Automotive Production Outlook
North America and the Global Impact

Session: Forecasting the North American Sales and Production Footprint in Uncertain Times

Joseph McCabe, President
855.734.4590 ext. 1001

MARKET DISRUPTION

BALANCING RISK & OPPORTUNITY

Competing in a Disruptive Global Market

- ***Consumer preference vs. market direction***
- ***Shareholder value***
- ***Supply chain importance to the VM strategy***
- ***Innovation in product and strategy***
- ***Investment strategies***
- ***Regulations and incentives***
- ***Geo-political impact on globalization***
- ***Future players***
- ***Minimize risk and maximize opportunities***
- ***Defend core operations and identify areas for growth***

Market Drivers, Enablers & Constraints

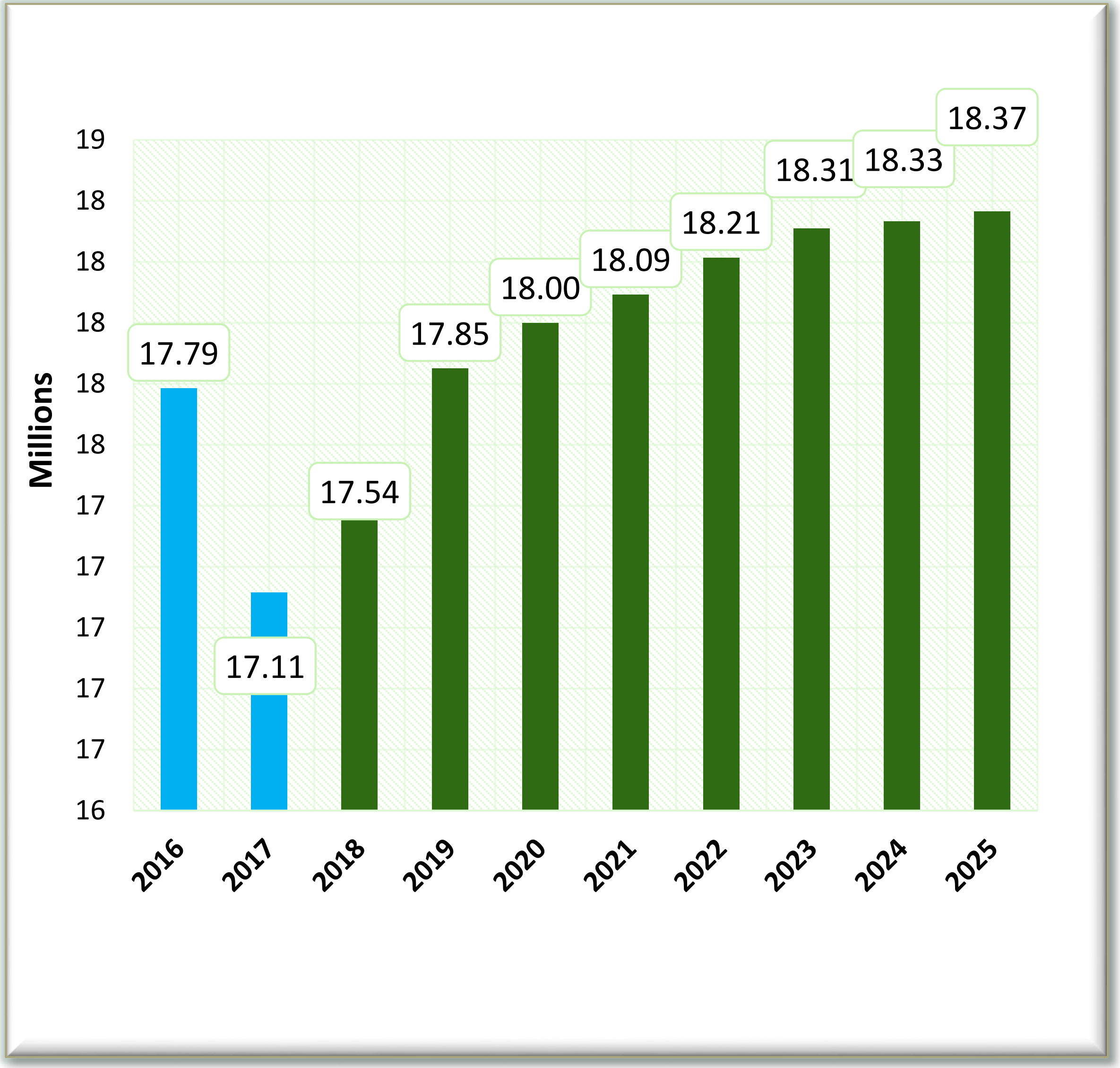
Disruptive Consumer Views: Brand & Domestic Production Loyalty

