

EV Markets in North America

NAATBatt 2024

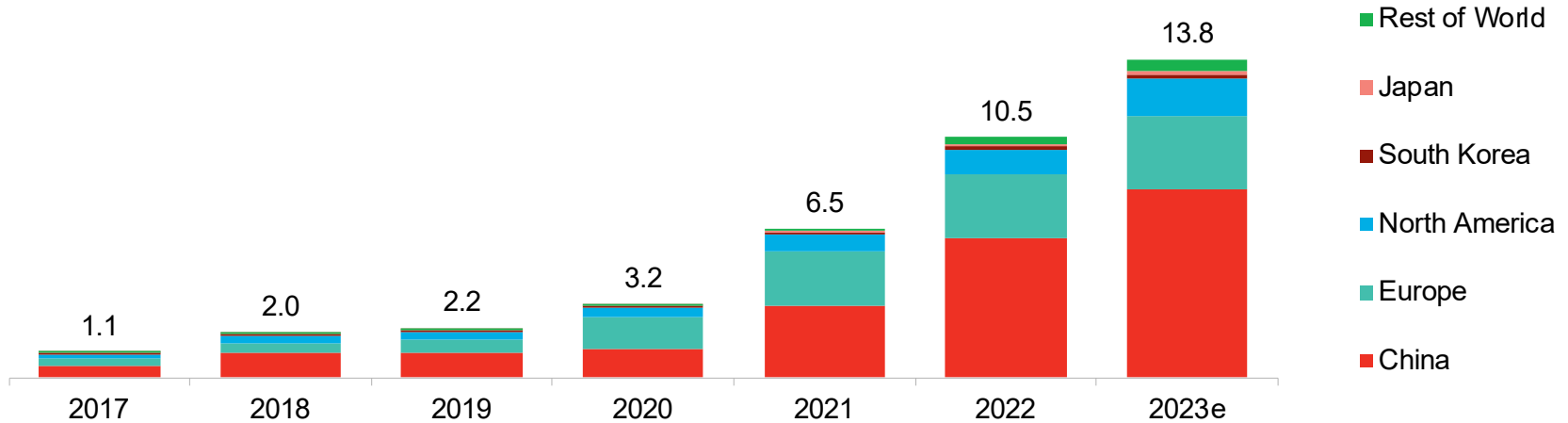
Evelina Stoikou

February 20, 2024

EV sales have experienced another year of growth

Passenger EV sales by market

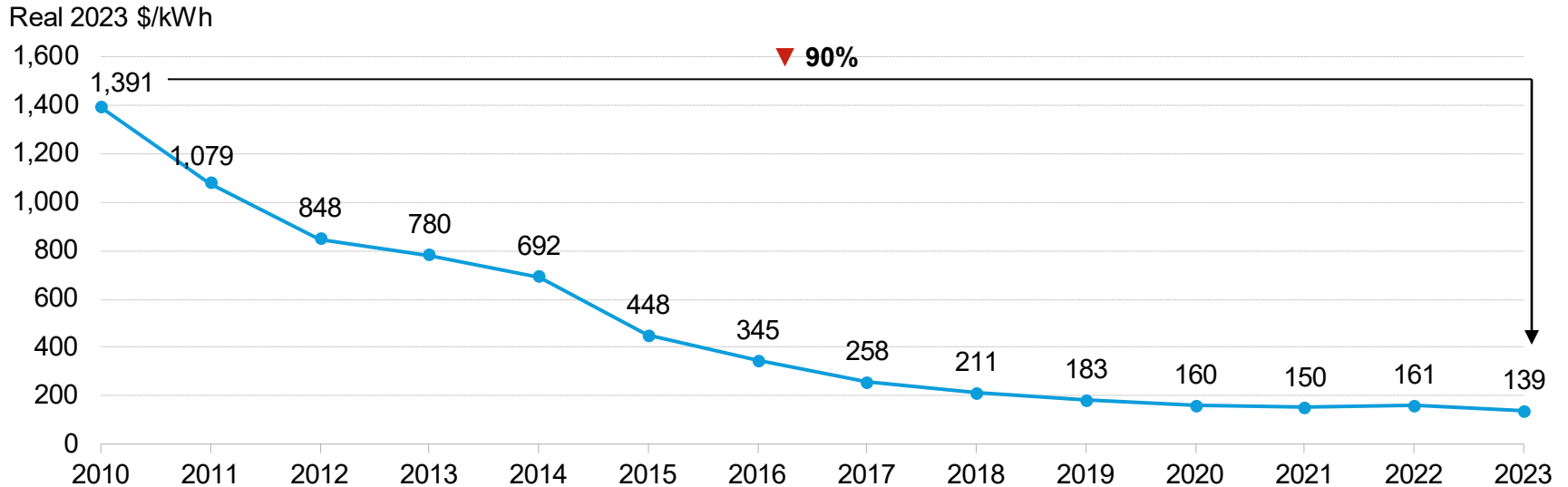
Million



Source: BNEF. Includes BEVs and PHEVs.

Battery pack prices have fallen 90% between 2010 and 2023

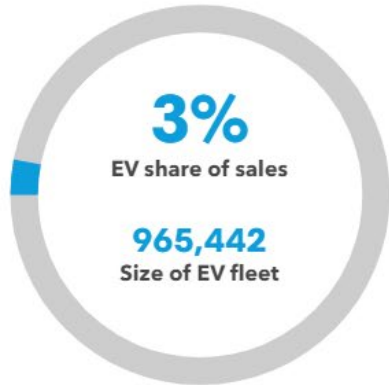
Lithium-ion battery pack prices



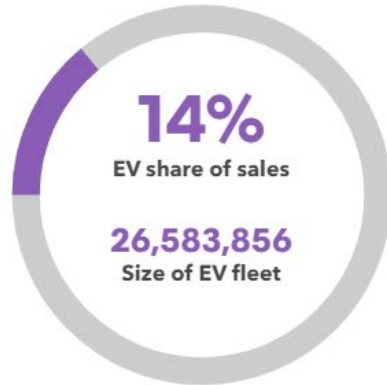
Source: BloombergNEF. Note: Historical figures have been adjusted to real 2023 dollars.

The picture of the EV industry today

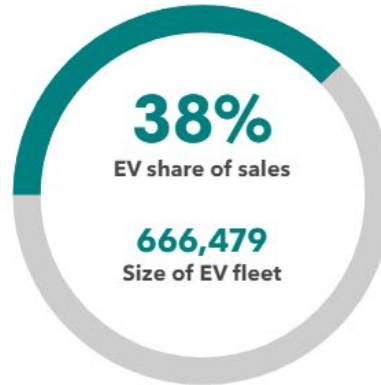
Vans and trucks



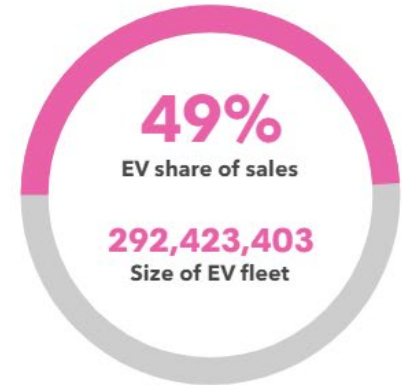
Passenger cars



Buses



2 and 3 wheelers



Source: BNEF. All data as of end of 2022.

However, in 2023 concerning news circulated around the US EV market

Wall Street Sours on EVs as Demand Falters, Funding Costs Soar

The Electric-Vehicle Bubble Starts to Deflate

Biden is imitating China just as its industrial policy starts to crack.

By The Editorial Board [Follow](#)

Aug. 21, 2023 6:38 pm ET

ber downgrades two lithium stocks, Cowen cuts charging names
sing interest rates lift car-loan expense, cost of capital

Here's why people aren't buying EVs in spite of price cuts and tax breaks.



