
S&P Global

Mobility

Automotive Trends & the Impact on Plastics

Prepared for NPE 2024

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May, 2024



Agenda

Who we are

Global macroeconomic conditions

Global light vehicle sales outlook

BEV forecast

US vehicle market dynamics

What-ifs for US marketplace

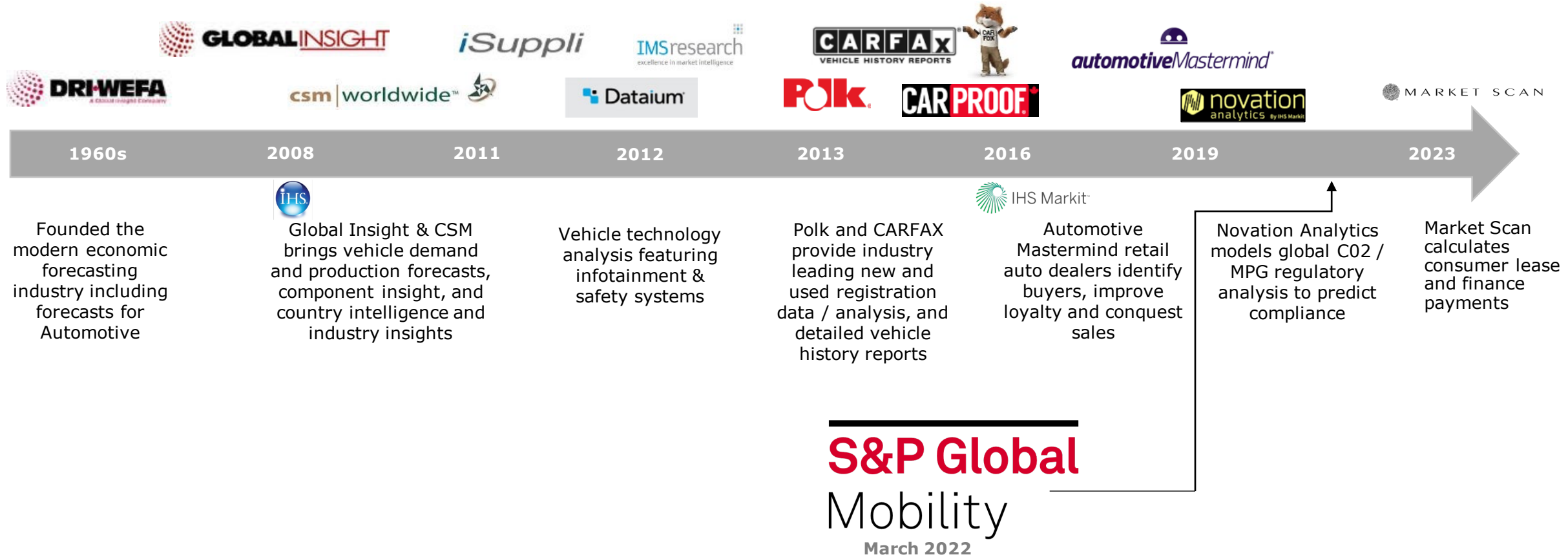
S&P Global

Mobility

We provide invaluable insights derived from unmatched automotive data, enabling our customers to anticipate change and make decisions with conviction. Our expertise helps them to optimize their businesses, reach the right consumers, and shape the future of mobility.



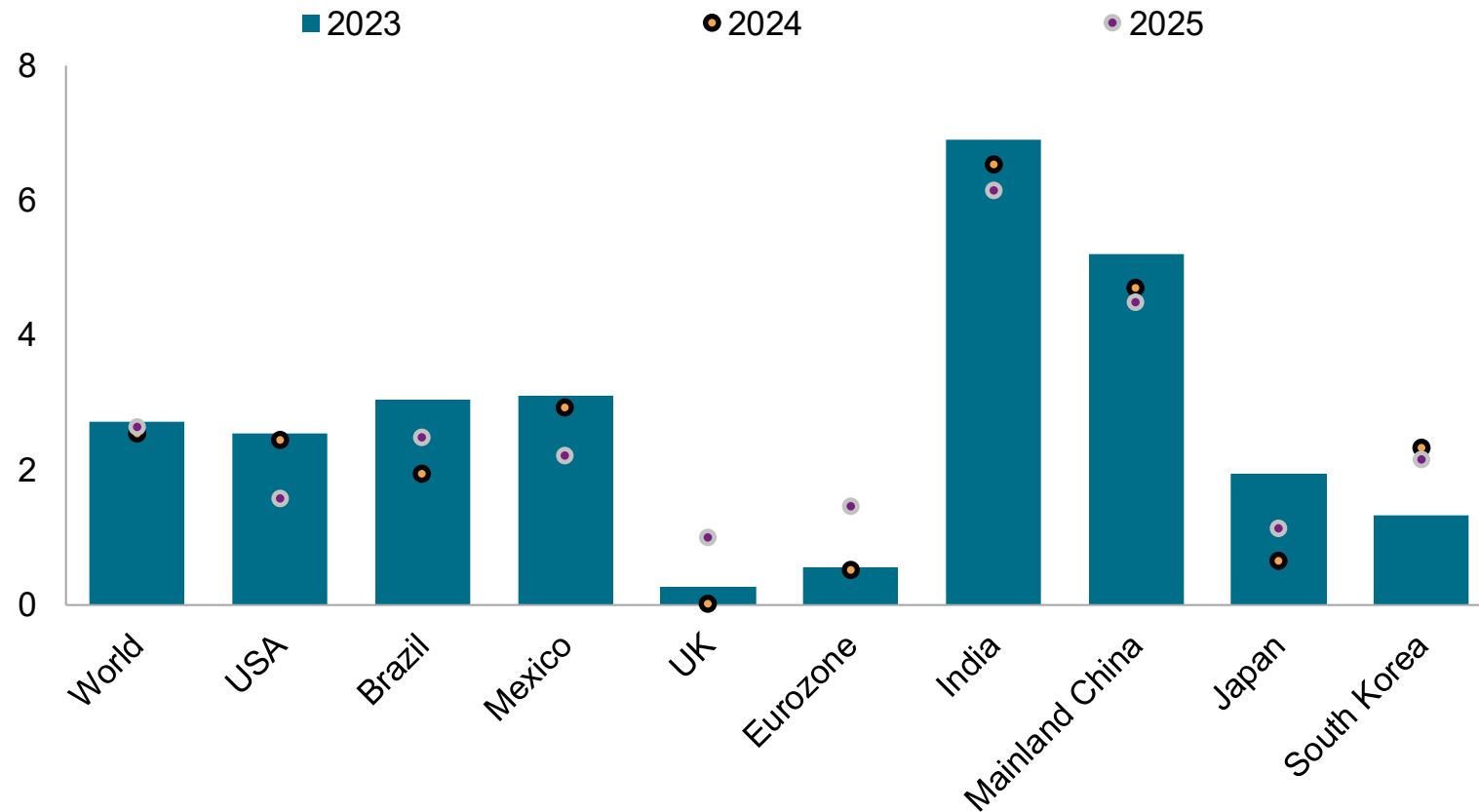
S&P Global Mobility provides decades of automotive experience built through the integration of industry leading intelligence providers



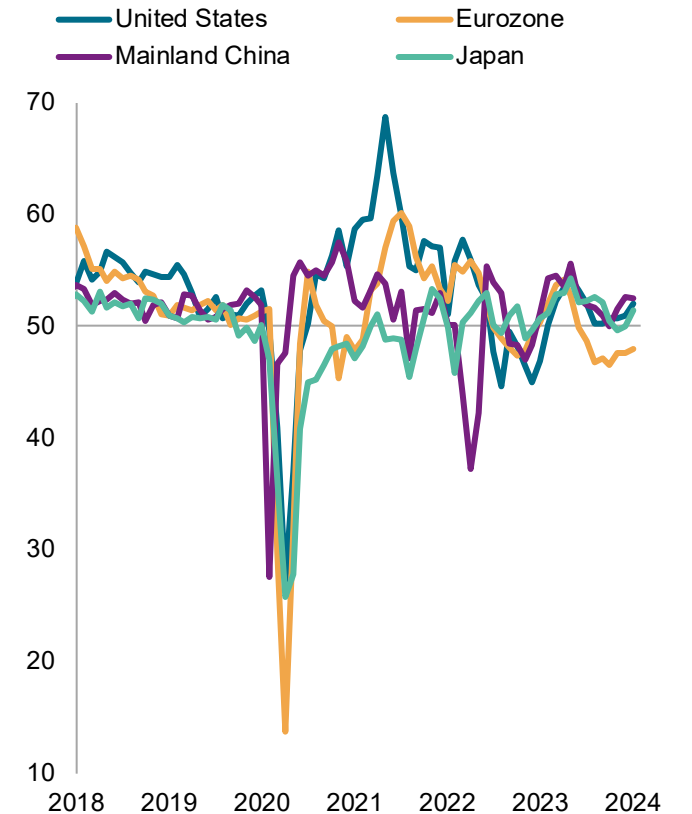
Pace of recovery slows for most

Success in combating inflation will impact economic performance

Regional differences in economic performance (real GDP growth rate, % YOY)



