

# Powering EV

A Look at the Future of EV Projects

SITE  
SELECTORS  
GUILD





# Panel Moderator



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Tochi Advisors

# Audience Poll



Join at [menti.com](https://menti.com) | use code **5551 4118**

# Have you ever driven an electric vehicle (EV)?

▶ Start Menti



0%

Yes

0%

No



Join at [menti.com](https://menti.com) | use code **5551 4118**

# Do you own or have you owned an EV?

▶ Start Menti



0%

Yes

0%

No



Join at [menti.com](https://menti.com) | use code 5551 4118

# Would you consider owning an EV in the future?

▶ Start Menti



0%

Yes

0%

No



Join at [menti.com](https://menti.com) | use code 5551 4118

# Has your community landed an EV related project?

▶ Start Menti



0%

Yes

0%

No





# If you own an EV, where do you charge your EV?



Account



Content



Design



Settings



Help & Feedback

# Industry Overview: Global

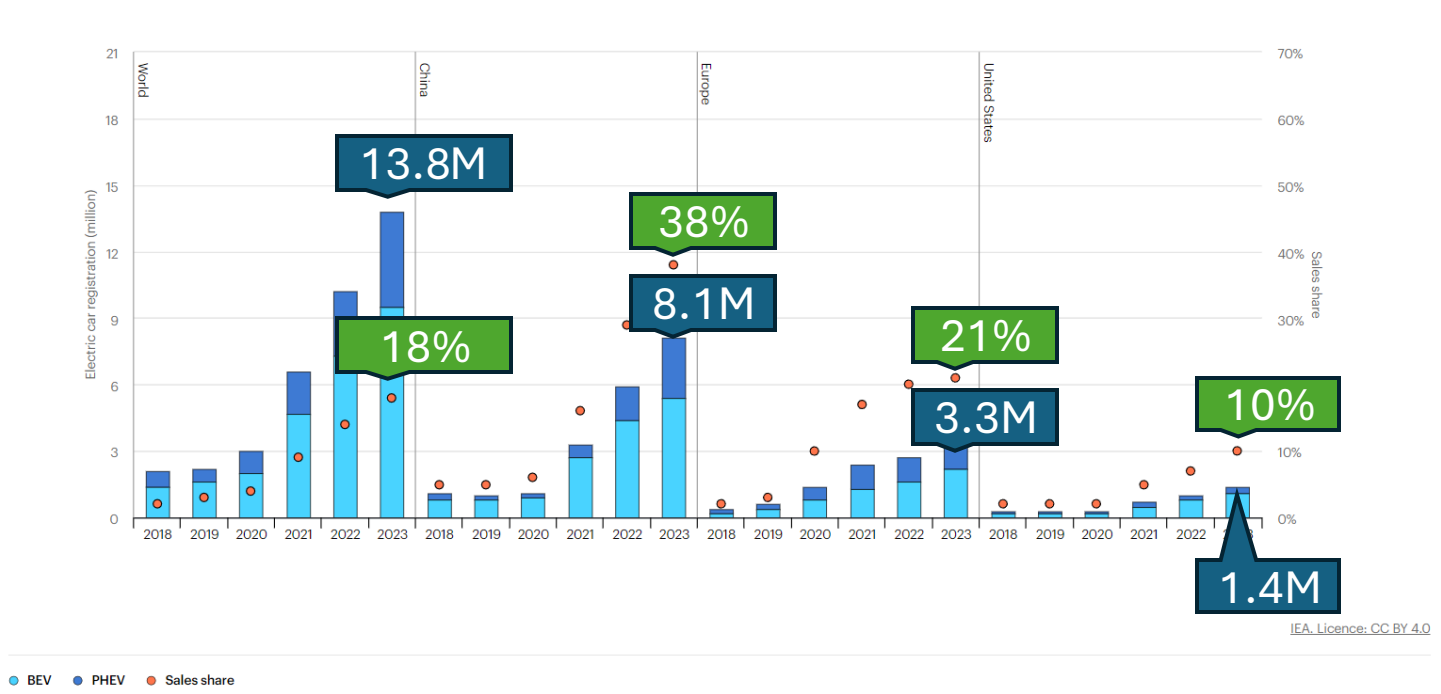


# Global Automotive Industry

- **Vehicles sold globally: 57 Million units**
- **Reported revenue: \$1.9 Trillion**
- **Employees: 3.4 Million**