Medora Lee

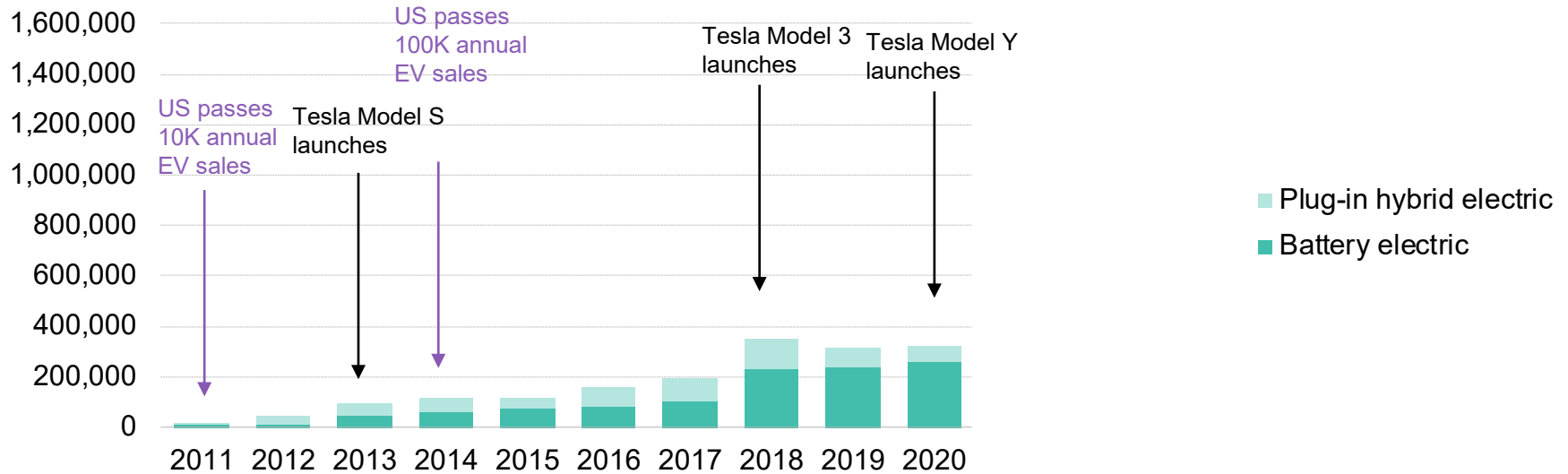
USA TODAY

Published 12:47 p.m. ET Nov. 14, 2023 | Updated 8:06 p.m. ET Nov. 14, 2023

Source: Wall Street Journal, Bloomberg, USA Today.

The US EV market has gone through many firsts

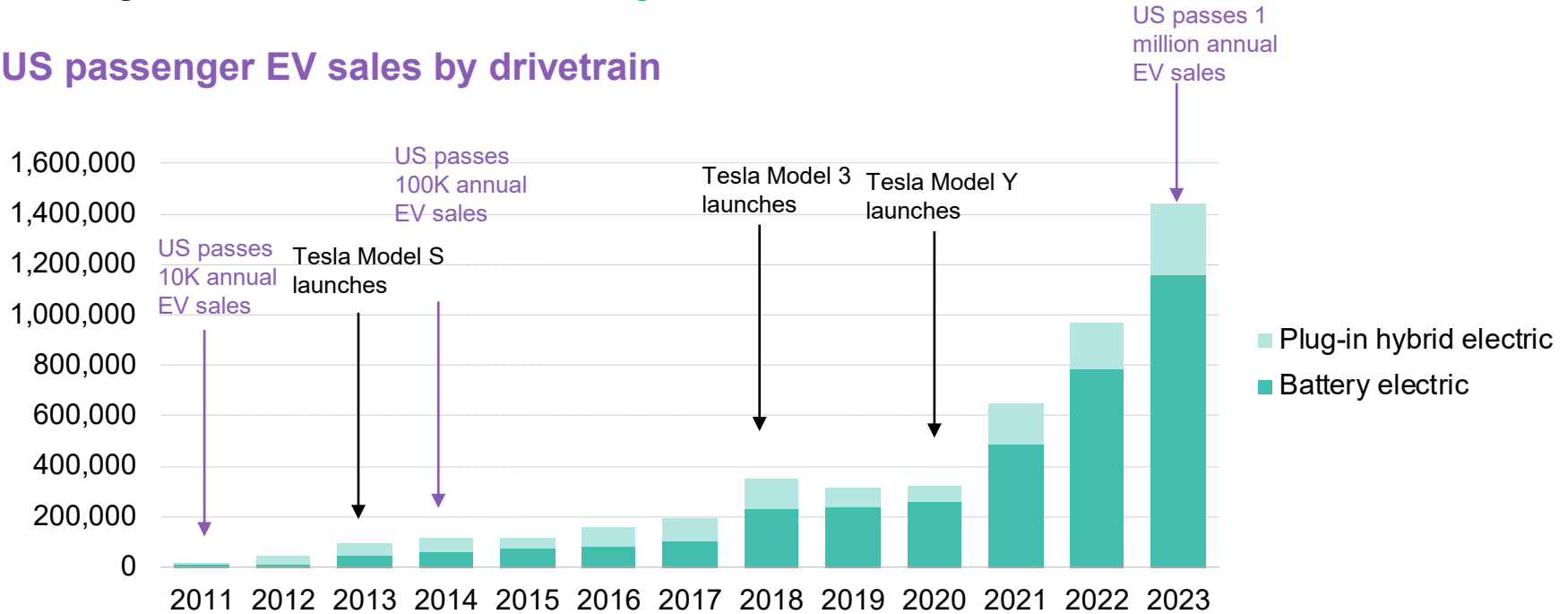
US passenger EV sales by drivetrain



Source: BloombergNEF

The US EV market has gone through many firsts... but clearly has taken off

US passenger EV sales by drivetrain



Source: BloombergNEF

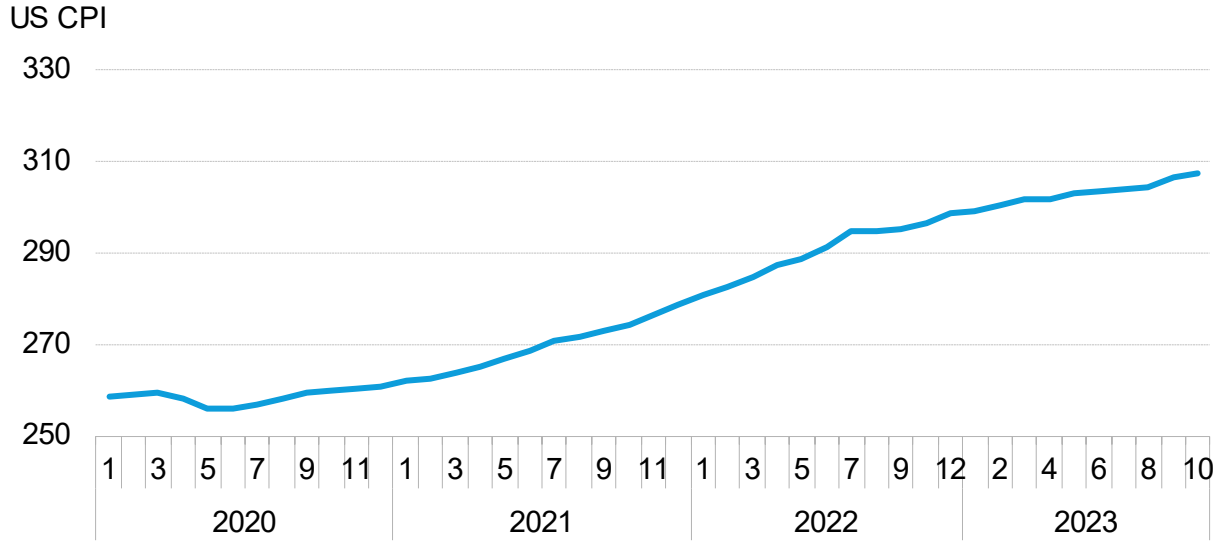
Despite the growth, there are still challenges



Source: Bloomberg Mercury

Inflation remained at **elevated levels** in 2023, continuing to affect the EV and battery industry

US Consumer Price Index (CPI)



Source: Bloomberg Terminal, US Bureau of Labor Statistics. Note: Used CPI INDX Index.

