

# Zinc Battery Initiative

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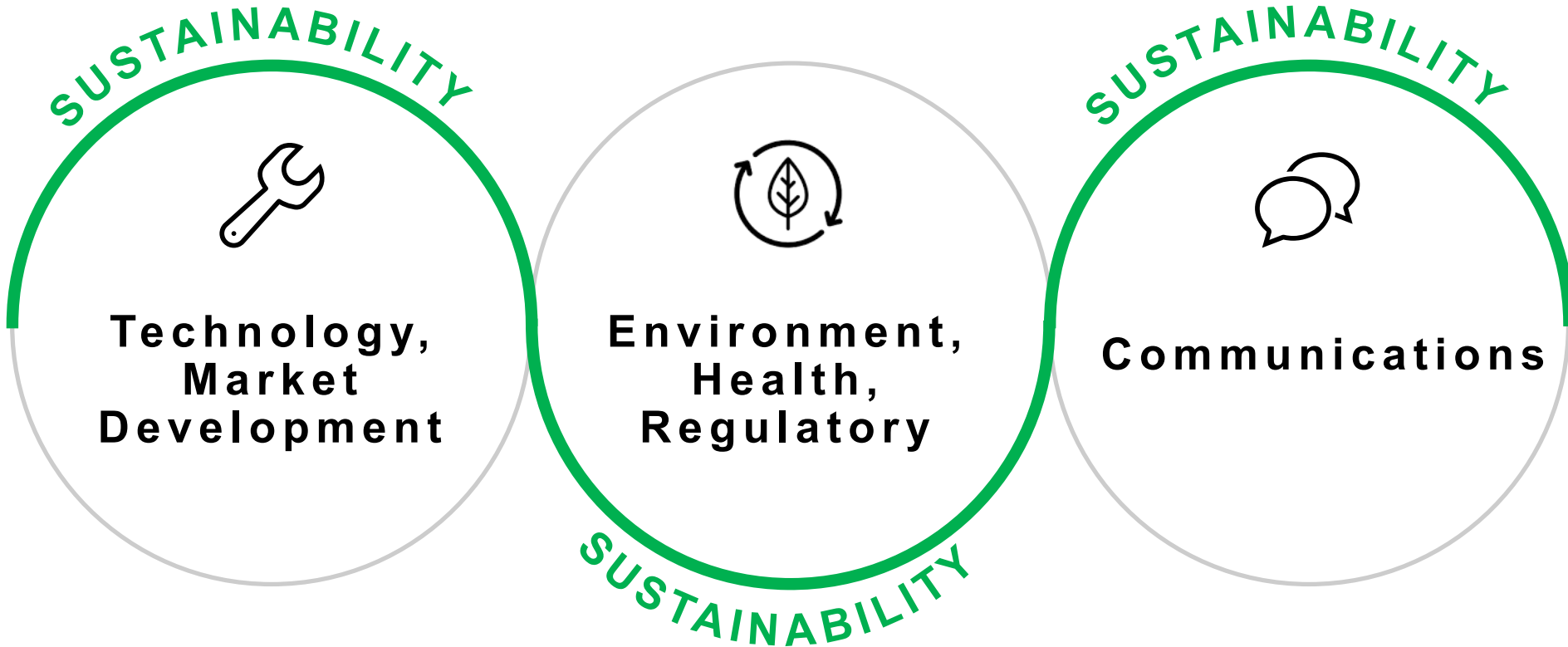
# International Zinc Association (IZA)

- 42 full members
- 185 affiliate and associate members
- Offices in Durham - NC, Brussels, Delhi, Shanghai

**IZA represents the global zinc industry in mining, production, first use production and recycling**



# IZA's Core Program Areas



# ZBI - Zinc Battery Initiative

## A Partnership to Advance Zinc-based Battery Technologies

Championing zinc batteries and ensuring that all potential customers and other stakeholders understand the value and advantages of zinc-based power and energy storage products.