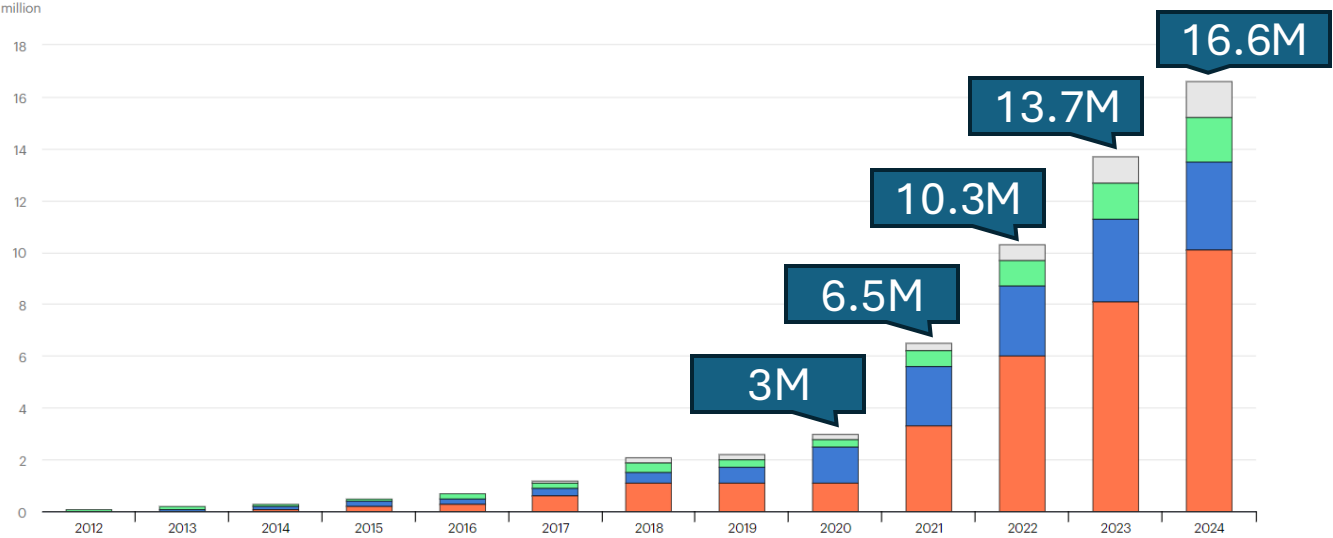


# EV Registrations & Sales Share, 2018-2023



PHEV – Plug In Hybrid  
BEV – Battery Electric

# EV Car Sales, 2012-2024



## 2024

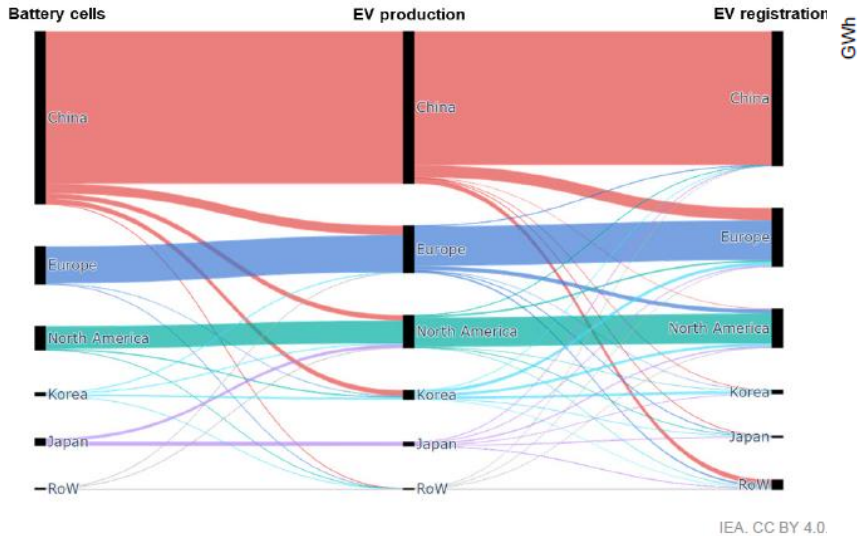
- China: 10.1M
- Europe: 3.4M
- US: 1.7M
- Rest of World: 1.4M

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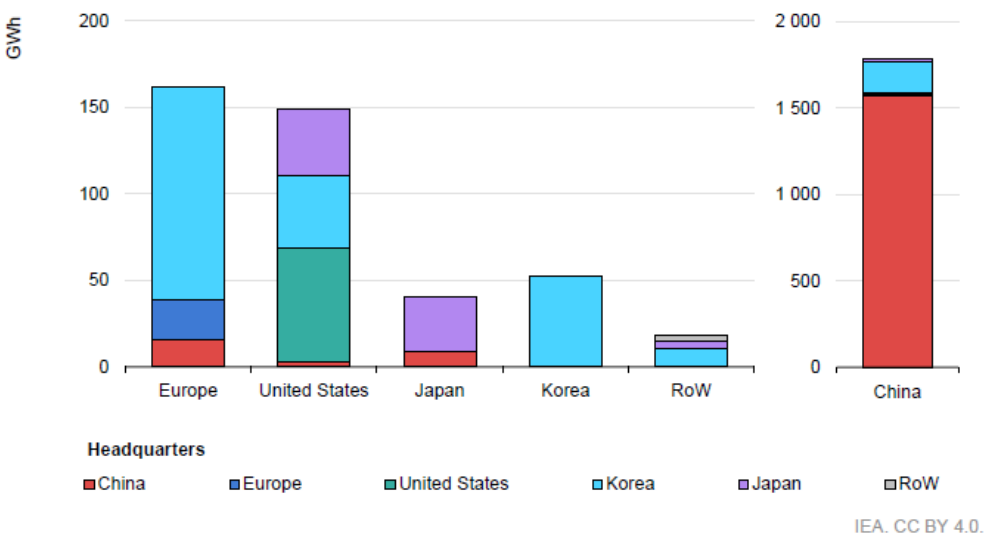
# Global Trade in Batteries and EVs



Global Trade Flows for Lithium-Ion Batteries & Electric Cars, 2023



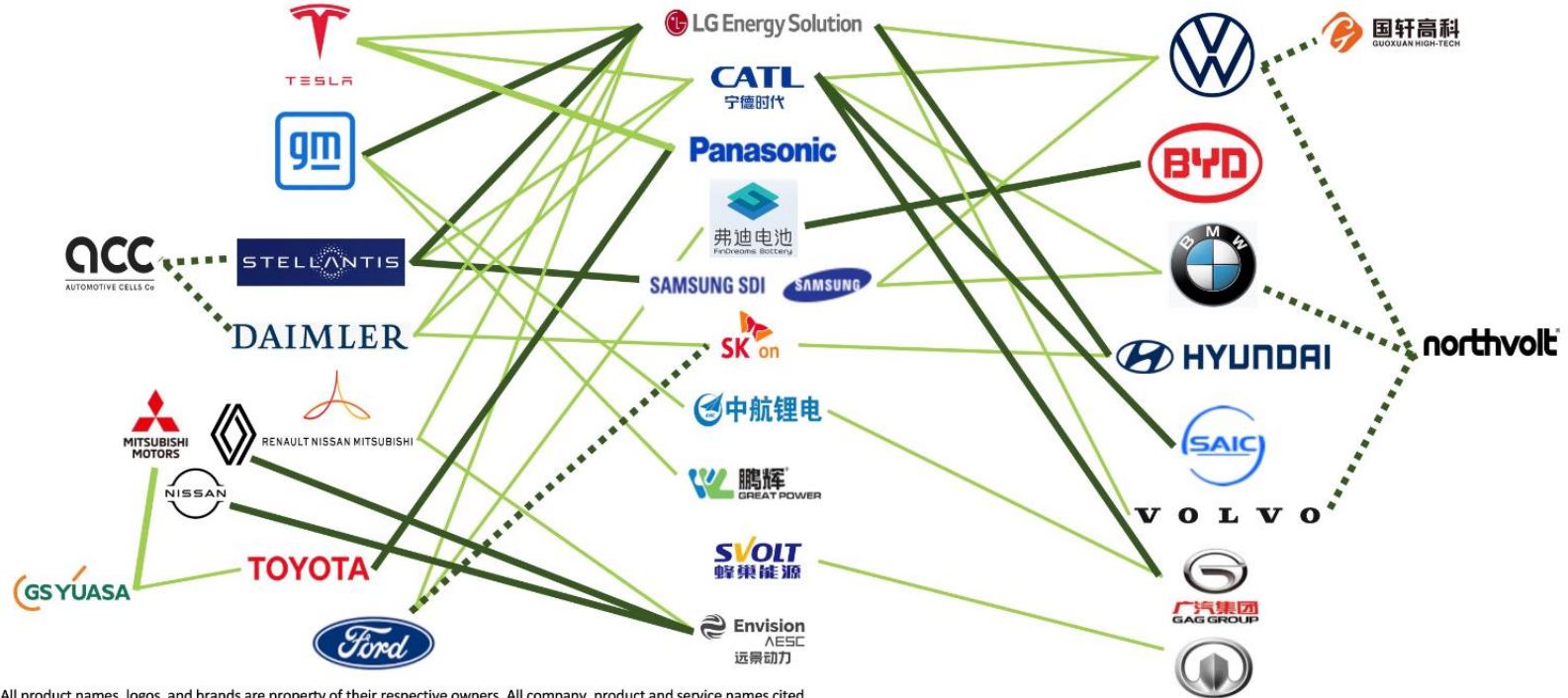
Installed Regional Lithium-Ion Battery Cells Manufacturing Capacity by Location of Manufacturer HQ, 2023