S&P Global Composite Output PMI™ (Index, over 50 signals expansion)

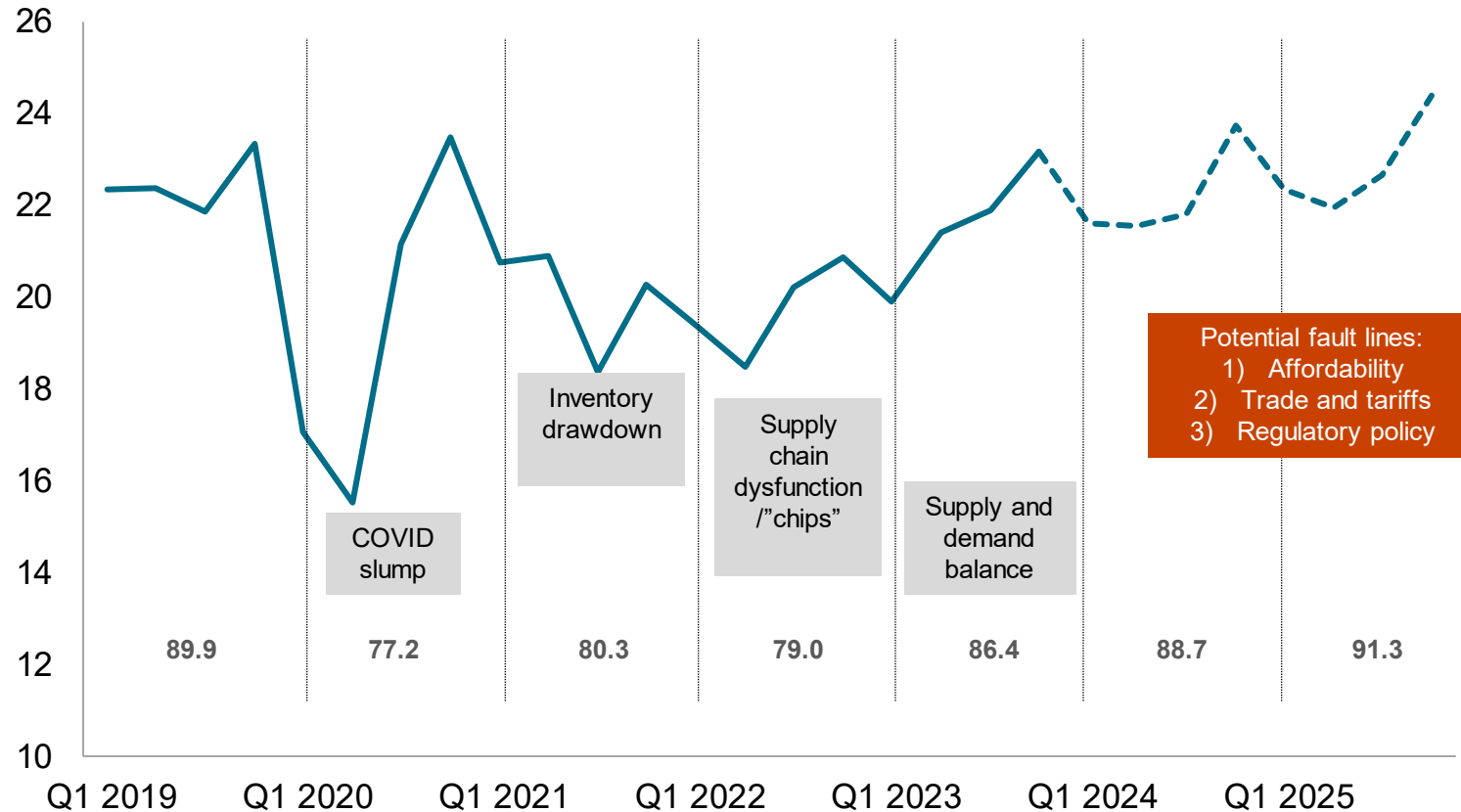


Data compiled Feb. 5, 2024.
PMI = Purchasing Managers' Index.
Sources: Caixin; au Jibun Bank; S&P Global Market Intelligence.

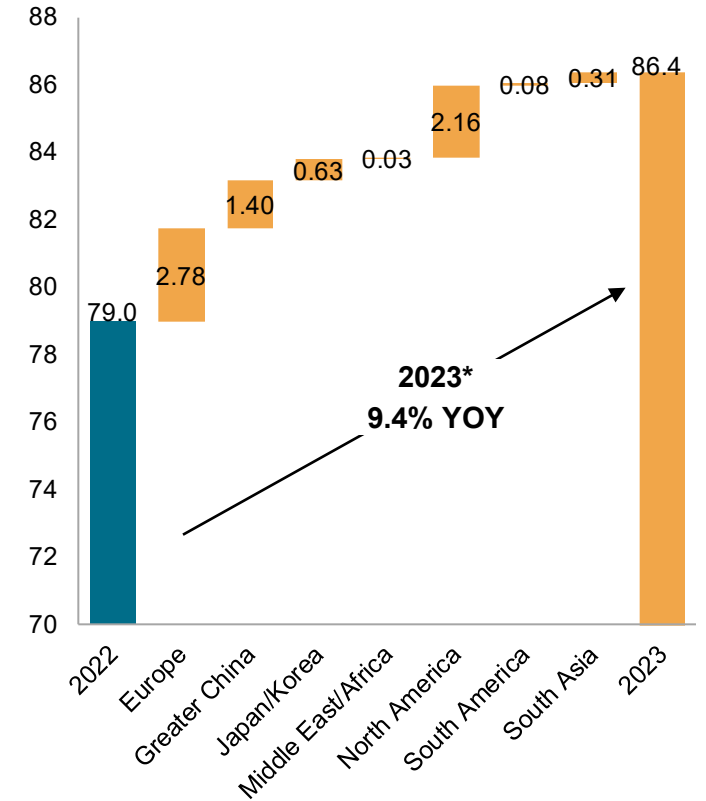
Light vehicle sales growth normalizes across all regions

Demand growth to slow as regional challenges threaten progress

Global light vehicle sales (millions per quarter)



Regional demand growth rates diverge (millions)