# ZBI – Members



Joplin, MO



Turtle Creek, PA



Alameda, CA



Richmond, CA



Tempe, AZ



Tualatin, OR



Pearl River, NY



San Francisco, CA  
Brisbane, AUS



Somerset, NJ



San Leandro, CA



Hershey, PA



Dartmouth, NS, CAN  
Oakland, CA



Toronto, CAN



Stockholm, Sweden



Vancouver, BC, CAN  
Ulster, NY



Rottenburg, Germany



Bruxelles, Belgium

## Suppliers



Houston, TX



Germany  
Woburn, MA



Germany  
Newtown Square, PA



Dickson, TN



Taiwan



Tokyo, Japan



Velden, Austria



Cleveland, OH

International Zinc Association







# Why Use Zinc for Batteries ?

- ✓ High specific capacity at 820Ah/kg, 5820Ah/L
  - ✓ Better volumetric capacity than Li at 2060Ah/L
- ✓ Versatile, powerful anode material, can be combined with several cathodes
- ✓ Fire-safe, water-based electrolytes
- ✓ Sustainable supply chain with material available around the world
- ✓ Effective, sustainable & low-cost solution for a variety of applications including:



# VARIOUS ZINC CHEMISTRIES AND TECHNOLOGIES

Nickel



MnO<sub>2</sub>



Ion



Bromine



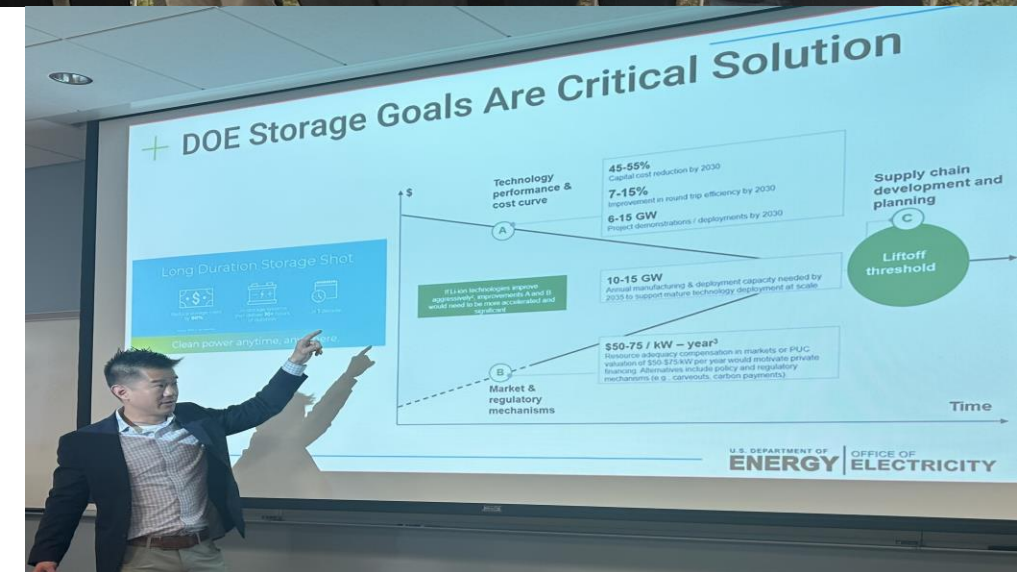
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## Joint DOE – WVU - IZA Zinc Battery Workshop:

- Seven Zinc battery developers & manufacturers
- Six zinc producers & suppliers
- International Zinc Association & Zinc Battery Initiative
- West Virginia University
- DOE Office of Electricity
- DOE Office of Energy Efficiency & Renewable Energy
- DOE Pacific Northwest National Lab
- DOE Sandia National Lab



*“What if the DOE offered to be the first customer? How many cells would we need to buy?” Eric Hsieh, DOE Deputy Assistant Secretary for Energy Storage*



# Workshop Outcomes: Challenges and Opportunities



## **1. High cost for investments in pilot production lines**

- \* Shared pilot production lines would be valuable for zinc battery developers

## **2. Derisking first business with batteries produced with a pilot production line (PPL) or full-size line (FSL)**

- \* Off-take agreements for supply of batteries

## **3. Industrial awareness and adoption**

- \* Look beyond utilities: The EV charging industry, energy intensive industry (e.g. steel), and potential other industries, are good targets for adoption of non-Lithium battery chemistries
- \* Re-designed charging-discharging strategies offer new opportunities for batteries, such as the addition of (high cycling) grid stabilization functionality to (low cycling) UPS batteries.



# Workshop Outcomes: Challenges and Opportunities



## 4. Safety standards for battery transportation and applications

- \* Application standards to include zinc-based batteries
- \* Work with insurance companies to derisk zinc batteries for indoor use and in critical applications (datacenters)
- \* Work with other battery associations to get zinc batteries specified as unique category in UN battery transportation standards.

