



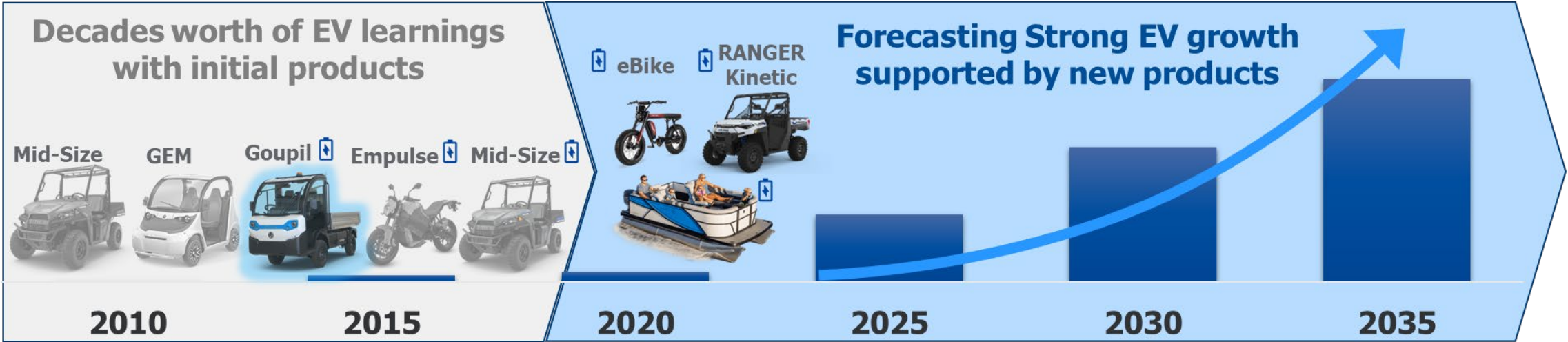
**Joe LoGrasso**

**VP Battery Systems & Strategy**

**POLARIS**



The Leading Global Powersports Company- 2023 \$8.9B Revenue, +16000 Employees



Back in 2008, there was only one practical choice:

**LEAD ACID BATTERIES INSIDE**



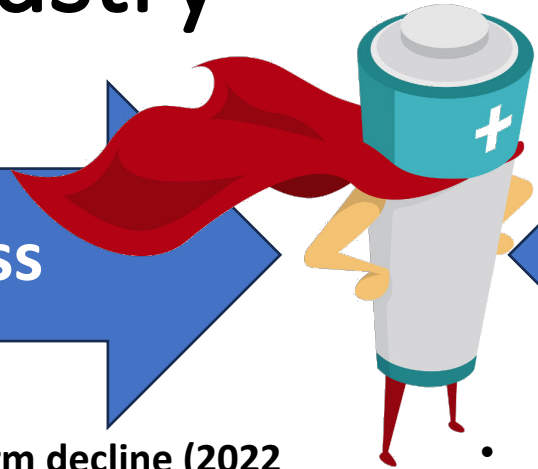
**Ranger XP Kinetic EV- 2023**  
**XP Kinetic Commercial- 2024**

Applications Matched to Preferred Performance Metrics	Li-Ion (NMC811-Gr)	Li-Ion (NCA-Gr)	Li-Ion (LFP-Gr)	Li-Ion (LCO-Gr)	Li-Ion High Voltage (LNMO)	Lithium Metal (High Ni-Li)	Silicon (High Ni- Majority Silicon)	Sodium ion (NaMOx) **Not Commercial	Lithium Sulfur Battery (LSB) ** Not Commercial	Solid State Sulfidic Lithium Metal Anode **Not Commercial	Solid State Oxidic Lithium Metal Anode **Not Commercial
Moped (Wh/Kg > Cost > Self Discharge)	Avg	Avg	Good	Poor	Poor	Bad	Avg	Poor	Bad	**Bad	**Bad
Motorcycle (Rate > Wh/L > Wh/Kg)	Avg	Avg	Poor	Poor	Bad	Avg	Good	**Bad	Poor	**Avg	**Avg
Sports Car (Wh/L > Rate > Cycle Life)	Good	Good	Avg	Avg	Poor	Bad	Avg	**Bad	Bad	**Poor	**Poor
Sedan (Cost > Wh/L > Cycle Life)	Poor	Poor	Avg	Poor	Avg	Bad	Bad	**Avg	Poor	**Bad	**Bad
Sports Utility Vehicle (Wh/L > Cost > Cycle Life)	Avg	Avg	Avg	Avg	Poor	Bad	Poor	**Bad	Poor	**Bad	**Bad
Pickup Trucks (Wh/L > Wh/Kg > Cycle Life)	Poor	Poor	Poor	Bad	Bad	Bad	Avg	**Bad	**Avg	**Good	**Good
Heavy Duty Trucks (Wh/Kg > Cycle Life > Cost)	Poor	Poor	Poor	Bad	Bad	Bad	Poor	**Bad	**Good	**Bad	**Bad

# State of The Industry

## Momentum/Progress

- Battery Materials Price continue long term decline (2022 blip)
- YoY growth down but BEV sales still increasing( 10M in '23)
- EV Consumers Win- Incentives in soft sales market. Gap to ICE Closing
- Incentive/Investments in manufacturing(IRA/BIL, States...)  
Over \$175bn announced in EV/Battery
- >20 Giga factories under construction
- Lithium Market Demand Outlook: 2.5x Growth 2024-2030
- Lilon Battery Safety as a priority and reduced incident rates/industry & govt focus 2022-2023
- Progress toward growing the circular supply chain but still early