# OEM – Battery Manufacturer Relations

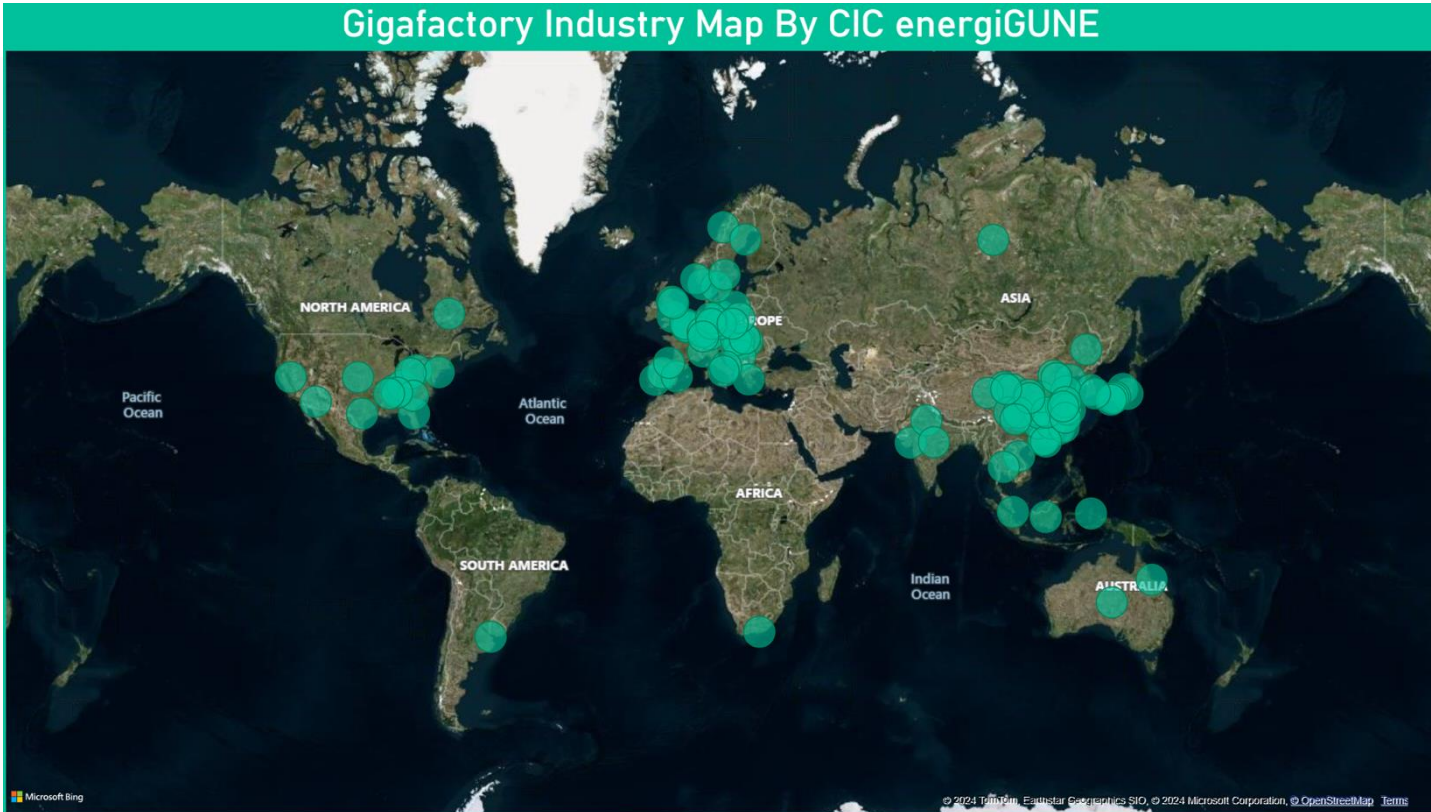
- Currently in a battery supply relationship
- Currently in a battery supply relationship and have cooperated to build battery plants
- Currently in a battery supply relationship and will cooperate to build battery plants
- ... Currently no battery supply relationship but will cooperate to build battery plants



Note: All product names, logos, and brands are property of their respective owners. All company, product and service names cited herein are for identification purposes only. Use of these names, logos, and brands does not imply endorsement.