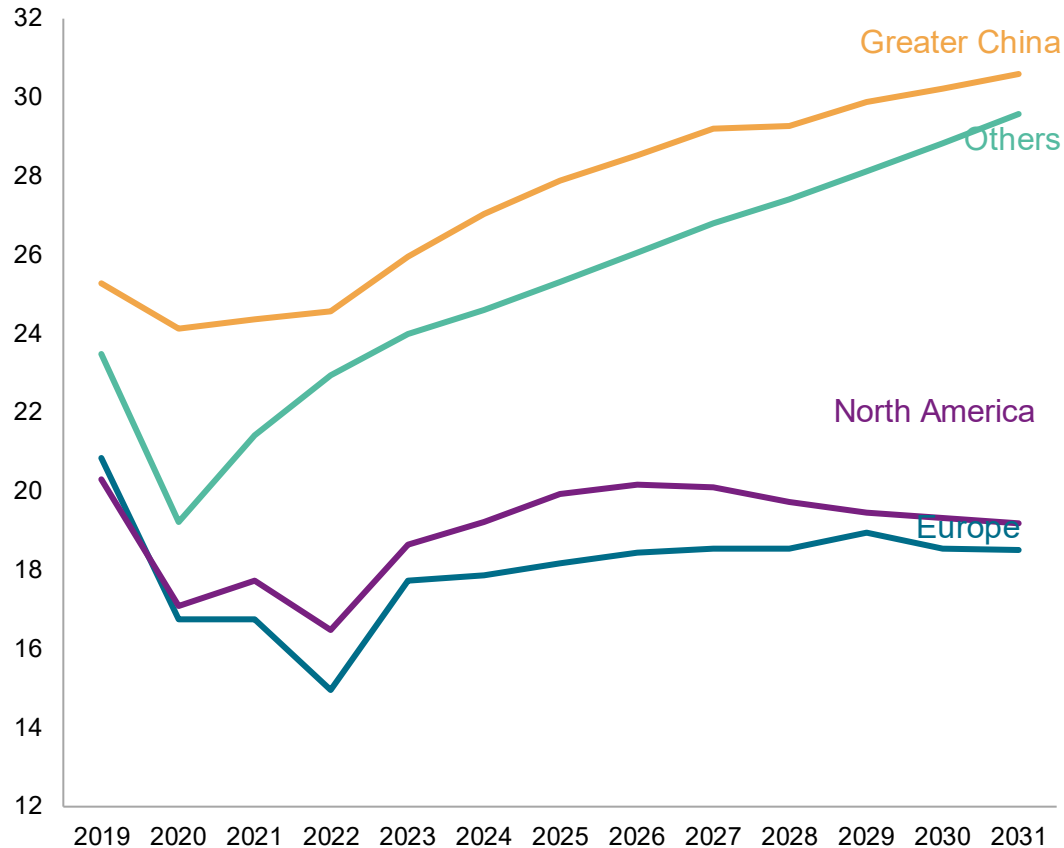


Data compiled Feb. 19, 2024.
 *Full year 2023 data not available for all markets.
 Source: S&P Global Mobility.

Europe and US momentum flatten

Inventory restocking and renewed incentives to support short-term outlook

Light-vehicle sales by region (millions)



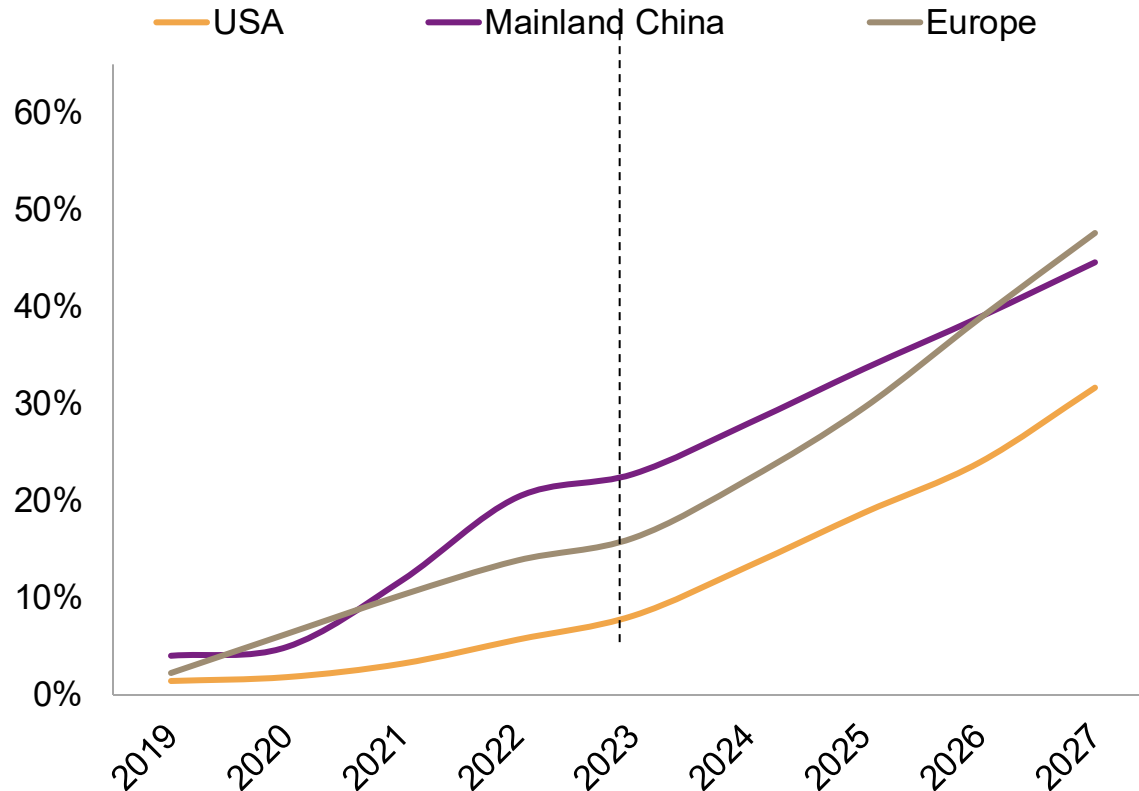
- Output recovery in key regions feeds inventory restocking. Pent-up demand continues to play a role (likely losing momentum).
- Delayed incoming Euro 7 emission rules mild positive — now 2027/28 (was 2025).
- Mainland China — incoming data indicates stronger market activity, especially for domestic brands. Falling new energy vehicle (NEV) prices & NEV stimulus extension to 2027.
- Discounting & dealmaking improves as supply further recovers — prices unlikely to settle back to pre-crisis levels.
- Wildcards — Red Sea crisis (parts/CBU/ships), Chinese exports (EU probe), EV uptake, EU/US Elections, US Inflation Reduction Act/Environmental Protection Agency & net-zero commitments

Data compiled Feb. 19, 2024.
Source: S&P Global Mobility.

Battery electric-vehicle acceptance rates vary across key markets

BEV transition faces multiple challenges – no one said it was going to be easy!