US automakers have **pushed back** their near-term targets



\$3.5 billion

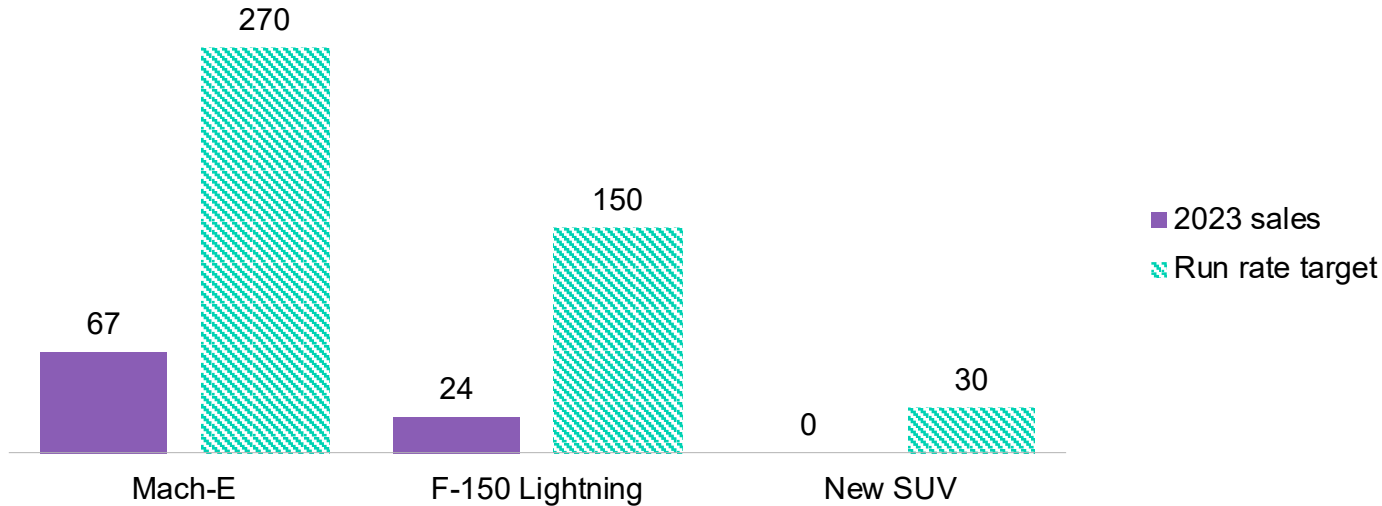
~ \$2 billion

Source: BloombergNEF

US domestic automakers have struggled to achieve near-term targets

Ford's annual run rate targets for selected models

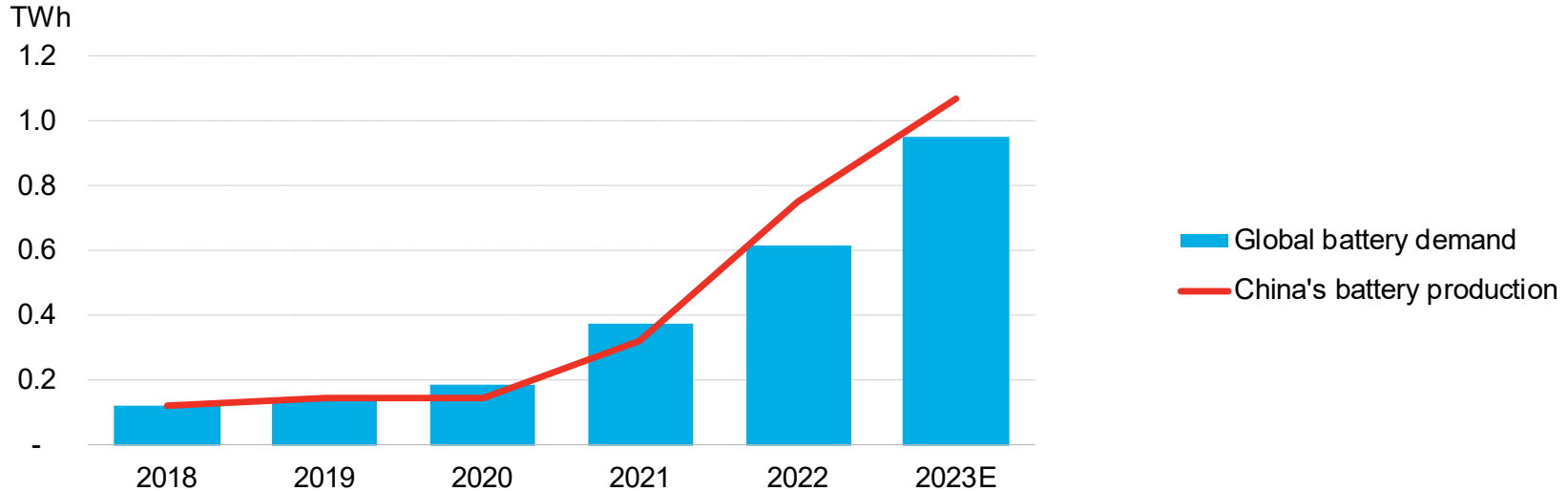
Thousand



Source: BloombergNEF, MarkLines. Note: 2023 sales are global and preliminary. Target refers to the 600,000 run rate target previously set by Ford for 2023, now moved to 2024. The run rate target includes 150,000 units for Ford's Transit electric vehicles not included in this figure

Battery production outpaced demand

Global annual lithium-ion battery demand and China's battery production

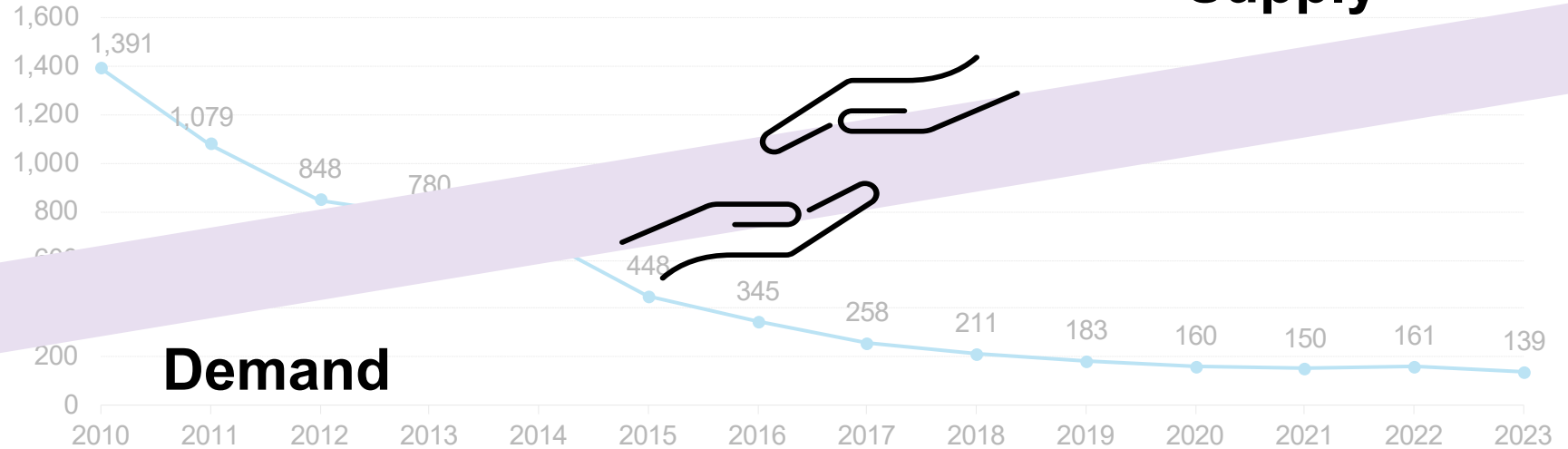


Source: BloombergNEF, Ministry of Industry and Information Technology (MIIT) of China. Note: China's production is the annual output of battery manufacturers located in mainland China. Data before 2022 is from MIIT and 2023 data is estimated by BNEF. Global battery demand is based on EV sales and stationary storage installations that year and excludes inventories. TWh is terawatt-hours.