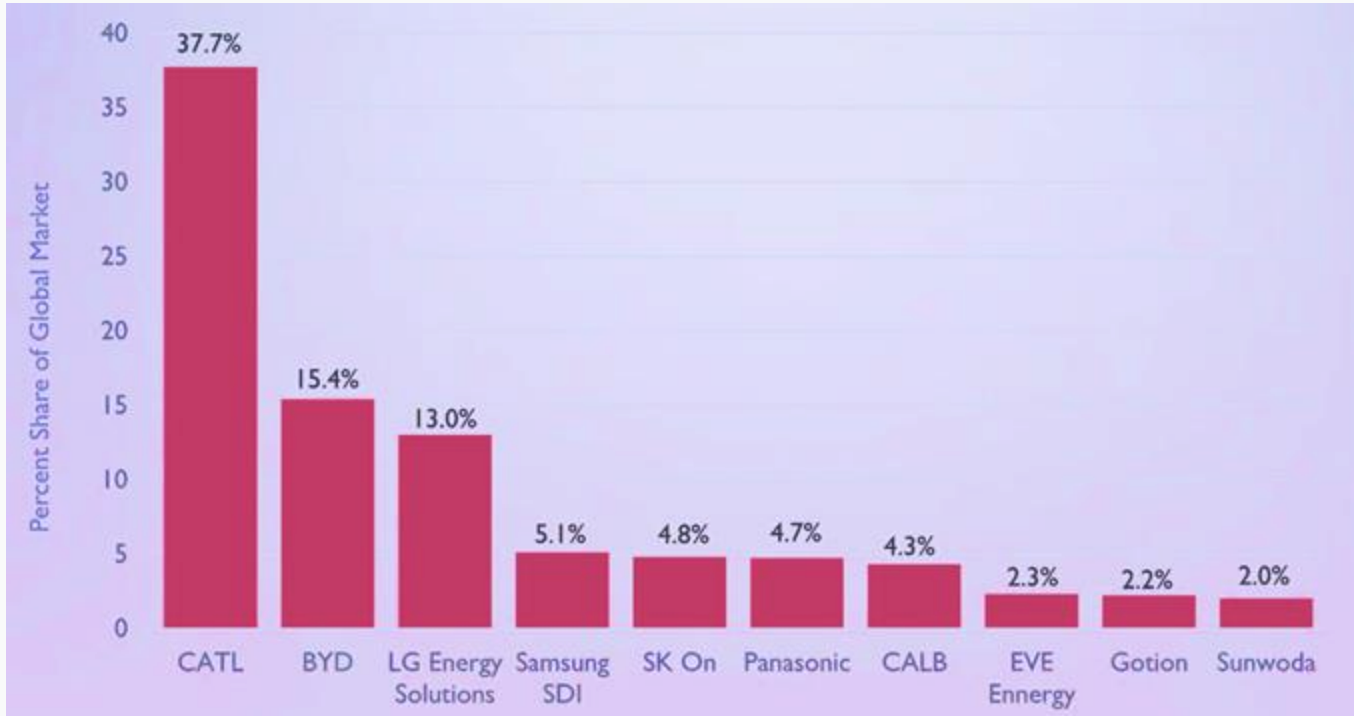
Source: Researcher and Research LLC

# Global Battery Initiatives (Operational & Ongoing)



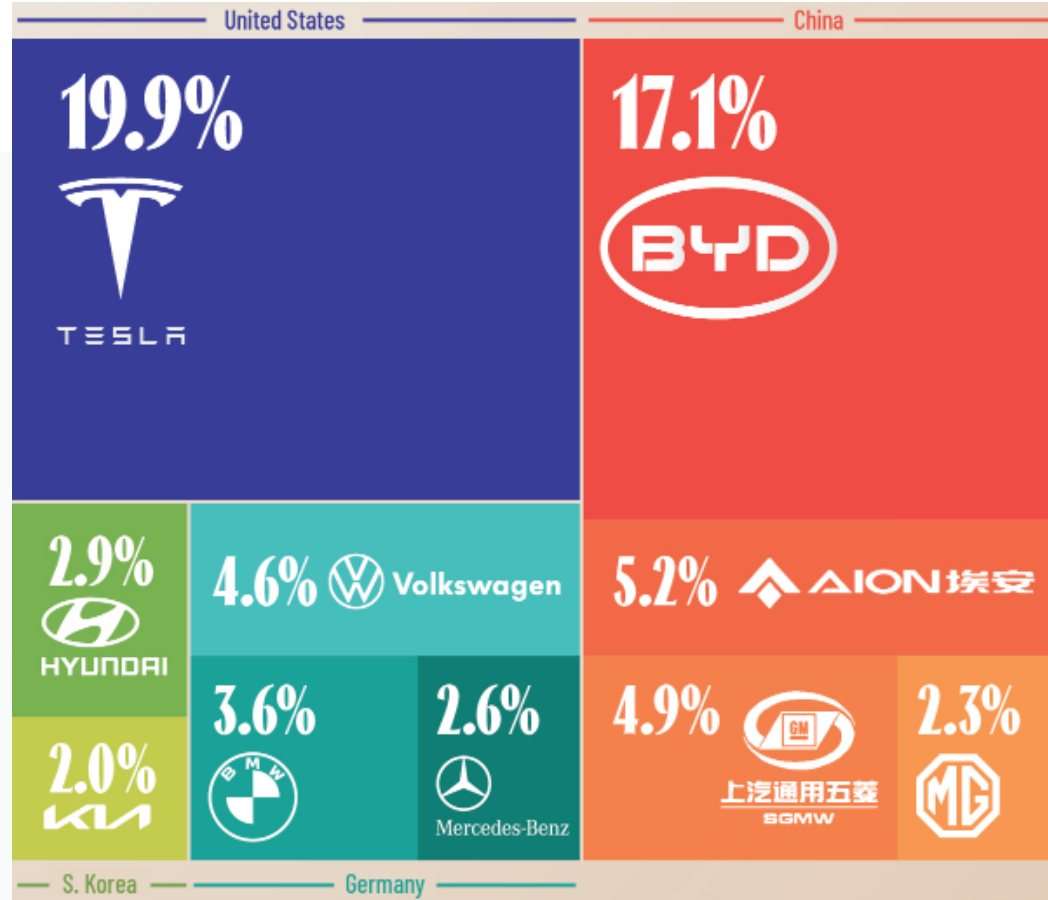


# Global Battery Manufacturers: Percent Share of Global Market Q1/2024



# Global BEV Sales in 2023

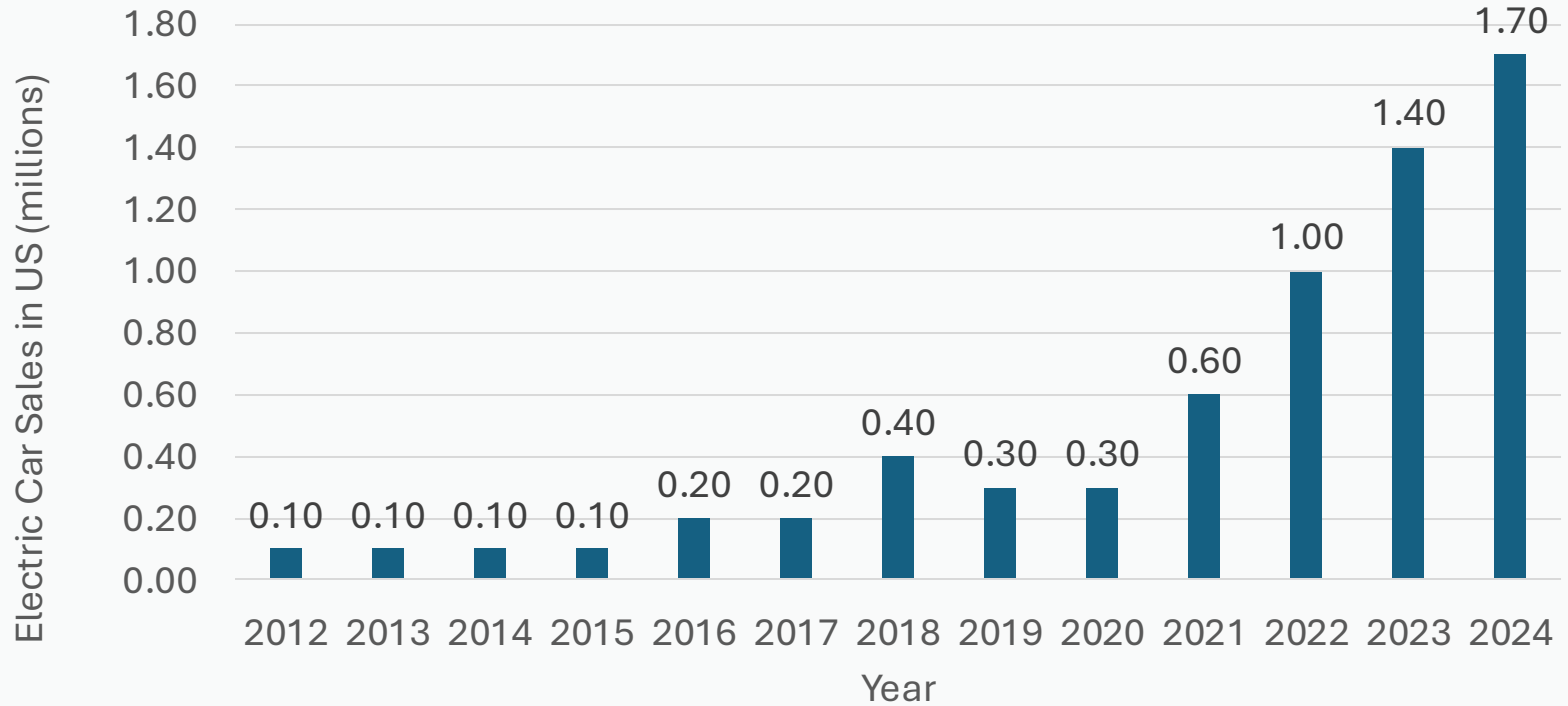
