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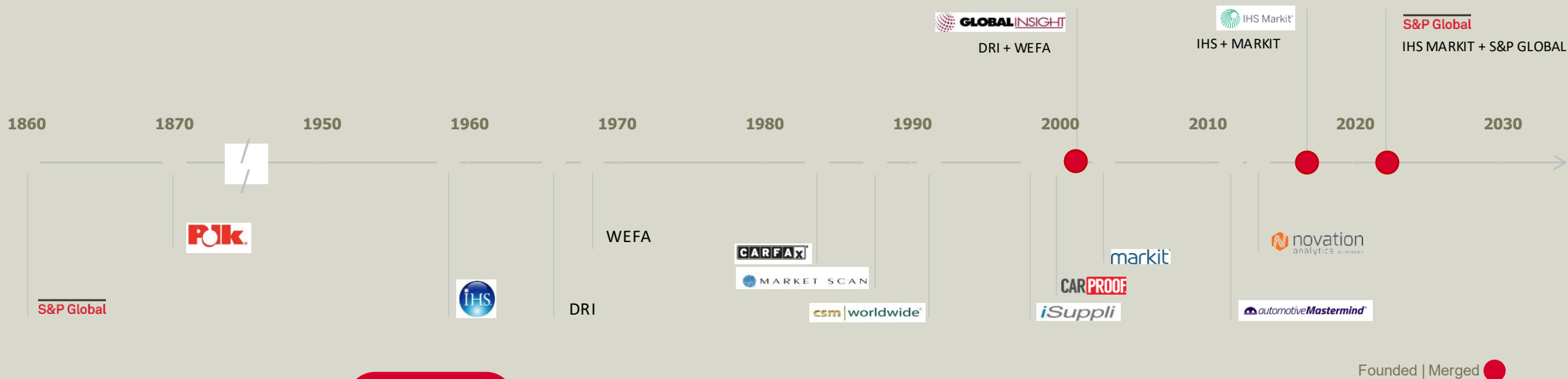
| 3-5 JUNE 2025
MESSE BERLIN

● A Hyve Event

Navigating the Chinese Motor Market: Global Expansion, Production Dynamics, and Strategic Shifts

Jie Yang, Senior Research Analyst, S&P Global Mobility

S&P Global Mobility: Over 100 years of experience coupled with new insights



RL Polk
Founded in 1870 and acquired by IHS in 2013.
Vehicle registration and vehicles-in-operation data. US audience targeting.

CARFAX
Founded in 1984 and acquired by Polk in 1999.
Vehicle history reports in the United States.

Market Scan
Founded in 1988 and acquired by S&P Global Mobility in 2023.
Automotive pricing and incentive intelligence.

CSM Worldwide
Founded in 1991 and acquired by IHS in 2010.
Deep insights on vehicle production and components.

iSuppli
Founded in 1999 and acquired by IHS in 2010.
Technology insights: autonomous driving electrification, and connectivity.

Global Insight
Founded in 2001 through the merger of DRI and WEFA and acquired by IHS in 2008.
Macroeconomic and industry analysis and forecasting.

CarProof
Founded in 2000 and acquired by IHS in 2015.
Vehicle history reports in Canada. Now known as CARFAX Canada

automotiveMastermind
Founded in 2012 and acquired by IHS Markit in 2017.
Predicts future buyers from their loyal, service-not-sold, and conquest portfolio.

Novation Analytics
Founded in 2014 and acquired by IHS Markit in 2019.
Vehicle energy efficiency and greenhouse gas emissions analysis.

