BATTERY COUNCIL INTERNATIONAL

ESSENTIAL ENERGY EVERYDAY

Overview of U.S. Policy Impacting the Battery Industry

BatteryCouncil.org

Who is BCI?

Leading trade association for battery industry since 1924

- Represents manufacturers, recyclers, and suppliers across North America
- Members produce 98% of U.S. lead batteries
- Members expanding into other chemistries and product portfolios

Serving America's rechargeable battery industry for 100 years

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BCI member companies manufacture a variety of battery chemistries

How Did These Government Programs Come to the Fore

Batteries identified as critical to U.S. economy

Broader U.S. climate goals

- Reduced vehicle emissions
- Reduced industrial emissions
- Essential for energy storage, transportation, and national security

Greater energy resiliency

- Grid stability
- Facility back-up stability

Greater electrification

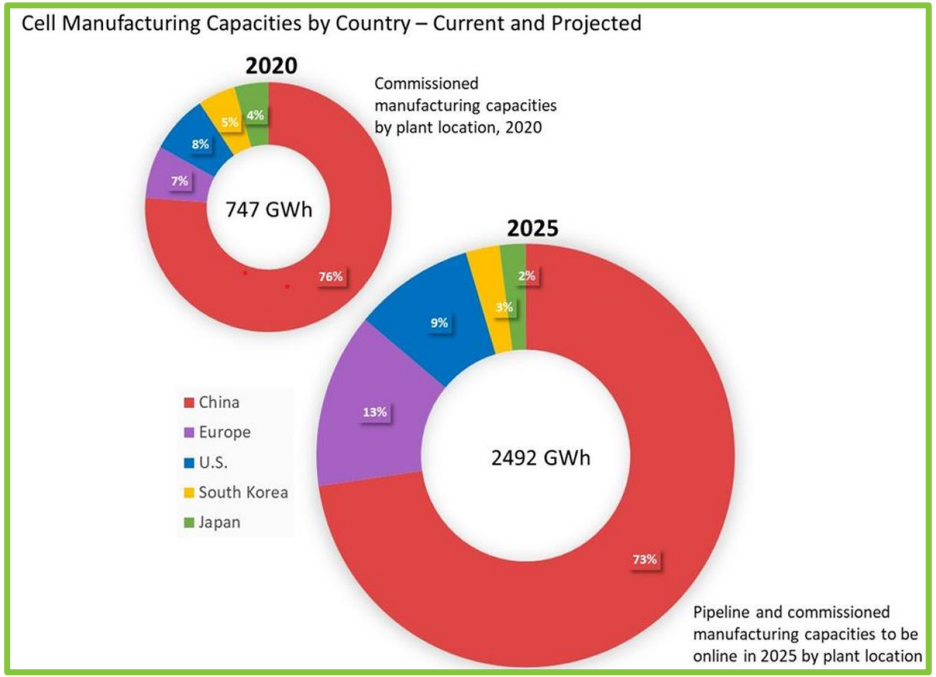
- Mobile culture
- Higher use of data driven industrial & consumer products
- Growing importance in renewable energy and electric vehicle sectors

U.S. Department of Energy, "National Blueprint for Lithium Batteries 2021–2030"

Identified National Risks

- COVID-19 pandemic highlighted supply chain weaknesses
- Over-reliance on foreign manufacturing across numerous industries
- Critical materials and technologies central to economic strength
- Need for secure, domestic supply chains
- Security risks of integrated components

2021 White House Projections (Li):



White House, "Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth" (2021)
U.S. Department of Defense, "Securing Defense-Critical Supply Chains" (2022)

National Goals for Legislation and Programs

- Investing in domestic manufacturing
- Increase domestic production to meet growing energy storage demand
- Grow EV and energy storage markets
- Not "anti" any country or region, but pro-U.S. investment
- Preserving technology leadership across multiple platform(s)

Key U.S. Legislation Impacting Battery Industry

Infrastructure Investment and Jobs Act (2021) ("Bipartisan Infrastructure Law")

- Focuses on infrastructure improvements
- Investments in for battery manufacturing and technology

CHIPS and Science Act (2022)

- Promotes semiconductor manufacturing
- Supports battery technology advancements

Inflation Reduction Act (2022)

- Aimed to reduce inflation economy-wide
- Additional funding and incentives for battery manufacturing and recycling