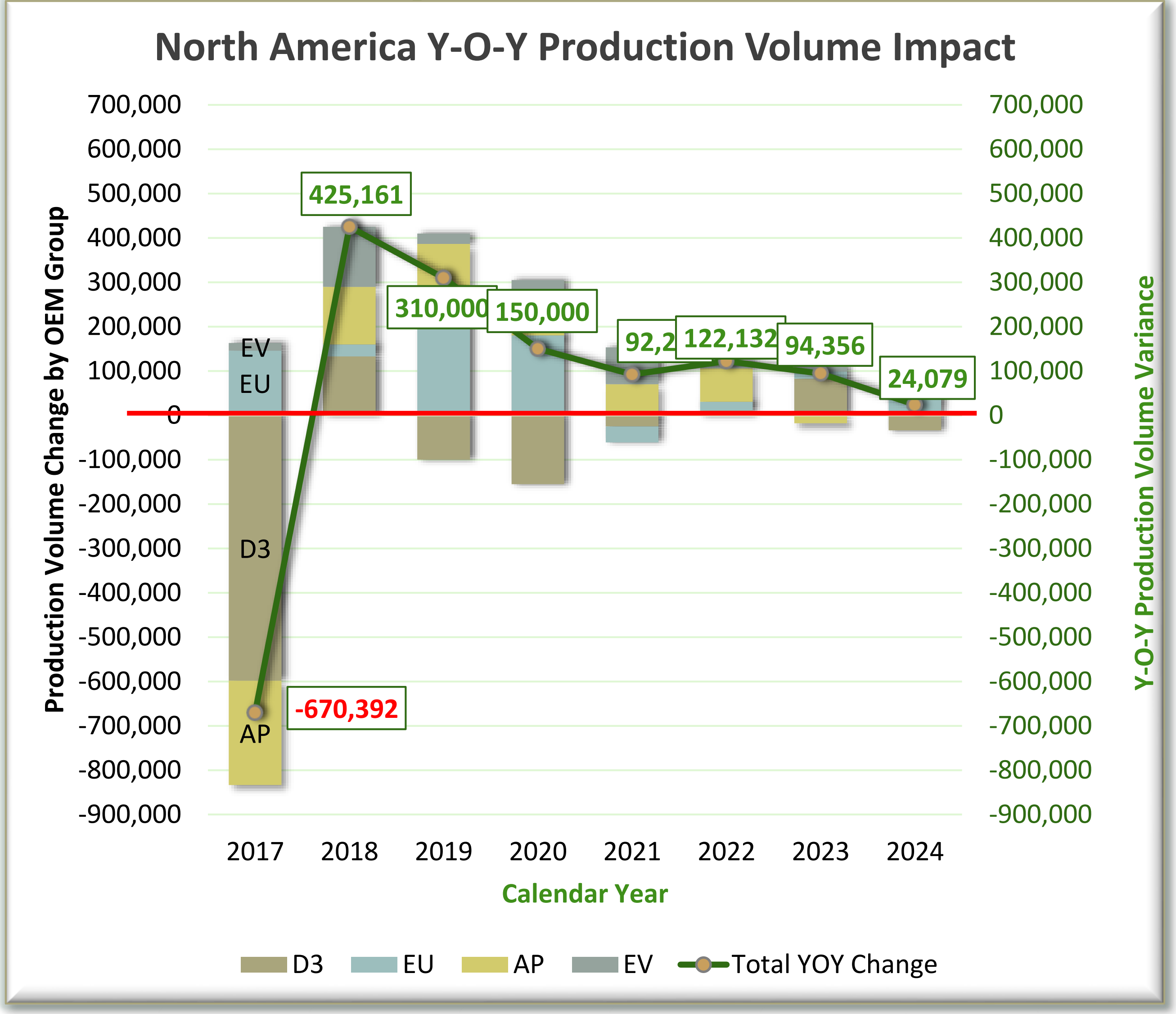
- **Are consumers concerned about where their vehicle is built?**
  - China - Buick Envision, Cadillac CT6 PHEV, and Volvo S60
  - Italy - Jeep Renegade
  - "Imported from Detroit" campaign – Chrysler Pacifica and 300 built in Canada
- **Do consumers care about the parent company ownership?**
  - Geely → Volvo
  - Tata → Jaguar/Land Rover
  - More to come!