Newest acquisition

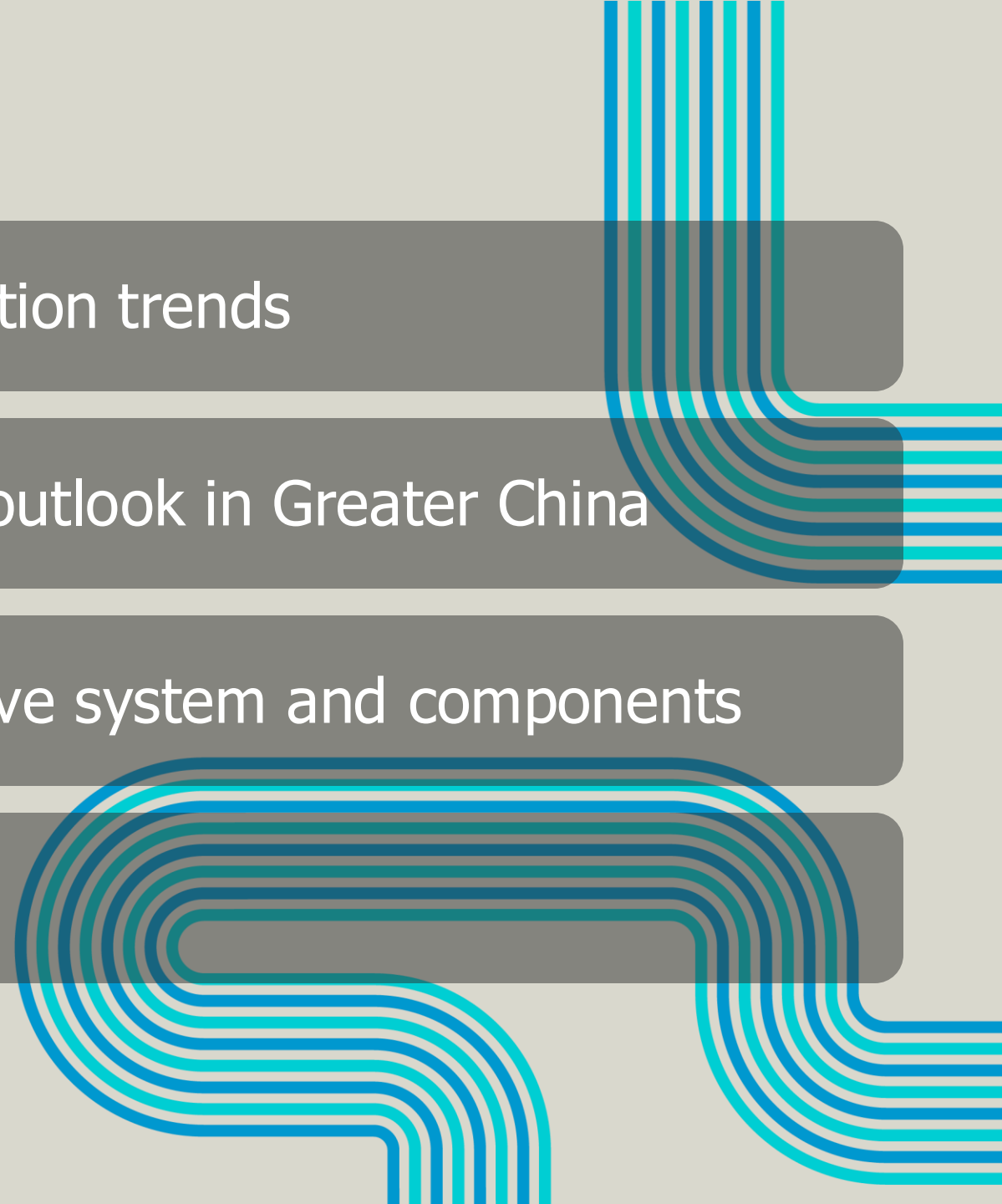
Agenda

Greater China light vehicle electrification trends

Electric drive and motor technology outlook in Greater China

Supply chain dynamics of electric drive system and components

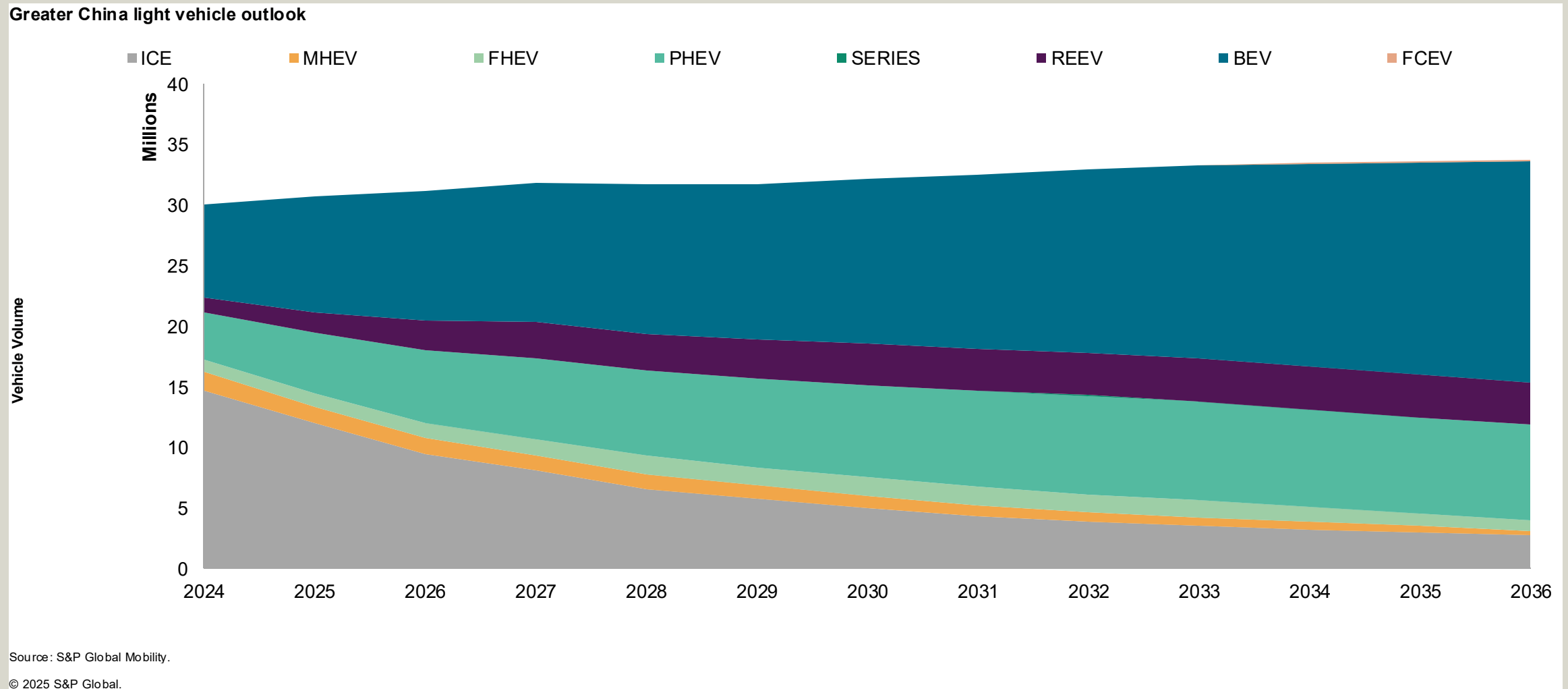
Summary



Greater China light vehicle electrification trends

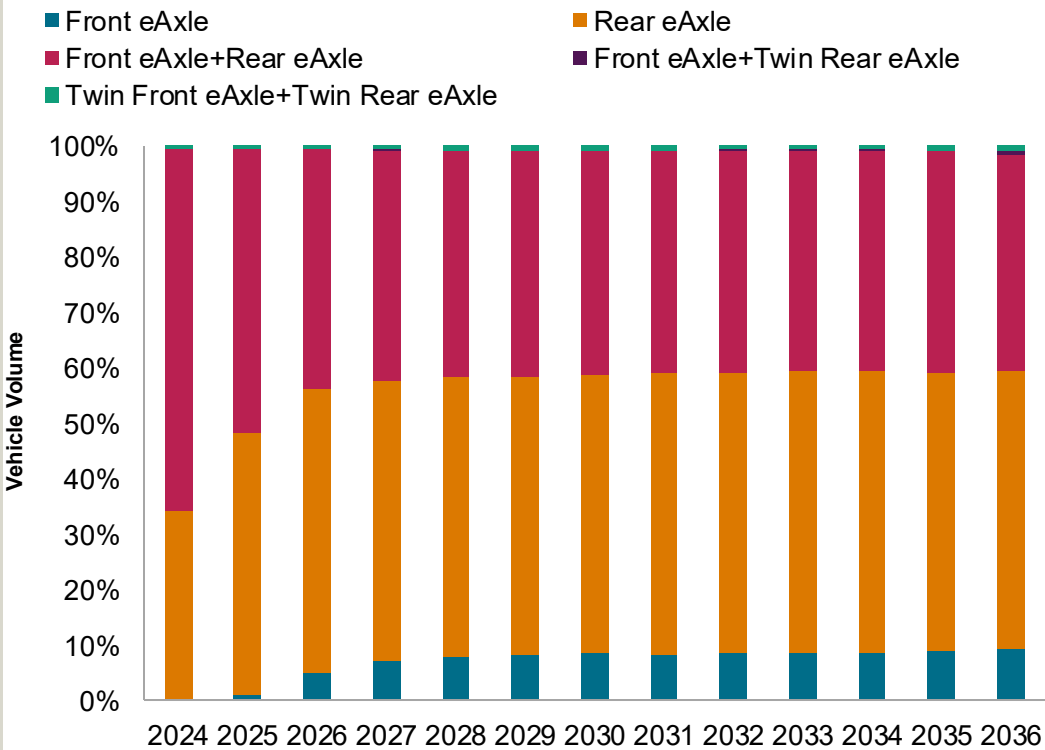


Greater China leads the world in electrification progress and range extender market is expected to keep growing



Range extenders become increasingly popular in Greater China

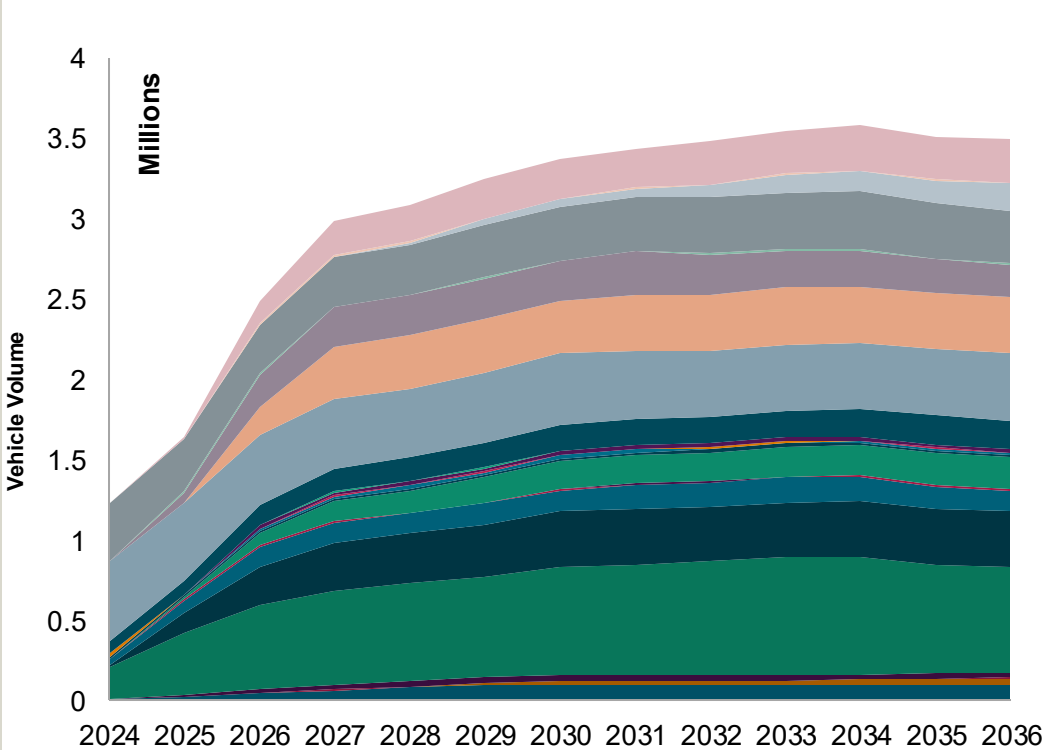
Greater China range extender volume split by motor architecture