BEV share of passenger vehicle sales forecast



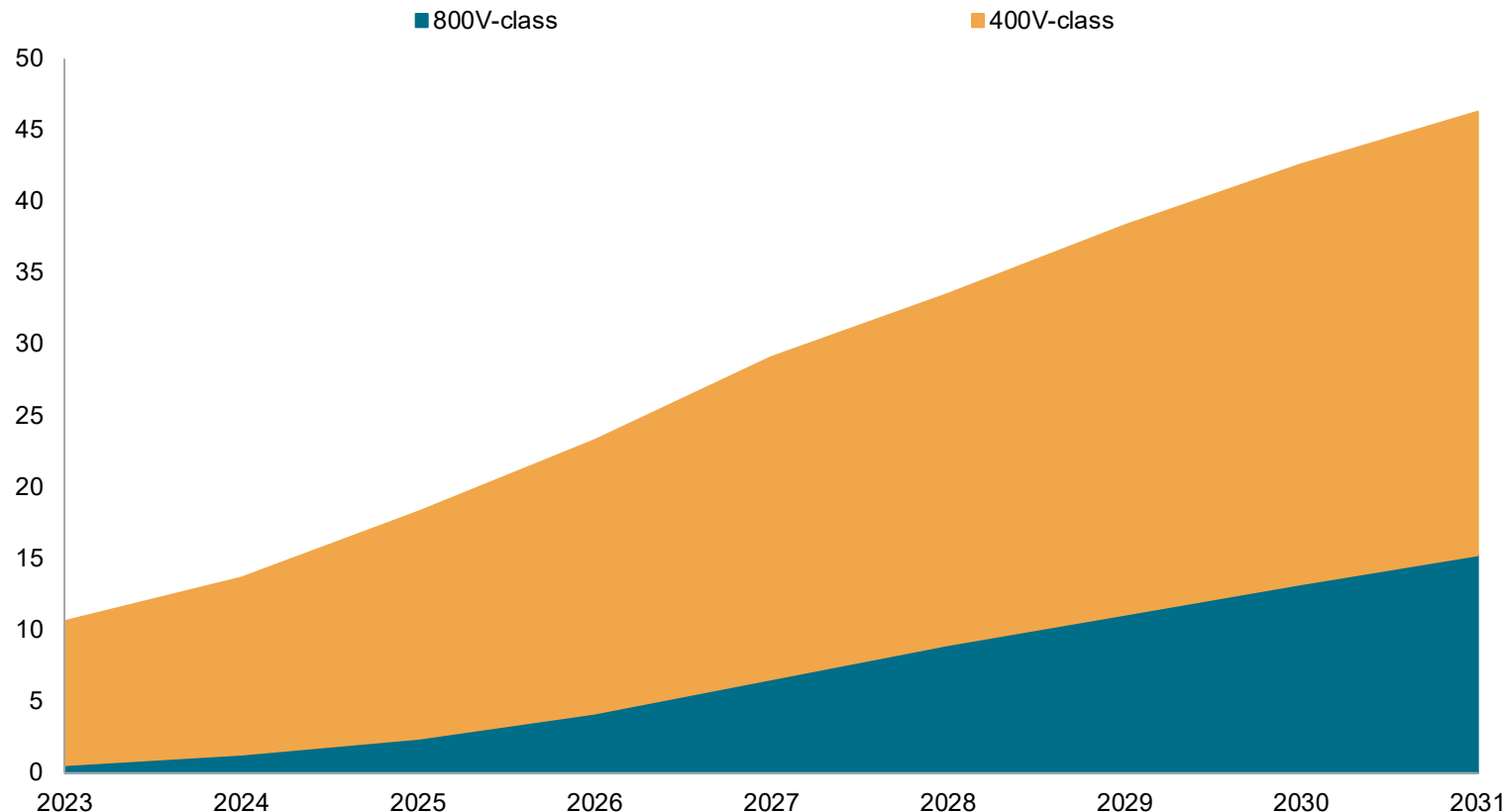
- **Mainland China:** Battery-electric vehicle (BEV) share rising in line with original equipment manufacturer new energy vehicle (NEV) push — fresh products, new NEV brands, EV price war, government support (national/local). NEV share already greater than one in three vehicles (2024: 44%) sold.
- **Europe:** Rising EV volume/share expected as BEV availability improves (busy model pipeline for 2024–25). Some concerns on EV incentive phase/phasing out (e.g., German BEV incentive cancellation). Political risk of net zero push-back as populists seek differentiation (EU Elections 2024). Euro 7 delay means technical boost to share of internal combustion engines (older tech runs longer, especially entry & vans).
- **USA:** Emerging concerns on BEV adoption curve. Detroit 3 looking to phase some EV investments citing fears on “natural demand.” Inflation Reduction Act subsidies driving OEM & supplier investment across EV landscape. 2024 US election could be gamechanger.

Data compiled Feb. 15, 2024.
Source: S&P Global Mobility.

High-voltage outlook for global battery-electric vehicles

Expected growth beyond 2025 driven by new architecture rolover

Total battery-electric vehicle growth volumes driven by new architecture rolover (Global production (millions))



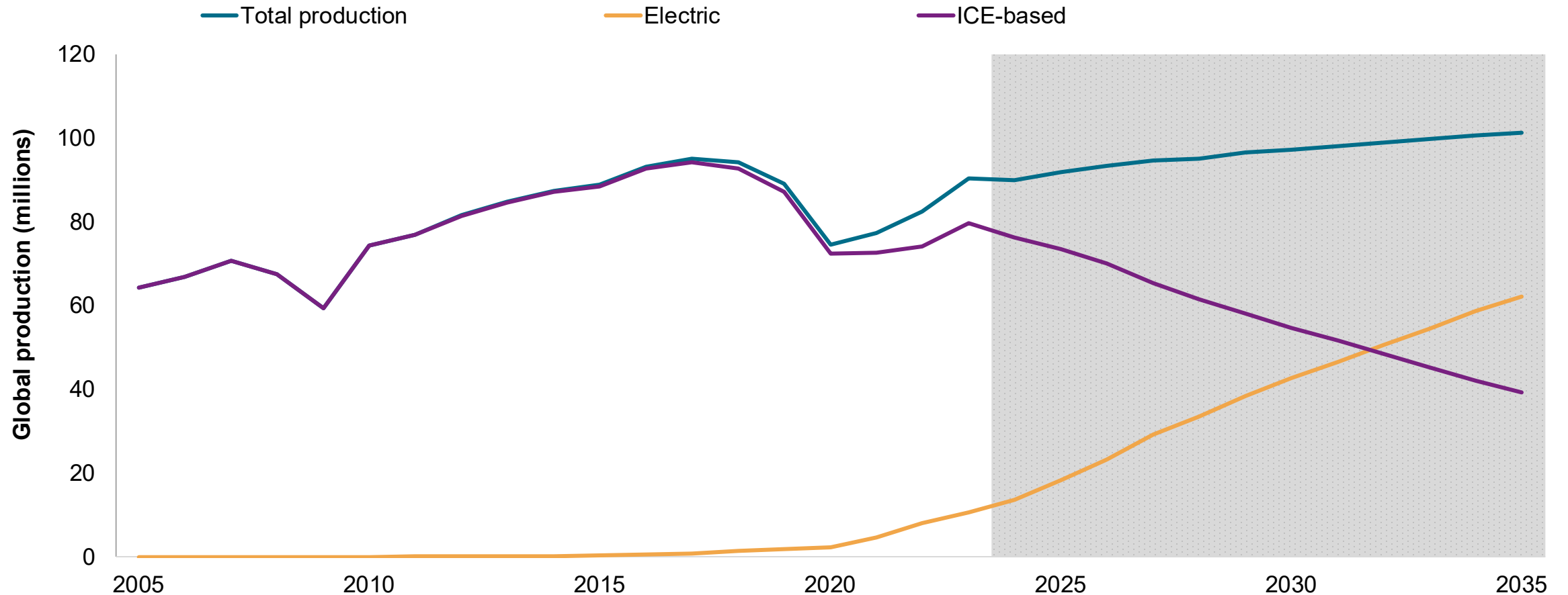
- High-voltage architectures are expected to remain niche for the first half of the decade while growing quite strongly beyond 2025 to support all the future new high-end products and architectures with 11 million units by 2030
- A few manufacturers are already offering 800V architectures, including Volkswagen, Hyundai and GM
- Hyundai expected to largely contribute globally to the first 800V rolover with E-GMP platform
- Many large original equipment manufacturers (rather on the premium market) to start expending the trend with new 800V platform launch

Data compiled March 2024.

Source: S&P Global Mobility, Global Light Vehicle Production based Powertrain Forecast, February 2024.

A foreseeable technology tipping point

After slow ramp-up curve, battery-electric vehicles are projected to become the global mainstream technology beyond 2032



Data compiled March 2024.

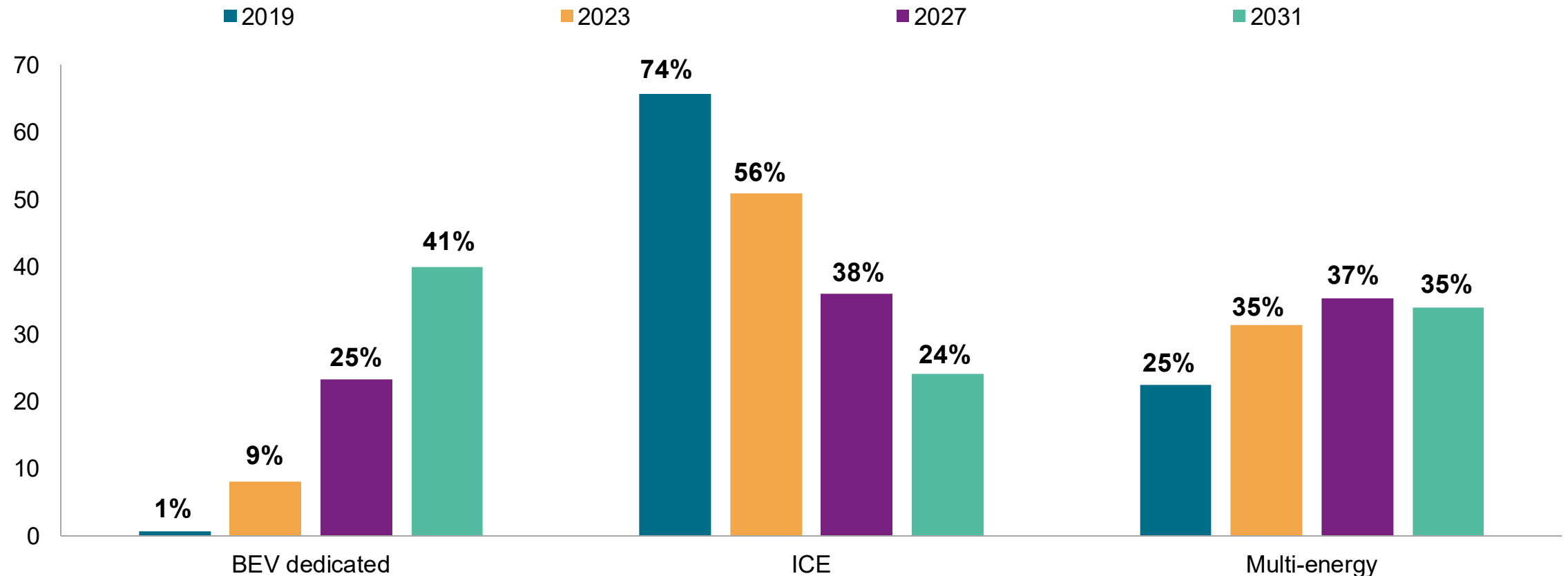
ICE-based = internal combustion engine (ICE), ICE with start/stop technology, mild hybrid electric vehicle, full hybrid EV, plug-in hybrid EV, range-extended EV, series.