Infrastructure Investment and Jobs Act

Battery Material Processing and Manufacturing

- $6 billion allocated
- 42 U.S.C. § 18741

EV Charging Infrastructure

- $7.5 billion allocated
- 42 U.S.C. § 18711

Battery Recycling and Second-Life Applications

- $3 billion allocated
- 42 U.S.C. § 18742

Inflation Reduction Act

Funding Allocation

- $369 billion for clean energy and climate initiatives

Key Provisions

- Advanced Manufacturing Production Tax Credit (26 U.S.C. § 45X)
- Clean Vehicle Credit (26 U.S.C. § 30D)
- Energy Storage Investment Tax Credit (26 U.S.C. § 48(c)(6))

Clean Vehicle Credit

Tax Credit for New Qualified Plug-in EVs

- Up to $7,500 tax credit available

Domestic Battery Component Manufacturing

- 100% of qualifying components must be manufactured in North America after 2029

Domestic/Free Trade Nations Critical Mineral Content

- 60% after 2025

Impact on Domestic Battery Production

- Increases demand for domestically-produced batteries

48C - Energy Storage Investment Tax Credit

30% tax credit for standalone energy storage projects

Includes various storage technologies

- Battery storage
- Pumped hydro storage
- Compressed air storage
- Thermal storage

Drives growth in stationary energy storage market

Section 45X - Manufacturing Production Tax Credit

Minimum performance of battery cells:

- At least 100 Wh/L, and 12 Wh of energy
- Battery Modules also eligible (> 7 kWh)

Tax Credits for batteries:

- 10% of cost for electrode active materials
- $35 times the capacity in kWh per battery cell (up to 100kwh)
- $10 times the capacity in kWh per battery module
- $45 per battery module that does not use battery cells

All Chemistries Eligible:

- Credit not limited to specific chemistries
- Incentivizes production of any innovation meeting the targets
- Can claim credits for electrode active materials, cathode and anode materials, anode foils, electrochemically active materials (solvents, additives, electrolyte salts)

Section 45X – Provides Immediate Assistance to Mfgr

Immediate incentives to leverage existing manufacturing capacity

- Credits available from 2024-2032
- Rewards higher-capacity battery production
- Incentivizes production shift to of higher energy-density technologies
- Provides capital for more rapid investment in production capacity

Original Congressional Budget Office scoring (across solar, wind, and battery credits)

- $2.5 billion / year in 2024, growing to $4.5 billion in 2030
- Total of ~$30 billion by 2031

Academic analysis suggests credits could be worth much more

- $43 - $196 billion (GW Mercatus Center, 2023)

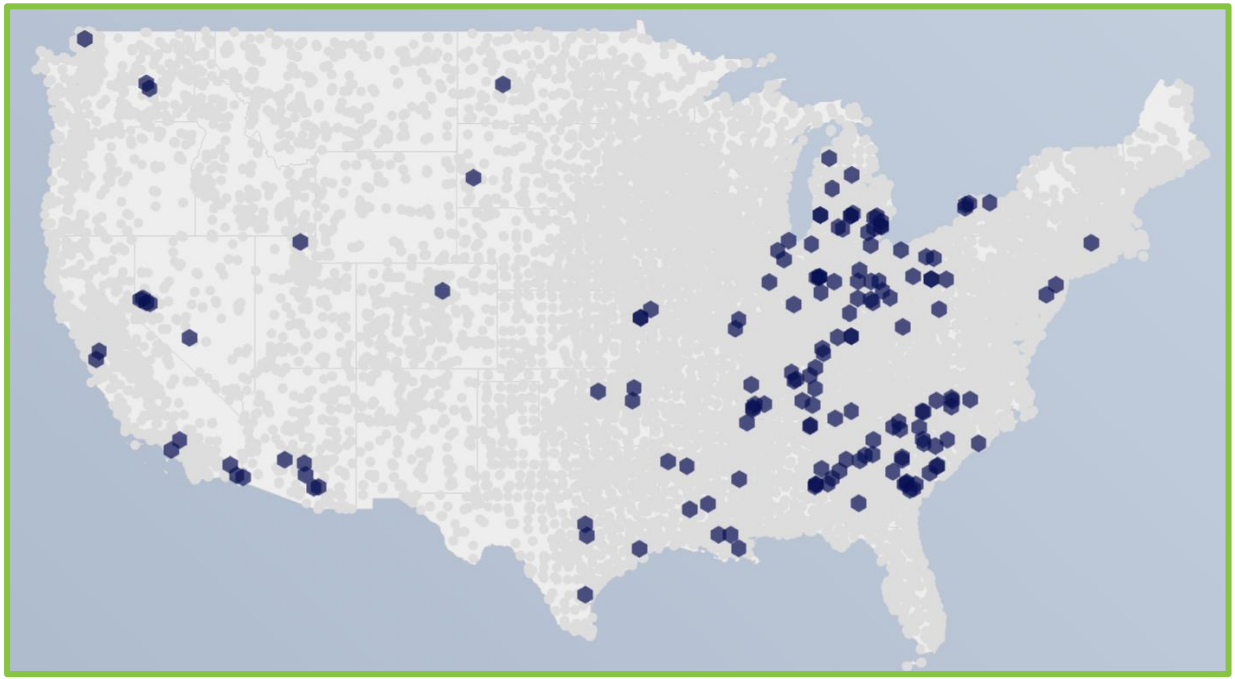
Battery/EV Infrastructure Projects Announced

