



AutoForecast Solutions

The Global Automotive Outlook Disruption and Industry Transition

**Presented to:
The AMS Automotive Evolution Summit**

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AFS Services: Automotive Forecasting & Business Intelligence Solutions

AFS Forecast

- Global Production Detail
- Vehicle, Engine, Transmission, Motor, Drivetrain, & Electrification
- BEV, PHEV, HEV, FCEV, IC
- History + 8 Year Outlook
- Updated Weekly & Monthly
- Web-Based Reporting Suite
- AFS Market Alerts

AFS Planning

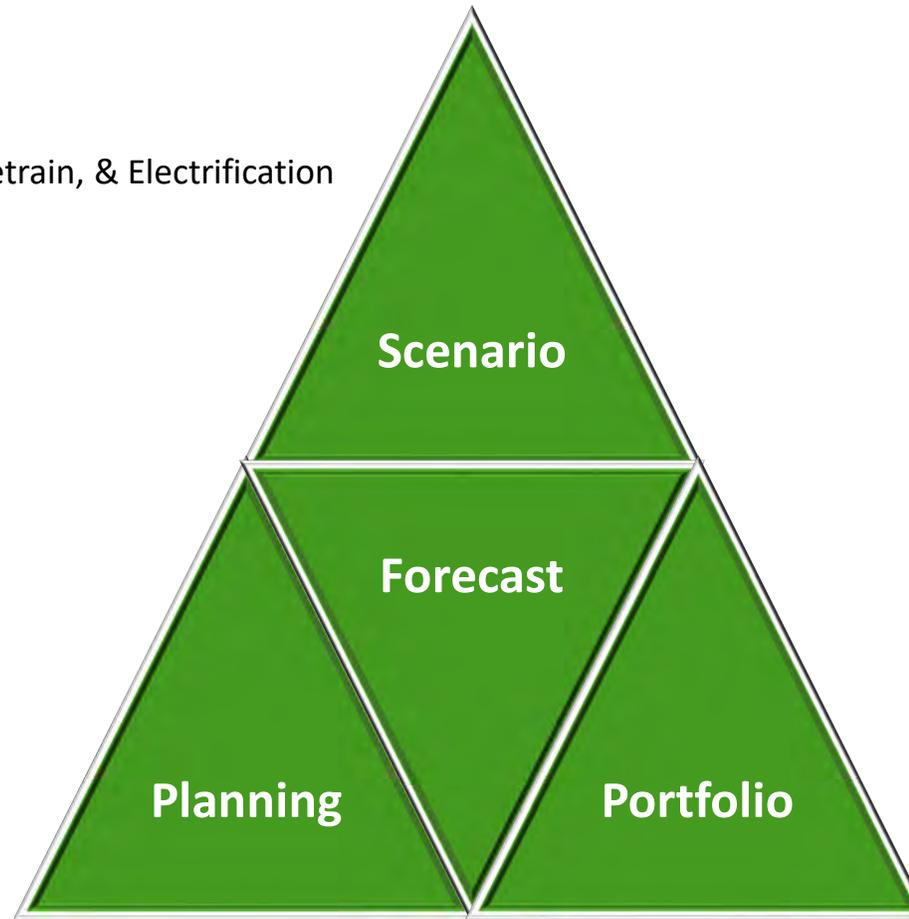
- Part Number, Pipeline/RFQ Management
- Real-Time Sales Forecasting
- Risk Assessment
- Opportunity Identification
- Budget vs. Current Analysis
- Capacity planning
- Secure, Web-based Interface
- Integrate with AFS Forecast & Scenario

AFS Scenario

- Outlook Adjustment
- Proactive Approach to Prepare for Market Shifts
- Forecast Performance Comparison
- Budget vs. Current Forecast Analysis
- Secure, Web-based Interface
- Integrate with AFS Forecast & Planning

AFS Portfolio

- Opportunity Identification
- Market Share Mapping
- Competitor Analysis
- Gap Analysis
- Secure, Web-Based Interface
- Integrate with AFS Forecast & Scenario



Understand opportunities
Develop a value proposition
Identify areas of risk & growth.

AutoForecast Solutions.
Driving Data into Decisions.
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Contributing Forecast Factors: Above and Beyond the Numbers

Market Drivers, Enablers & Constraints

- Consumer preference vs. market direction
- Ability vs. necessity (The Demand Imperative)
- Shareholder value
- Supply chain importance to the VM strategy
- Program lifecycle & cadence adjustments
- Innovation in product and strategy
- Regional analysis by segment, OEM market share, trends, and competitive positioning



- Economic indicators
- Investment strategies
- Regulations & incentives
- Geo-political impact on globalization
- Trade rules & logistics
- Legacy vs. future players
- Increasing level of stakeholder impact
- M&A activities and megatrends

- Partnerships, collaboration, cooperation, & standardization
- The Balancing Act: Minimize risk and maximize opportunities
- Defend core operations and identify areas for growth

SEMICONDUCTOR IMPACT SUMMARY

Semiconductor Shortage Impact Analysis: Global Scenario

Total Impacted Volume (Since Jan 2021): Sum of the vehicle volume based on announced plant shutdowns by each vehicle manufacturer; calculated using the AFS Forecast process. The volume displayed based on January 2021 thru YTD.

Total Lost Volume (Since Jan 2021): The total sum of vehicles lost related to the semiconductor shortage. The volume displayed based on January 2021 thru YTD using the forecast processes and results of the AFS global production outlook.

Total Potential Volume Impact (Since Jan 2021): The total of Announced Impacted Volumes plus additional forecasted production volume impact (above and beyond the Announced) analyzing the long-term disruption in the semiconductor supply chain. Using AFS scenario forecasting services. The volume displayed based on January 2021 thru YTD.

Announced Plant Impact Volumes (Since Jan 2021): Volume projection based on the announced reduction in production and/or shutdown at a plant level, and volume impact levels/recoverability. Analysis performed at the vehicle level and summarized to reflect short, mid, and long-term impact to total production. Using the AFS plant workday analysis algorithm. Announced volumes are represented by the sum of the Recoverable, At Risk, and Unrecoverable categories as assigned by AFS.

Potential Volume Impact (2022): The total of Announced Impacted Volumes plus additional forecasted production volume impact (above and beyond the Announced) analyzing the long-term disruption in the semiconductor supply chain. Using AFS scenario forecasting services. The volume displayed based on 2022 YTD.

Vehicle Plants Impacted to Date: The total number of final light vehicle assembly plants globally impacted by the semiconductor shortage and reported by AFS. Plant level detail and data used to create this report are provided as part of a subscription to AFS Services.

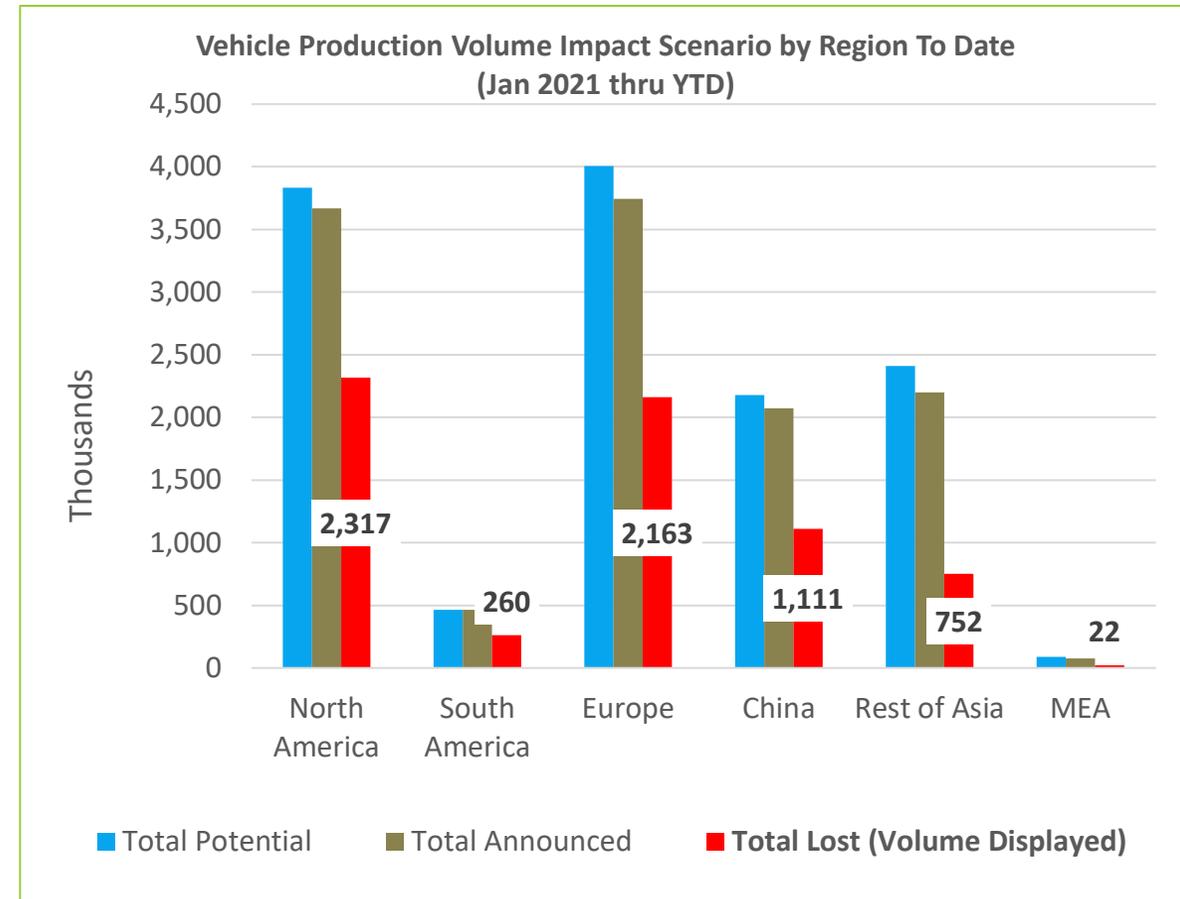
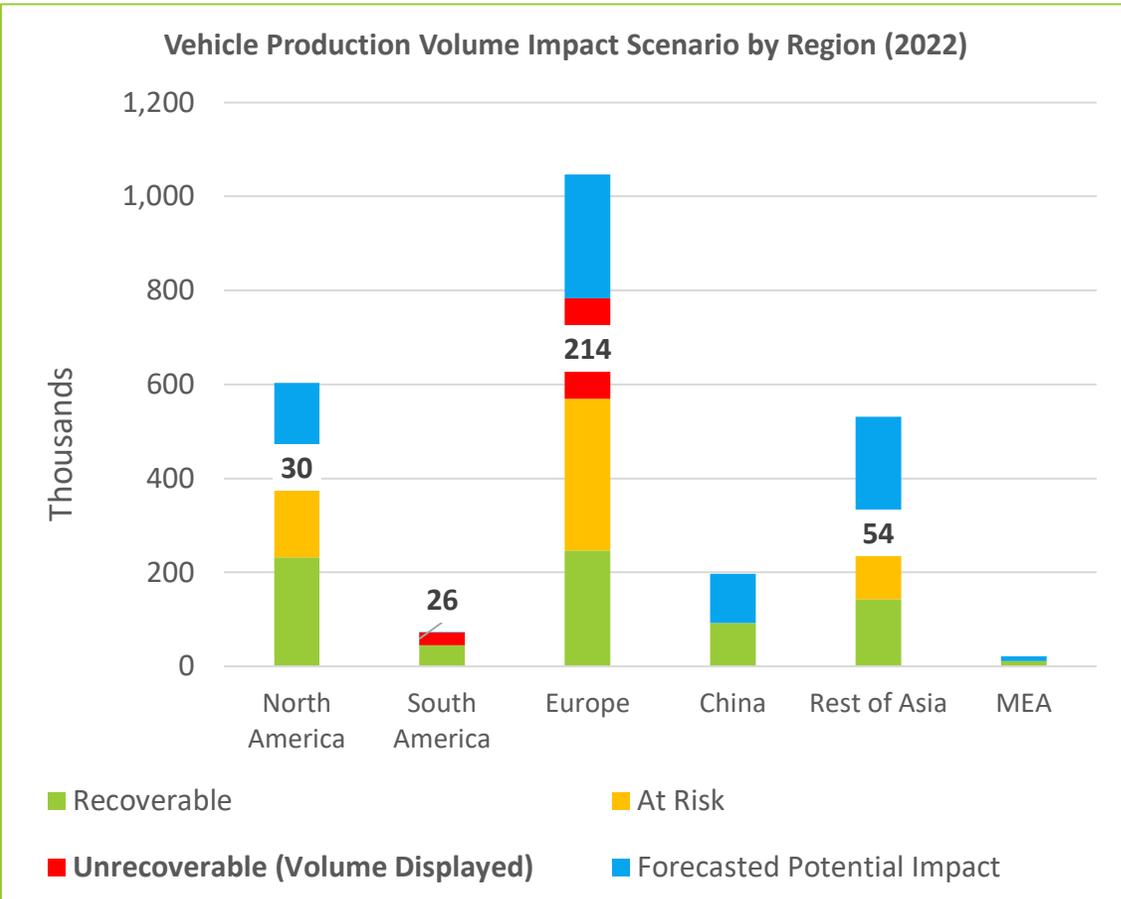
NOTE: All analysis using the AFS Global Light Vehicle Production Forecast; updated on a monthly basis. Check out www.autoforecastsolutions.com or send us an email at info@autoforecastsolutions.com to learn how to subscribe.

| |
|---|
| Total Impacted Volume (Since Jan 2021) |
| 12.22M |
| Total Lost Volume (Since Jan 2021) |
| 6.62M |
| Total Potential Volume Impact (Since Jan 2021) |
| 12.98M |
| Announced Plant Impact Volumes (2022) |
| 1.72M |
| Potential Volume Impact Total (2022) |
| 2.47M |
| Vehicle Plants Impacted to Date |
| 435 |
| As of: May 13, 2022 |



Source: AFS global forecast and services

Semiconductor Shortage Impact Analysis: Global Scenario



CHARTS ABOVE: (LEFT) Production impact due to semiconductors in 2022 (RIGHT) Production impact due to semiconductors (Jan 2021 thru YTD) – reporting on Total potential, announced, and lost

Assumption: AFS presumes that a majority of plants with a net workday impact less than 15 days will be **Recoverable**. Plants categorized **At Risk** have a net workday impact of 22-30 days. Plants in the **Unrecoverable (regional volumes shown on right report; total shown on left report)** status, either have over 30 days of net shutdown or assemble a vehicle which may not need to be backfilled (i.e. high inventory cars and CUVs). Plants with room for overtime can potentially recover volume, while plants that traditionally run at full-speed may not be able to recover all of the lost volume. Expect short-term volumes to be impacted, and recovered through shift/labor balancing. If this issue continues for a considerable amount of time, adjustments to the assumptions may be necessary.

NOTE: All analysis using the AFS Global Light Vehicle Production Forecast; updated on a monthly basis. Check out www.autoforecastsolutions.com for more information.