Source: S&P Global Mobility, Global Light Vehicle Production based Powertrain Forecast, February 2024.

BEV reality check; midterm pressure on adoption rates

Business model adaptation supported by flexible platform deployment

Global production by platform type: Evolution from 2019 to 2031 (millions)



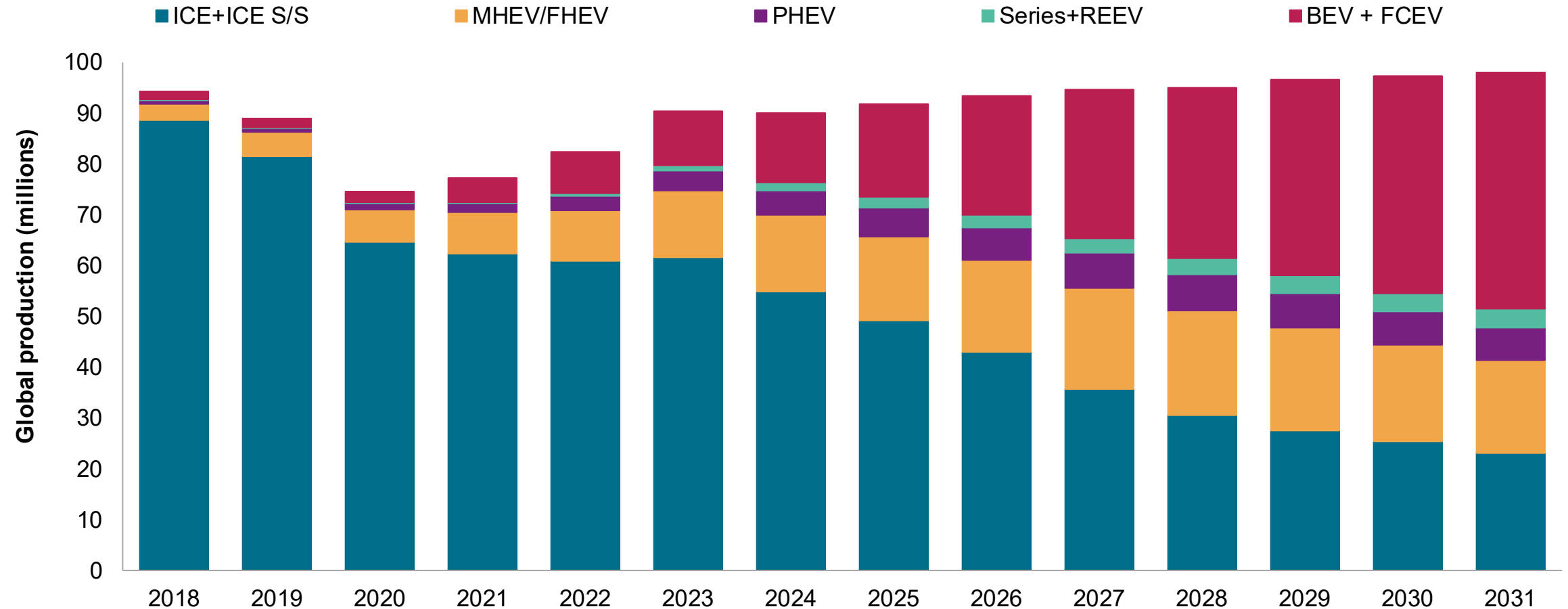
Data compiled Feb. 21, 2024.

BEV = battery-electric vehicle; ICE = internal combustion engine.

Source: S&P Global Mobility; Light-Vehicle Production Forecast, February 2024.

Global powertrain outlook: ICE remains the integral solution into the 2030s

Hybrid volume surpassed by battery-electric vehicles as early as 2025



Data compiled March 2024.

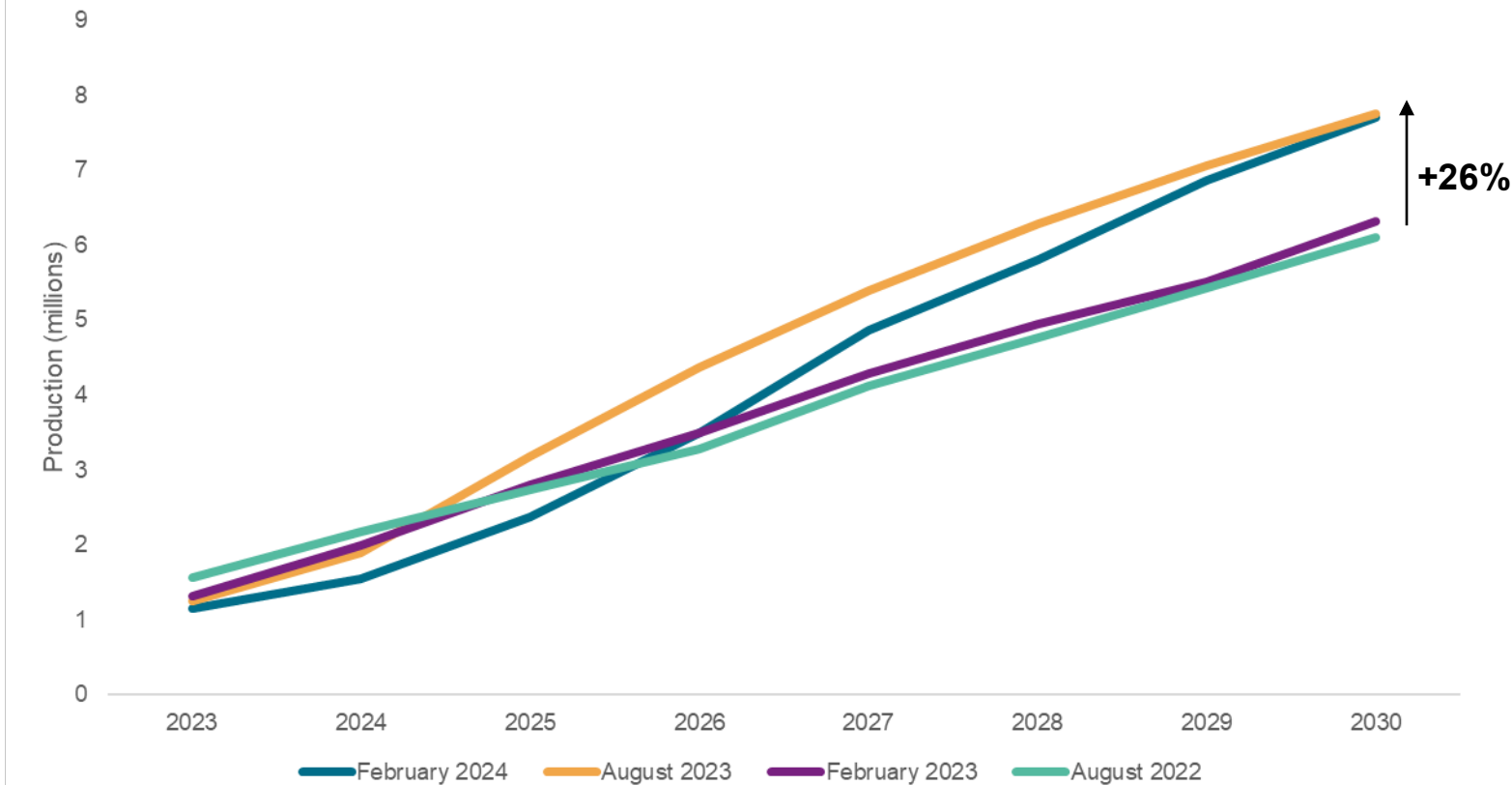
ICE = internal combustion engine; ICE S+S = internal combustion engine with start/stop technology; MHEV = mild hybrid electric vehicle; FHEV = full hybrid EV; PHEV = plug-in hybrid EV; REEV = range-extended EV; BEV = battery-electric vehicle; FCEV = fuel-cell EV.

