

**JUNE 4, 2026**

**Close data gaps to accelerate deployment**

# ● **What Don't You Know That Could Break Everything? The Standards and Public Information Gap Behind Safe and Reliable Deployment?**

Jackie Huynh, Moderator

Jamie Kolln, Pacific Northwest National Laboratory; Andrew Hoover, Redwood Materials; LaTanya Schwalb, UL Solutions; Jody Leber, CSA Group

## **SUMMARY:**

This session covers the continuous improvements of codes and standards for deployment of Energy Storage Systems and understanding potential gaps.

## **IMPACT:**

This session covers how codes and standards are closing the gaps to deploy safer Energy Storage Systems.



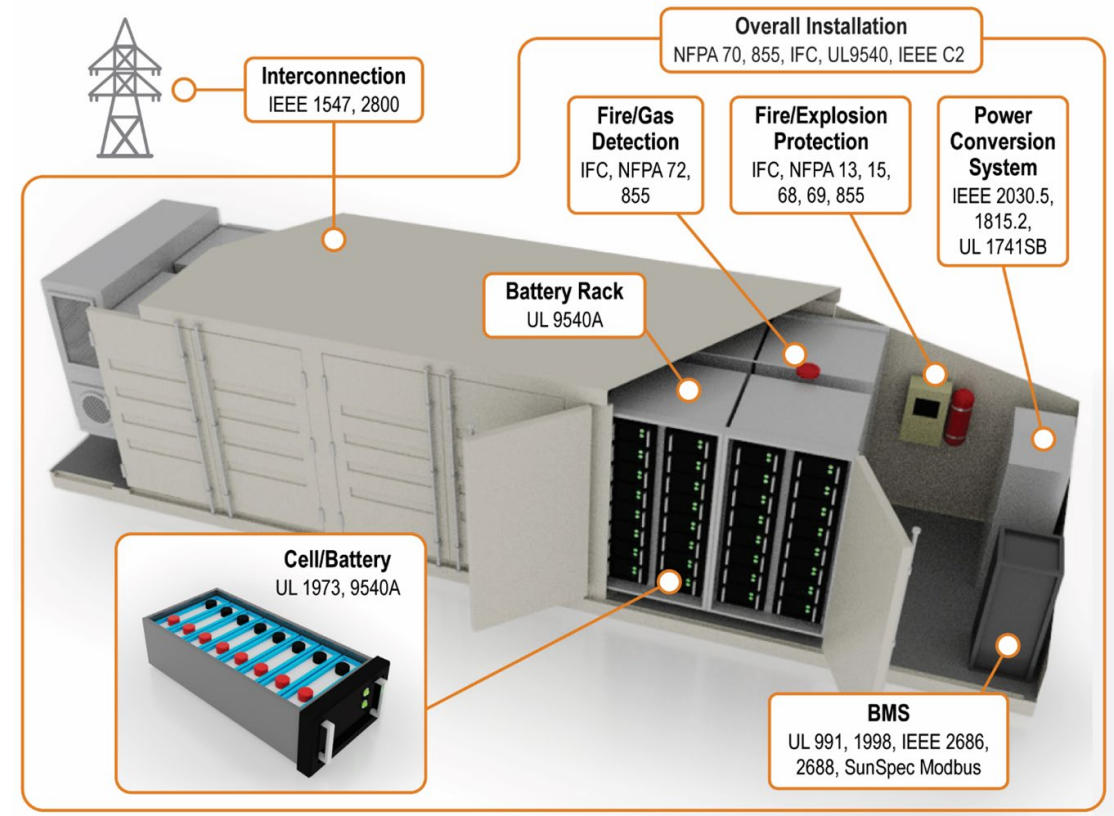
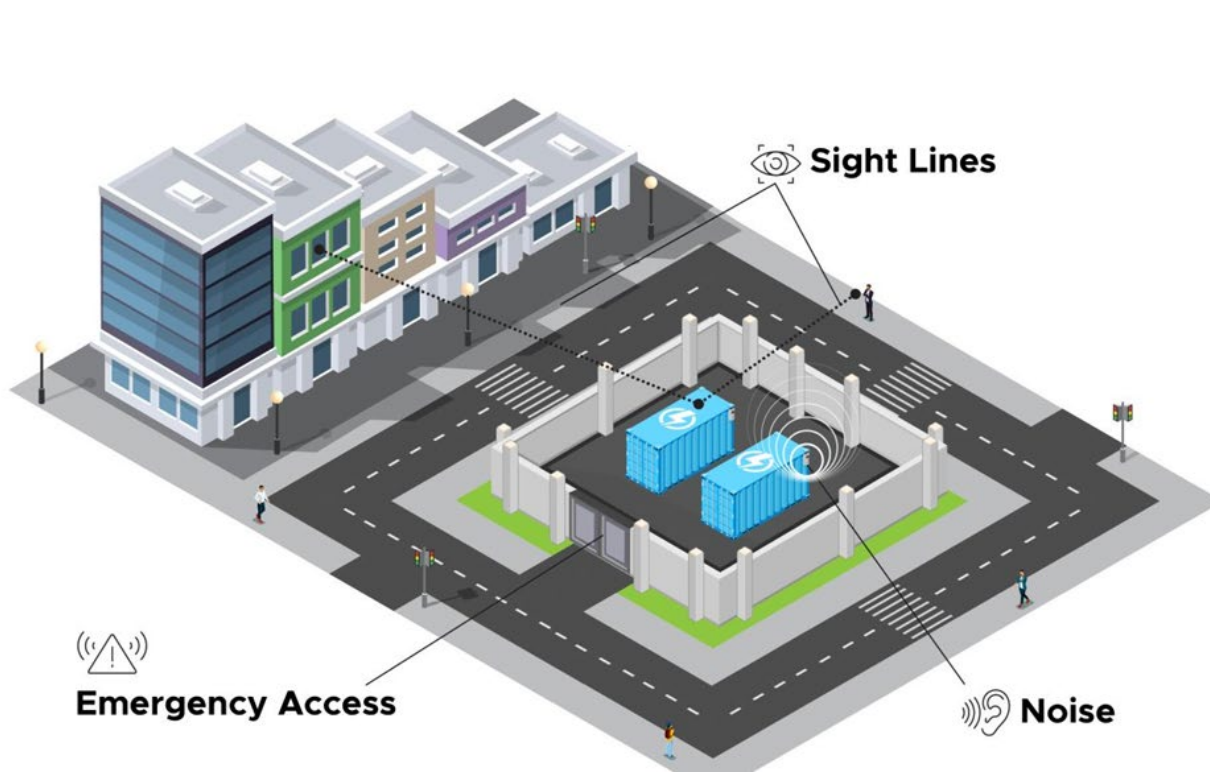
JUNE 2, 2026