## Headwinds

- Macro-Economic Environment: Inflation, Spending, Interest Rates
- Market Cap Relative to S&P (30-60% down) for industry companies. Capital and investment growth down
- Pending Election Cycle Uncertainties- Economy, Incentives, Tariffs...
- China pressure- low cost batteries & EVs in US/EU markets
- Foreign Policy reaction to US Incentives-Not standing still!
- Pace of Supply Chain, Mfg & Work Force Ramp Up
- CAPEX costs for NA and EU still 2x of that of Asian suppliers
- China Technology Policies- China All Solid State Battery Collaborative Innovation Partnership (CASIP)
- Consumer concerns about charging and battery & EV safety

# Our Committees

COMMITTEES ARE FOUNDATIONAL PILLARS AS COLLABORATION SPACE AND SHARING FORUMS

Battery Finance

Battery Logistics  
Safety

Education

Energy Materials

Electrode Materials

Lithium Battery  
Safety

Manufacturing in NA

Markets

Military Batteries

Onshoring Battery  
Technology

Policy &  
Regulatory

Recycling

Second Life Use

Sodium Battery

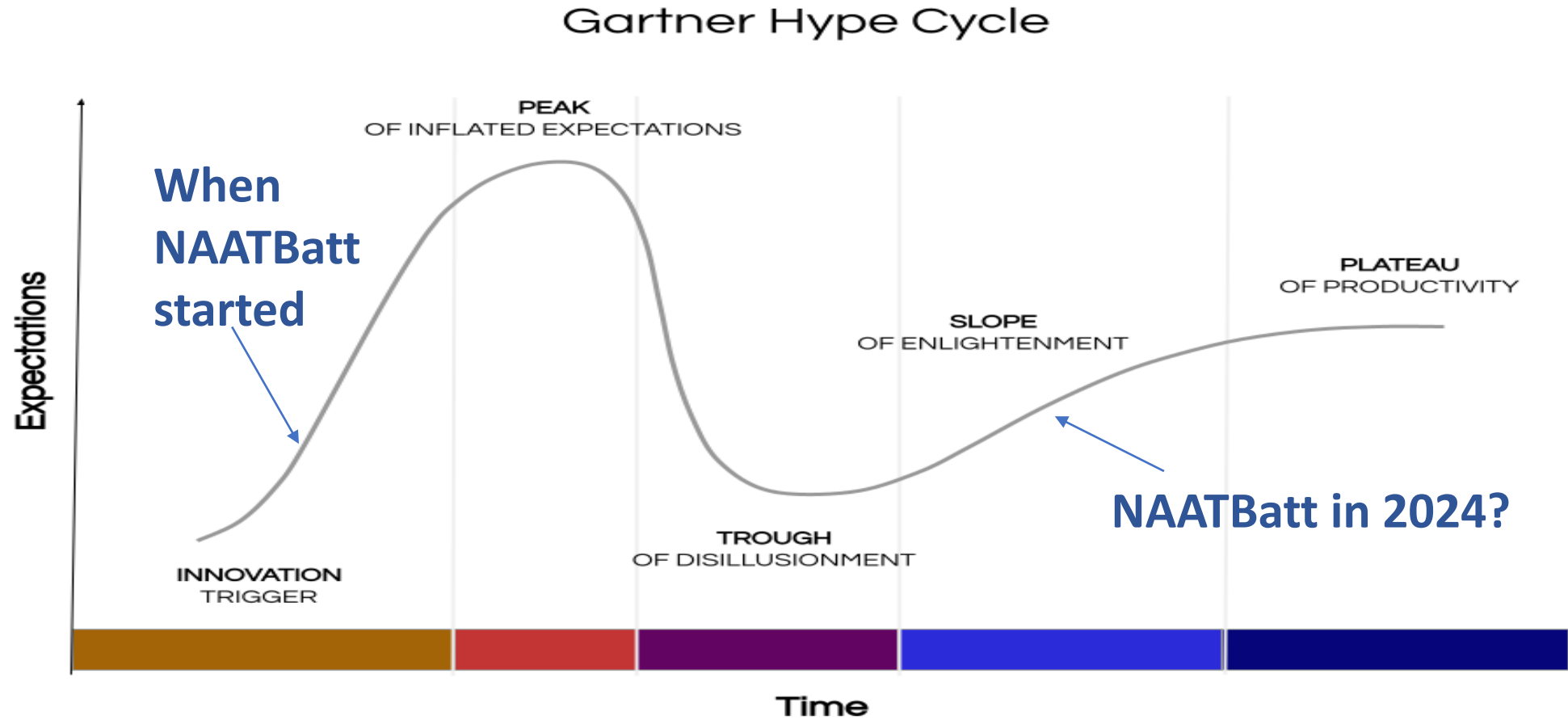
Track and Trace

Zinc Battery

## LARGEST BATTERY INDUSTRY TRADE ASSOCIATION

- Significant growth and participation in the last year. 16 in 2024
- Great place to explore topics, communicate, and plan or recommend activity
- Please consider joining and contributing to one or more

# Where are we today?



# Can We Do More?

- **As THE leading industry trade association we have...**
  - Resources..Sound Organization Finances
  - The Contacts: Technical, Business, Consumers, Producers, Govt: Reg-Labs-Trade, Investment, Legal...
  - Forums for Collaboration & Learning-Programs & Committee Meetings
  - Cooperated closely in Key Industry Public-Private Efforts (ex: LiBridge)
- **What more can we do?**
  - Enhance sharing and education in critical areas?
  - Help companies better connect their businesses and network?
  - Where are we in a unique situation to better contribute over other industry activity?
  - What's on YOUR mind?
- **Let us know...get with an Officer, BoD member, committee chair...**
- **THANK YOU!**



**Ashley Zumwalt-Forbes**

**Deputy Director for Batteries and  
Critical Materials (MES-C)**

**US Department of Energy**