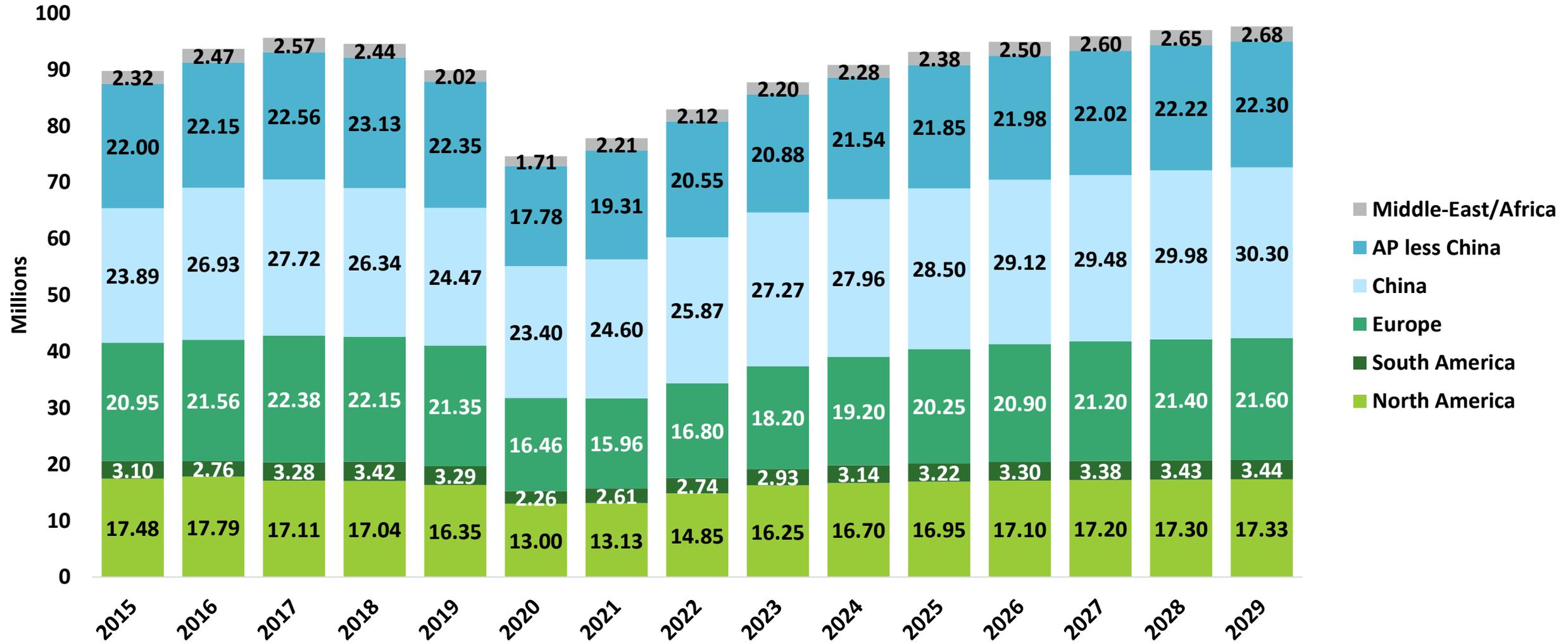
Updated: May 13, 2022

Source: AFS global forecast and services

THE GLOBAL OUTLOOK

LONG TERM ANALYSIS

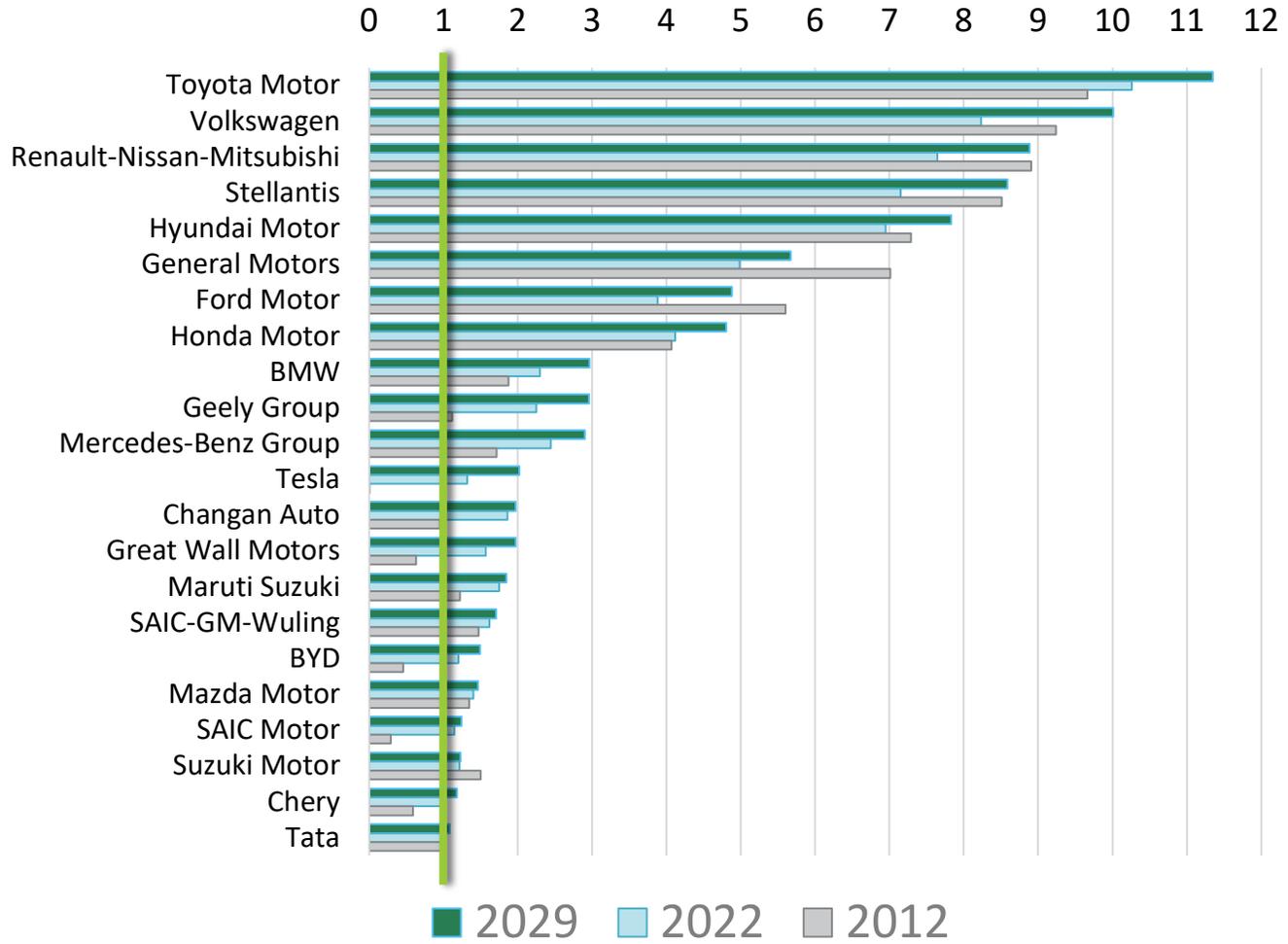
Global Light Vehicle Production Outlook (as of May 1, 2022 AFS Forecast release)



Source: AutoForecast Solutions

“1 Million Unit Club” Brand Owner Analysis (2029)

MILLION UNITS OF GLOBAL PRODUCTION RANKING BASED ON 2028 POSITION



22
Brand Owners in 2029 to produce OVER 1 Million units/year

90%
% of Global Production

Top 10 Brand Owners
70% of total market

| Inductees Since 2012 |
|--------------------------|
| Chery |
| Geely Group (with Volvo) |
| Great Wall Automobile |
| SAIC Motor |
| Tata |
| Tesla |

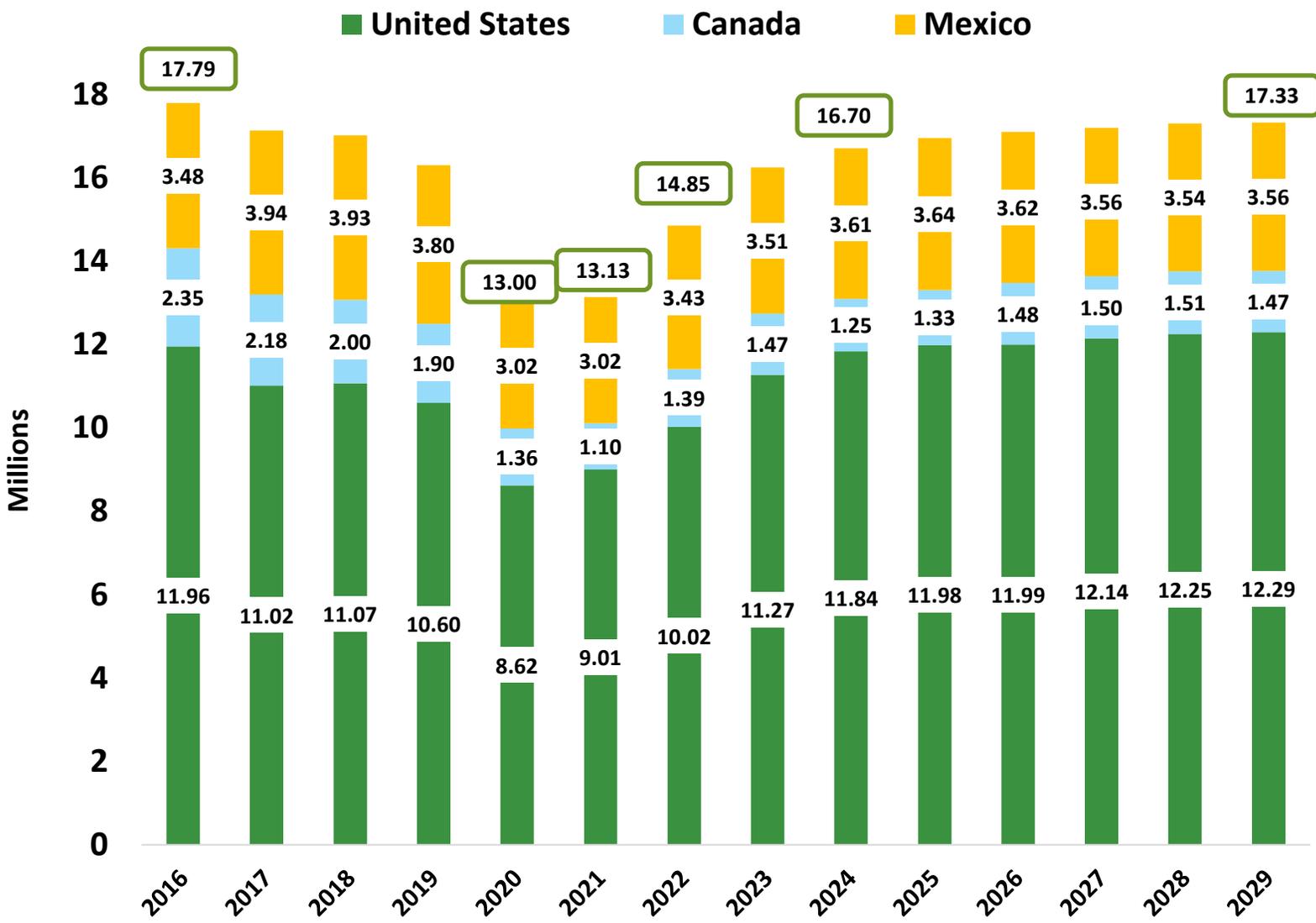
| 500K – 1 Million in 2029 |
|--------------------------|
| Beijing Automotive Group |
| BYD |
| Dongfeng Motors |
| GAC Motor |
| FAW |
| Isuzu |
| Subaru |

Source: AutoForecast Solutions

THE NORTH AMERICA OUTLOOK

LONG TERM ANALYSIS

North America Growth Outlook and Growth



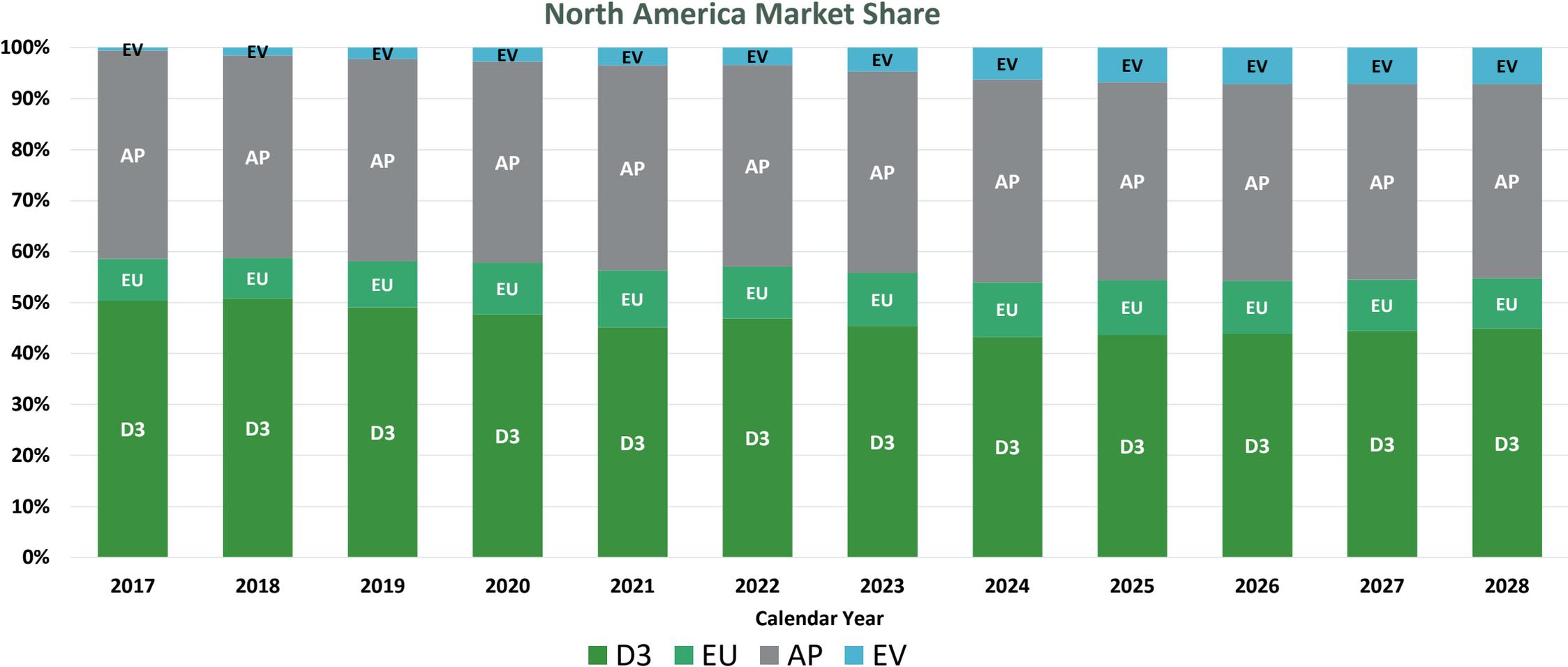
| Jurisdiction | Growth (2020-2029) | CAGR (2016-2029) | CAGR (2020-2029) |
|---------------|--------------------|------------------|------------------|
| North America | 33.24% | -0.20% | 3.24% |
| United States | 42.59% | 0.22]1% | 4.02% |
| Canada | 8.09% | -3.54% | 0.87% |
| Mexico | 17.88% | 0.17% | 1.84% |

Disruptors

- COVID, Semiconductors, raw materials, logistics
- Global conflicts and geo-political impacts
- USMCA compliance in 2023

Source: AutoForecast Solutions

North America Market Share by Brand

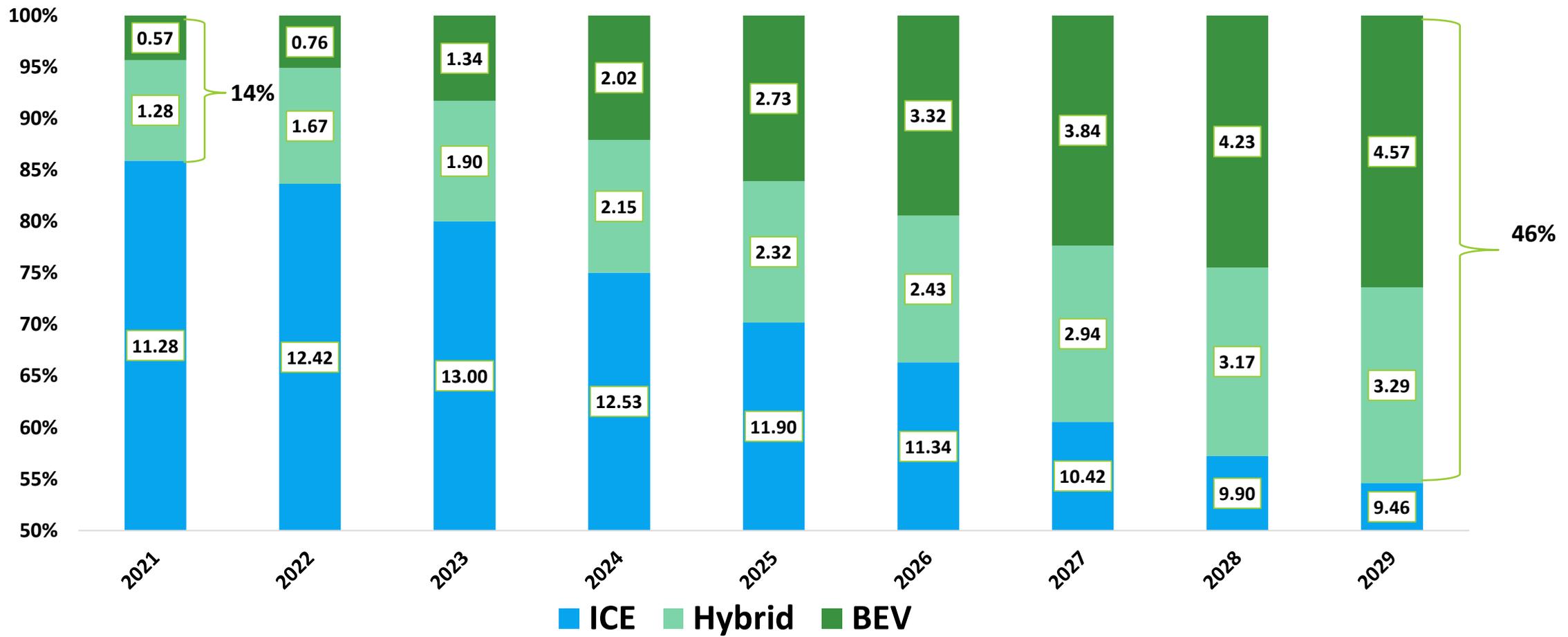


Brand owners staying in their lanes

Source: AutoForecast Solutions

Powertrain Production Mix: North America

North America Light Vehicle Production



A different story when viewed for a propulsion perspective

NOTE: Values in columns represent light vehicle production in millions

Source: AutoForecast Solutions

Domestic Investment Opportunity: New Players



- Strengthening relationship with Stellantis
- Heavy investment in auto shows



- Owner of Volvo & Lotus
- 10% stake in Daimler and looking to invest in Aston Martin
- The Lynk & Co and Polestar brands developed as exports
- The new Volvo plant in the U.S. will assemble Polestar-branded vehicles; opportunity to add Lynk & Co in future



- U.S. plans to market Chery products under the VANTAS & T-Go brands with HAAH were cancelled; investigating new ways to enter the market



SAIC MOTOR

- Heavy expansion throughout southeast Asia and targeting Western Europe – with their sights on North America
- Already produces/assembles MG/Roewe products in China, England, India, and Thailand



VINFAST

- \$2 - \$4 Billion investment in North Carolina to assemble electric buses, SUVs, and batteries – Target July 2024
- US\$200 Million investment in California to sell electric vehicles through a network of 60 dealers starting 2022.