Source: S&P Global Mobility.

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Greater China range extender volume split by vehicle design parent



Source: S&P Global Mobility.

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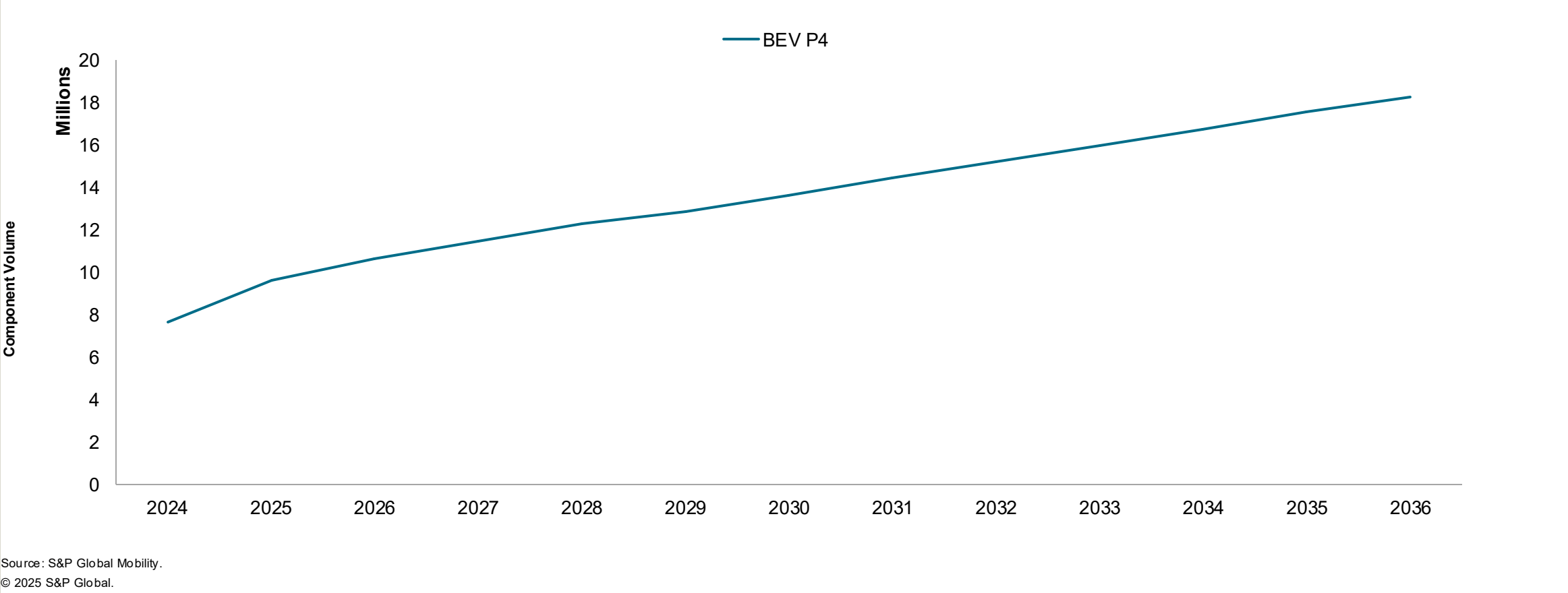
Electric drive and motor technology outlook in Greater China



Greater China electric motor production volume

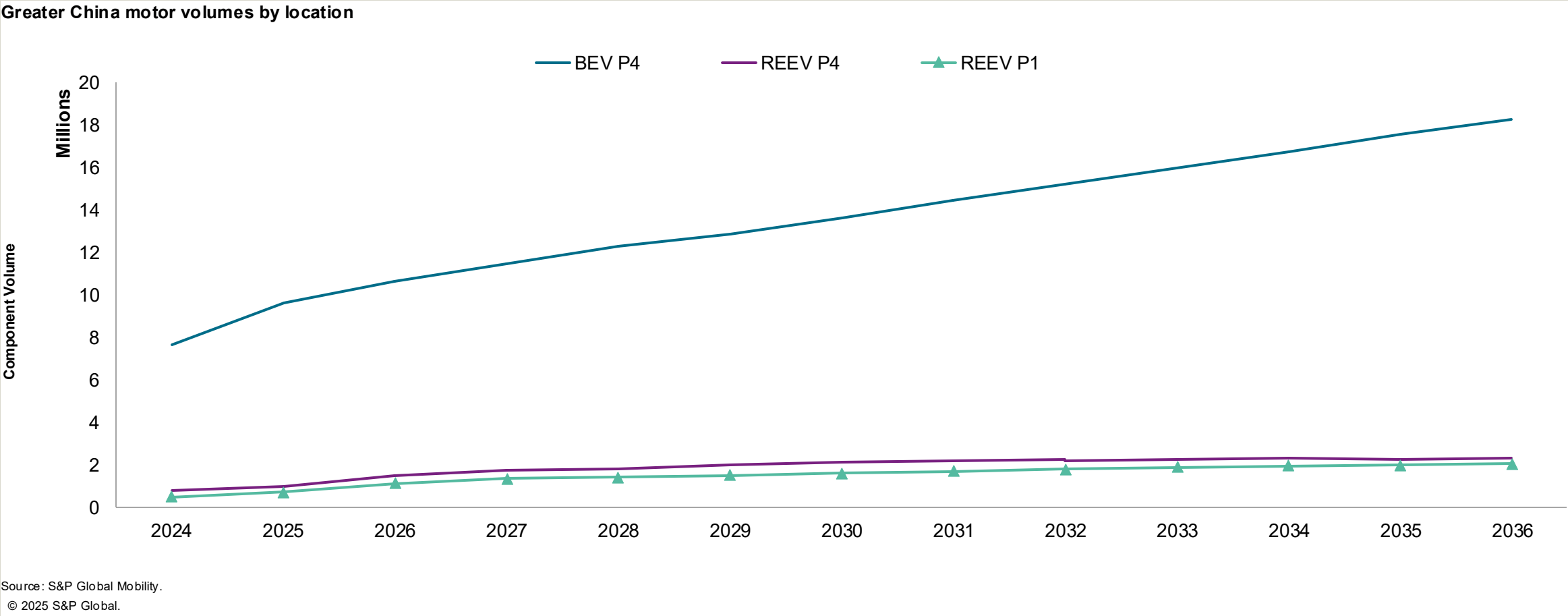
Demand for e-Axle or P4 motor in BEVs is expected to grow faster than other motor type