Supply and demand dynamics impacted battery prices

Lithium-ion battery pack prices

Real 2023 \$/kWh



Source: BloombergNEF. Note: Historical figures have been adjusted to real 2023 dollars.

And now the US is facing a dilemma:



Minimizing cost

Focusing on minimizing cost and continue relying on low-cost imports

Focusing on onshoring the battery value chain and diversify away from China

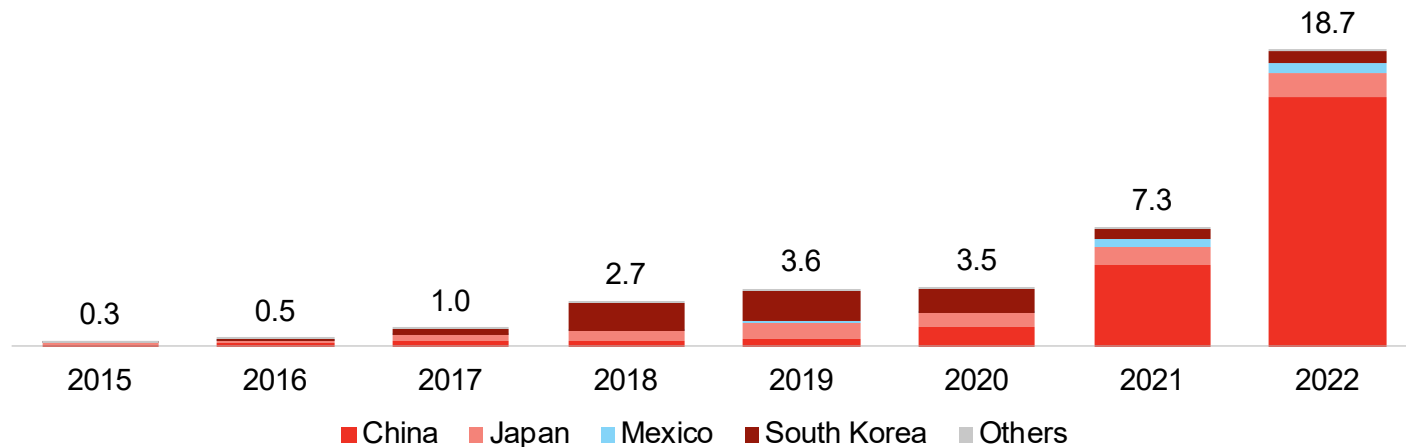


Supply chain security and diversification

US EV battery imports from mainland China more than doubled over 2021-22

US EV battery imports

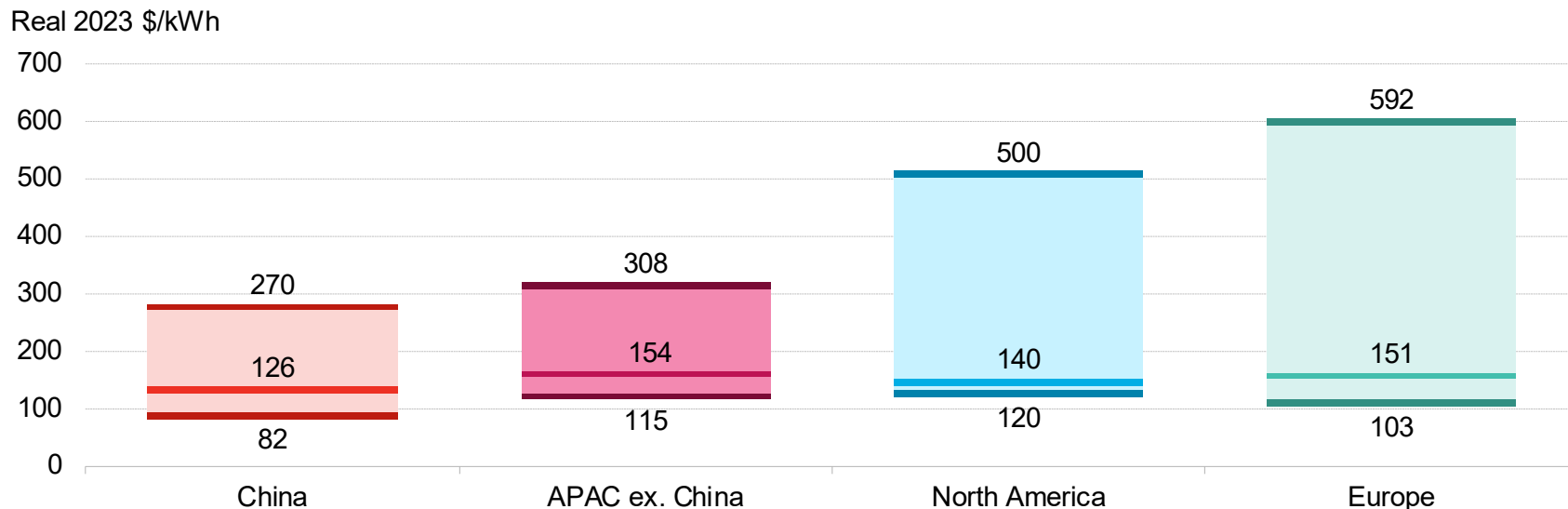
GWh



Source: BloombergNEF, US International Trade Commission, Trade Map. Note: Converts imports from dollars to GWh based on BNEF's 2022 Lithium-Ion Battery Price Survey.

Average prices in North America and Europe were 11% and 20% higher compared to China

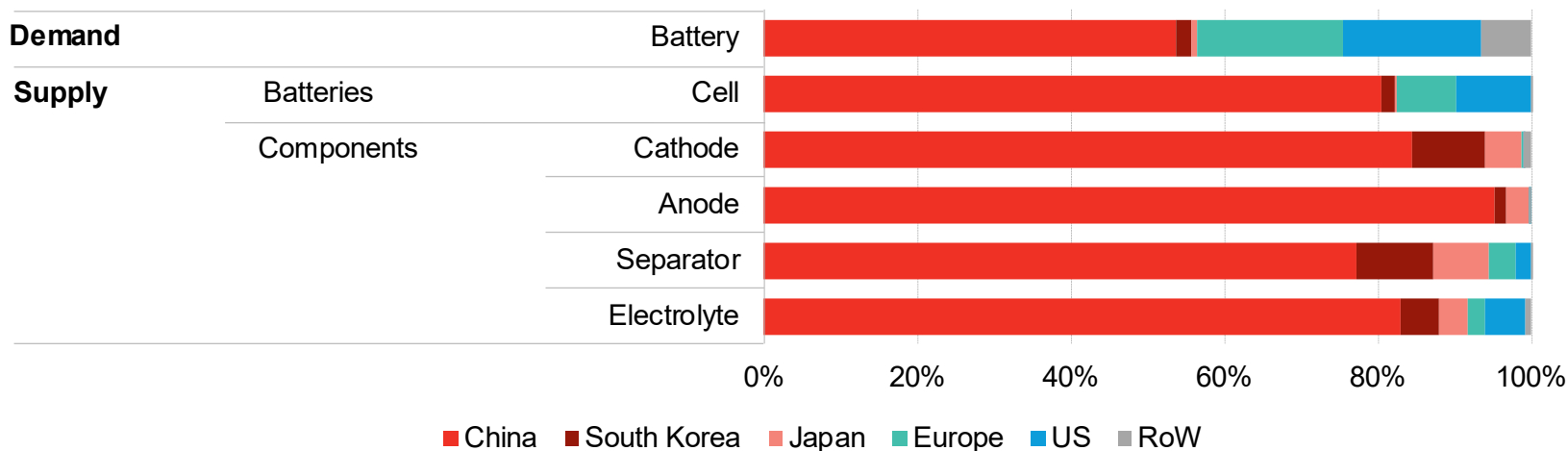
Volume-weighted average pack price and range by region delivered



Source: BloombergNEF. Note: APAC is Asia-Pacific, kWh is kilowatt-hours.