BYD AUTO

- Partially financed by Warren Buffett
- Currently produces electric buses in California
- Supporting Toyota bZ series of EVs



Faraday Future

FOXCONN®



RIVIAN

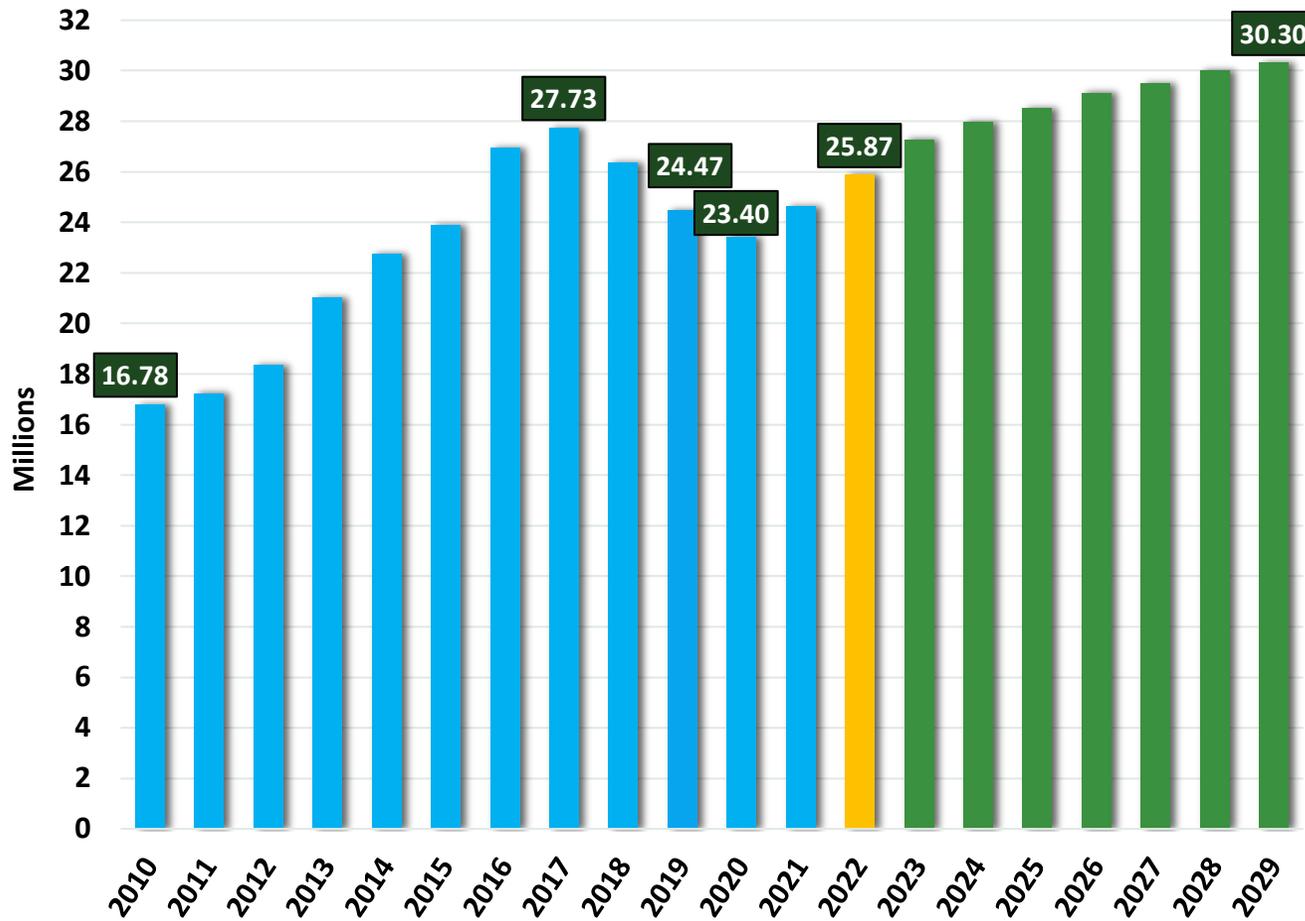
LUCID

Source: AutoForecast Solutions

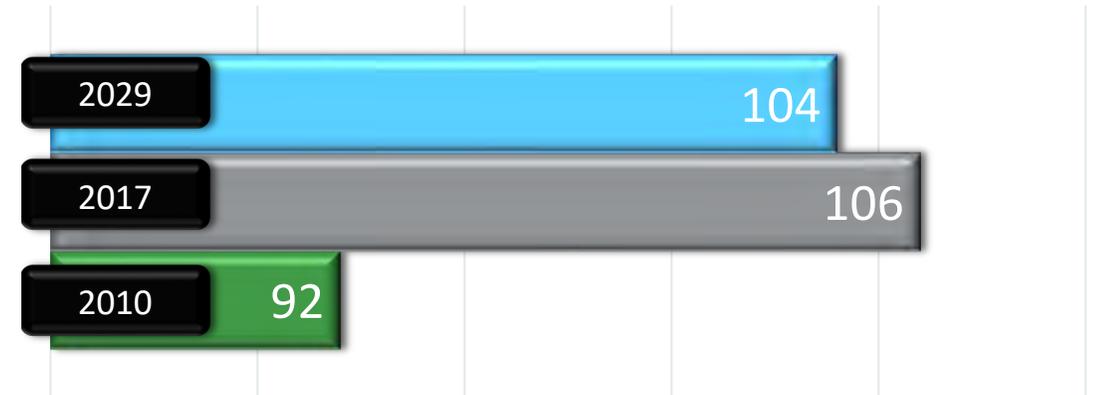
CHINA

China Vehicle Production Outlook

China Vehicle Production



Vehicle Manufacturers in China by year



Brand Owners in China by year



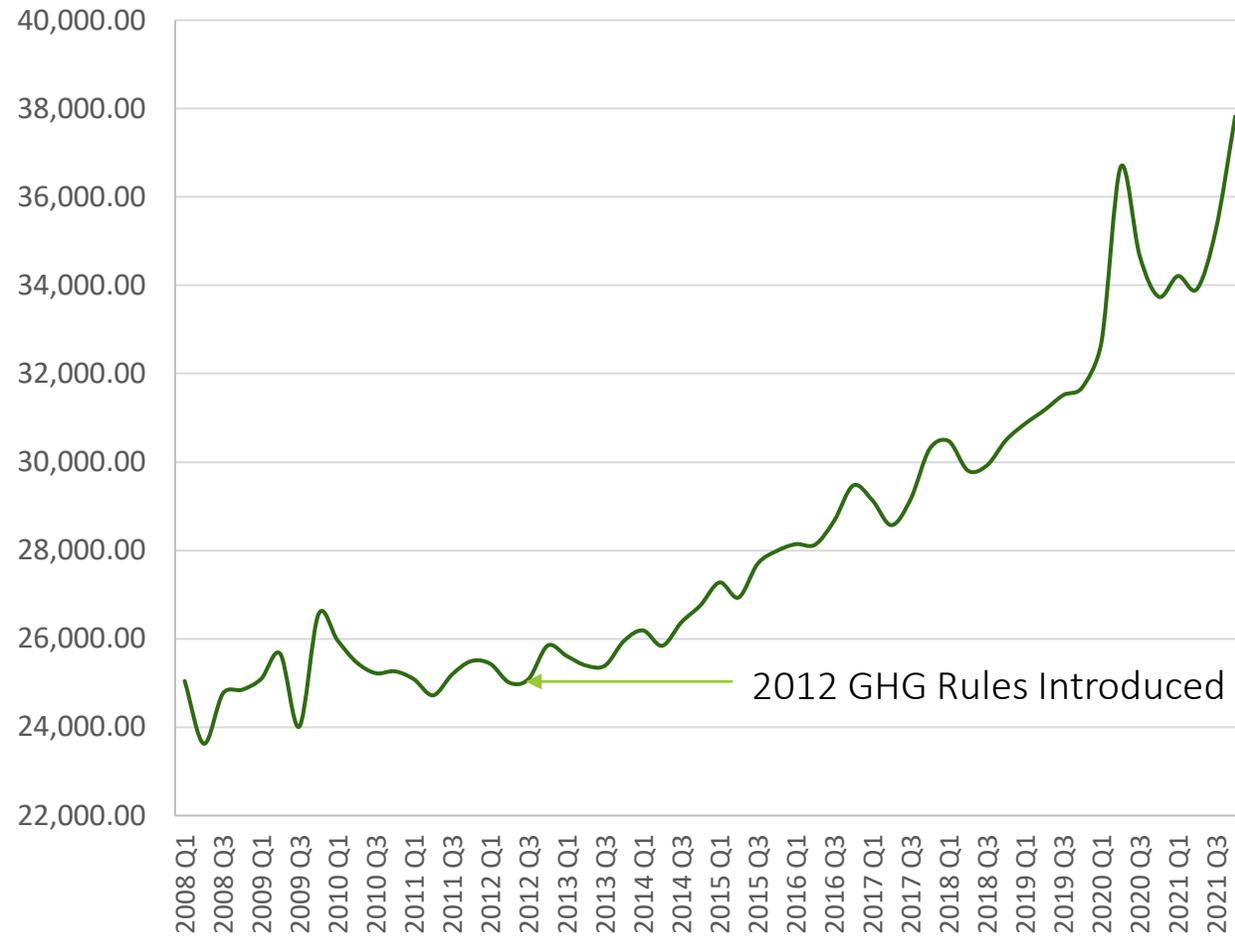
A lesson is leveraging disruption

Source: AutoForecast Solutions

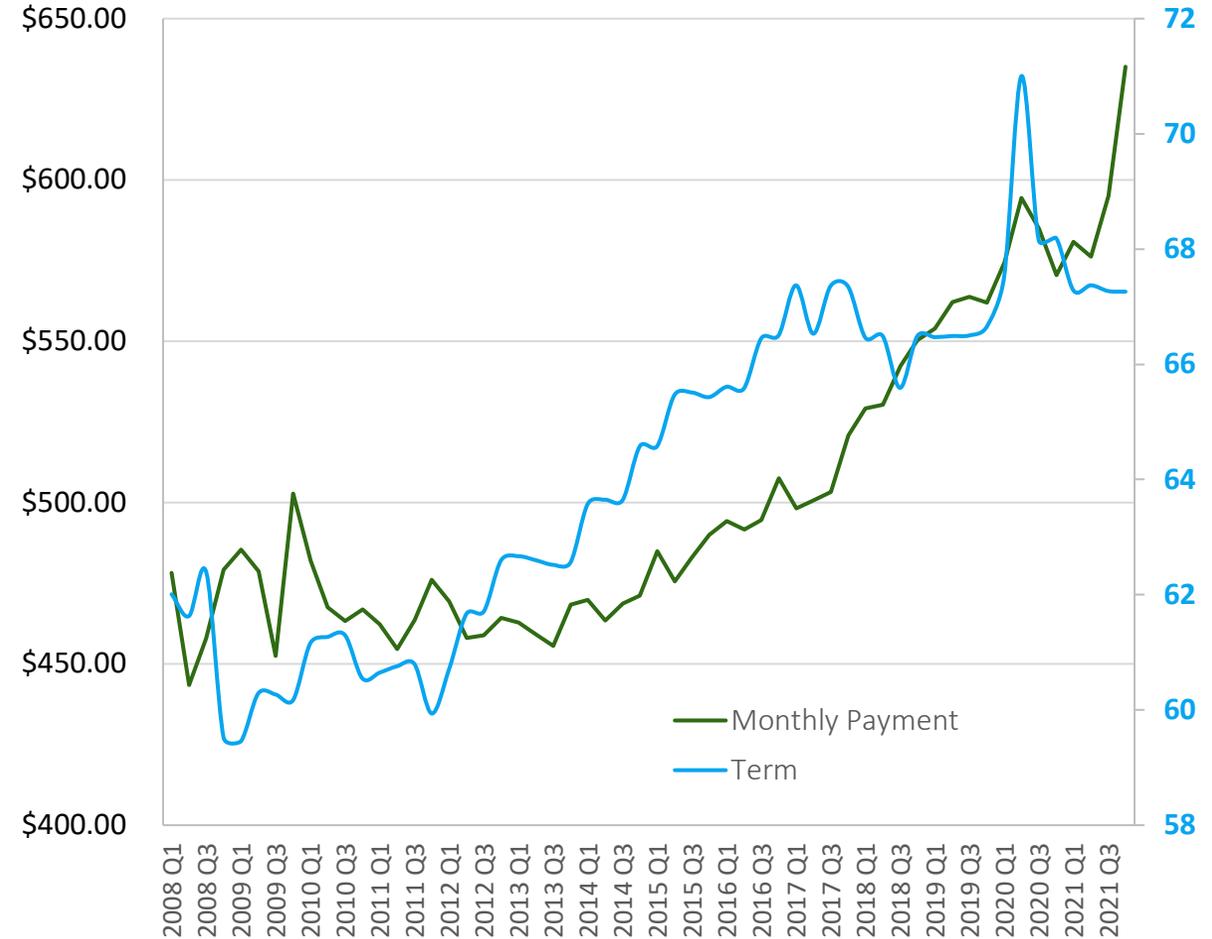
ELECTRIFICATION

Vehicle Affordability is Already Falling

Amount Financed



New Vehicle Monthly Payments and Terms



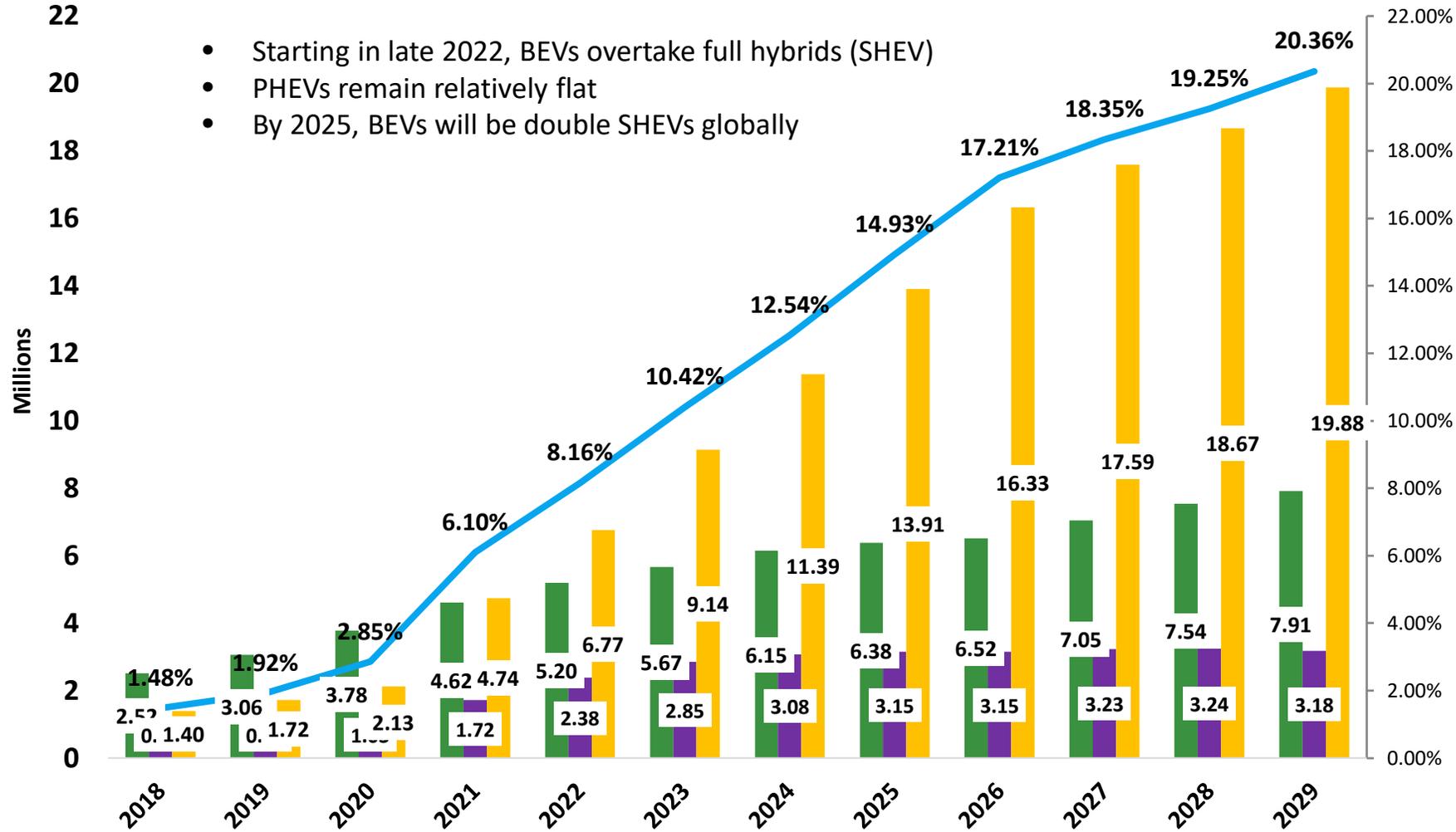
The new consumer norm: higher prices and longer terms

Source: Federal Reserve Economic Data

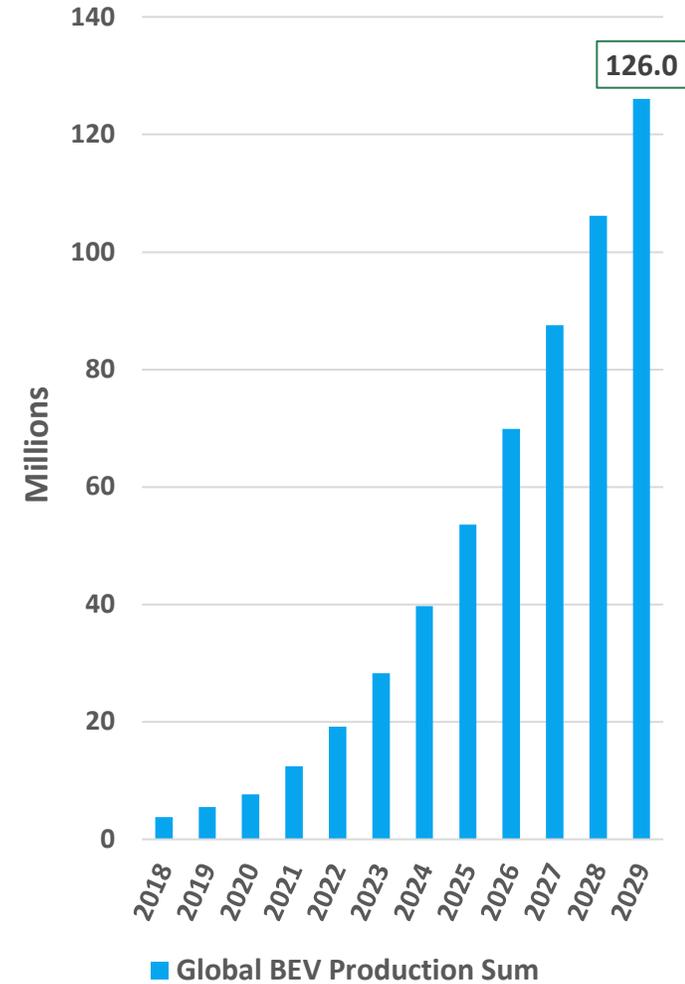
Global xEV Production Outlook

■ SHEV ■ PHEV ■ BEV — % BEV

- Starting in late 2022, BEVs overtake full hybrids (SHEV)
- PHEVs remain relatively flat
- By 2025, BEVs will be double SHEVs globally