# AGENDA

- Moderator
  - Jackie Huynh (PNNL) 10 mins
- Panelist Presentations
  - Jaime Kolln (PNNL) 10 mins
  - Andrew Hoover (Redwood Materials) 10 mins
  - LaTanya Schwalb (UL Solutions) 10 mins
  - Jody Leber (CSA Group) 10 mins
- Panel Discussion and Q&A 40 mins



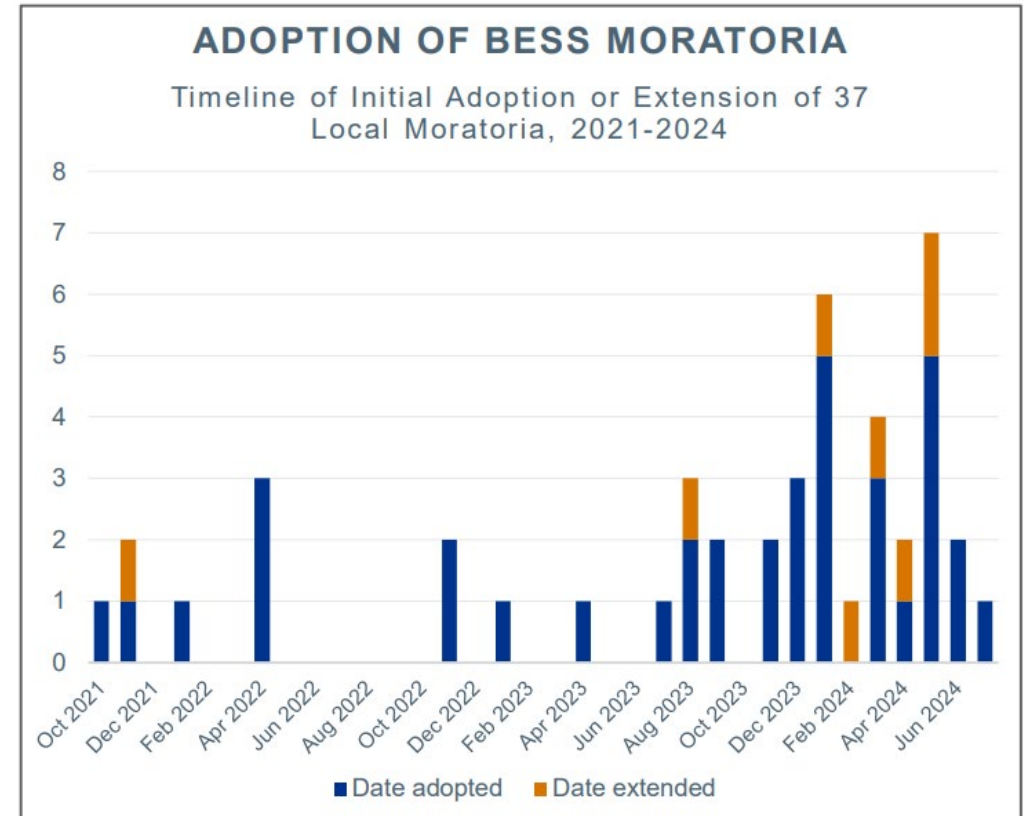
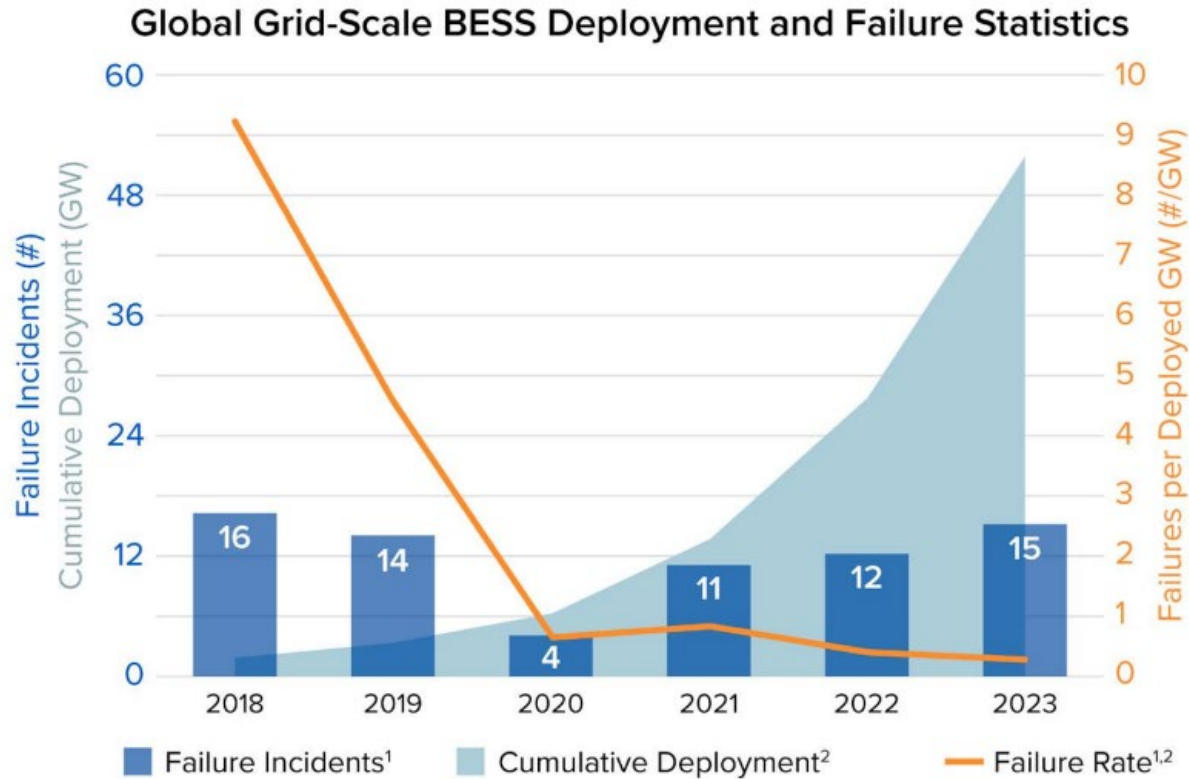
# Brief Summary