Greater China motor volumes by location



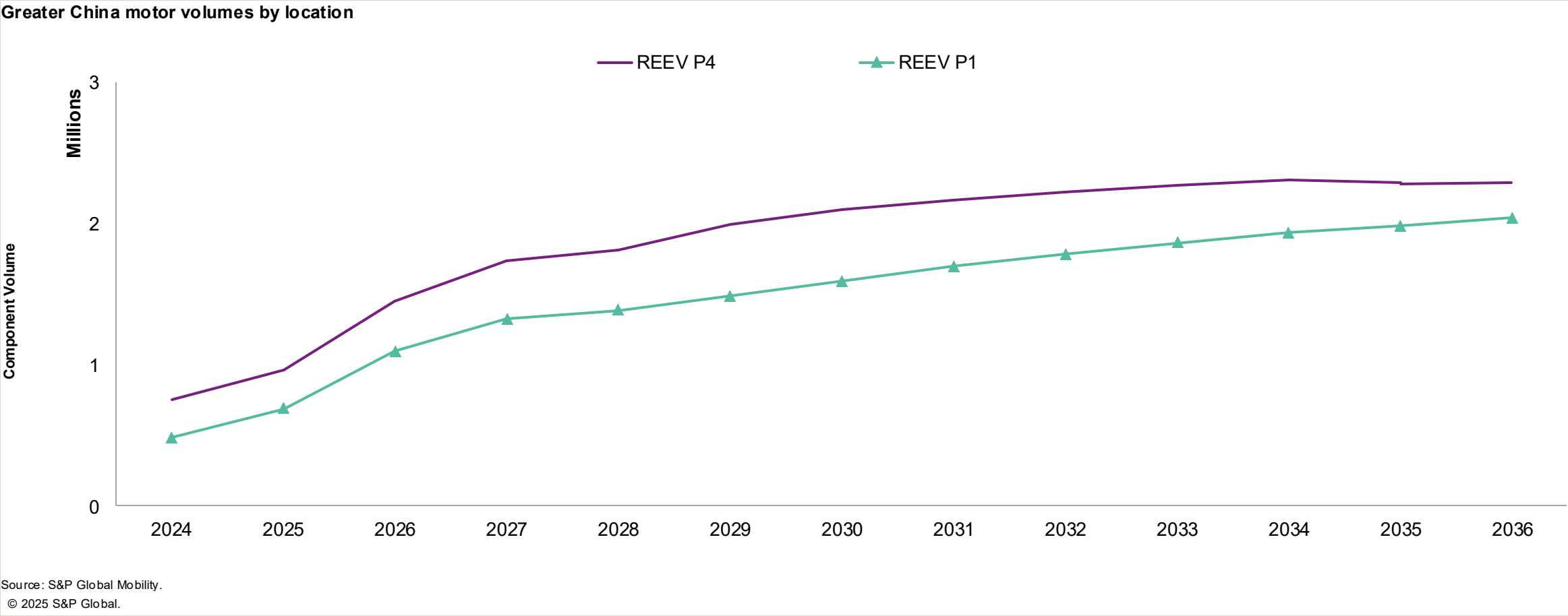
Greater China electric motor production volume

Electric motors on range extender will experience a rapid growth in the next two years



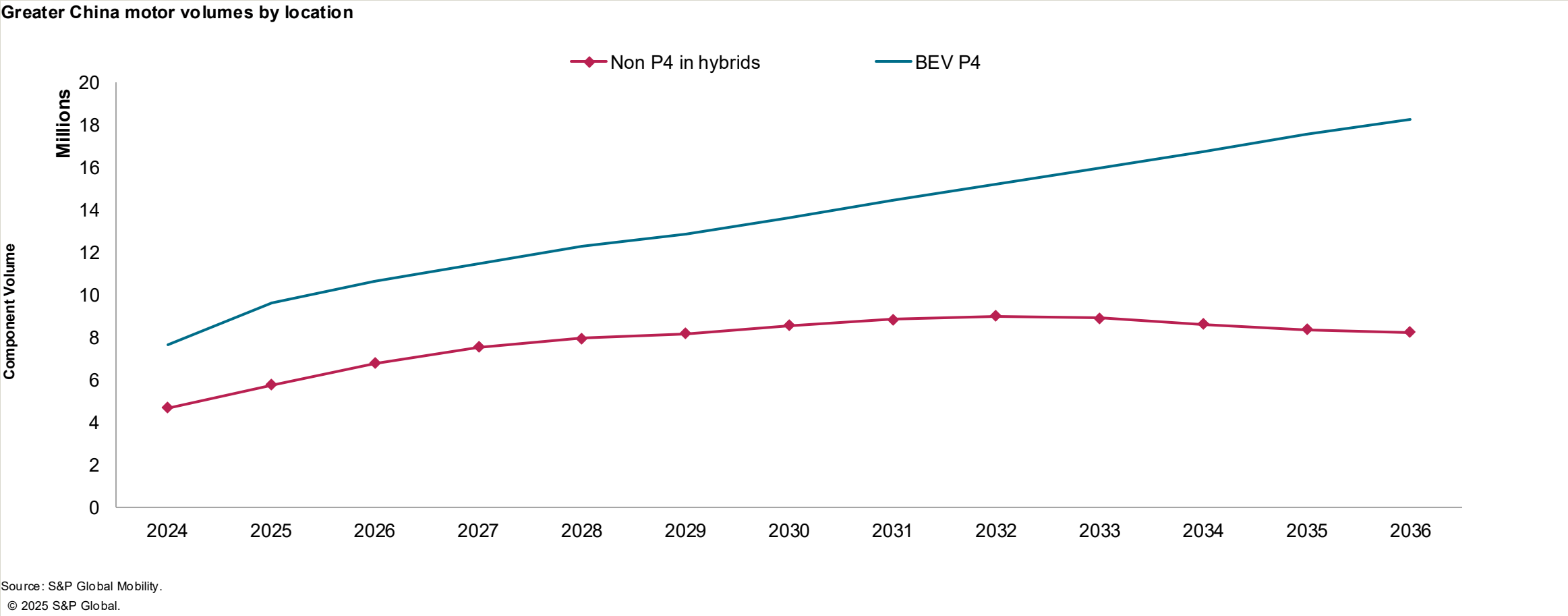
Greater China electric motor production volume

Electric motors on range extender will experience a rapid growth in the next two years