Global BEV Production
Cumulative thru year with 2002 basis

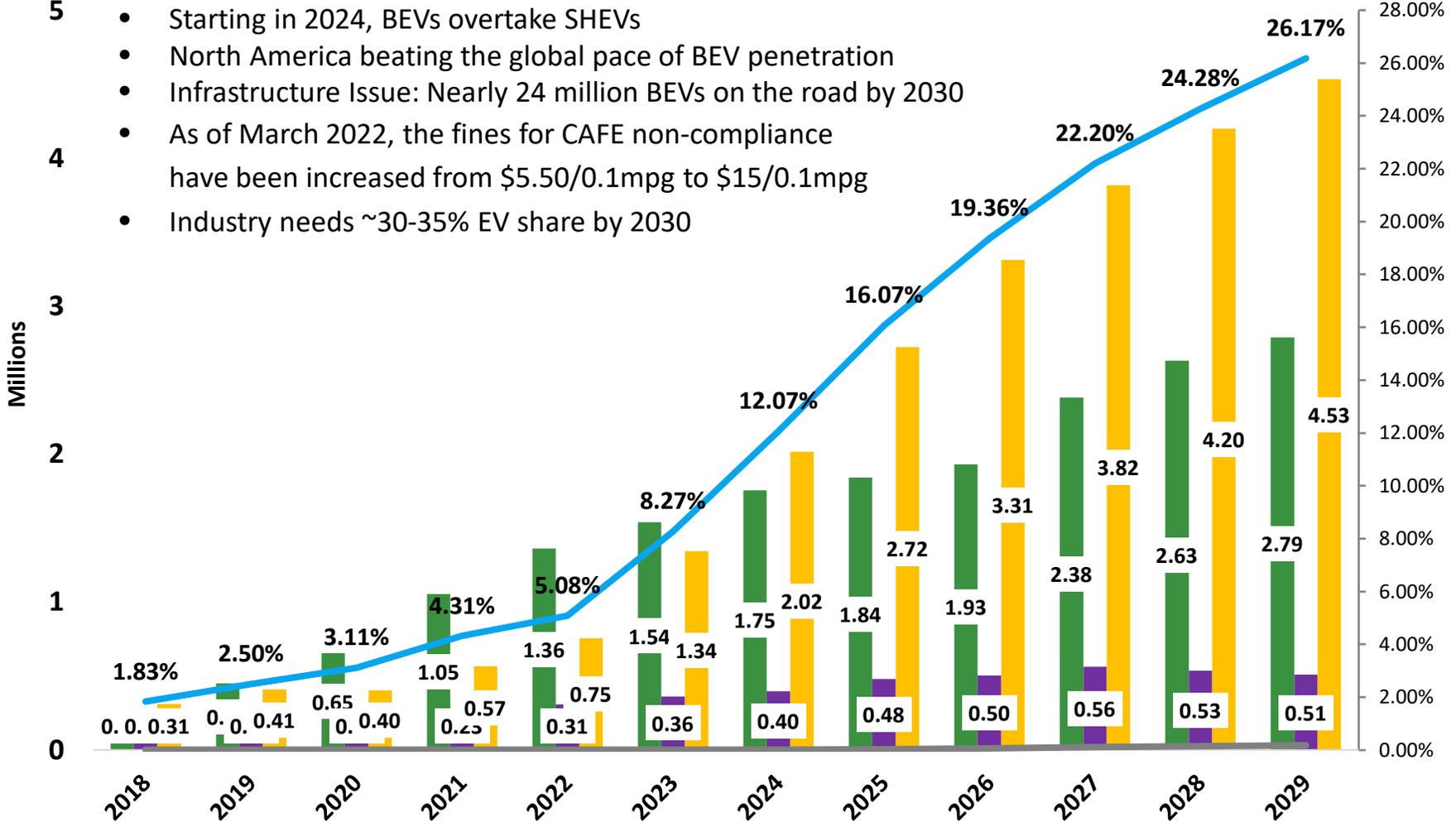


Source: AutoForecast Solutions

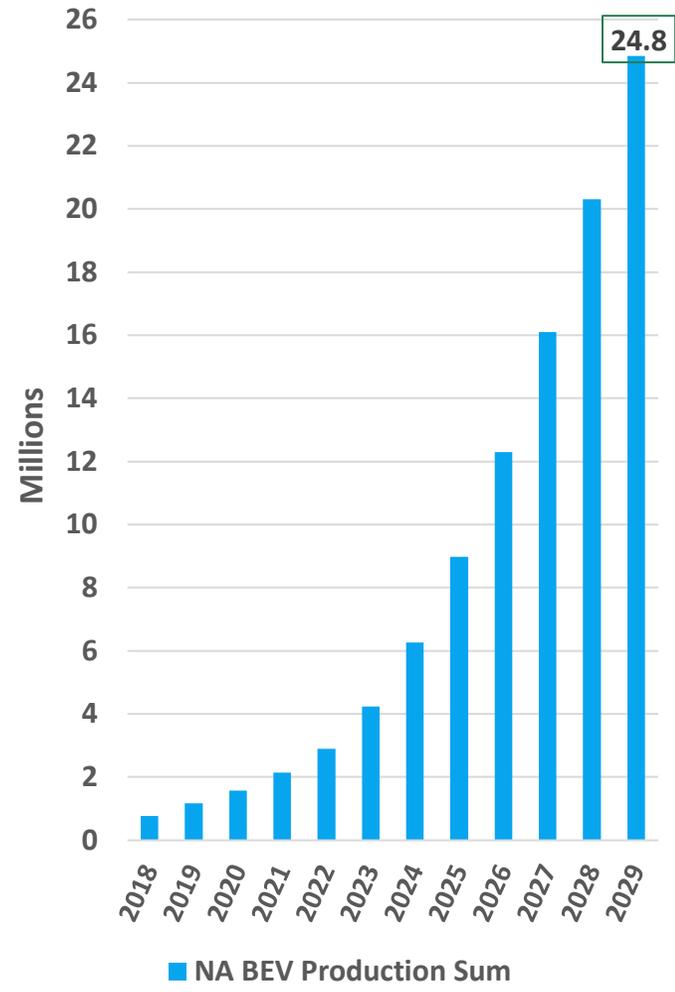
North America xEV Production Outlook

■ SHEV ■ PHEV ■ BEV — eREV — % BEV

- Starting in 2024, BEVs overtake SHEVs
- North America beating the global pace of BEV penetration
- Infrastructure Issue: Nearly 24 million BEVs on the road by 2030
- As of March 2022, the fines for CAFE non-compliance have been increased from \$5.50/0.1mpg to \$15/0.1mpg
- Industry needs ~30-35% EV share by 2030



North America BEV Production Cumulative thru year with 2002 basis

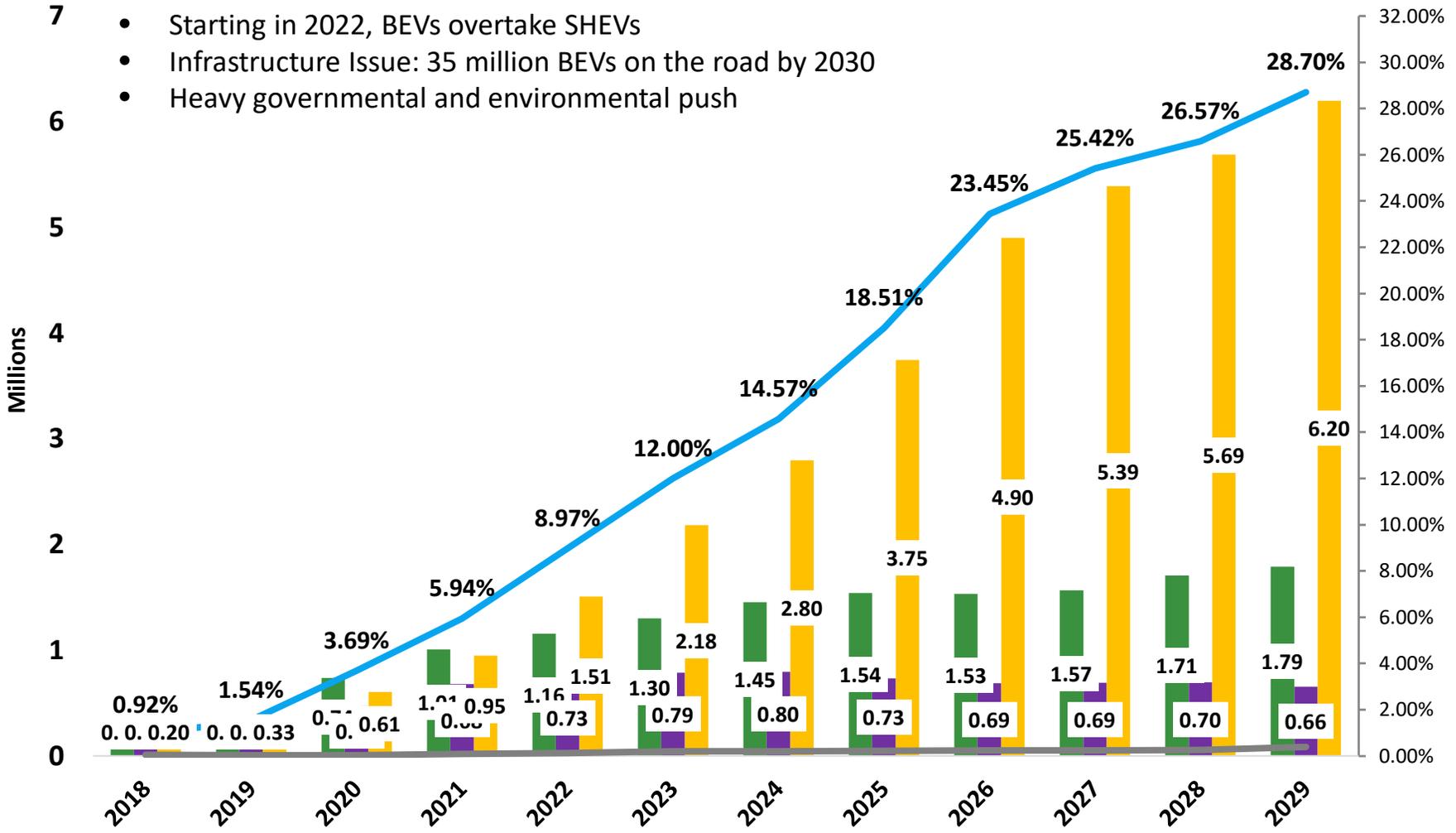


Source: AutoForecast Solutions

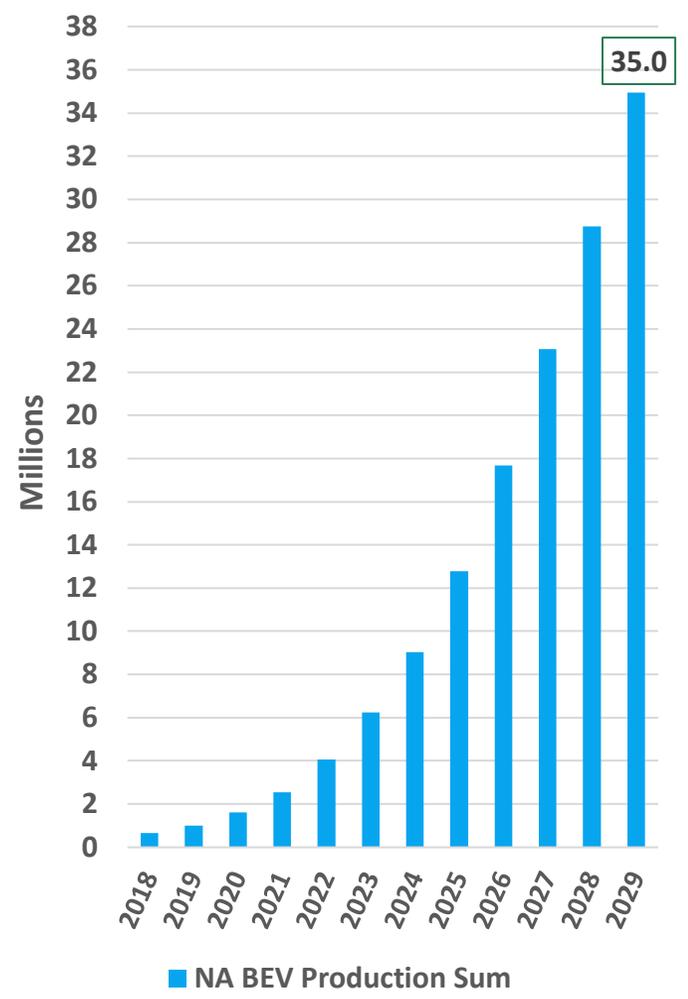
Europe xEV Production Outlook

■ SHEV ■ PHEV ■ BEV — eREV — % BEV

- Starting in 2022, BEVs overtake SHEVs
- Infrastructure Issue: 35 million BEVs on the road by 2030
- Heavy governmental and environmental push



North America BEV Production Cumulative thru year with 2002 basis

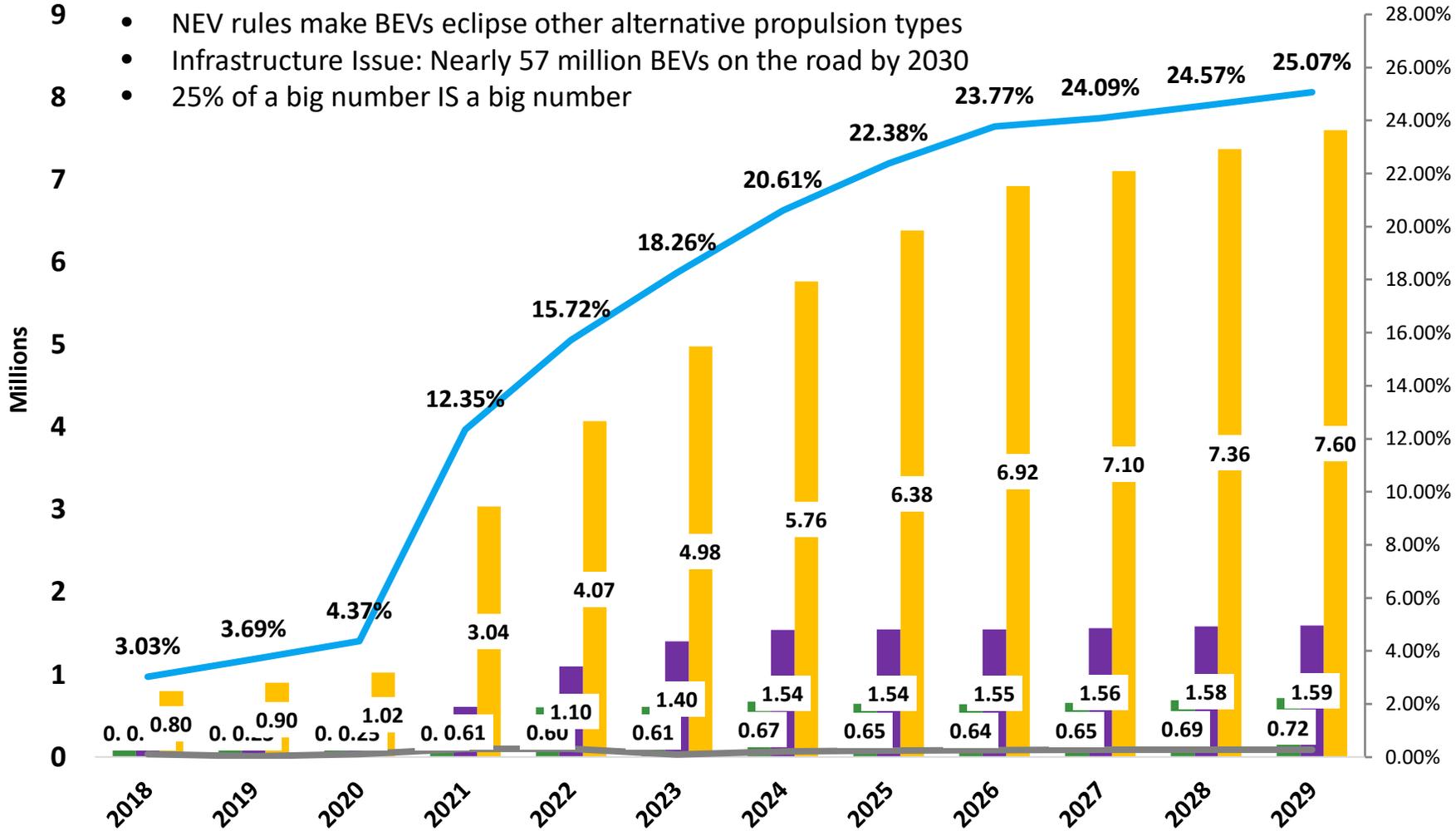


Source: AutoForecast Solutions

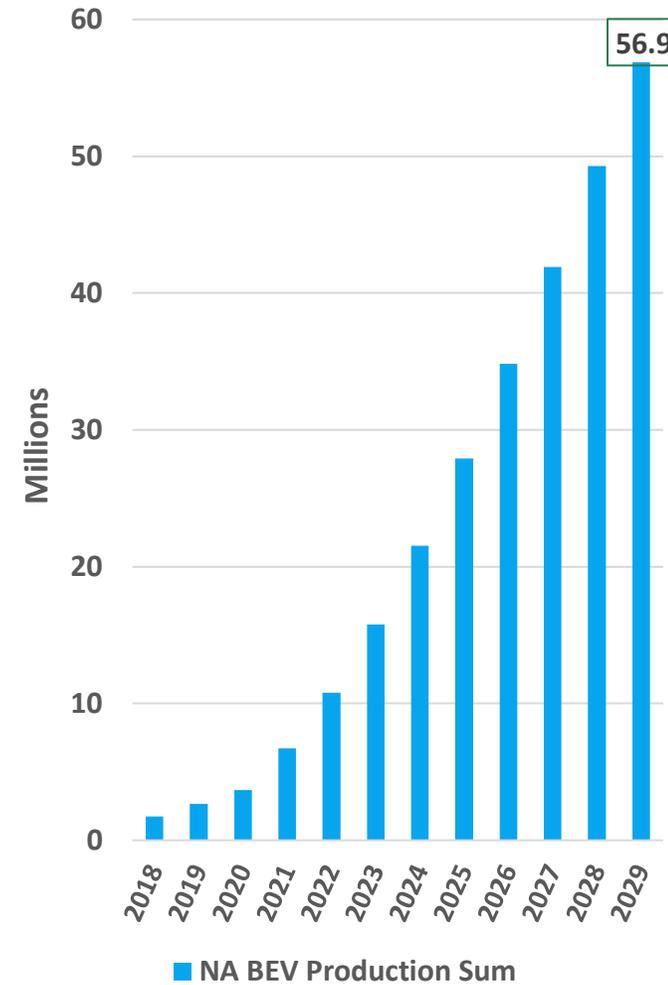
China xEV Production Outlook

■ SHEV ■ PHEV ■ BEV — eREV — % BEV

- NEV rules make BEVs eclipse other alternative propulsion types
- Infrastructure Issue: Nearly 57 million BEVs on the road by 2030
- 25% of a big number IS a big number