$177 Billion Private Industry Investment Announced

- $2.6+ Billion in federal assistance (EV)
- $3.8+ Billion in grants announced (Energy)

Increased demand for U.S.-made batteries and materials

- Higher consumer preference for domestically produced items



Source: www.invest.gov, Investing in America (08/16/2024)

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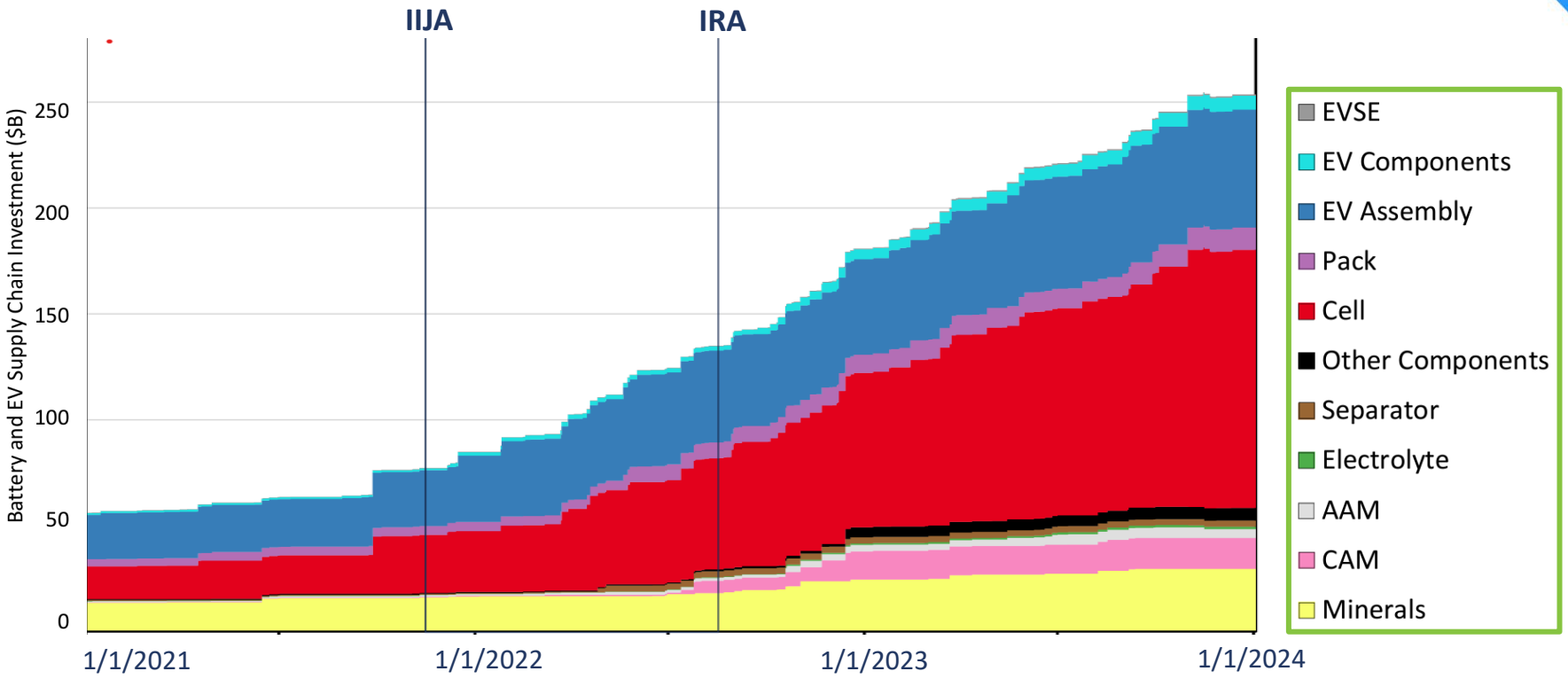
U.S. Battery Investment to date: 1,200 GWh by 2030