Top 10 companies make up 65% of the overall market.



# Industry Overview: US

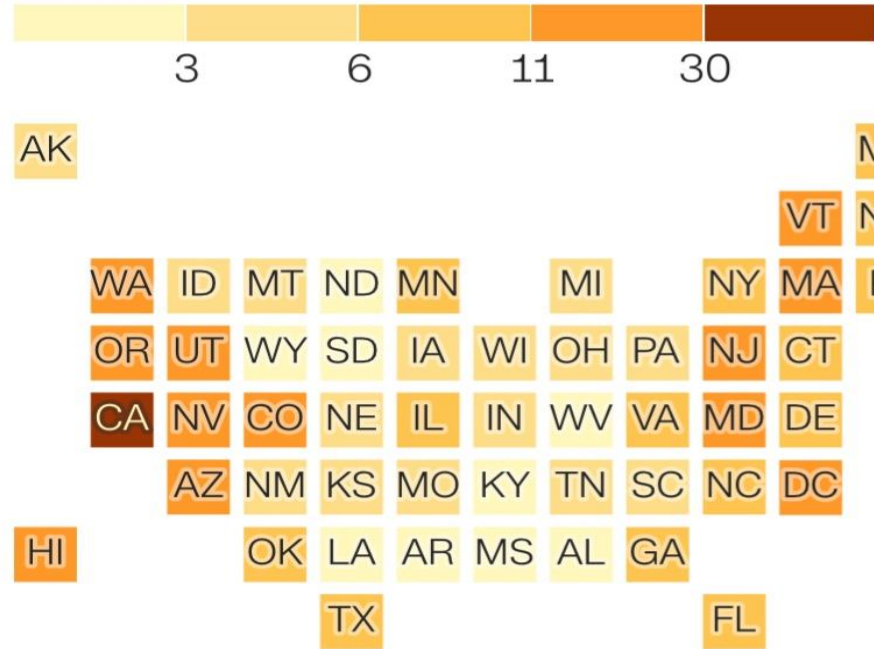


# Growth in US EV Sales





# EVs & PHEVs per 1,000 Population



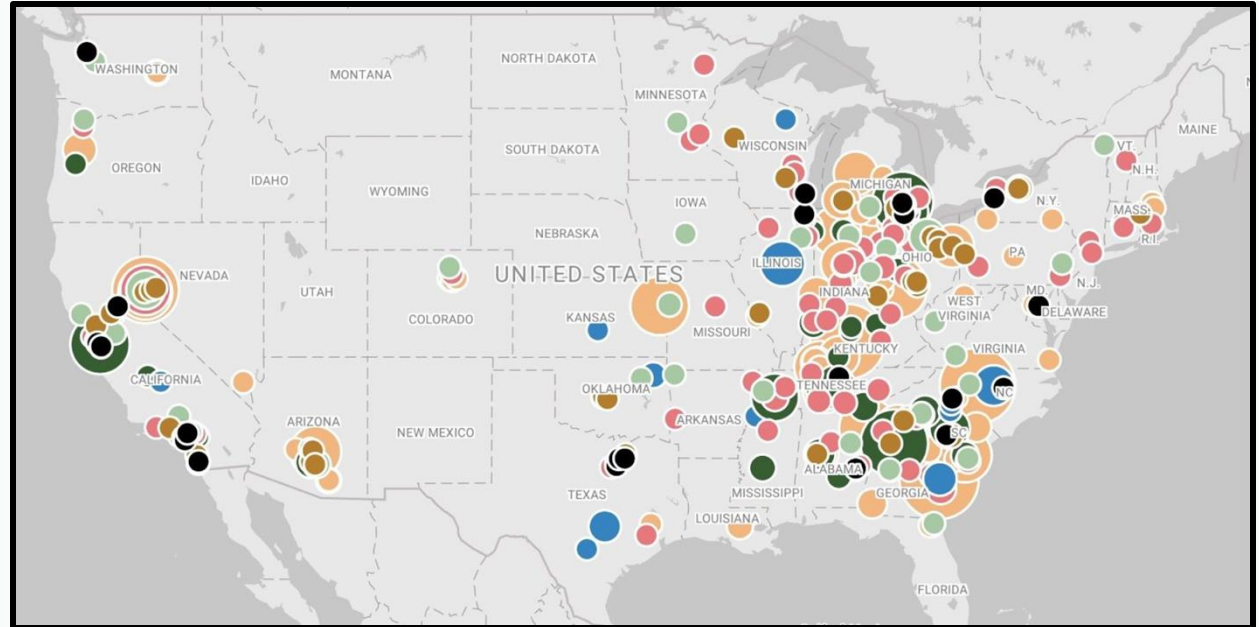
Source: US Department of Energy/US Census Bureau  
Graphic: Alex Leeds Matthews, CNN