Greater China electric motor production volume

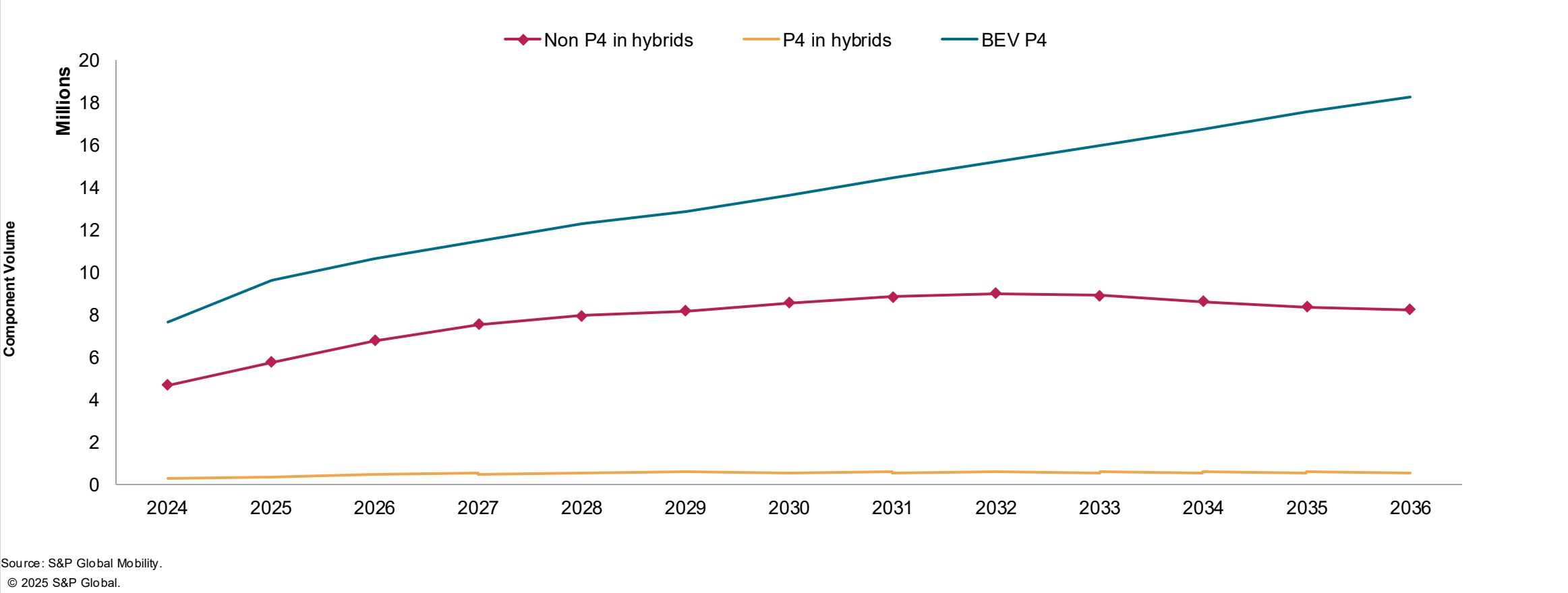
Demand for motors in hybrids will grow and reach a peak volume around early 2030s



Greater China electric motor production volume

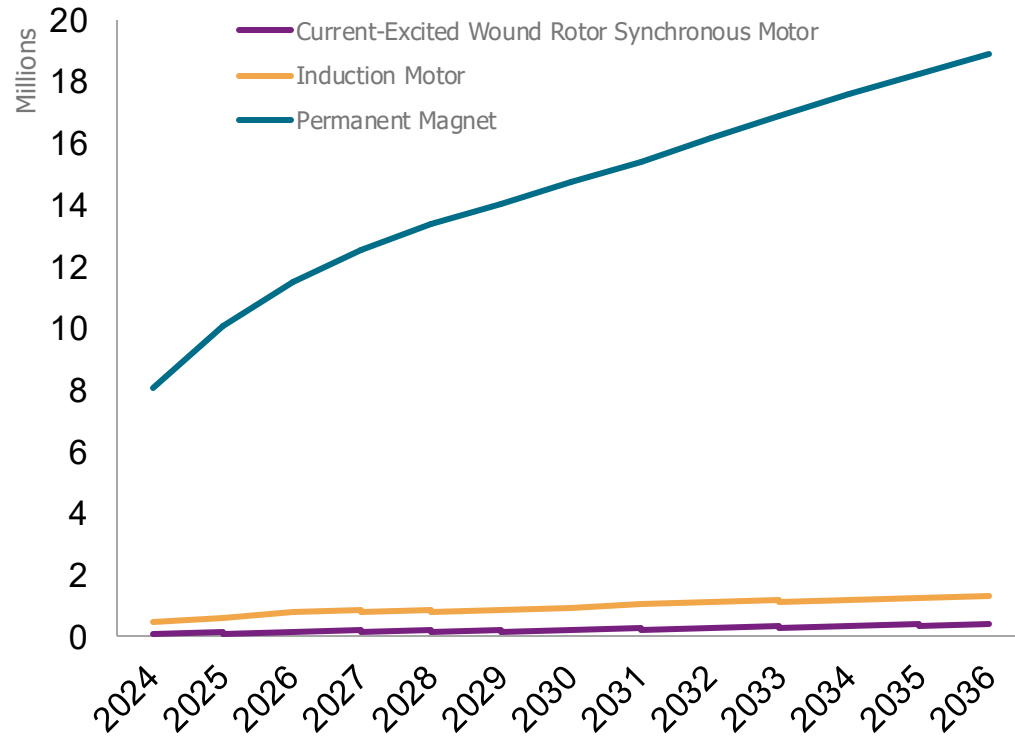
Demand for motors in hybrids will grow and reach a peak volume around early 2030s

Greater China motor volumes by location



Permanent magnet motor continues to dominate Greater China market

eAxle motor type trend in Greater China (millions)



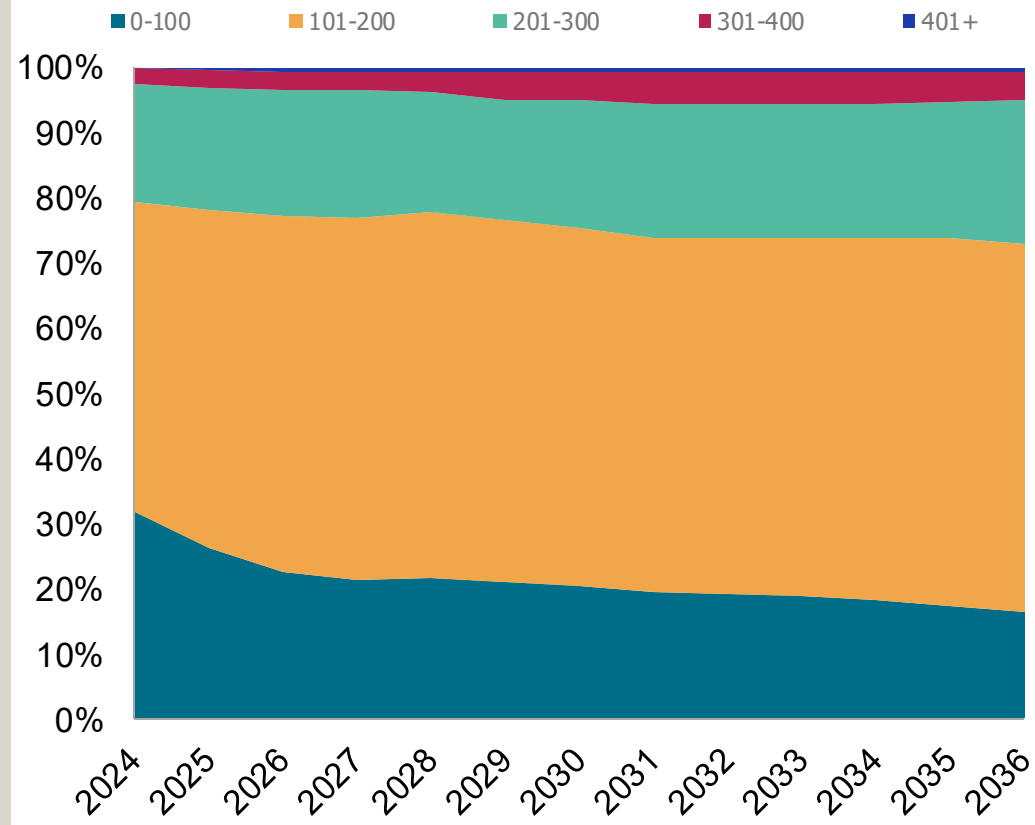
Source: S&P Global Mobility.