Source: S&P Global Mobility, Global Light Vehicle Production based Powertrain Forecast, February 2024.

North American battery-electric vehicle forecast evolution over the last 18 months

North American battery-electric vehicle volume reduction in short-term, but strong push toward 2030 driven by Inflation Reduction Act, etc

North America BEV production



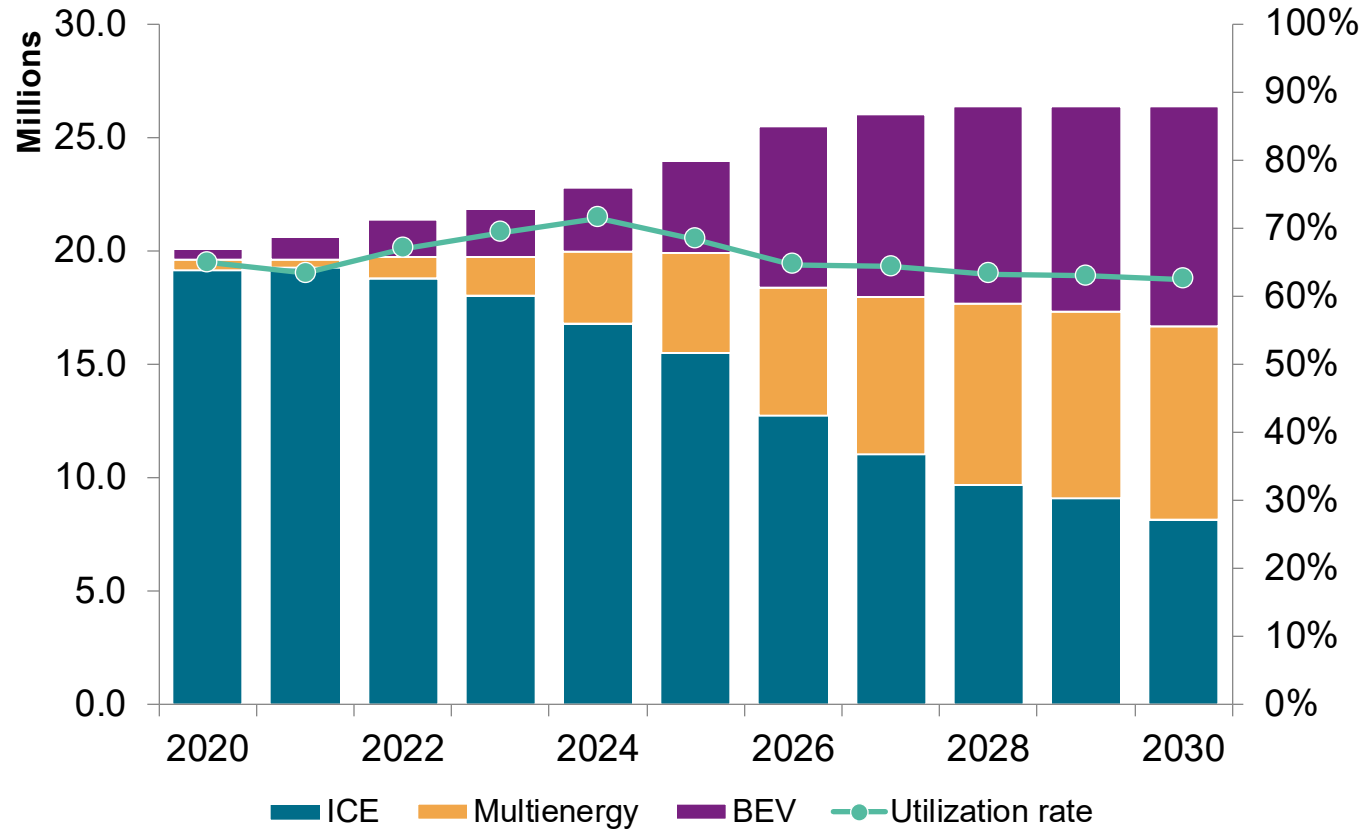
- Strong battery-electric vehicle volume growth in 2023 (increase of 38% by 2030).
- Volumes reduced in the short term owing to a mix of demand and supply concerns, as well as timing delays for Tesla's new Monterrey, Mexico, assembly plant
- Inflation Reduction Act: massive push toward green economy and electric car development.
- Environmental Protection Agency's Tier 4 proposal (April 2023): clear signal in favor of regional EV development for model year 2027 and beyond.
- Some volume original equipment manufacturers, such as Volkswagen and Mercedes-Benz, localizing their operations.

Data compiled January 2024.

Source: S&P Global Mobility, Global Light Vehicle Production based Powertrain Forecast, December 2023.

EPA Proposal impacted on NA BEV capacity

Capacity by propulsion type



OEM Stated BEV Sales Goals

	2030	2030 ^	Date
General Motors	50		
Toyota	40	40	2023 05
Ford	50		
Stellantis	55	50	2023 07
Honda	40		
Hyundai	50	55	2023 06
Nissan	40		
Kia	45		
Subaru	40	50	2024 01
Volkswagen, Audi	55	55	
Tesla	100		
Mercedes-Benz	80	70	2023 05
BMW	50		
Mazda	25	25-40	2023 12
Volvo	100		
Mitsubishi	50*		
Porsche	80		
Land Rover	60		
Jaguar	100		
Lucid	100		
Lexus	80		

*PHEV ^ Revised

Data compiled Jan. 9, 2024.
Source: S&P Global Mobility.

Snapshot of the industry

Vehicle demand remains insulated (somewhat)

	2022	2023	2024	
GDP	1.9	2.5	2.5	=
Inflation	8.0	4.1	3.2	+
Fed Funds Rate	1.7	5.0	5.1	=
Payroll	4.3	2.3	1.6	+
LV Sales (million)	13.88	15.60	15.99	+
BEV Share	5.7	7.8	11.1	+
Tesla Share	3.6	4.2	4.4	+

Data compiled Nov 15, 2023.
Source: S&P Global Market Intelligence.



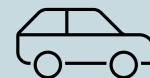
GDP

- Inflation remains higher for longer, with the “Fed” remaining hawkish... consumer is sour...