Pacific Northwest National Laboratory. "Regulatory and Permitting Processes for Energy Storage Siting." Accessed May 1, 2026. <https://www.pnnl.gov/sites/default/files/media/file/Regulatory%20and%20Permitting%20Processes%20for%20Energy%20Storage%20Siting.pdf>.



# ESS Improvement & Community Concerns



Srinivasan, Lakshmi, Eula Billaut, Stephanie Shaw, Ryan Franks, Sebastian Becker, Jordi Mueller, and Matthew Paiss. *Insights from EPRI's Battery Energy Storage Systems (BESS) Failure Incident Database: Analysis of Failure Root Cause*. Report No. 3002030360. Palo Alto, CA: Electric Power Research Institute, May 2024.

Powell, Devyn. "Tracking Local Moratoria and Other Key Considerations for Battery Energy Storage Siting." Report No. PR2024-404. Sandia National Laboratories, August 2024. [https://www.sandia.gov/app/uploads/sites/82/2024/08/PR2024\\_404\\_Powell\\_Devyn\\_Policy.pdf](https://www.sandia.gov/app/uploads/sites/82/2024/08/PR2024_404_Powell_Devyn_Policy.pdf).



# Updated Codes & Standards

2016      2017      2018      2019      2020      2021      2022      2023      2024      2025      2026

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
UL9540A	UL 9540A 1st		UL 9540A 2nd		UL 9540A 3rd		UL 9540A 4th		UL 9540A 5th	UL 9540A 6th
CSA 800									CSA 800	
UL 9540	UL 9540 1st				UL 9540 2nd			UL 9540 3rd	UL 9540 3rd w/ revisions	
NFPA 855					NFPA 855 1st			NFPA 855 2nd		NFPA 855 3rd
IEEE 2686									IEEE 2686	
UL 1741					UL 1741 2nd	UL 1741 3rd			UL 1741 (on-going)	

Incident	Location	Date	Key Learning Outcomes
McMicken Battery Fire	Surprise, AZ	Apr-19	Emergency response protocols revised; container entry procedures redesigned
Victorian Big Battery Fire	Geelong, Australia	Jul-21	Commissioning safety procedures enhanced; coolant system monitoring improved
AES Dorman Battery Fire	Chandler, AZ	Apr-22	Gas detection systems mandated; ventilation requirements updated
Elkhorn Battery Fire	Monterey County, CA	Sep-22	Fire suppression system improvements; community notification protocols developed
East Hampton BESS Fire	East Hampton, NY	May-23	Regulatory oversight procedures strengthened; facility design standards revised
Gateway Energy Storage Fire	Otay Mesa, CA	May-24	Extended fire suppression capabilities required; cross-jurisdictional coordination improved
Neermoor BESS Explosion	Germany	May-24	International safety standard harmonization accelerated; first responder training globalized
Hwaseong Factory Fire	South Korea	Jun-24	Manufacturing safety protocols enhanced; supply chain quality standards elevated
Moss Landing Fire	California	Jan-25	Large-scale facility design requirements updated; community resilience planning integrated

# Energy Storage 101 Course

## A: Intro to Grid Energy Storage Systems (ESS)



1. Fundamentals of Grid ESS



2. Electrochemical Cells-to-Systems



3. Unlocking Econ Benefits of ESS



4. Intro to Grid ESS Project Development

## B: Deployment of ESS Considerations



5. Grid ESS Codes and Standards



6. Basic Safety of Grid ESS



7. Overview of Grid ESS Emergency Response Planning

## C: ESS Operational Planning



8. Basic of the US Power Market



9. Overview of Grid Planning



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● **THANK YOU**



**ENERGY STORAGE SYSTEMS**  
SAFETY & RELIABILITY FORUM