICE analyzes aggregated BESS failure data. Understanding how and why BESS fail is a major priority for the energy industry. Learning from failure incidents will improve prevention and mitigation measures.

Download the report

Unleash the full potential of batteries

ABOUT TWAICE

TWAICE is the leading provider of predictive battery analytics software that optimizes the development and operation of batteries combining deep battery knowledge and artificial intelligence. TWAICE is committed to increasing the lifetime, efficiency and sustainability of the products that power the economy of tomorrow.

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