# National EV Announcements (OEMs, Tier 1-3)



According to Environmental Defense Fund,  
March 2024 report:

- Over the last 9 years, \$188 billion in investment in U.S. EV and EV battery manufacturing facilities.
- 61% of announced EV investments have occurred in the last 18 months since passage of the Inflation Reduction Act (IRA) and
- 82% have occurred in the last 27 months since passage of the Bipartisan Infrastructure Law (BIL)



# National EV Announcements (OEMs, Tier 1-3)



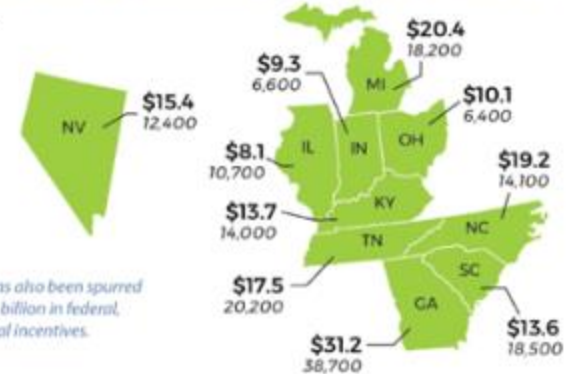
## Announced EV, EV Battery, Battery Component, and Battery Recycling Investment & Employment

January 2015 - February 2024

Manufacturing	Investment	Announced Created/Retained Jobs
Passenger vehicles	\$39.9 billion	62,700
Medium heavy duty vehicles	\$13.8 billion	24,000
EV components	\$4.0 billion	9,600
EV batteries	\$99.7 billion	81,100
EV battery components	\$24.0 billion	15,000
EV battery recycling	\$6.4 billion	2,200
<b>Total</b>	<b>\$188 billion</b>	<b>194,500</b>

## 84% of Announced Investment is in 10 States

\$ Billions of Investment  
Number of new jobs



Investment has also been spurred by nearly \$27 billion in federal, state, and local incentives.

# Mighty World of Tesla



## Fremont, CA Factory

Tesla's first factory—produces Model S, Model 3, Model X and Model Y



## Gigafactory Nevada

One of the world's highest volume plants for electric motors, batteries and powertrains



## Gigafactory New York

Builds Solar Roof, solar panels and electrical components for Superchargers



## Gigafactory Shanghai

Tesla's first factory abroad—produces Model 3 and Model Y



## Gigafactory Texas

Tesla's new global headquarters produces Model Y and is the future home of Cybertruck



## Gigafactory Berlin—Brandenburg

Tesla's first European factory—produces Model Y and will produce batteries and more



# Scout – Old is New



- International Harvester turned Navistar turned VW
- All electric SUV
- Reviewed 74 sites
- Two month, second-look decision
- March 2023 – Columbia, SC
- Ground Break: Feb 2024
- Production Start: Q4 2026
- 200k vehicles - +- 550 per day
  - BMW 1,500 per day
  - Volvo 400 per day



*Scout*

# SK in Georgia



- Large buildings, clean rooms & equipment, total investment is very high
- New job creation about 1000+
- Sites 150-500 acres
- Up to 80 MW power demand
- 1.3 MGD water consumption



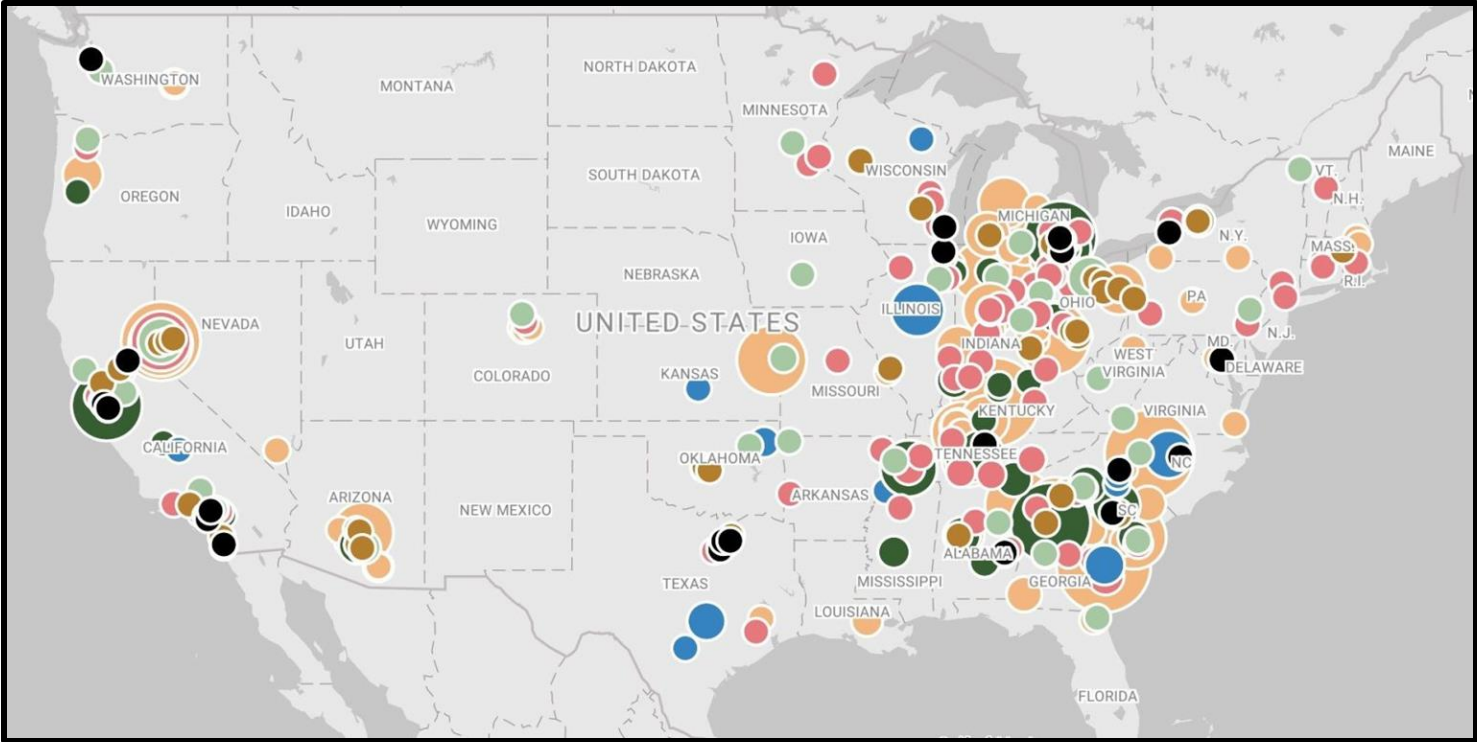
# A Little Help from My Friends...



