

Advancements in Battery Technology and Energy Storage

Summary of Comments - March 12th, 2025

On March 12th, 2025, OurEnergyPolicy hosted a discussion on developments in Battery Technology and Energy Storage covering industry standardization, machine learning, and the impacts of government policies on this growing industry. Find the audio recording [here](#).

SPEAKERS



David Sandbank

VP, Distributed Energy
Resources &
Transportation
NYSERDA



Lauren Marbella

Professor, Chemical
Engineering
Columbia University



MJ Shiao

VP, Supply Chain &
Manufacturing
American Clean Power



Sebastian Engelhart

Senior Director,
Strategy & Business
Development
Elevate Renewables

OurEnergyPolicy is a non-partisan organization. The following represents a summary of comments from the panelists.

- Battery recycling plans should be made now in preparation for the first wave of battery energy storage systems that will be retired in 10-15 years.
- The NYSERDA Inter-Agency Fire Safety Working Group published 15 code recommendations to enhance safety standards for battery energy storage systems.
- Tax credits such as the 45x manufacturing tax credit help improve the resilience and diversification of supply chains for battery energy storage, but the fate of these financial incentives are uncertain under the new administration..

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Battery and Energy Storage

- While the fundamental technology is similar, the battery storage used in phones, micromobility such as E-Bikes, electric vehicles (EVs), and grid storage will be optimized for the application of the battery for grid storage.
 - EV batteries favor higher energy density.
 - Since stationary batteries used in grid storage do not have the same space constraints as EVs, they prioritize longevity and durability.
- The 45x manufacturing tax credit helped boost supply chains for batteries.
 - It is still unknown whether tax credits like this will continue.
- Battery recycling must be invested in now and included in decommissioning plans to prepare for the first wave of ground battery storage that will be retired in 10-15 years, and for older EV batteries that are ready for refurbishing and recycling now.
 - Retired mining facilities should be considered for siting battery recycling facilities.
- Lithium iron phosphate is still projected to be the dominant battery chemistry deployed in the next 5-10 years, even as other battery chemistries are scaled up.

Battery Safety

- EVs have a lower risk of catching fire than cars with internal combustion engines (ICE).
- To improve safety levels of battery energy storage, the regulation and engineering is more important than the material itself.
- Instead of the batteries themselves, faulty management systems or sub-optimal engineering are usually the cause of fires.
 - For this reason, standardization is a key priority for NYSERDA.
 - The NYSERDA Inter-Agency Fire Safety Working Group published [15 code recommendations](#) to improve safety standards for battery storage systems.

Machine Learning and AI in Energy Storage Systems

- Energy and battery management systems produce significant amounts of data
 - AI can help process operational data for assessments of entire systems down to individual cells.
- Machine learning can also help optimize siting projects, energy density, and safety improvements.