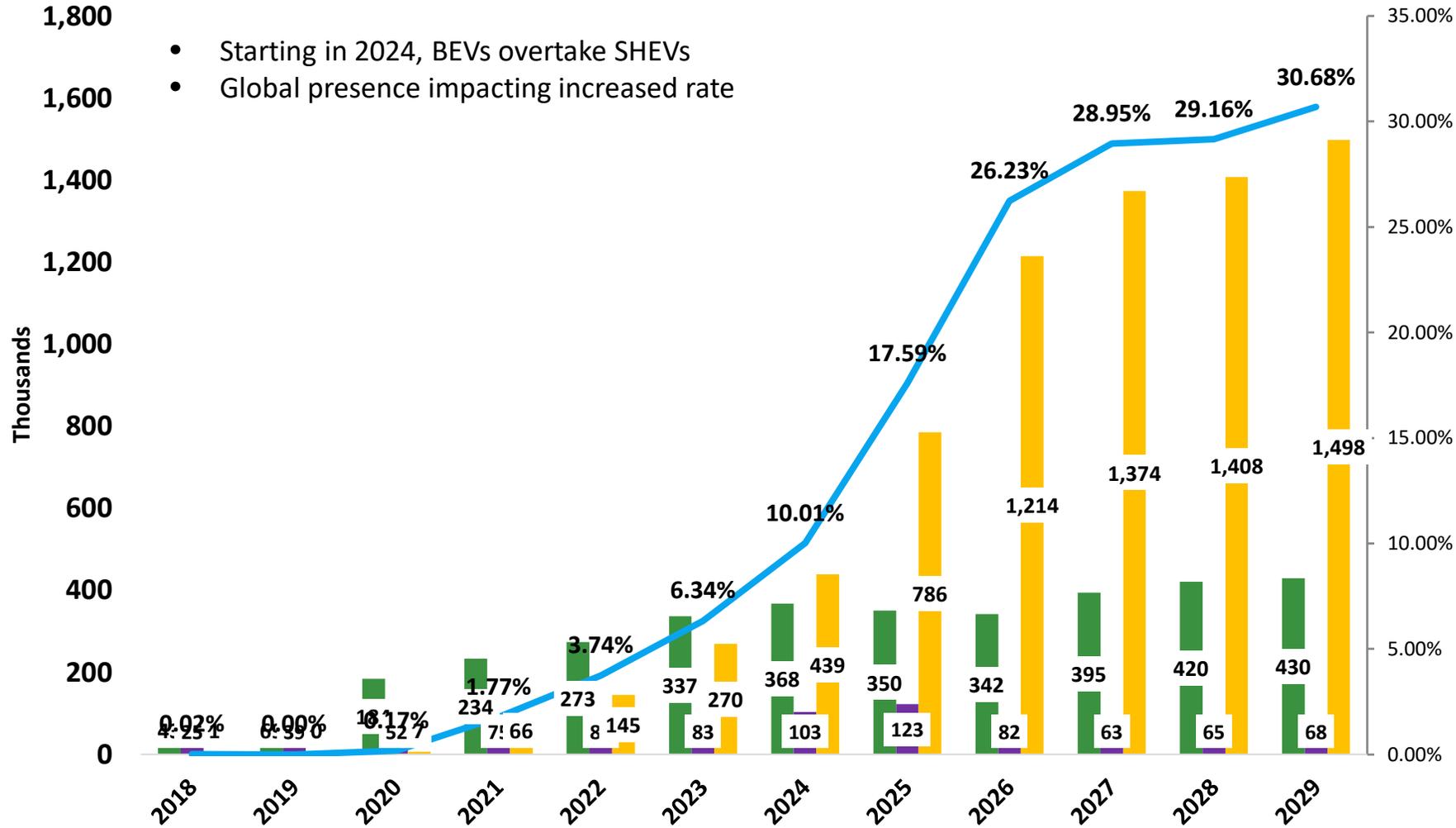
North America BEV Production
Cumulative thru year with 2002 basis



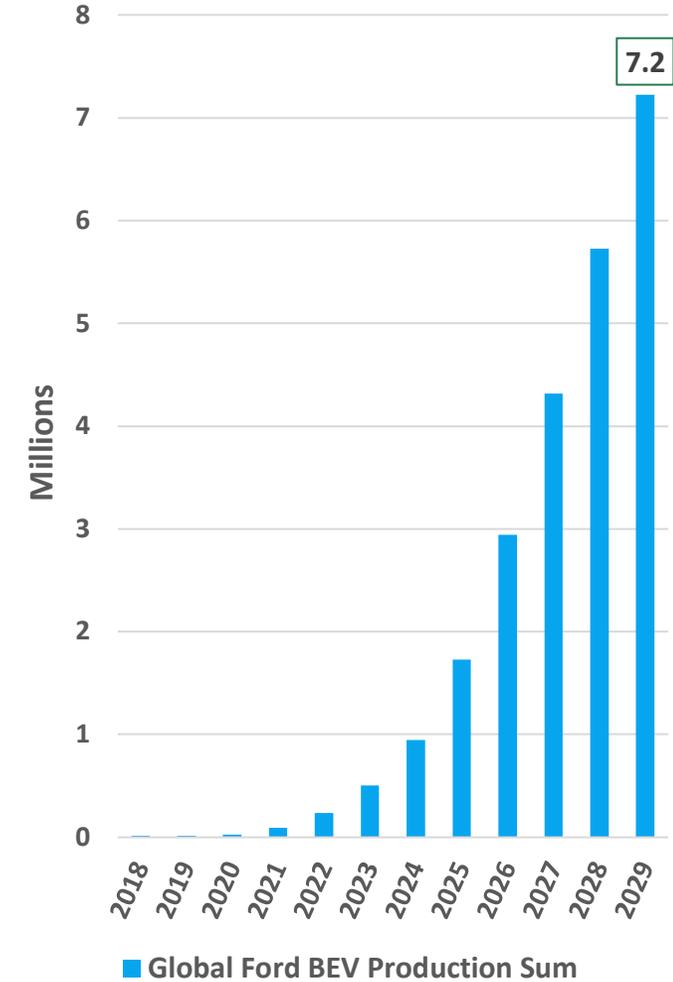
Source: AutoForecast Solutions

Global Ford Brand Owner xEV Production Outlook

■ SHEV ■ PHEV ■ BEV — % BEV



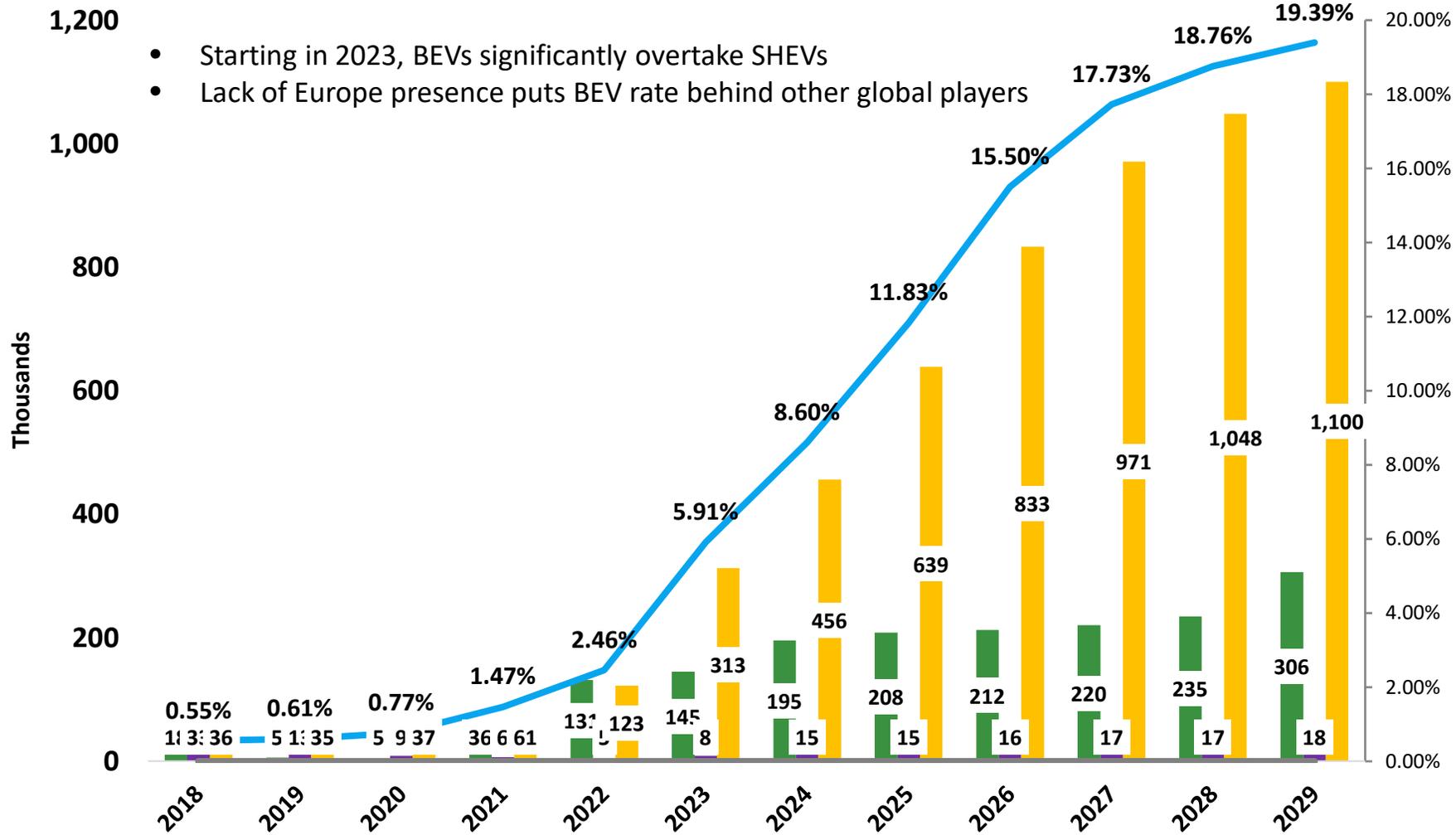
Global Ford BEV Production
Cumulative thru year with 2002 basis



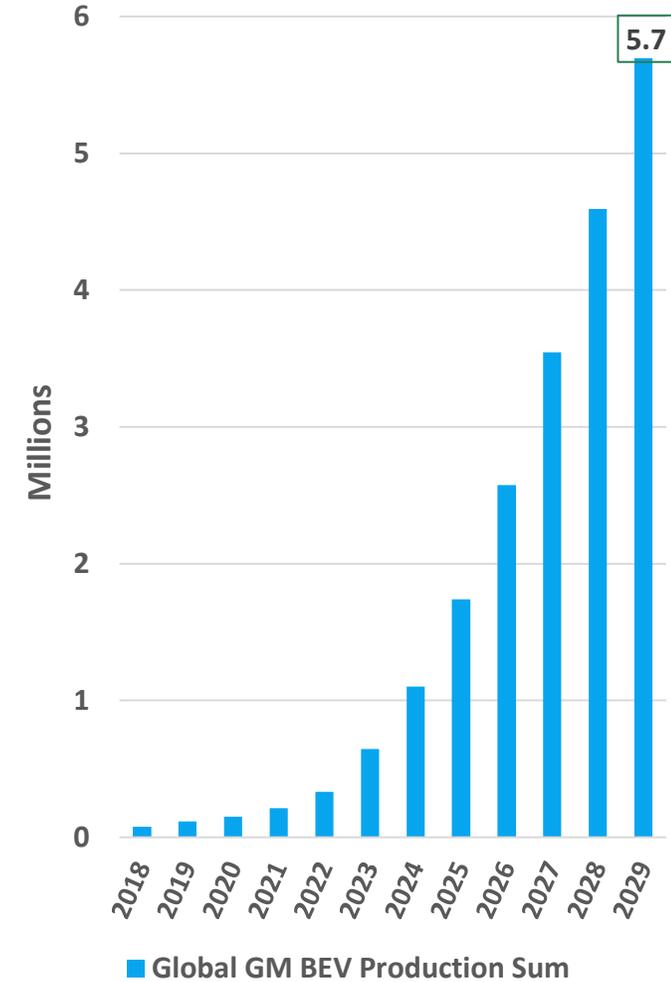
Source: AutoForecast Solutions

GM Brand Owner xEV Production Outlook

■ SHEV ■ PHEV ■ BEV — eREV — % BEV



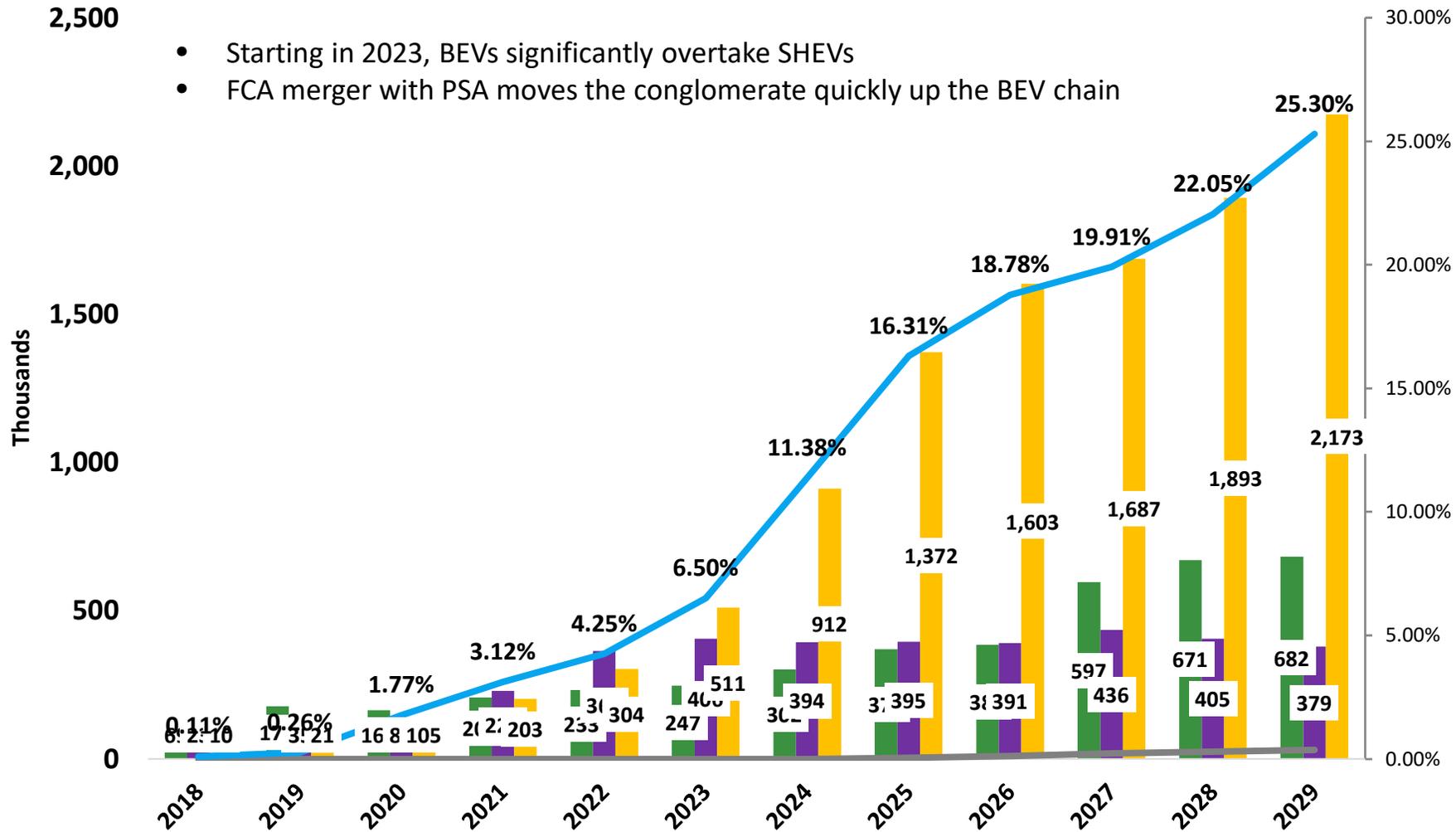
Global GM BEV Production
Cumulative thru year with 2002 basis