Employment

- “Help wanted,” employment continues to feed growth



Light Vehicle Sales

- Light vehicle sales defy economic gravity as more product continues to become available, however affordability is front and center



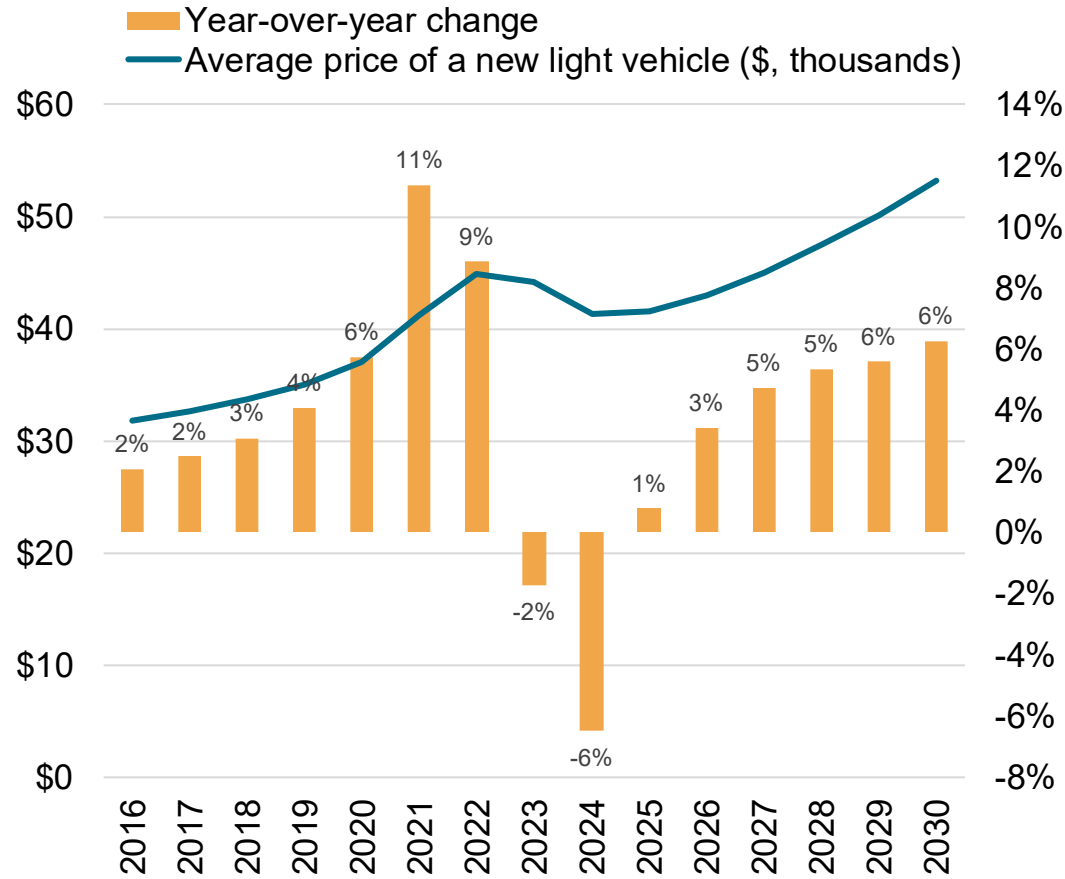
Electrification

- BEVs are it and Tesla is the name in the game

US light-vehicle sales development in longer term (2028 onward)

Light-vehicle prices have begun to ease, but long-term challenges remain

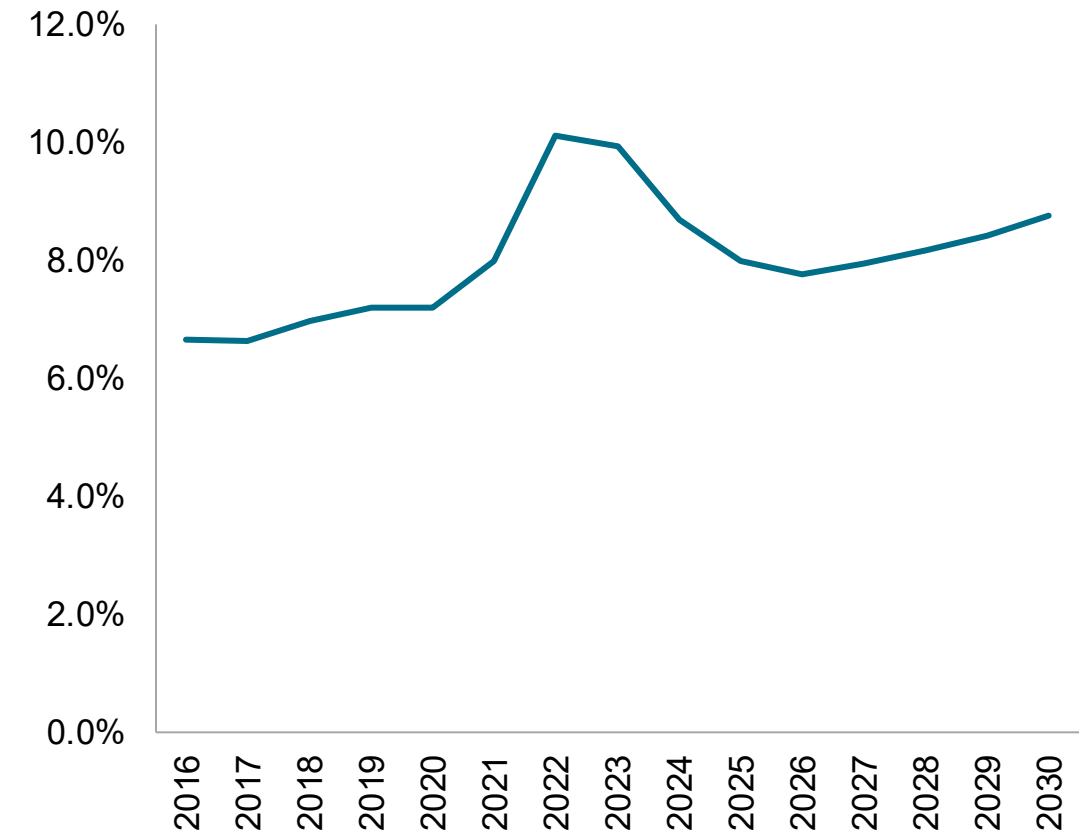
Light-vehicle prices to rise as electrification accelerates



Data compiled September, 2023.
Source: S&P Global Mobility.

Automotive affordability

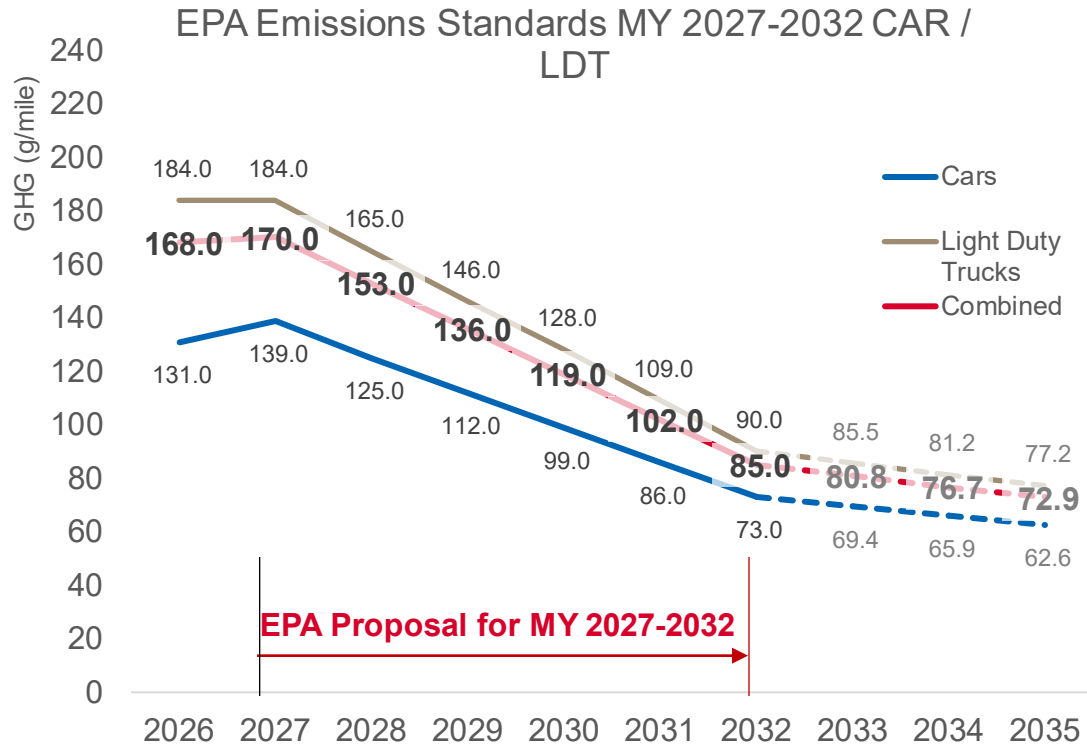
% of income spent on light-vehicle purchase