Over 80% of most of the key elements of the battery supply chain are centered in China

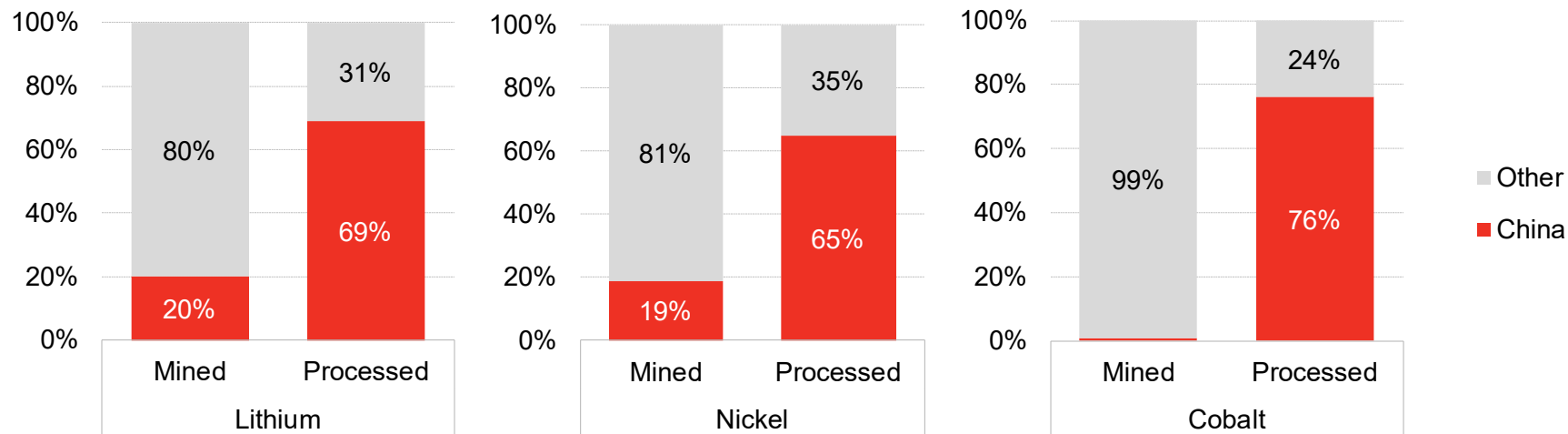
Global commissioned lithium-ion battery cell and component manufacturing capacity overlaid with battery demand by location, 2023



Source: BloombergNEF. Note: Supply data are fully commissioned plants as of November 2023. Demand data refers to BNEF projected 2023 year-end demand outlook. RoW refers to rest of world.

Further upstream, China dominates in the processing of key battery metals

Share of battery metal supply in 2023 by location



Source: BloombergNEF. Note: 2023 data is an estimate from BNEF's de-risked supply database. Battery metal supply shares are by weight. FTA stands for free-trade agreement.

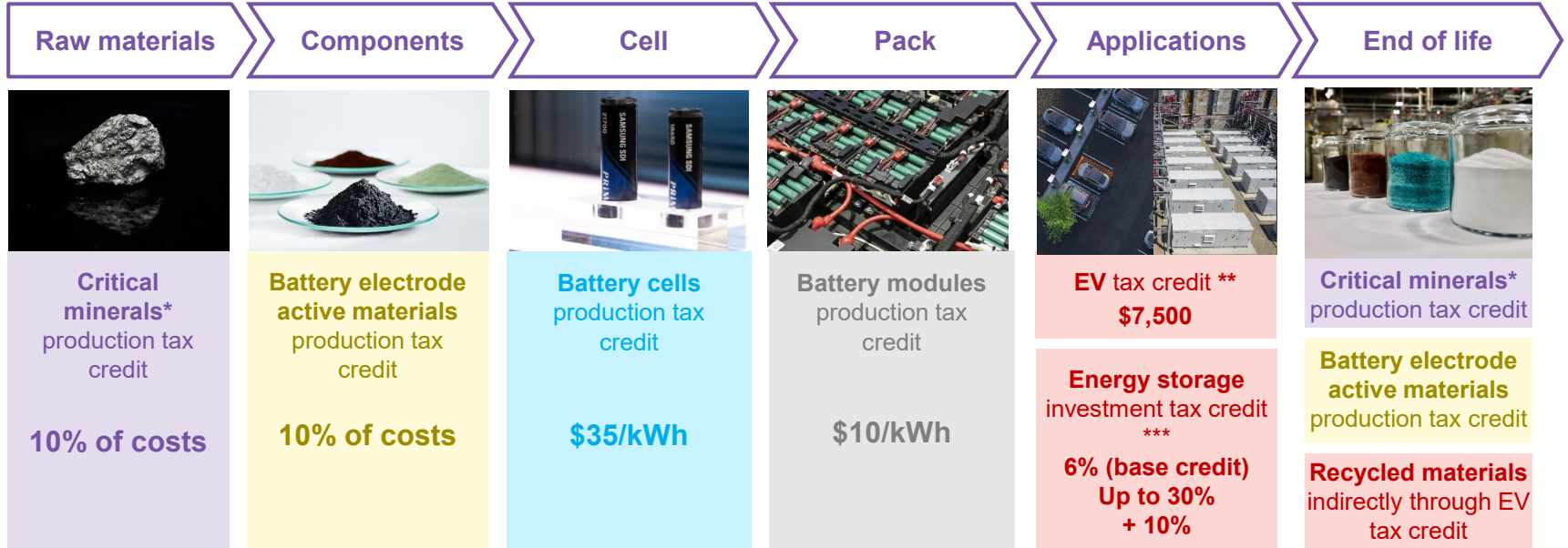
Nations worldwide are taking steps to localize their battery supply chain



Source: Bloomberg



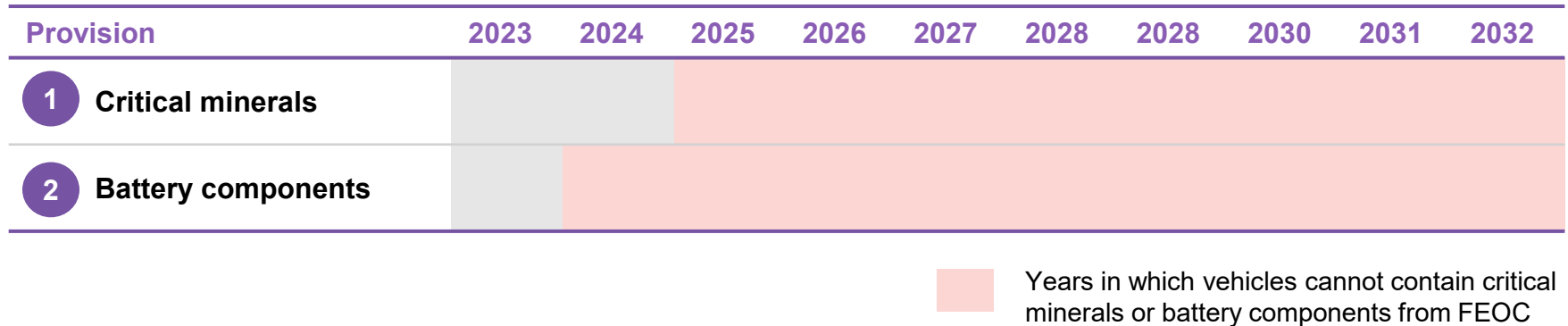
Inflation Reduction Act introduced multiple battery-related tax credits



Source: EVBox, Daimler, Bloomberg, Ascend Elements, Bloomberg Mercury, BASF. Note: *Critical minerals require mining or refining of the material in the US at specific purity levels. **EV credits include additional incentives for used clean vehicles and commercial clean vehicles. ***Energy storage is eligible for additional credits of 10% energy community adder and 10% or 20% environmental justice adder.