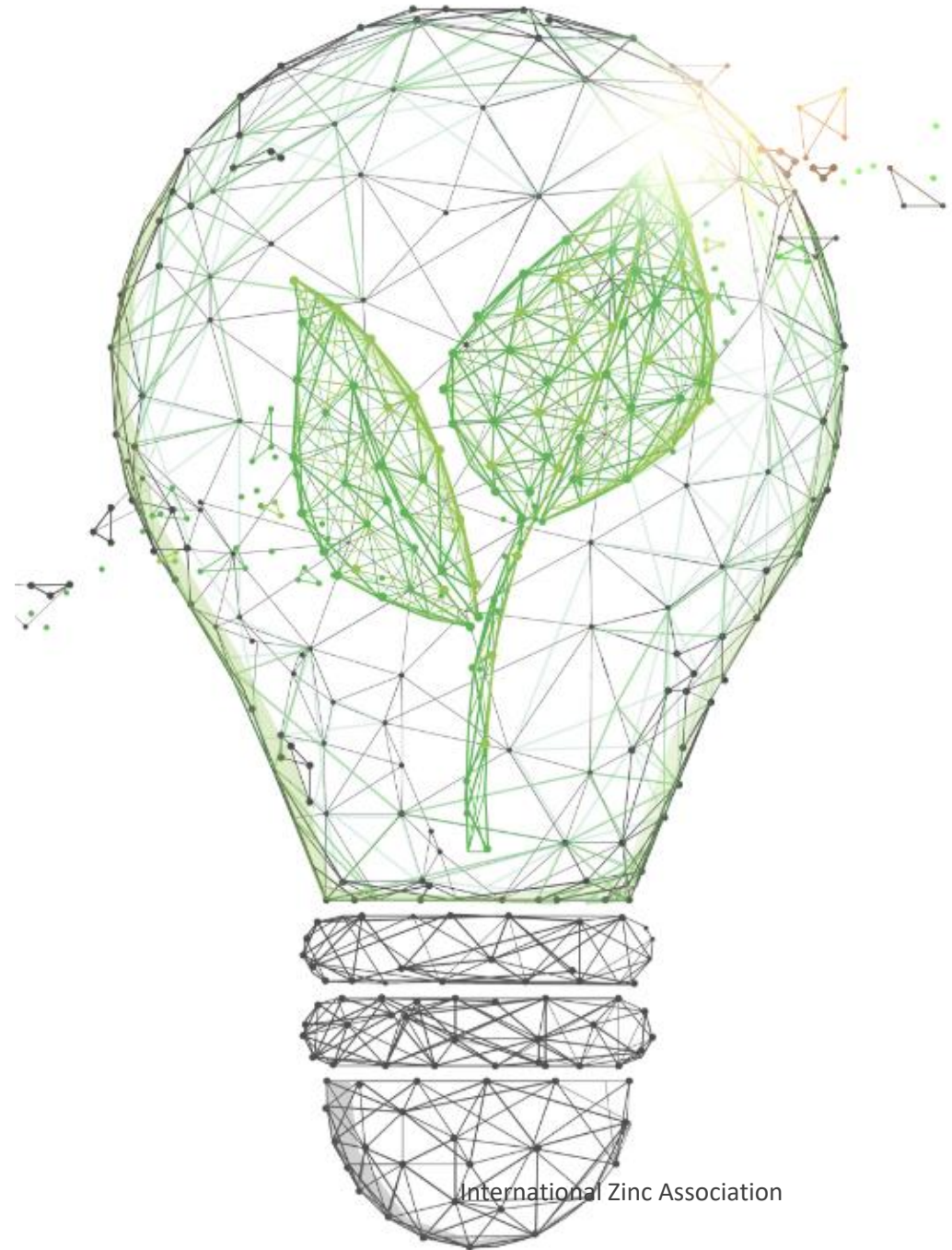
## 5. Supply bottlenecks in battery raw materials and components



# Action Plan

- **Promote and raise awareness about the benefits of zinc batteries to a wider audience of stakeholders**
- **Collaborate with the federal government and other key stakeholders to bolster the supply chain and offer cost-effective energy storage solutions**
- **Advocate for the inclusion of zinc batteries in both safety and application standards**

[www.zincbatteryinitiative.com](http://www.zincbatteryinitiative.com)



International Zinc Association