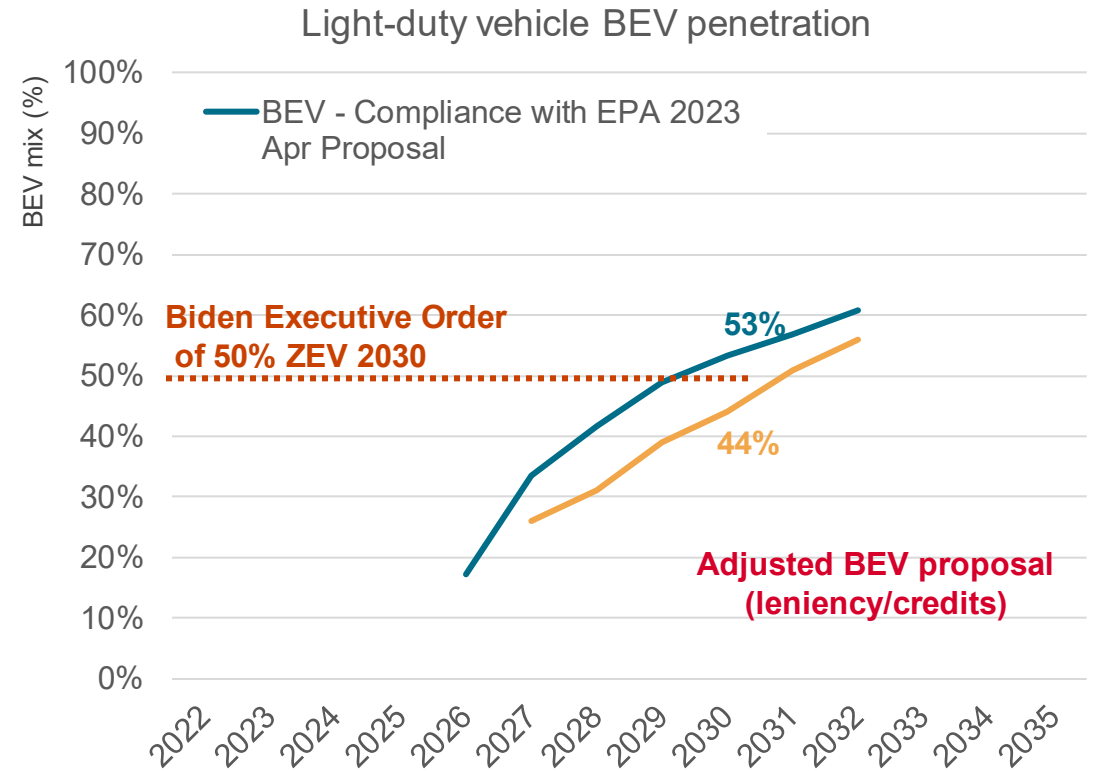
EPA GHG MY 2027 mandate and BEV conversion

EPA Emissions Standards Model Years 2027 to 2032

EPA Pathway “A” (Central Analysis)



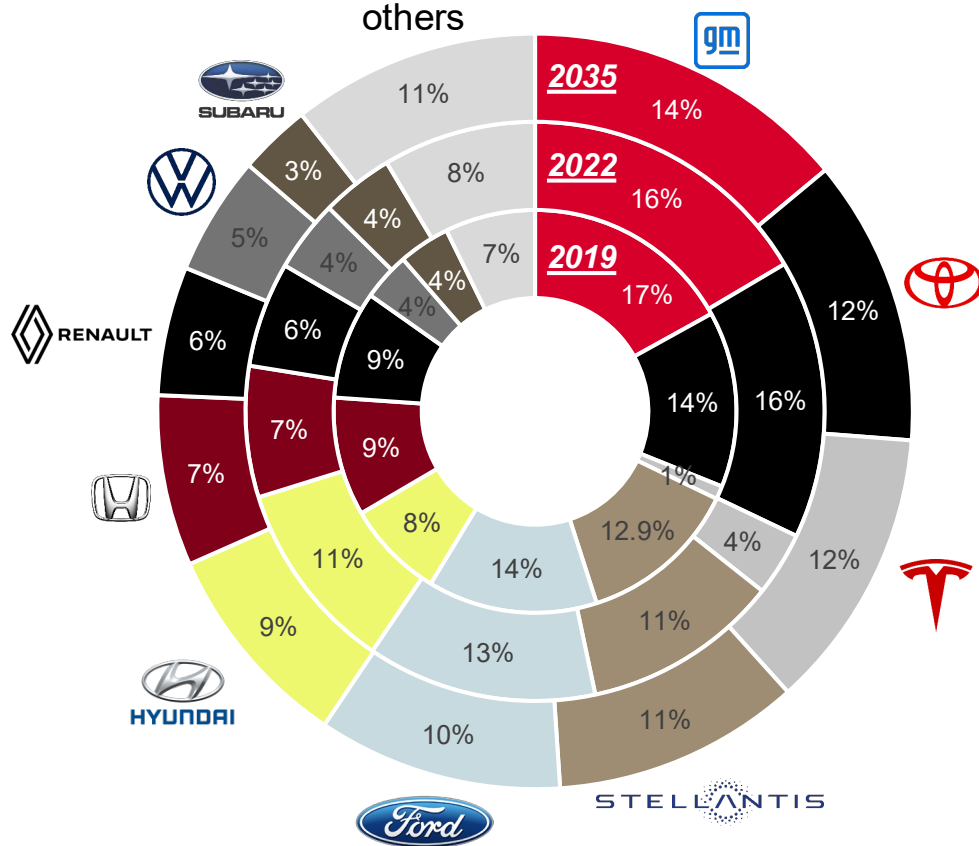
EPA Pathway “A” (Central Analysis)



United States | Forecast | Sales Parent Market Share

Tesla moving up the ranks to rival Toyota by 2035

USA market sales by Sales Parent



- As a well-established brand, we forecast Tesla to further increase in volume and market share and to almost match Toyota by 2035
- All other OEMs will yield market share, Toyota exceptionally after putting more emphasis on BEVs and losing some of their hybrid-heritage competitive advantage
- New brands like Rivian, Vinfast, NIO, Lucid, and Fisker will fight for their relevance in the market; summed up under „others“ in this view



- With a faster regulatory but also customer-induced transition towards BEVs, disruptive new players profit from a leveled playing field

Source: 2023 S&P Global Mobility Light Vehicle sales-based Powertrain Forecast
Market Definition: Passenger & light commercial vehicles (<6t), excluding vans

Harmonization of aspiration vs reality

Forbes

In 2023, The United States Started Building Big Again, Thanks To Biden's Inflation Reduction Act

Energy Innovation: Policy and Technology
Contributor @
We are a nonpartisan climate and clean energy policy think tank.

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Dec 26, 2023, 08:15am EST

Hyundai raises workers' pay 14% next year, 25% by 2028, following Toyota and Honda

The move that follows pay hikes at nonunion manufacturers Toyota and Honda as well as the six-week UAW strike against the Detroit 3.

November 13, 2023 12:37 PM

CARLY SCHAFFNER

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REUTERS World Business Markets Sustainability Legal Breaking

Climate & Energy | Technology | Climate Change | Climate Solutions | ADAS, AV & Safety

US issues \$135 million in advance EV tax rebates since Jan 1, Treasury says

By David Shepardson

February 14, 2024 8:10 AM EST · Updated a month ago



“I think an America first administration should scour every single IRA program and question ‘how can we save the American taxpayer dollars?’ in each and every one of them and ‘how can we prevent the flow of money to the [Chinese Communist Party]?’”

Donald J. Trump

BEV Scenarios 2030

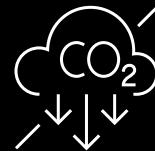
EV market growth depends on many factors. S&P Global Mobility baseline forecasts are based on current laws and regulations, which may be subject to significant change.

An EV scenarios workshop investigates potential changes to EV market variables, and what they may mean under unique scenario conditions.



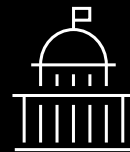
NHTSA Fuel Economy Standards*

- A scenario in which proposed NHTSA MPG standards are adopted



EPA GHG Standards

- A scenario in which proposed EPA GHG limits are adopted



2024 Republican Presidential Victory

- The GOP scenario envisions a Republican candidate is elected president in 2024 and changes legislation



Natural EV Demand

- A scenario which critically analyzes the evolution of BEV price and range relative to ICE and what consumer adoption may look like without regulatory pressures/incentives on OEMs

Contact us

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