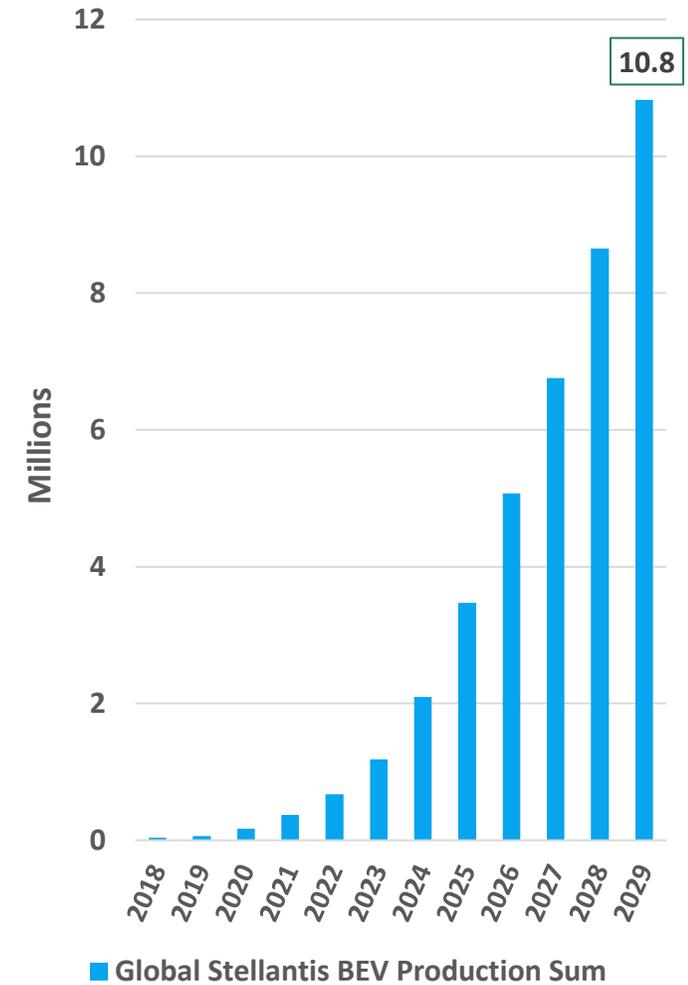
Source: AutoForecast Solutions

Stellantis Brand Owner xEV Production Outlook

■ SHEV ■ PHEV ■ BEV — eREV — % BEV



Global Stellantis BEV Production Cumulative thru year with 2002 basis



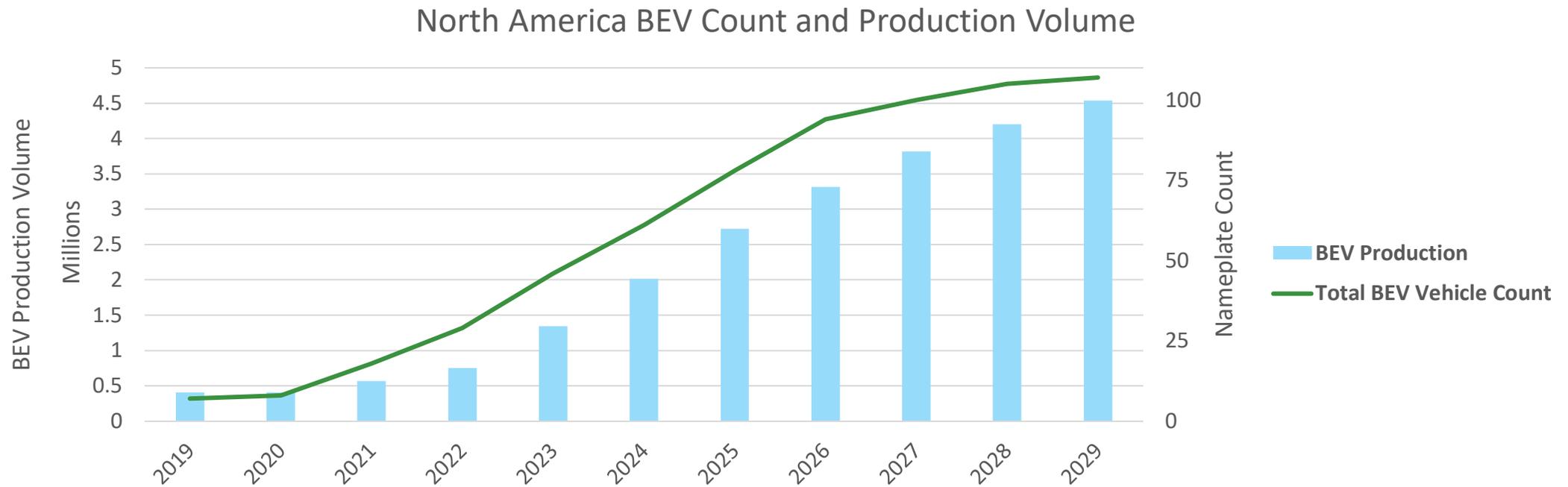
Source: AutoForecast Solutions

North America BEV Market

By 2029...

107 Unique, domestically-built, battery-electric nameplates
Only 7 in 2019

37 Brands will be producing a total of nearly 5 million units
Chevrolet, Nissan, and Tesla were the only major BEVs in 2019



Source: AutoForecast Solutions

Key Electrified Platform/Program Launches: North America

Legacy VMs

- **GM BV1: Dec 2021**
 - BrightDrop brand: GM EV commercial vehicle strategy
 - Opening opportunities for contract manufacturing
 - Start in Livonia (KUKA) - shift to Ingersoll, Canada (2022)
- **GM BEV3: March 2022**
 - North America and China
 - Cadillac Lyriq, Celestiq, Symboliq; Chevy Blazer, Equinox EV, Buick Variants, Cruise Brand and others
- **GM BUT/BET: Sept 2021**
 - GMC Hummer & Sierra, Chevy Tahoe & Silverado, Cadillac Escalade
- **Ford TE1: Aug 2025**
 - F-Series Lightning (next generation), Transit, and other models
 - Ford starting to electrifying F-Series Lightning on T3 (existing platform)
- **Ford GE1: Sept 2020 (China in April 2021)**
 - Mustang Mach-E and other small CUVs
- **Ford GE2.1: May 2024**
 - GE1 replacement
 - Addition small and mid-sized CUV EV variants
- **STLA: Stellantis global electrification strategy: April 2023**
 - Four versions: Small, Medium, Large, and Frame (Truck)
 - U.S. launch Oct 2023 (STLA Large @ Toluca and Belvidere)

New Players

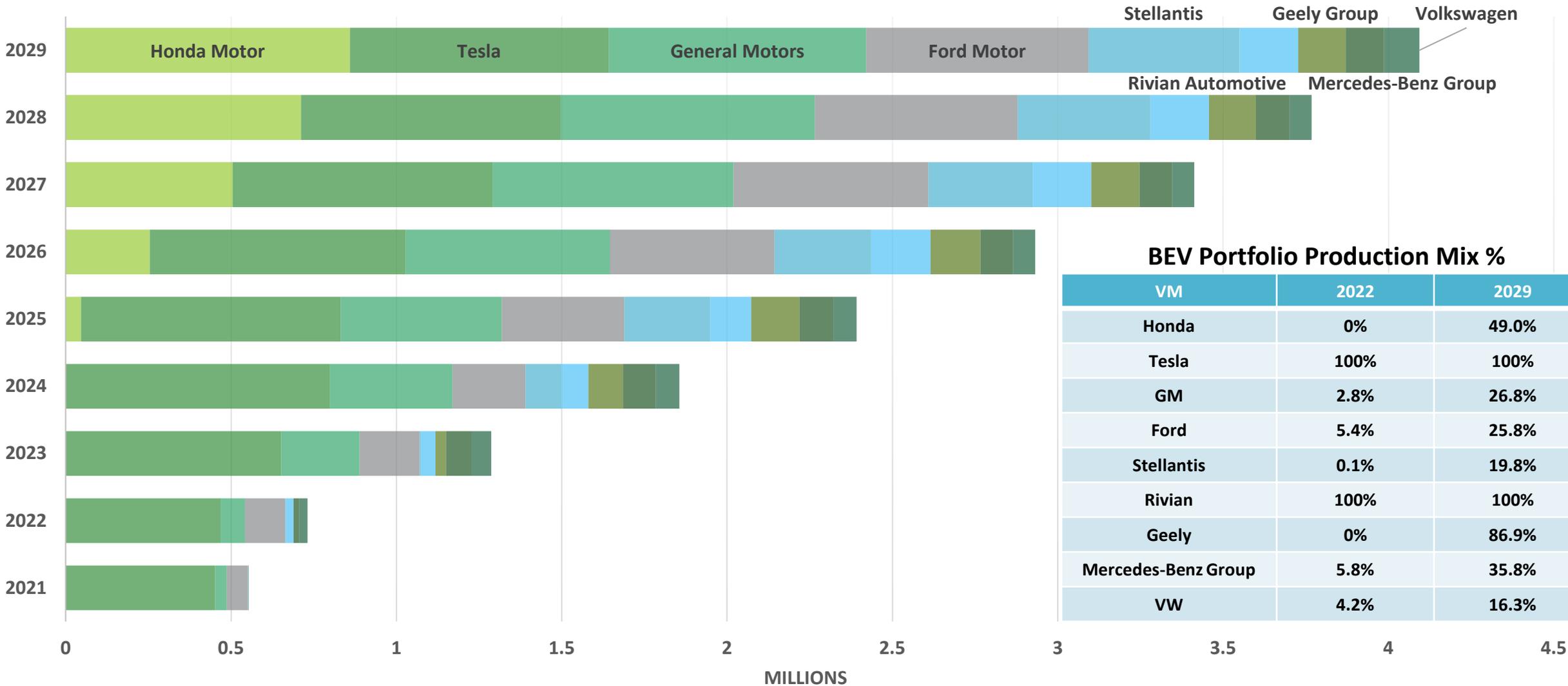
- **Rivian: Q3 2021**
 - Large van, pickup, and crossover
 - Normal, Illinois
- **Lucid: Q4 2021**
 - Lucid Air and Gravity
 - Casa Grande, Arizona
- **Amazon Zoox: Q4 2021 planned**
 - **Delayed**
 - Autonomous Minivan
 - Foster City, California
- **Arrival: Q1 2022**
 - **likely delayed**
 - EV vans and buses
 - Charlotte, North Carolina
- **Faraday: Q3 2022**
 - Fluid situation
 - Mid-sized CUV
 - Hanford, California
- **Canoo: Q4 2022**
 - Fluid situation
 - Minivans and mid-sized pickup
 - Pryor, Oklahoma
- **Foxconn: 2022/2024**
 - Fisker PEAR EV (Q2 2024)
 - Endurance large pickup (Q3 2022)
 - Lordstown, Ohio

NOTE: 2021/2022 launches most likely delayed due to COVID and semiconductor issues

Source: AutoForecast Solutions

North America BEV Production By Vehicle Manufacturer

BASIS: >100K UNITS PER YEAR BY 2029

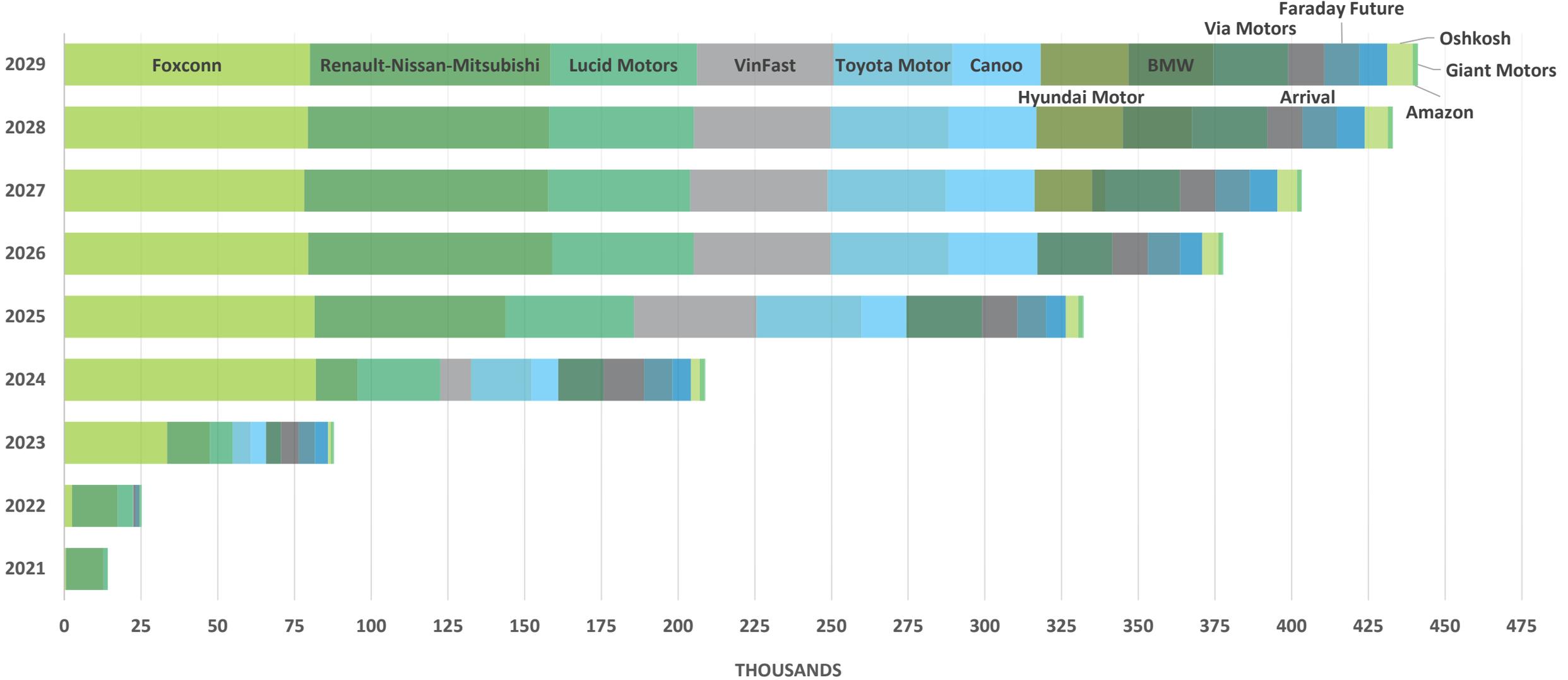


BEV Portfolio Production Mix %

| VM | 2022 | 2029 |
|---------------------|------|-------|
| Honda | 0% | 49.0% |
| Tesla | 100% | 100% |
| GM | 2.8% | 26.8% |
| Ford | 5.4% | 25.8% |
| Stellantis | 0.1% | 19.8% |
| Rivian | 100% | 100% |
| Geely | 0% | 86.9% |
| Mercedes-Benz Group | 5.8% | 35.8% |
| VW | 4.2% | 16.3% |

North America BEV Production By Vehicle Manufacturer (cont'd)

BASIS: <100K UNITS PER YEAR BY 2029



EV Adoption Concerns

The Macro Issues

- Range Anxiety
- Infrastructure
- Resource Limitations
- Cost Barriers

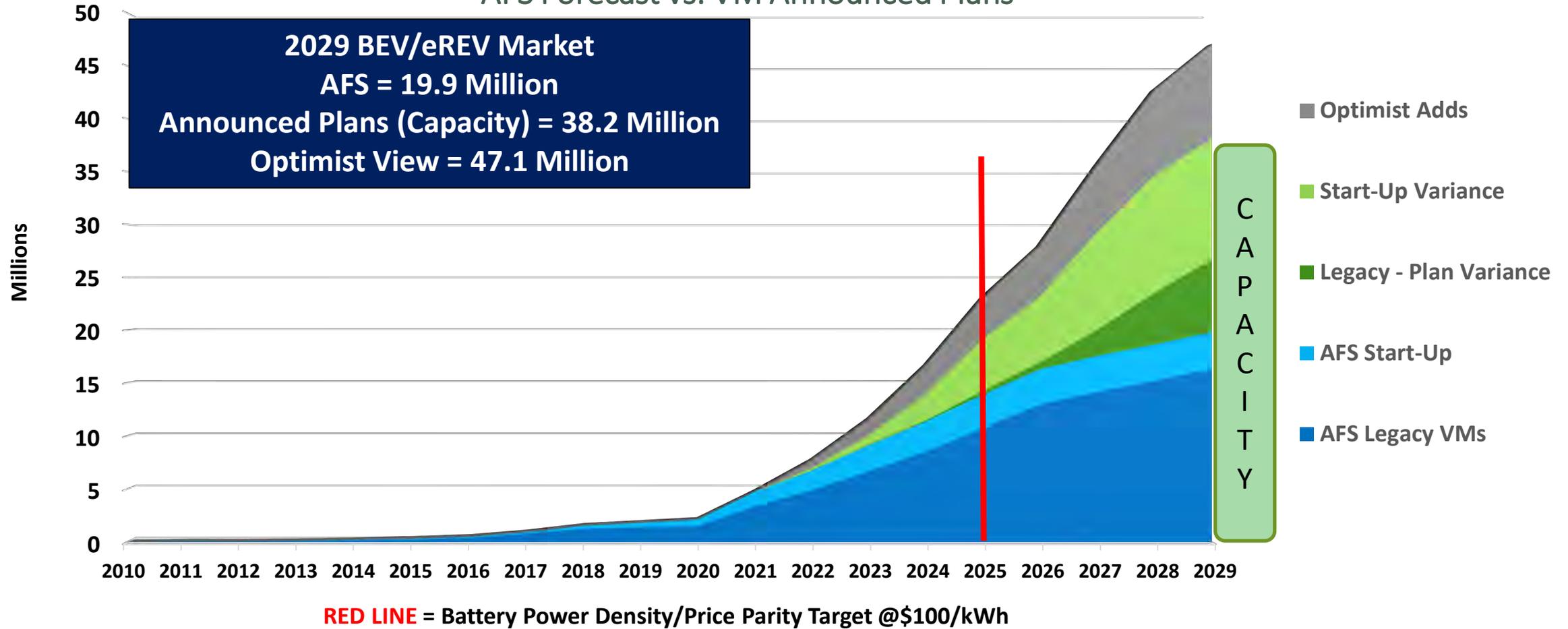
The Fine Print

- Identifying the stakeholders
- Supply chain/VM vertical integration
- Government involvement
- Standardization: regulations, rules, and emission targets
- Charging stations
 - Home and highways
- Financial incentives
 - Direct sale incentives
 - Tax incentives
- Logistics incentives
 - City center allowances
 - HOV use
- Material and manufacturing innovations
 - Rare earth metal availability
 - Current production capacity does NOT support EV build plans
 - The need for improved battery chemistry
 - Raw material prices not expected to decline substantially proportion to volume
- Penalties
 - Consumer
 - Fuel tax
 - EV-consumer road use tax
 - Cost of personal time during charging
 - Manufacturer: Carbon credit mandates
- Altered revenue models & the new consumer
 - New players
 - Understanding the target consumer
 - Brand loyalty erosion
 - Lower sales
 - Transactional vs. Subscription-based model