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- **Permanent magnet motor** will dominate the eAxle market in Greater China with nearly **90% of share in 2024** and a **similar share in 2030**.
- **Induction motor will be primarily used in secondary eAxle** and most of the vehicle models that choose permanent magnet solutions for secondary drive will be equipped with disconnection function.
- Although not a primary choice for motors in Greater China, **current-excited motor has drawn some attentions**.
 - **BYD is developing current-excited motor** and has acquired a patent in this domain.
 - **Infimotion Technology** has developed a **hybrid permanent magnet and current excited motor design**.

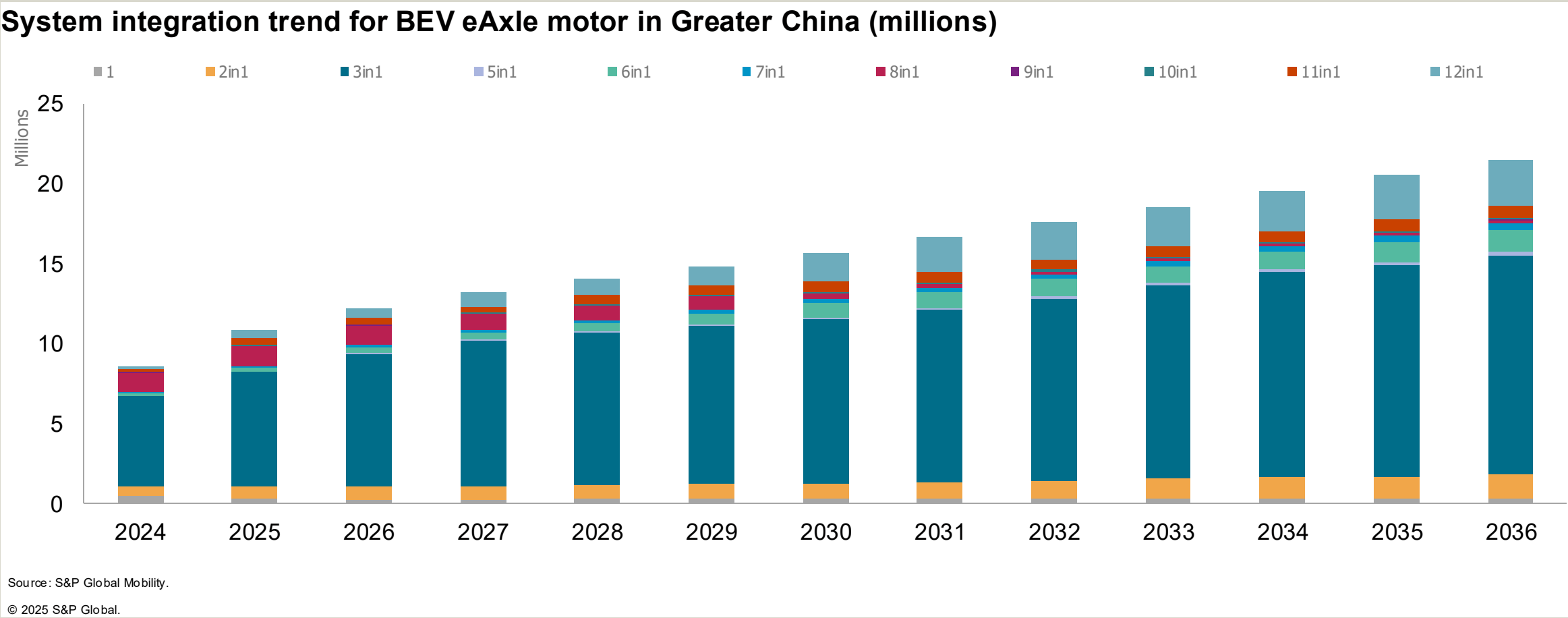
Chinese motor suppliers aiming at higher power and higher speed

Motor power on BEVs manufactured in Greater China



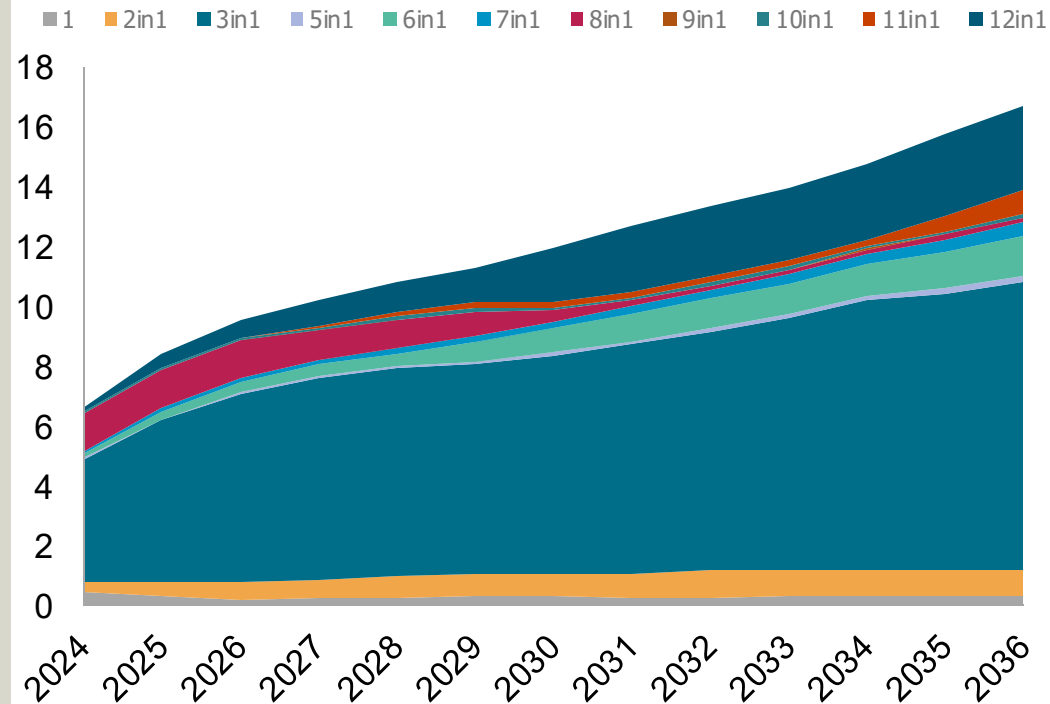
- **BYD** announced in March 2025 a **580 kW motor with max speed of 30511 rpm**, this motor is fitted to **Han L and Tang L**.
- **Xiaomi V8s motor** that recently went into production this year could reach a **max speed of 27200 rpm** and has a **peak power of 425 kW**. Their **V6 and V6s motor**, launched during last year, each has a peak power of **220 kW and 275 kW**, and both could go up to **21000 rpm**.
- At their event in April 2025, **Huawei** launched a new motor that has a **max speed of 38800 rpm**. Their **DriveOne motors in production** could reach **over 200 kW** with a **max speed of 22000 rpm**.
- **GAC** announced **Quark Electric Drive 2.0** equipped with a motor that could go up to **30000 rpm** in 2024. The production version on Hyper has a **peak power of 320 kW** and a **max speed of 22000 rpm**.

3-in-1 will remain as the dominant system integration solution with X-in-1 on the rise



Chinese OEMs are more aggressive on adopting X-in-1

Chinese vehicle brands system integration trend for BEV eAxe motor in Greater China (millions)



Source: S&P Global Mobility.