The US has set strict requirements to access the \$7,500 EV tax credit in the IRA is

Limitations for foreign entities of concern



Source: US Treasury, BloombergNEF

Eligible EV models that can get the credit are limited



Source: BloombergNEF, Department of Energy.

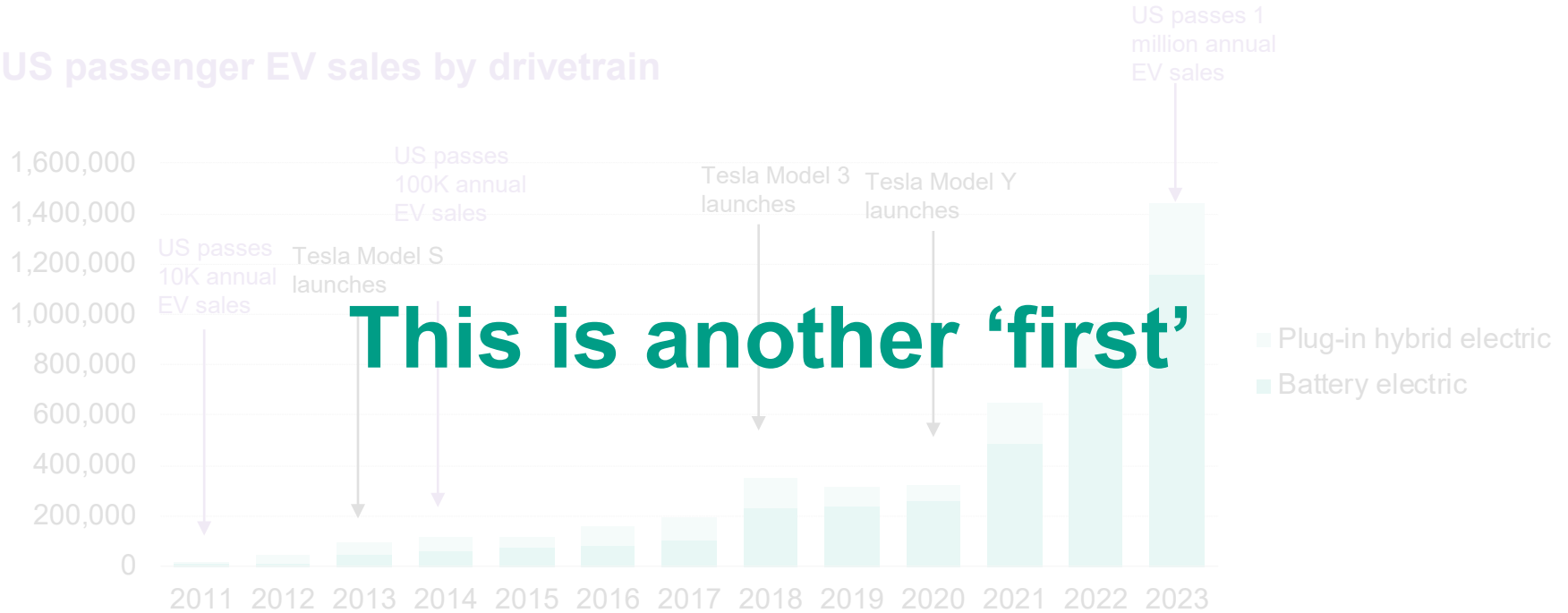
Eligible EV models that can get the credit are limited **and shrinking**



Source: BloombergNEF, Department of Energy.

The US EV market has gone through many firsts...

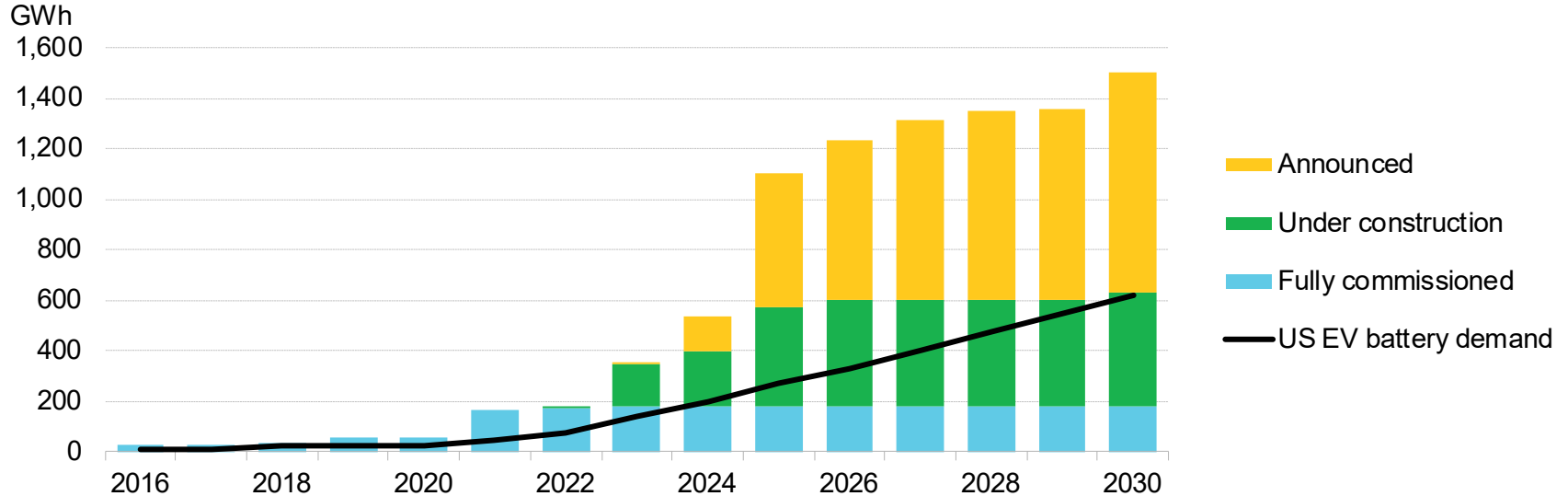
US passenger EV sales by drivetrain



Source: BloombergNEF

A 'first' in scaling up battery cell manufacturing capacity

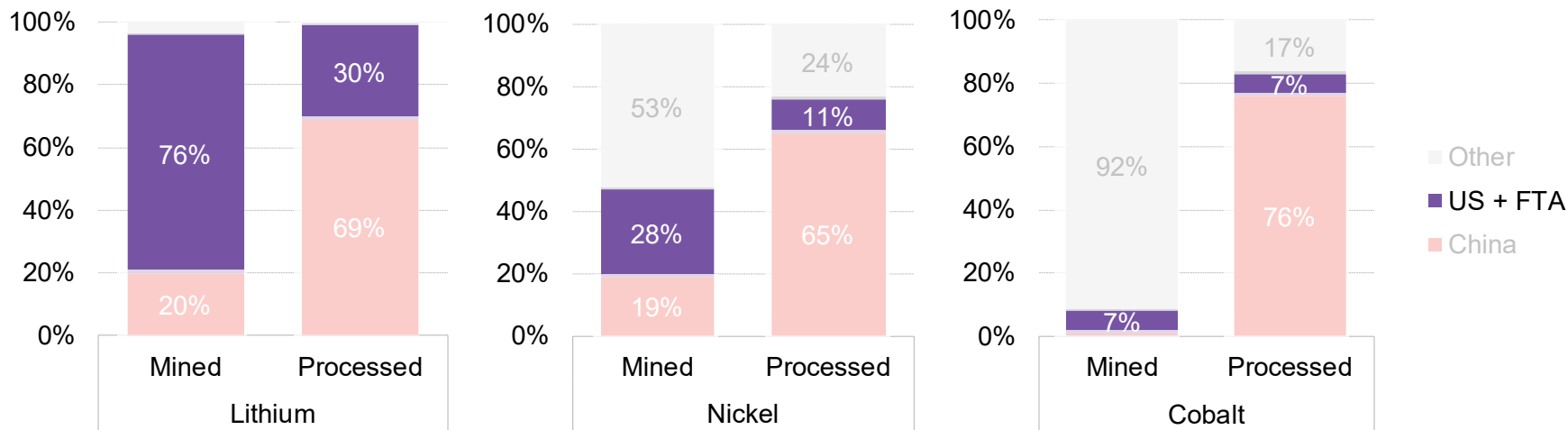
North America lithium-ion cell manufacturing nameplate capacity



Source: BloombergNEF. Note: From the Zero-Emission Vehicles Factbook 2023.