Source: AutoForecast Solutions

Global EV Market Sizing: AFS Base Case

BEV/eREV Market Outlook AFS Forecast vs. VM Announced Plans



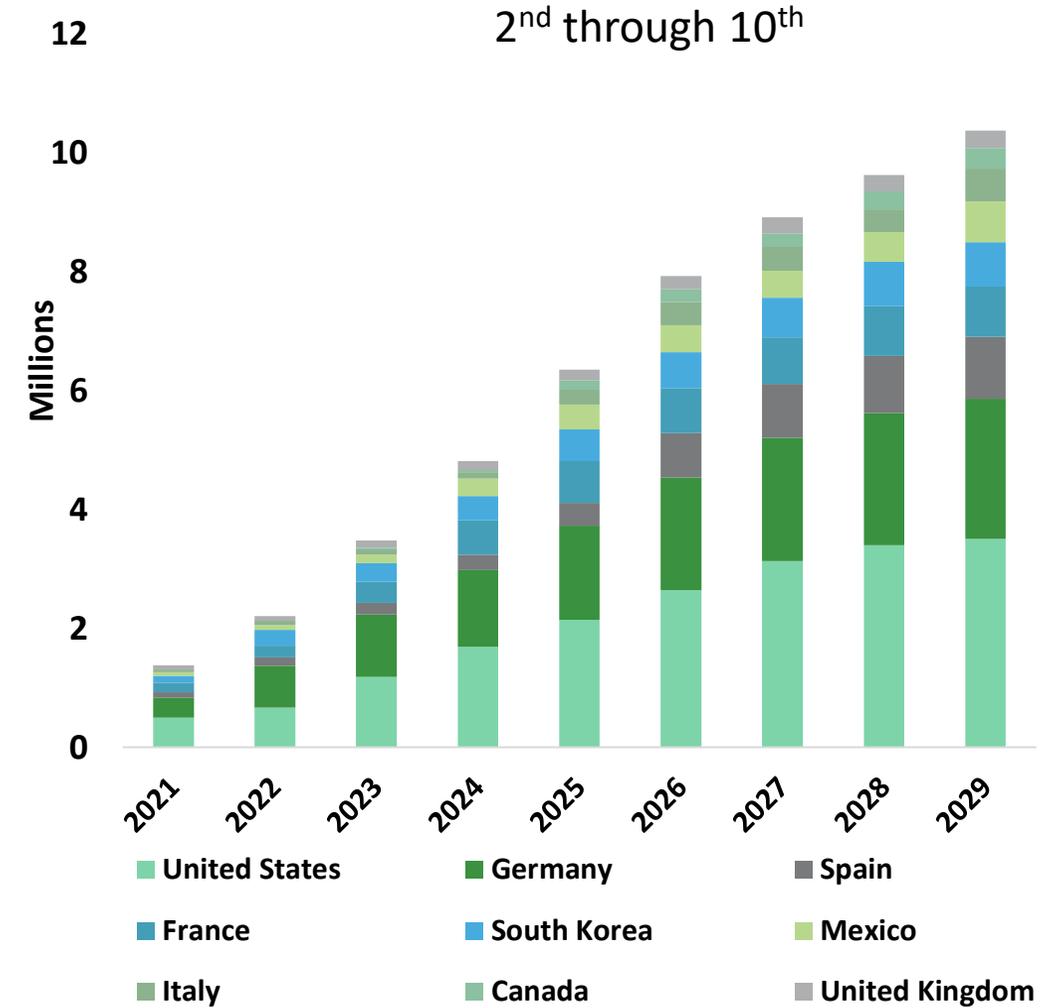
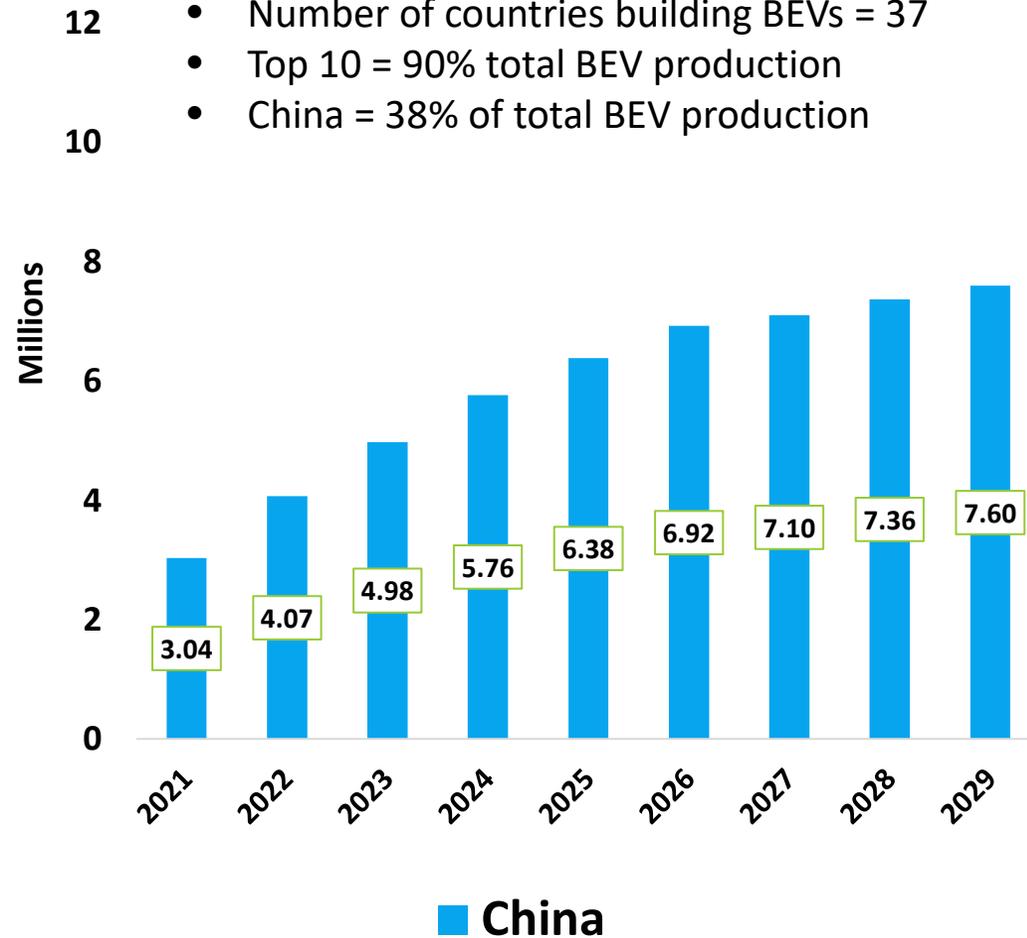
EVEN AN OPTIMISTIC VIEW REQUIRES OVER HALF OF VEHICLES TO HAVE AN ENGINE

Source: AutoForecast Solutions

Global Light Vehicle BEV Production: Top 10 Countries

Based on 2029 Calendar Year

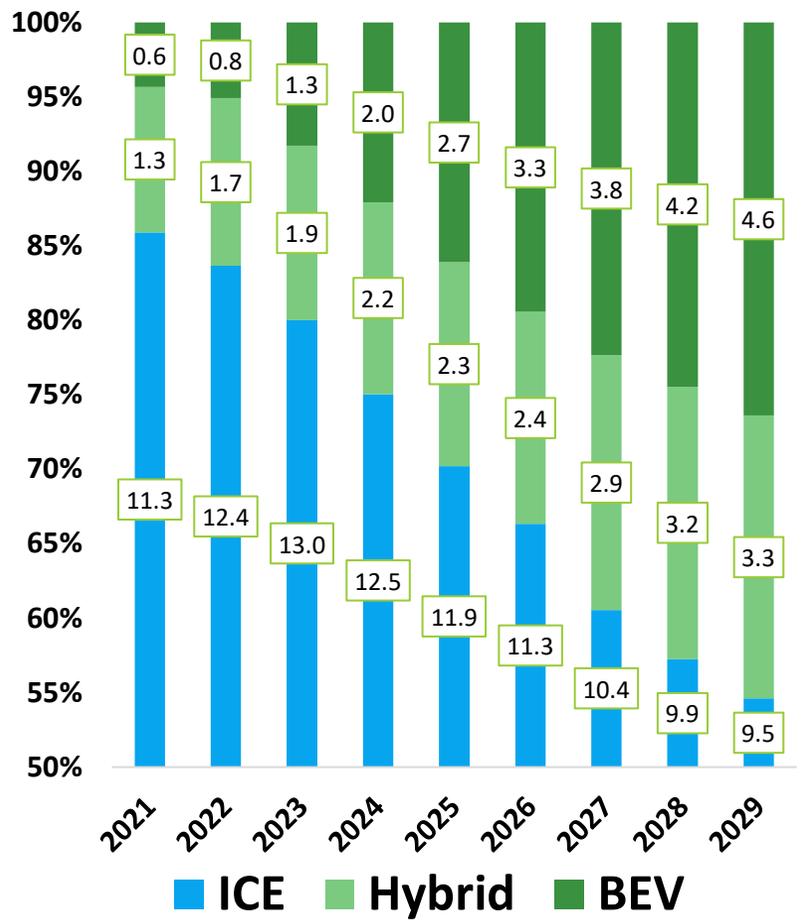
- Number of countries building BEVs = 37
- Top 10 = 90% total BEV production
- China = 38% of total BEV production



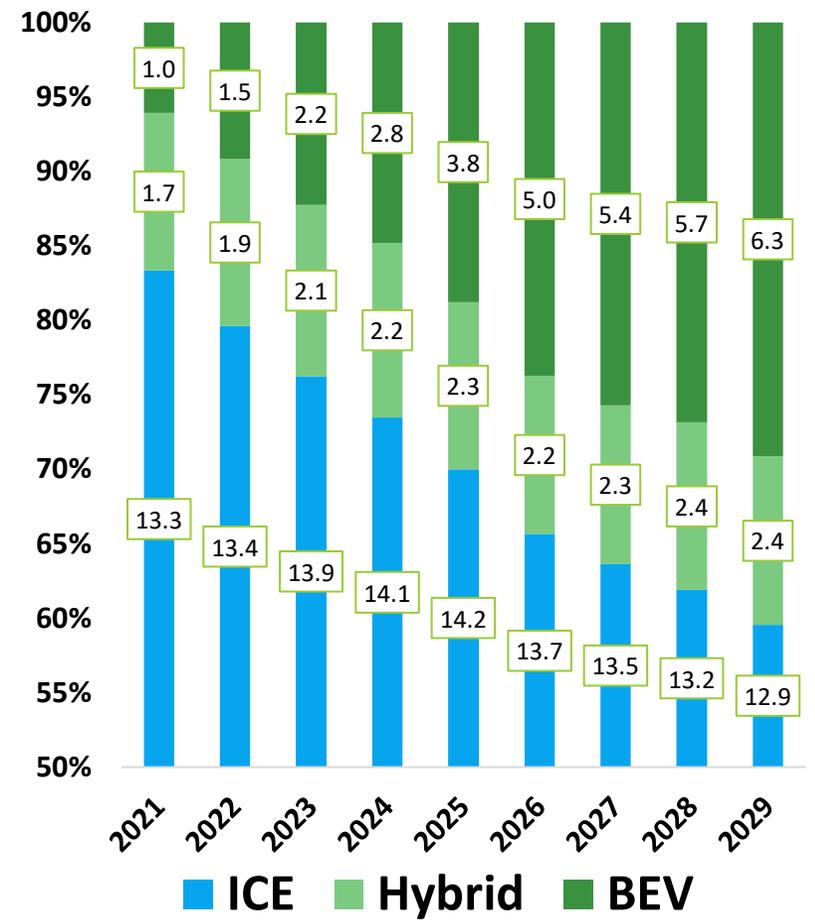
Source: AutoForecast Solutions

Powertrain Production Mix by Major Markets

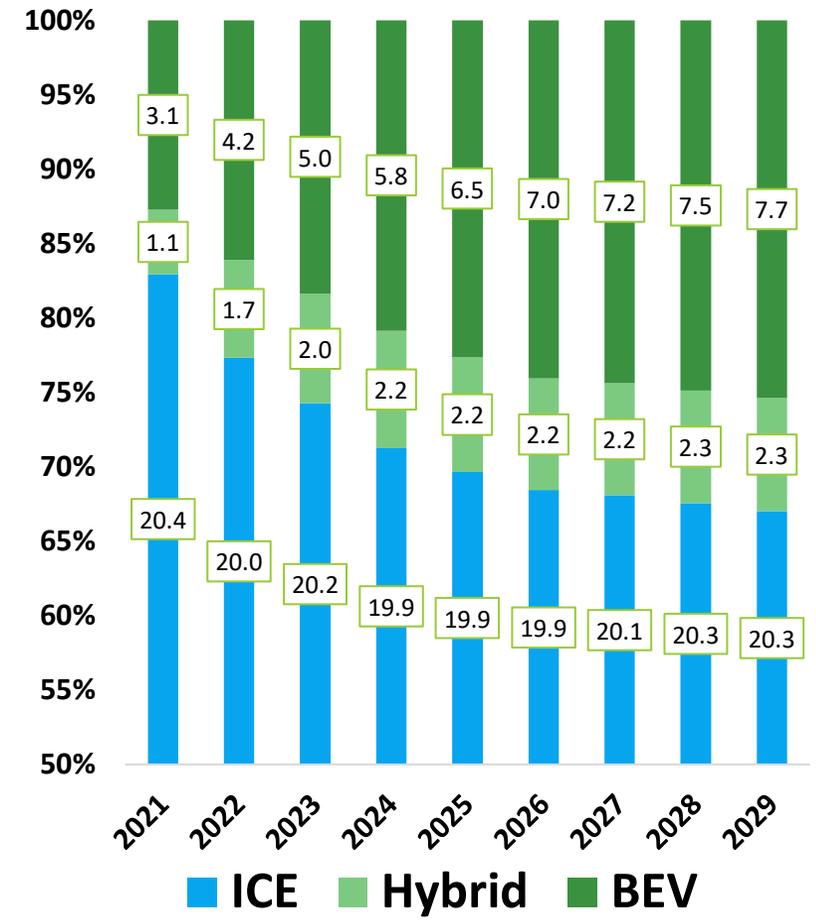
North America Vehicle Production



Europe Vehicle Production



China Vehicle Production



NOTE: Values in columns represent light vehicle production in millions

Source: AutoForecast Solutions

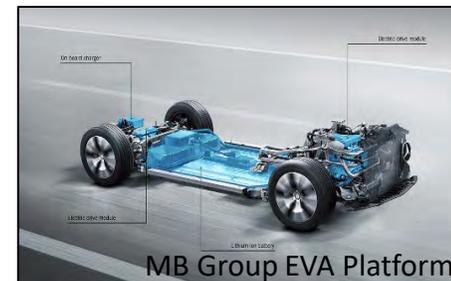
Top 10 BEV Brand Owner Production Comparison

| Brand Owner | 2019 Production Volume |
|---------------------------|------------------------|
| Tesla | 365K |
| Renault-Nissan-Mitsubishi | 190K |
| BYD | 145K |
| Beijing Automotive Group | 138K |
| Volkswagen | 113K |
| SAIC-GM-Wuling | 71K |
| Geely Group | 60K |
| SAIC Motor | 55K |
| Hyundai | 53K |
| Chery | 47K |
| Other | 495K |
| TOTAL | 1.73M |

71%



- Level up 2029
- Level down 2029
- New in 2029



| Brand Owner | 2029 Production Volume |
|---------------------------|------------------------|
| Volkswagen | 2.54M |
| Stellantis | 2.17M |
| Tesla | 2.02M |
| Ford | 1.50M |
| Geely Group | 1.34M |
| GM | 1.10M |
| Honda | 1.06M |
| Mercedes-Benz Group | 1.06M |
| Hyundai | 821K |
| Renault-Nissan-Mitsubishi | 733K |
| Other | 5.53M |
| TOTAL | 19.88M |

72%

Source: AutoForecast Solutions

AFS Global Production Scenario: Long-term Outlook

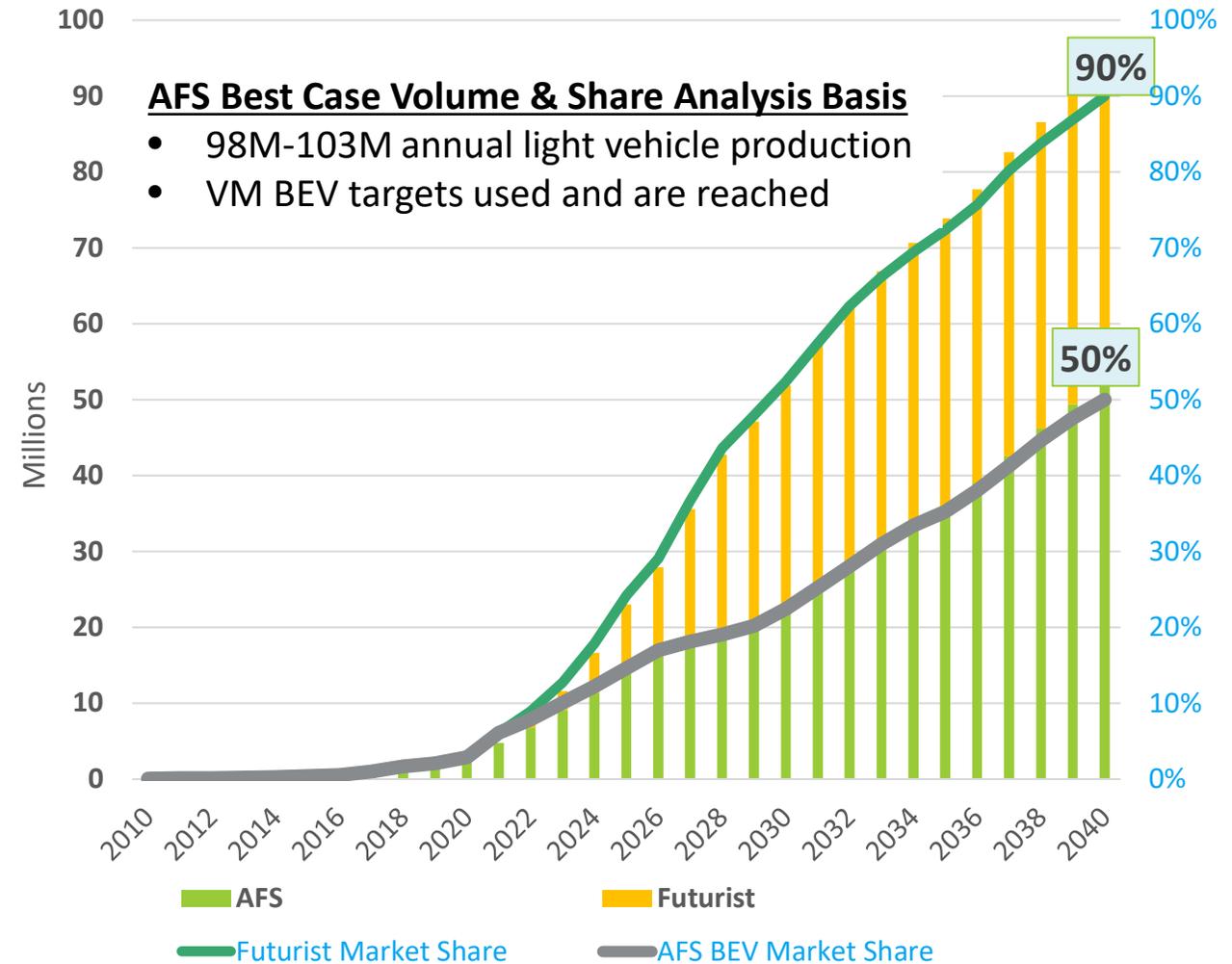
Best Case: Potential Winners

- General Motors, Ford, Volkswagen
 - Aggressive targets are achievable
 - Consumer buying habits inline with VM investment strategies; mitigating financial losses
- Commercial Vehicle Startups
 - Delivery and fleet truck buyers are uniquely positioned to benefit from low-cost operation
- Government
 - Strong investment pays off politically