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- In 2024, 25% of all BEV eAxes on Chinese brand vehicles has adopted **above 3-in-1** solutions, and according to our current forecast, this number will go up to **more than 30% in 2030**.
- **BYD e platform 3.0 evo 12-in-1** is a step forward from **8-in-1** system of e platform 3.0
 - Integrates Motor, Inverter, Transmission, OBC, DCDC, PDU, VCU, BMS, Energy Management Controller, Voltage Booster, Current Booster, Self Heating Module
- **Infimotion 12-in-1 or 11-in-1**
 - **11-in-1 for China domestic market:** Motor, Inverter, Transmission, OBC, DCDC, PDU, VCU, High Voltage BMS, Low Voltage BMS, Thermal Management System, Intelligent Anti-slip Control
 - **12-in-1 for global market outside of China** with an additional Electric Vehicle Charger Converter

Winding technology diversifies

CRRC Mini-pin & X-pin



Infimotion S-Winding



Photo by Jie Yang at 2025 Auto Show Shanghai

Hairpin U-Pin

Widely adopted by all OEMs and suppliers in China, most newly designed eAxle motors are expected to have Hairpin. This winding technology is also utilized on flywheel motors on DHT hybrids and range extenders.

X-Pin

Unique to the Chinese market, shorter tip length compares to Hairpin, early adopters including UAES (Bosch & SAIC joint venture) and BorgWarner. Manufacturing difficulty is still among the key factors that hold back the uptake of X-pin motor.

Mini-Pin

Emerging winding technology that could enable shorter tip length than Hairpin, with the possibility of achieving shorter tip length than X-Pin after optimization.

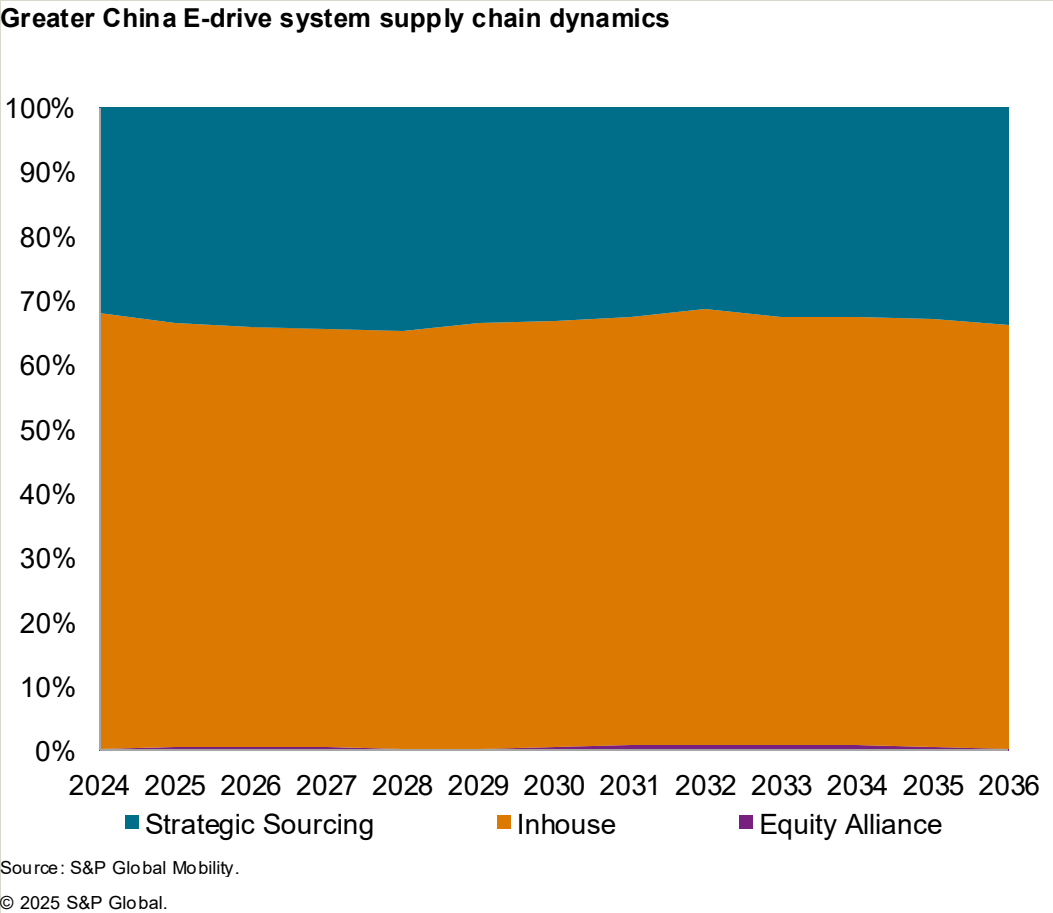
Continuous Hairpin (Wave/S-Winding)

This winding solution removes the welding process completely but requires higher level of manufacturing capability. Adopted by some premium models as eAxle motors and some applications on P2 in China market.

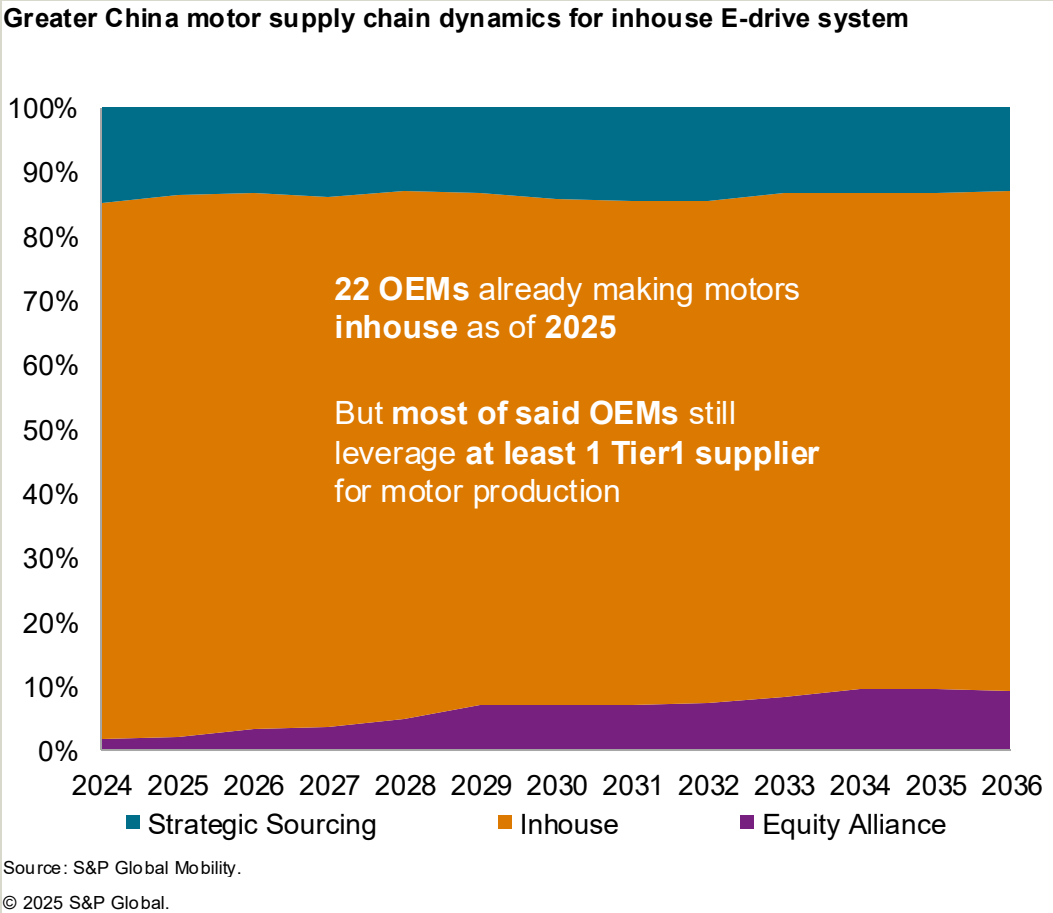
Supply chain dynamics of electric drive system and components