Source: Argonne National Laboratory, Quantification of Commercially Planned Battery Component Supply in North America through 2035, March 2024, Figure 3

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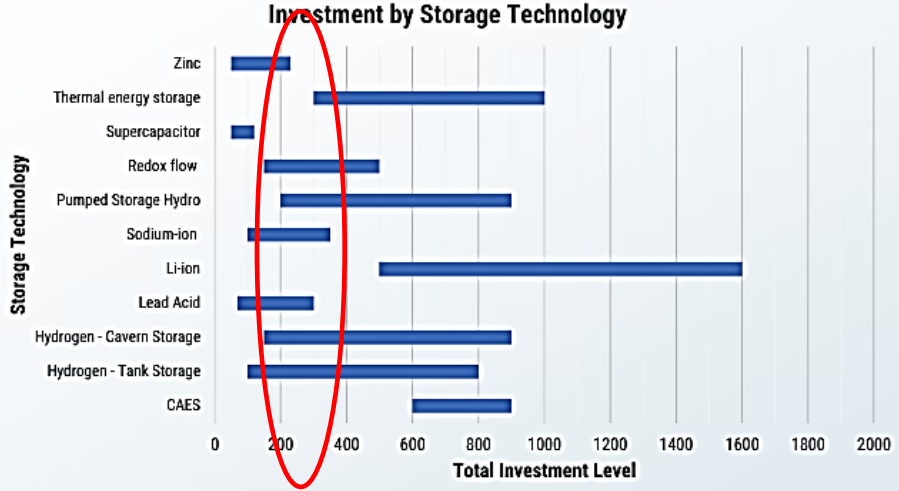
U.S. Department of Energy: Energy Storage Grand Challenge

- **Grid Storage Focus**
  - **Mission:** To be a global leader in energy storage innovation, manufacturing, and utilization.
  - **Vision:** Energy storage technologies enable a U.S. and global energy system that is resilient, flexible, affordable, and secure.
  - **Goal:** To develop and domestically manufacture energy storage technologies that can meet all marketplace demands by 2030.
- **Funding**
  - Research and Development (Private, Academic, and National Labs)
  - Manufacturing Capacity
  - Deployment

Estimated R&D investment required to approach $0.05/kWh LDES

Investment Requirement



- Diminishing marginal returns evident as more mature technologies (e.g., PSH, Li-ion) generally require more investment to achieve deep LCOS reductions
- Investment requirements modest for several technologies – lead-acid, supercapacitors, zinc, sodium ion

ENERGY STORAGE GRAND CHALLENGE
U.S. DEPARTMENT OF ENERGY

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BCI BATTERY COUNCIL INTERNATIONAL

Incumbent BCI Players Receiving Grants – A Non-Exclusive List

East Penn – lead battery R&D

Clarios - lithium battery R&D

Stryten – vanadium flow manufacturing; lithium 6T battery prototype

ENTEK - lithium separator manufacturing

Microporous - lithium separator manufacturing

Doe Run - critical mineral production

OTHERS – in progress and/or confidential

BCI - Consortium for Lead Battery Leadership in LDES (*with CBI*)

- $5M for lead battery research at Nat'l Labs
- ABC, C&D/Trojan, Clarios, East Penn, Enersys, Crown, Gridtential, Stryten

CleanTech Strategies (*with BCI*)

- $5M for flow battery research at Nat'l Labs
- BCI's Flow Battery Industry Group: CTS, Stryten, CMBlu, Invinity, BioZen Batteries, ENTEK, Ramboll, Polypore

Industry-wide 45X Tax Credits

- Public and private companies alike benefiting from additional capital for re-investment

Conclusion

- U.S. battery incentives part of broader economic strategy
  - Aim to secure supply chains and boost domestic manufacturing
  - Reduce reliance on extended and vulnerable supply chains
- Other regions, like the EU, need to be evaluating similar self-investments
  - EU should consider similar industrial investment policies
  - Ensure EU's continued economic strength and global competitiveness

Key Takeaway: *EU-US regional interests are aligned. Significant potential for EU-US collaboration in battery technology and manufacturing.*

bci 2025
CONVENTION + POWER MART EXPO










BCI 2025 Convention
+ Power Mart Expo

May 4-7, 2025 ★ San Antonio, TX