Base Case: Potential Winners

- Toyota, Mazda, Honda
 - Focusing on hybrids and fuel cells delays large investments on BEVs until the market is proven, saving billions of dollars

VM EV Targets, Best Case Scenario



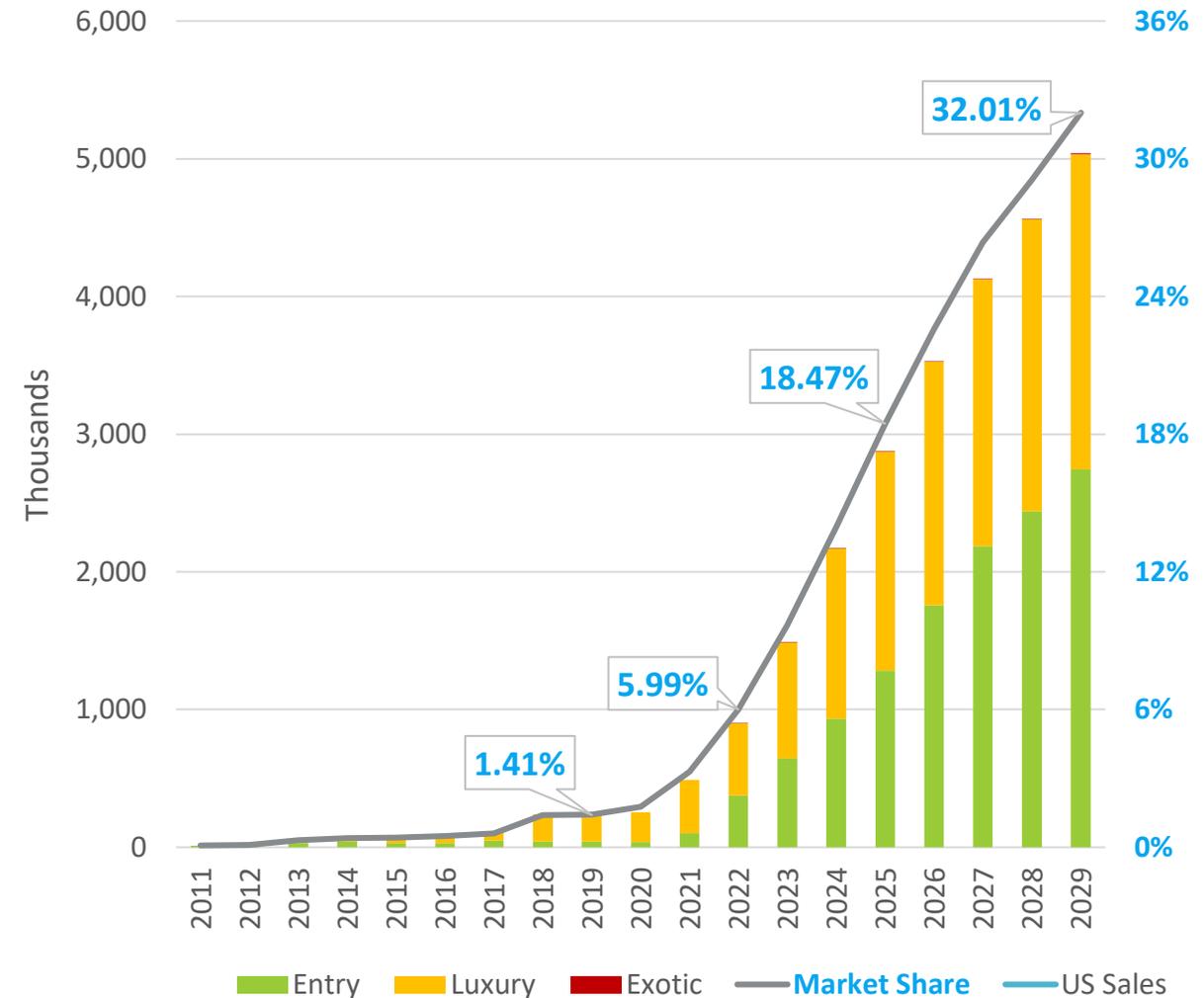
Source: AutoForecast Solutions

BEV Sales Outlook: United States

Analysis Assumptions:

- Significant uptick starting in 2023
- Growth needs to accelerate to hit any VM-announced BEV targets in 2030+
- Nearly 100% of domestically-built BEVs are sold domestically
 - Proposed U.S. incentives for domestically-produced BEVs will make imports more expensive
 - The list of “known” players with a firm U.S. production footprint is volatile
- Imports largely limited to luxury/low-volume models
 - Existing imported BEVs will grow, potentially to the point where they will may be built domestically

United States BEV Sales Outlook

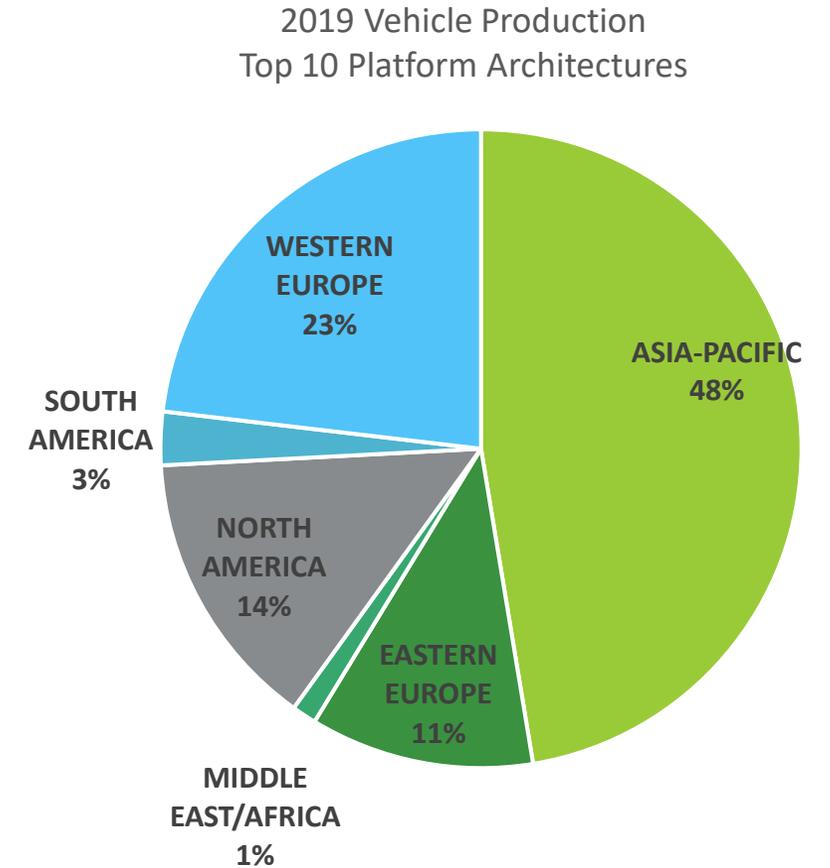


THE GLOBAL IMPERATIVE

Top 10 Global Vehicle Platform Architectures: 2019

Production in 36 Countries representing over 28% of global output

| Platform Architecture | Platform Architecture Owner | 2019 Vehicle Volume | % of Total Production |
|-----------------------|-----------------------------|---------------------|-----------------------|
| MQB | Volkswagen | 7.0 million | 7.8% |
| TNGA | Toyota Motor | 4.0 million | 4.4% |
| CMF | Renault-Nissan-Mitsubishi | 3.0 million | 3.3% |
| KP2 | Hyundai Motor | 1.9 million | 2.1% |
| CCA | Honda Motor | 1.7 million | 1.9% |
| EMP2 | Groupe PSA | 1.6 million | 1.8% |
| GSP | Honda Motors | 1.6 million | 1.7% |
| N | Hyundai Motors | 1.5 million | 1.7% |
| MLB | Volkswagen | 1.4 million | 1.5% |
| 35up | BMW | 1.4 million | 1.5% |
| TOTAL | | 25.0 million | 27.8% |

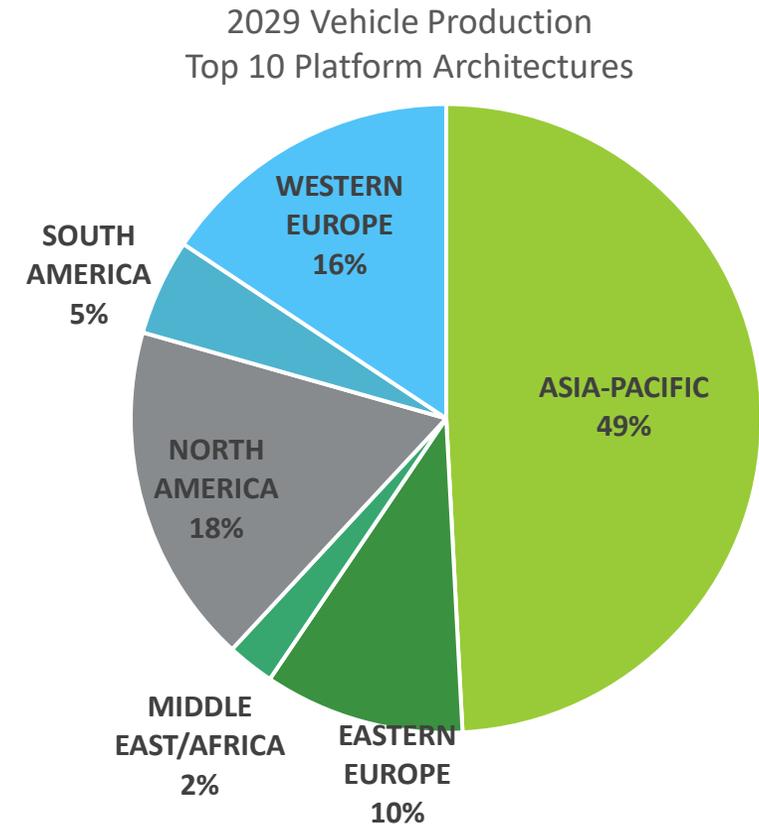


Source: AutoForecast Solutions

Top 10 Global Vehicle Platform Architectures: 2029

Production in 43 Countries representing over 41% of global output

| Platform Architecture | Platform Architecture Owner | 2029 Vehicle Volume | % of Total Production | % Electrified | % BEV |
|-----------------------|-----------------------------|---------------------|-----------------------|---------------|-------|
| TNGA | Toyota Motor | 9.4 million | 9.6% | 29.2% | 2.2% |
| MQB | Volkswagen | 6.5 million | 6.7% | 6.9% | 0.4% |
| CMF | Renault-Nissan-Mitsubishi | 5.8 million | 6.0% | 18.8% | 11.7% |
| Honda Architecture | Honda Motors | 4.6 million | 4.7% | 31.3% | 18.4% |
| STLA | Stellantis | 2.8 million | 2.9% | 80.2% | 68.5% |
| VSS-F | General Motors | 2.4 million | 2.4% | 6.2% | 0.4% |
| N | Hyundai | 2.3 million | 2.4% | 12.1% | 1.9% |
| MEB | Volkswagen | 2.3 million | 2.4% | 100% | 100% |
| KP2 | Hyundai | 2.3 million | 2.3% | 3.7% | 2.4% |
| EMP2 | Stellantis (PSA) | 2.0 million | 2.1% | 15.2% | 10.8% |
| TOTAL | | 40.4 million | 41.3% | | |



All have electrified applications - but not 100% EV

Source: AutoForecast Solutions

Final Thoughts

The Changing Landscape

Evaluate current methodologies & rethink how to plan for the future

The Changing Consumer

- Brand loyalty erosion
- Build-to-order strategy: minimize need for trim level pre-builds and inventory-based selling
- Subscription-based vs. transactional-based purchases
- Socially motivated buying decisions

The China Effect

- It's not "if" but when there will be a North America presence
- Electrification and collaboration

Electrification

- Shareholder Value: a too-big-to-fail strategy
- Reduction in parts and manufacturing complexity
 - Labor & volume reduction; more automation

The Supply Chain

- Evaluating and rethinking just-in-time processes
- Vertical integration of key materials and products
- Investigating secondary & tertiary supply sources

The Existing Players

- GM and Ford electrifying entire line
- Partnerships & new brands indicate contract manufacturing direction
 - GM & Honda / Ford & VW
 - GM BrightDrop
- Stellantis vs old-FCA
 - Moved from last to near-lead in EV space through alliance with former PSA

The New Players

- EVs and SPAC money provides easier entry of new, unexperienced VMs; all looking for help
 - Elimination of ICE greatly reduces cost and time to market entry
 - Compressed time to market when you can eliminate the ICE components is a game changer
 - Proactive planning required: reactive approach can limit growth and competitiveness

Disruption creates opportunity

Source: AutoForecast Solutions

Thank You,



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Driving Data into Decisions.
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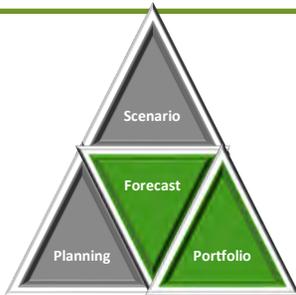
AFS Forecast is a comprehensive automotive production forecast database and at the heart of the AFS value proposition. Detailed monthly vehicle data: *Light Vehicle, Powertrain, Drivetrain, and Alternative Propulsion*. Updated and provided in a user-friendly, web-based, solution; on a monthly basis. Historical production volumes and an eight-year planning window of forecast volumes are updated every month on a global basis – with proven automotive subject matter expertise and support. Supplemental weekly and monthly market reports analyze and pinpoint changes that help improve your company’s competitive position.



AFS Planning is a fully integrated quote management and revenue planning solution specifically designed for an automotive supplier. Track and analyze your sales, customers, products, production capacity, and more at a detailed monthly part number level. Used also by the financial and investment community for due diligence and revenue performance analysis. Your company’s global footprint in a live database - integrated directly with the AFS Forecast database for accurate and timely planning, analysis, and opportunity identification. For further intelligence, add-on AFS Scenario.



AFS Scenario is the only tool available in the industry designed to create custom light vehicle and powertrain forecasts; on a regional basis for the global automotive market. Adjustments to annual, quarterly, and monthly production volumes can be done from the top down (total region) to the Vehicle/plant level – and all levels in-between (OEM, Platform, Program, etc.). Supported by a full suite of analysis reports to understand forecast changes over time.



AFS Portfolio is designed to allow an organization understand and track their competitive landscape. Customize around your products and services; track your product mix, volumes, competitive position, and identify your market share both from a volume and revenue perspective in the global automotive marketplace. Automatically updated every month to support a proactive approach in strengthening your core operations while identifying opportunities for growth.

Detailed Global Automotive Coverage

- Global light vehicle & powertrain coverage: 6 regions – 60 countries
- Complete light vehicle, engine, transmission, electric motor, & alternative propulsion detail – updated monthly
- Historical production volumes PLUS an eight-year outlook at a monthly level.
- Special reports on a weekly and monthly basis highlighting production timing changes, industry issues, opportunities & risks, and much more
- Dozens of fields updated monthly for the entire production outlook.
- Web-based interface to enhance and accelerate forecasting and planning efforts
- Concierge Support: Direct access to the AFS subject matter experts to ask the key questions to improve your competitiveness. Our team becomes an extension of your team.

Primary AFS Data Fields Updated Monthly and Accessible from the AFS Services web-based interface

| Vehicle | Engine | Transmission | Electric Motor |
|---------------------------|--|-------------------------|------------------|
| Region | Family, RPO Codes, * Other Description Fields | | |
| Country | Type (IC Only, BEV, eREV, PHEV, SHEV, and Fuel Cell) | | |
| Assembly Plant & Location | Production Manufacturer, Region, Country, & Plant | | |
| Vehicle Manufacturer | Vehicle Application Detail | | |
| Brand Owner | Start/End of Powertrain Package Application to Vehicle | | |
| Nameplate | Displacement (L, CC, CI) | Number of Forward Gears | Motor Type |
| Vehicle Type & Segment | Cylinder Configuration | Transmission Type | Motor Location |
| Platform Architecture | Number of Cylinders | Transmission Design | Max Voltage |
| Platform | Fuel Types / Flex Fuel | Clutch Actuation | Number of Phases |
| Program | Valvetrain | Case Material | Voltage Type |
| Start/End of Production | Aspiration | Transaxle | |
| Plant Coordinates | Fuel Delivery Types | Torque Converter | |
| | Valves per Cylinder / Valve Timing | | |
| | Block/Head Material | | |

Note: Many other attribute and code fields provided to customers for system integration

GLOBAL AUTOMOTIVE PRODUCTION FORECASTING



- Vehicle
- Engine
- Transmission
- Alternative Propulsion
- Drivetrain
- Advisory Services

8 Year Outlook
Updated Monthly

Detailed with Attributes

Over 25 Years of Experience

Concierge-level Support

Improve Your Competitiveness

- Opportunity Identification
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- Revenue Growth

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Data That Drives Tomorrow

AutoForecast Solutions (AFS) is the only fully integrated solutions provider of *vehicle, powertrain, and drivetrain production forecasting, business planning software, and advisory services* to the global automotive industry.



AFS helps our customer...

Understand the opportunities
Develop a value proposition to defend core operations
Identify areas for growth.