Automakers aim at making both E-drive system and motors inhouse

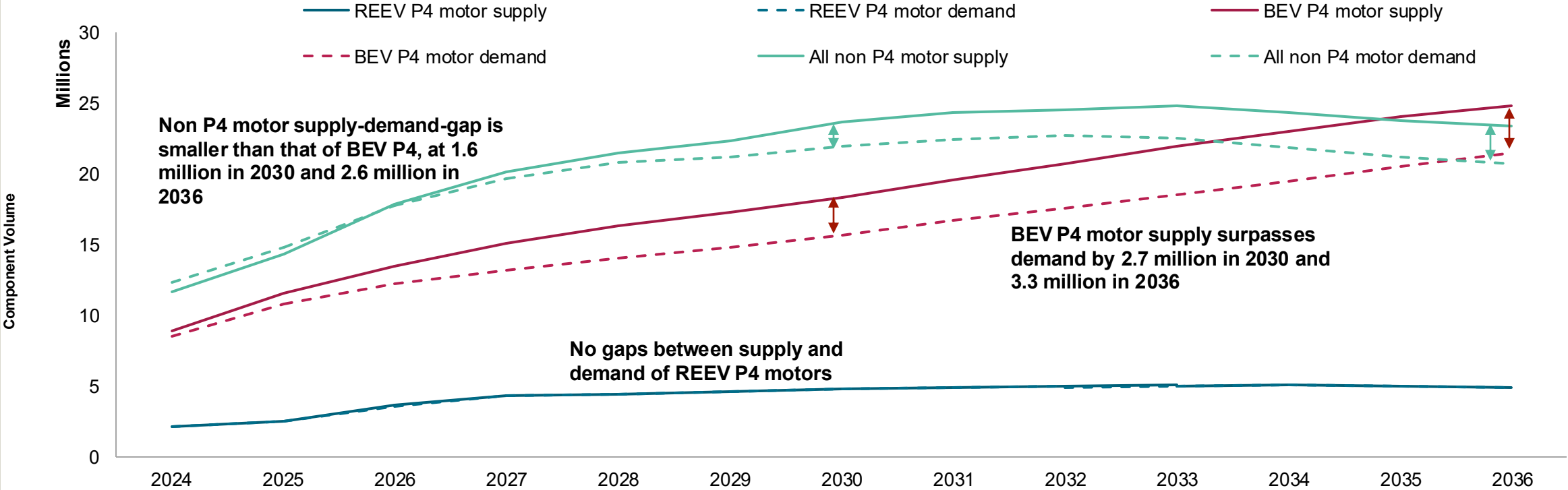


Inhouse
E-drive
system



Motor demand vs. supply in Greater China

Greater China motor demand and supply for BEV P4 and REEV P4

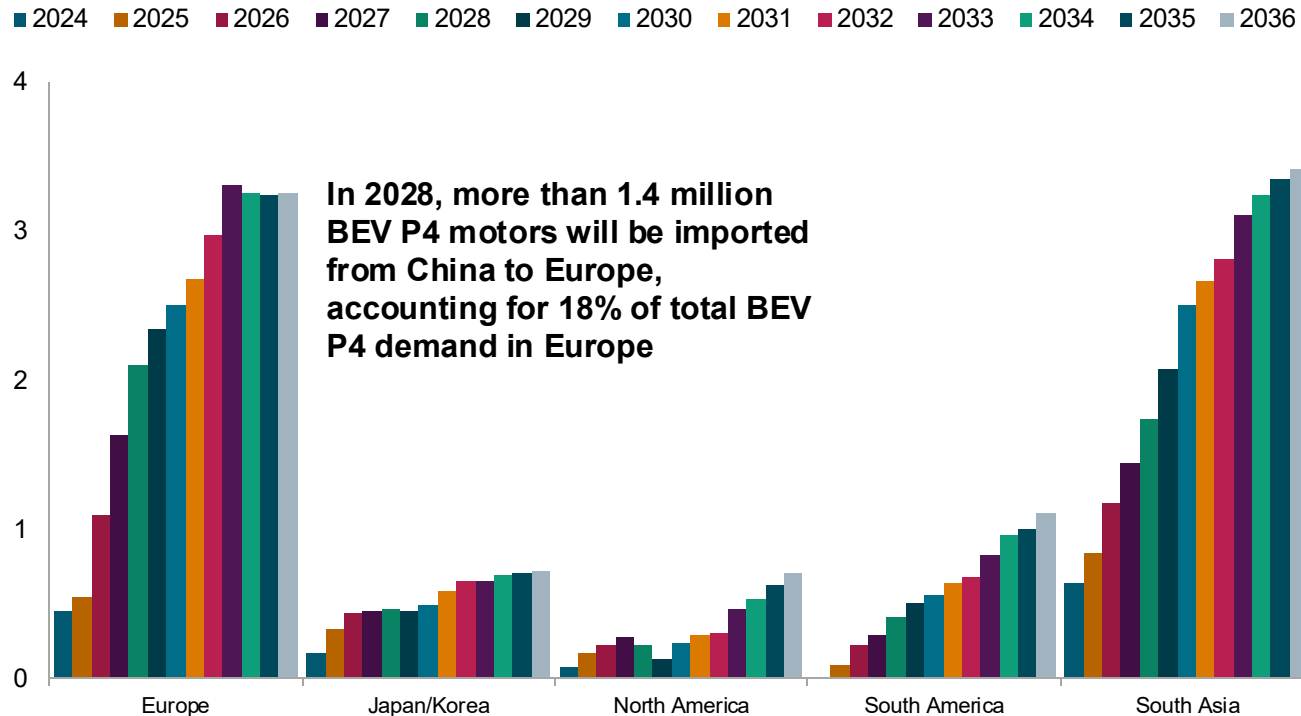


Source: S&P Global Mobility.

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E-motor exports from Greater China is expected to grow in the next decade

Electric motor exports from Greater China (millions)



Source: S&P Global Mobility.

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Europe

- **Fine-Stamping Serbia**

- Subsidiary of Zhenyu Technology.
- To build motor core component manufacturing plant in Serbia.

South Asia

- **Shanghai Edrive Thailand**

- Thailand manufacturing facility in construction, planning to be launched in the first half of 2025.
- This new facility will produce electric drive system and components.

- **Inovance Thailand**

- Launched production of X-in-1 electric drive system at their Thailand plant in 2024.

Summary



Summary



xEV market in China still thrives and follows a growth trajectory despite BEV sales volume being lower than expected, while REEVs and PHEVs play a significant role in the electrification in Greater China.



The electric motor and its subcomponents production volume will grow with the rising uptake of EVs, at the meantime many Tier1s and Tier2s face increasing pressure on cost reduction.



OEMs and suppliers are driven by demand for higher performance, new winding technology and other innovations on motors are being introduced to improve efficiency and achieve higher power output.



Chinese OEMs and motor suppliers are eager to venture into the global market as the domestic China market becomes more competitive. Many are planning to establish manufacturing facility outside of China.

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