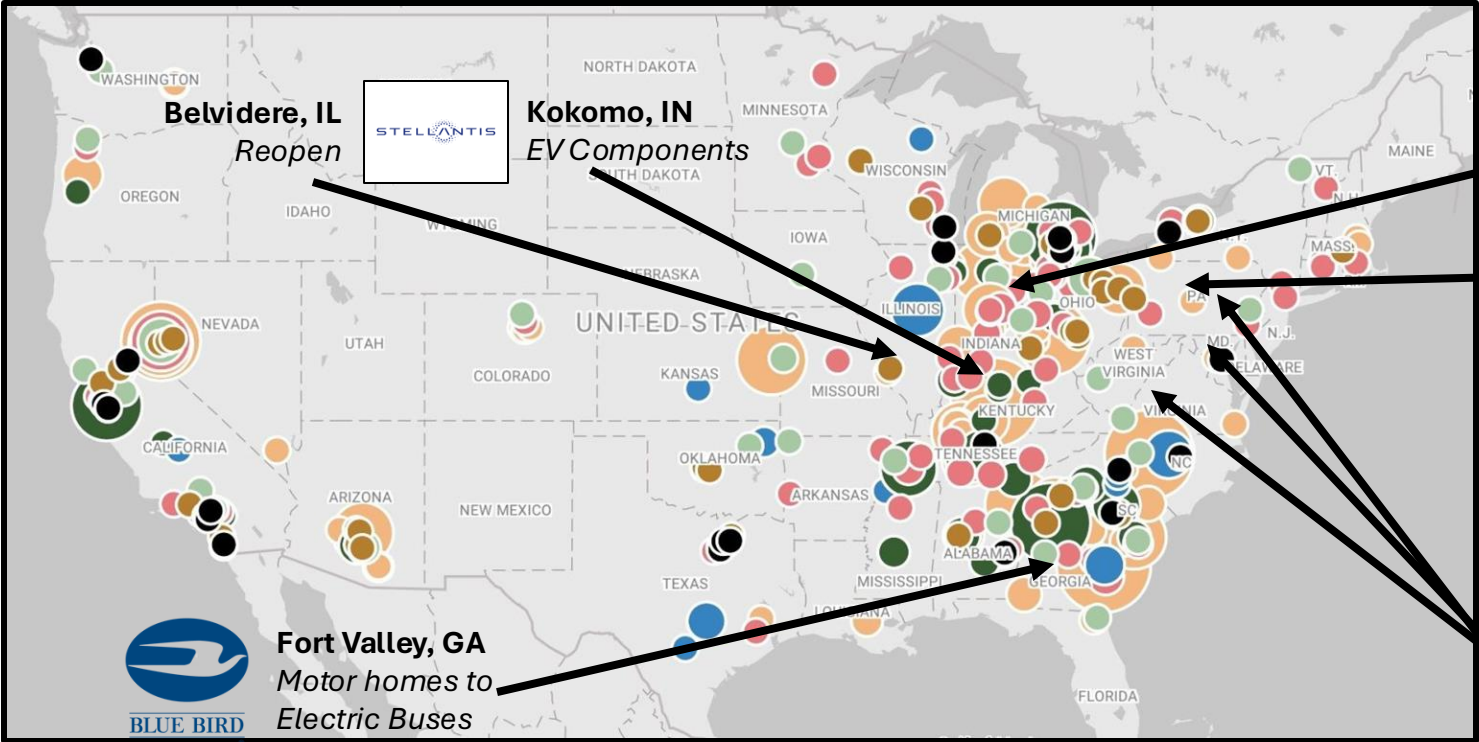
- **\$1.3B from SC for Scout**
  - \$2B in investment / 4000 jobs
- **\$2.1B from Georgia for Hyundai**
  - \$7.9B in investment / 8500 jobs
  - Production Start: Q4 - 2024
  - 300,000 vehicles : +-822 per day
- **\$1.25B from NC for Vinfast**
  - \$4B in investment
  - 7500 jobs
  - Production Start:
    - Q1 - 2028
  - 150,000 vehicles :  
+-411 per day



# National EV Announcements (OEMs, Tier 1-3)



# This Just In: \$2B Change of Direction



**Belvidere, IL**  
*Reopen*



**Kokomo, IN**  
*EV Components*



**Lansing, MI**  
*Conversion to EVs*



**York, PA**  
*Electric Moto.*



**Fort Valley, GA**  
*Motor homes to Electric Buses*



**Macungie, PA;**  
**Dublin, VA;**  
**Hagerstown, MD**  
*Heavy Duty Trucks*

# Michigan's current EV/Battery projects



**General Motors:** Orion Assembly and Ultium Cells

**Planned company investment:** \$6.5 bn

Expected to produce EV trucks – now changing to also ICEs & hybrids.

Ultium Cells production is expected to start in 2025. GM sold 75,800 EVs total in 2023.

**LG Energy Solutions Michigan**

**Planned company investment:** \$1.7 bn on a second battery plant

Profitable in the Q1 only due federal tax credits. Moving further into energy storage & software development.

**Gotion**

**Planned company investment:** \$2.4 bn

Battling community opposition, where it plans to build EV batteries.

**Our Next Energy**

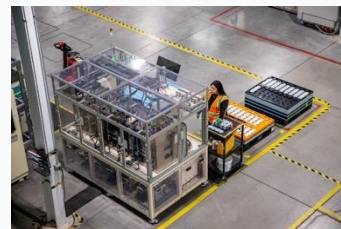
**Planned company investment:** \$1.6 bn

660,000-square-foot factory to allow automakers to shift to an American-made battery and obtain federal credits.

**Ford Blue Oval**

**Planned company investment:** \$3.5 bn downsized to \$2 bn

Lost more than \$100,000 on each EV it sold during Q1. Maintaining original opening target of 2026 despite receiving some community opposition.