US will rely on free trade agreement countries for battery metals

Share of battery metal supply in 2023 by location

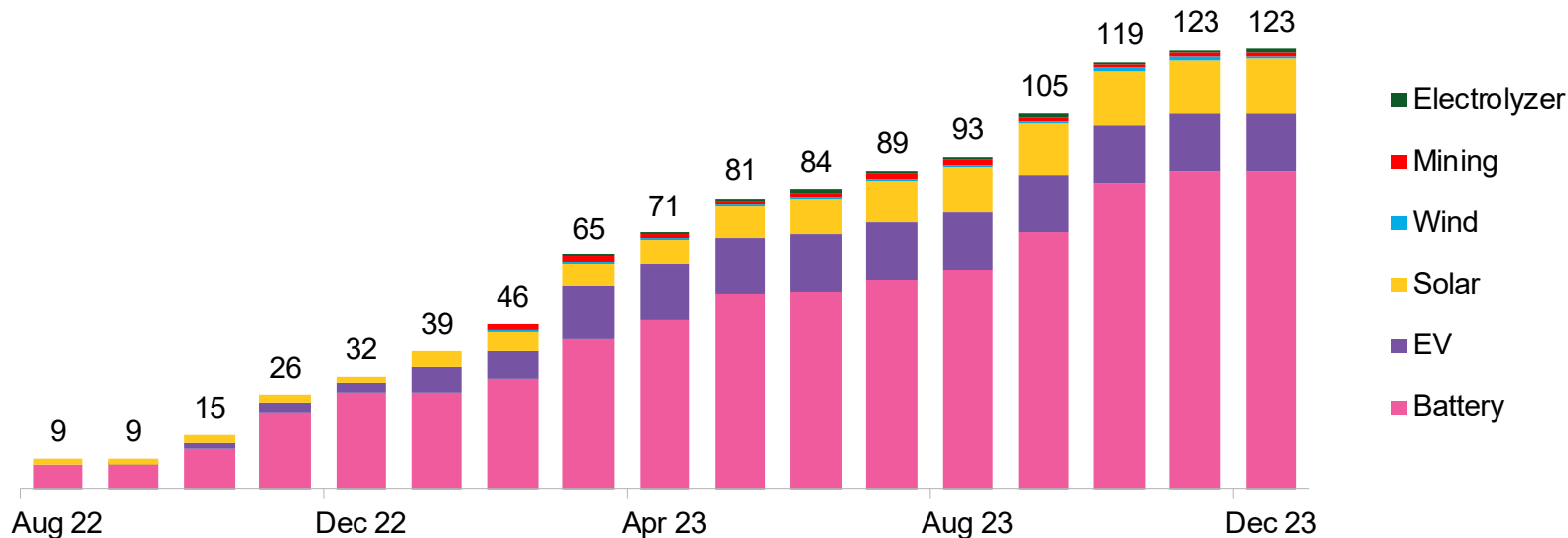


Source: BloombergNEF. Note: 2023 data is an estimate from BNEF's de-risked supply database. Battery metal supply shares are by weight. FTA stands for free-trade agreement.

Almost \$123 billion announced in clean-tech manufacturing industry since IRA

Cumulative clean-tech manufacturing investments announced after passage of IRA

\$ billion

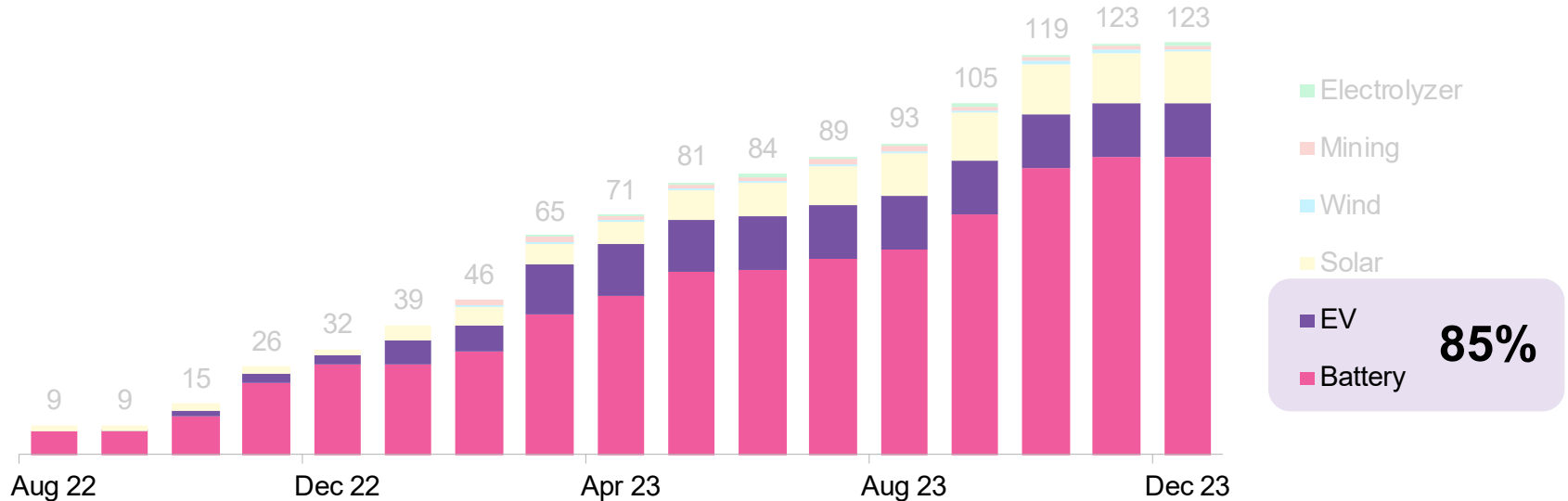


Source: BloombergNEF. Note: Data as of the end of July 2023. "Battery" includes cathodes, anodes, electrolytes, separators and cell production. "Solar" includes wafers, cells and modules. "Mining" includes battery-metal refining. "Wind" includes nacelles, blades, towers and gearboxes.