# EV Projects:

## What is an EV Project?



# Assembly Plant Utilization – An Outlook

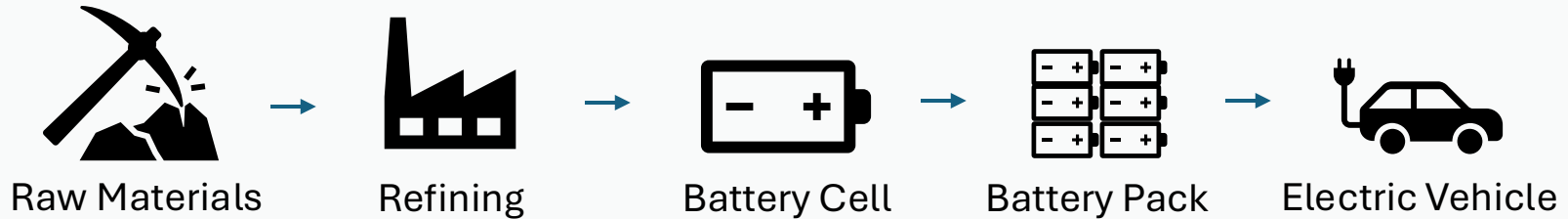


Year	ICE	BEV	ICE + BEV
2024	75%	42%	70%
2025	73%	45%	68%
2026	73%	49%	67%
2027	74%	49%	66%
2028	74%	52%	65%
2029	73%	56%	65%
2030	70%	60%	65%
2031	66%	62%	64%
2032	65%	63%	64%
2033	62%	64%	63%
2034	61%	66%	63%
2035	58%	67%	63%
2036	56%	68%	63%

- **Average plant utilization in North America is currently 70%**
- **Desired value is 80% for most OEM plants**
- **Slow transitioning to EV requires OEMs to be flexible**
- **Flexibility for both ICE and EV production at plants, which creates inefficiencies**



# EV Supply Chain



- Nickel
- Cobalt
- Lithium
- Manganese
- Graphite

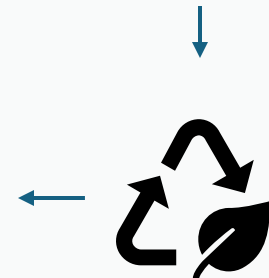
- Lithium
- Evaporation
  - Recycling
  - Direct Extraction

- Other Materials
- Hydrometallurgical
  - Pyrometallurgical

- Anode
- Cathode
- Separator
- Electrolyte
- Casing

- Pack Casing
- Battery Management System

- Vehicle Assembly



# What makes an EV project successful?



Utilities



Logistics



Incentives & Grants

# What Matters to EV projects:

## Utilities

- **Capacity, Reliability, & Timeline**
- **Green Energy – Carbon Intensity**
- **Water**
  - **Some processes require A LOT of water**
  - **Raw water**
- **Wastewater**
  - **Some processes discharge A LOT of wastewater**
  - **Direct Discharge**



# What Matters to EV projects:

## Logistics



- **General**
  - Capacity
  - Reliability
  - Timeline
- **Materials Processing/Refining**
  - Inbound logistics are more important than outbound
  - Ports and Rail are key
  - Source material is often international
- **Battery Cells/Packs**
  - Proximity to OEM is key

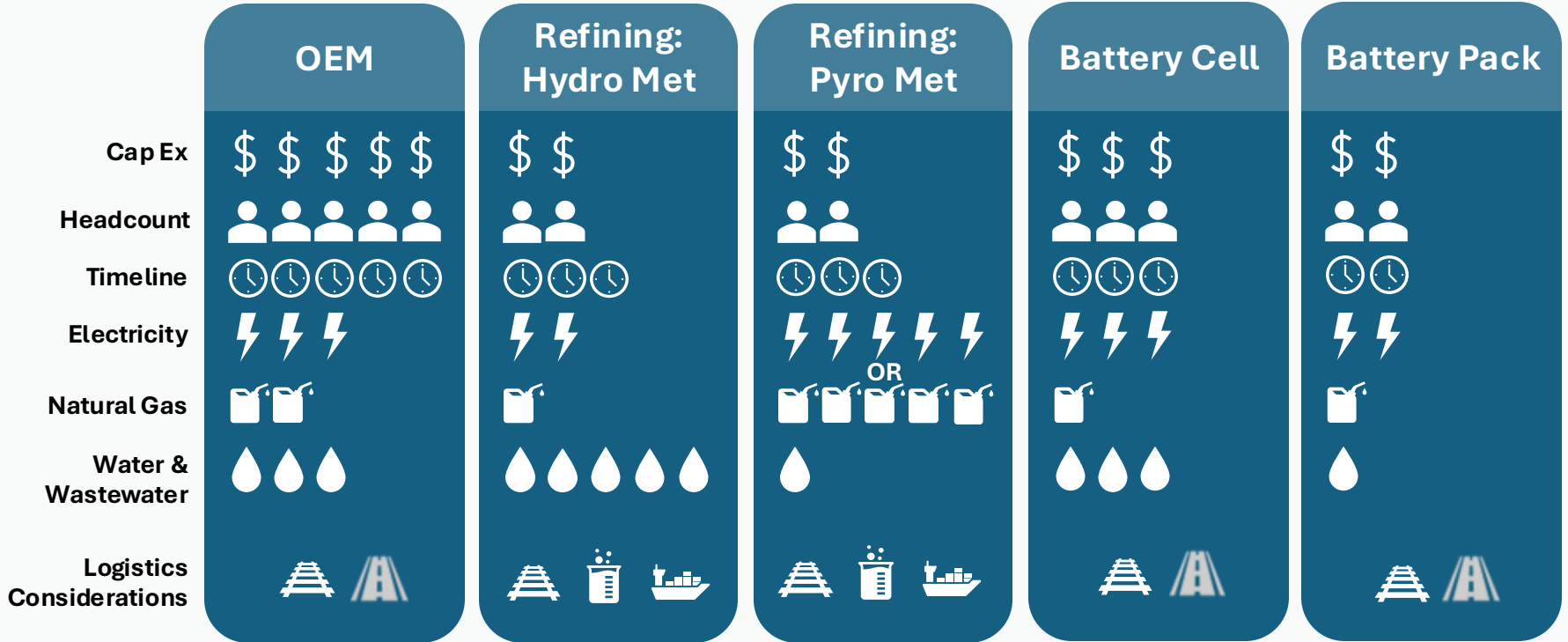
# What Matters to EV projects:

## Incentives & Grants



- **Caveat:**
  - **Some projects only work with Incentives & Grants  
BUT not all**
- **Bi-Partisan Infrastructure Bill**
- **Inflation Reduction Act**
- **DOE Grants & Loans**
  - **Grants:**
  - **Loans: Title 17, ATVM, & Tribal Energy Financing**

# Project Driver Examples



# What is the Future?



SITE  
SELECTORS  RS  

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 GUILD