... with 85% of the investment coming from the battery and EV industries

Cumulative clean-tech manufacturing investments announced after passage of IRA

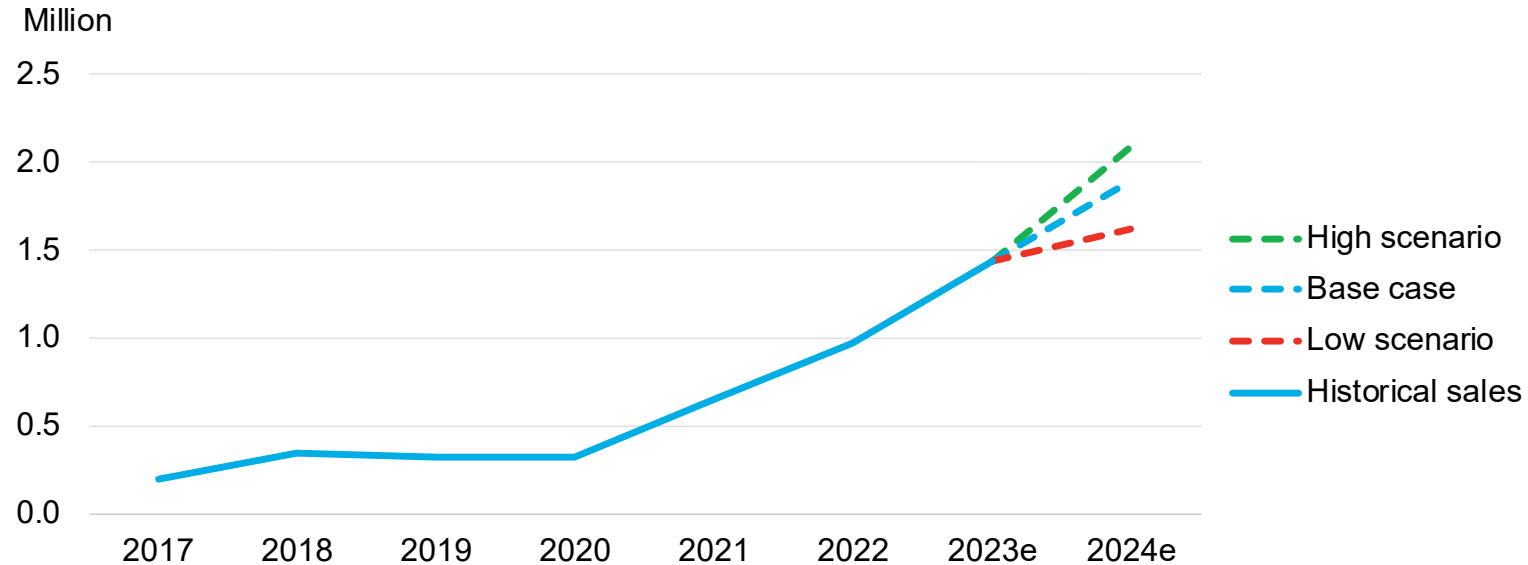
\$ billion



Source: BloombergNEF. Note: Data as of the end of July 2023. "Battery" includes cathodes, anodes, electrolytes, separators and cell production. "Solar" includes wafers, cells and modules. "Mining" includes battery-metal refining. "Wind" includes nacelles, blades, towers and gearboxes.

Decisions by automakers and consumers will have a real impact

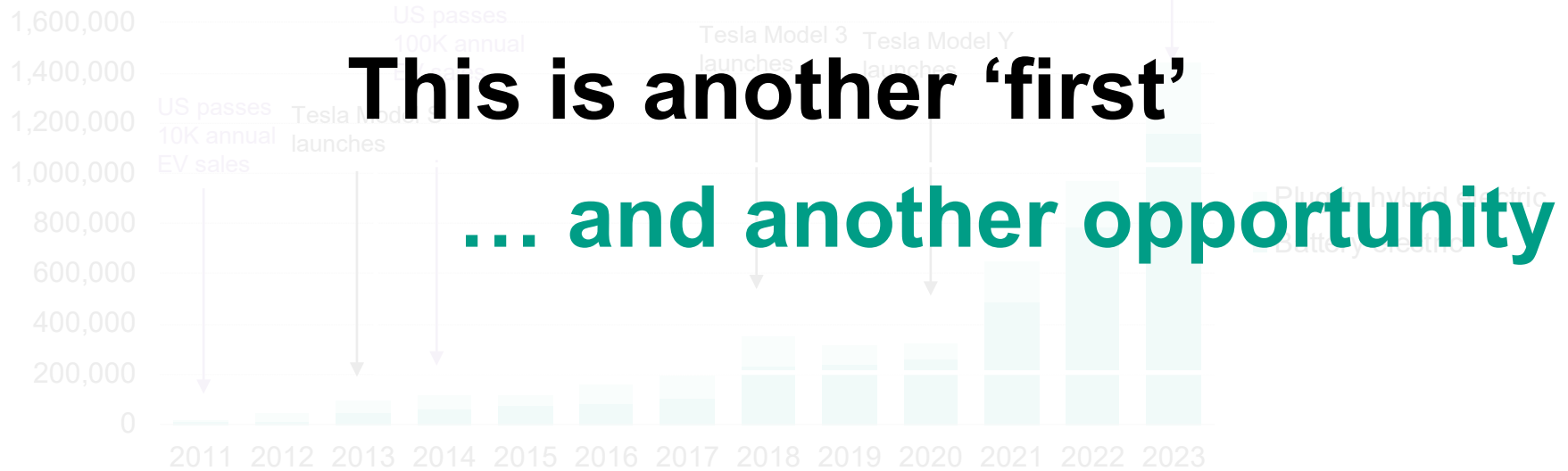
US passenger EV sales outlook under different scenarios



Source: BloombergNEF, MarkLines.

The US EV market has gone through many firsts...

US passenger EV sales by drivetrain



Source: BloombergNEF

Thank you!

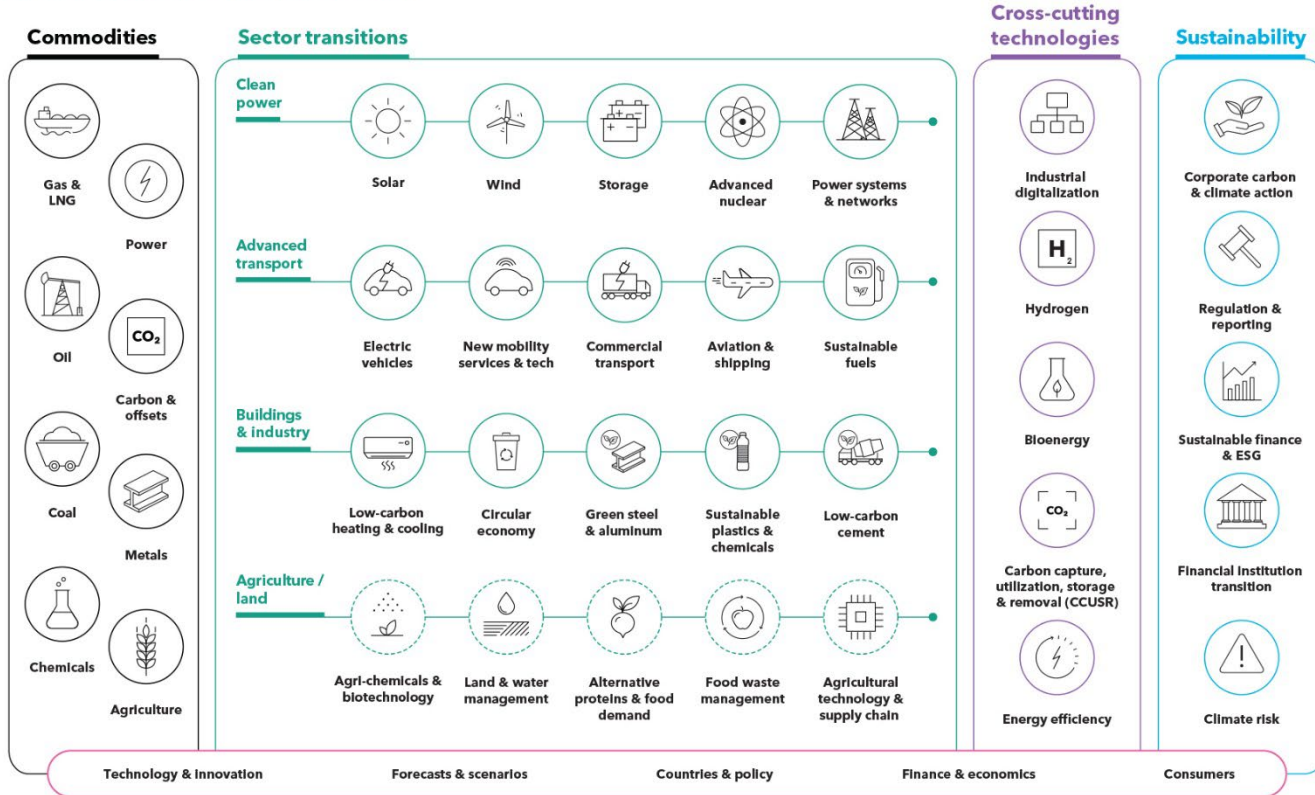
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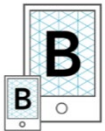
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