- **New players opening up the competitive landscape?**
  - Tesla
  - Google
  - Apple
  - Dyson
  - Silicon Valley
- **Is the landscape changing?**
  - Uber
  - Lyft
  - Ride sharing

NORTH AMERICA LIGHT VEHICLE PRODUCTION

NA Growth Outlook and OEM Group Contribution

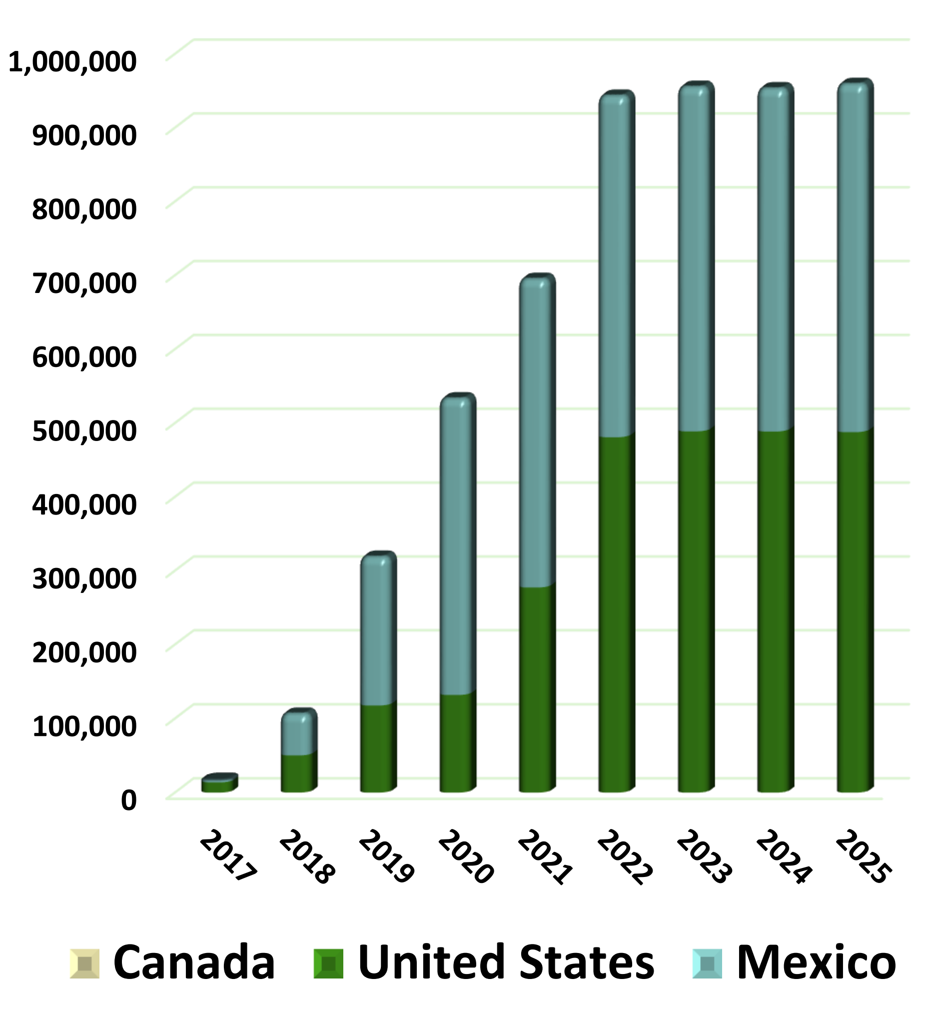




Source: AutoForecast Solutions – June 2018

NAFTA Greenfield Production Investment

(2017 – 2025)



UNITED STATES

- **Daimler North Charleston, South Carolina (2018)**
  - Freightliner/Mercedes Sprinter
- **Faraday Future Hanford, California (2018)**
  - Faraday large EV Plus
- **Karma Automotive Moreno Valley, California (2017)**
  - Karma Revero
- **Lucid Motor Casa Grande, Arizona (2019)**
  - Lucid (Air, D-SUV)
- **Navistar Springfield, Ohio (2017)**
  - Chevrolet Express, GMC Savana
- **Rivian Automotive Normal, Illinois (2020)**
  - Rivian (CUV, Pickup)
- **Volvo (Geely) Berkeley County, South Carolina (2018)**
  - Volvo (S60/S60L, XC90)
- **SF Motors Mishawaka, Indiana (2020)**
  - SF Motors (SF5, SF7)
- **Mazda Toyota Huntsville, Alabama (2021)**
  - Mazda CX-7, Toyota Corolla

MEXICO

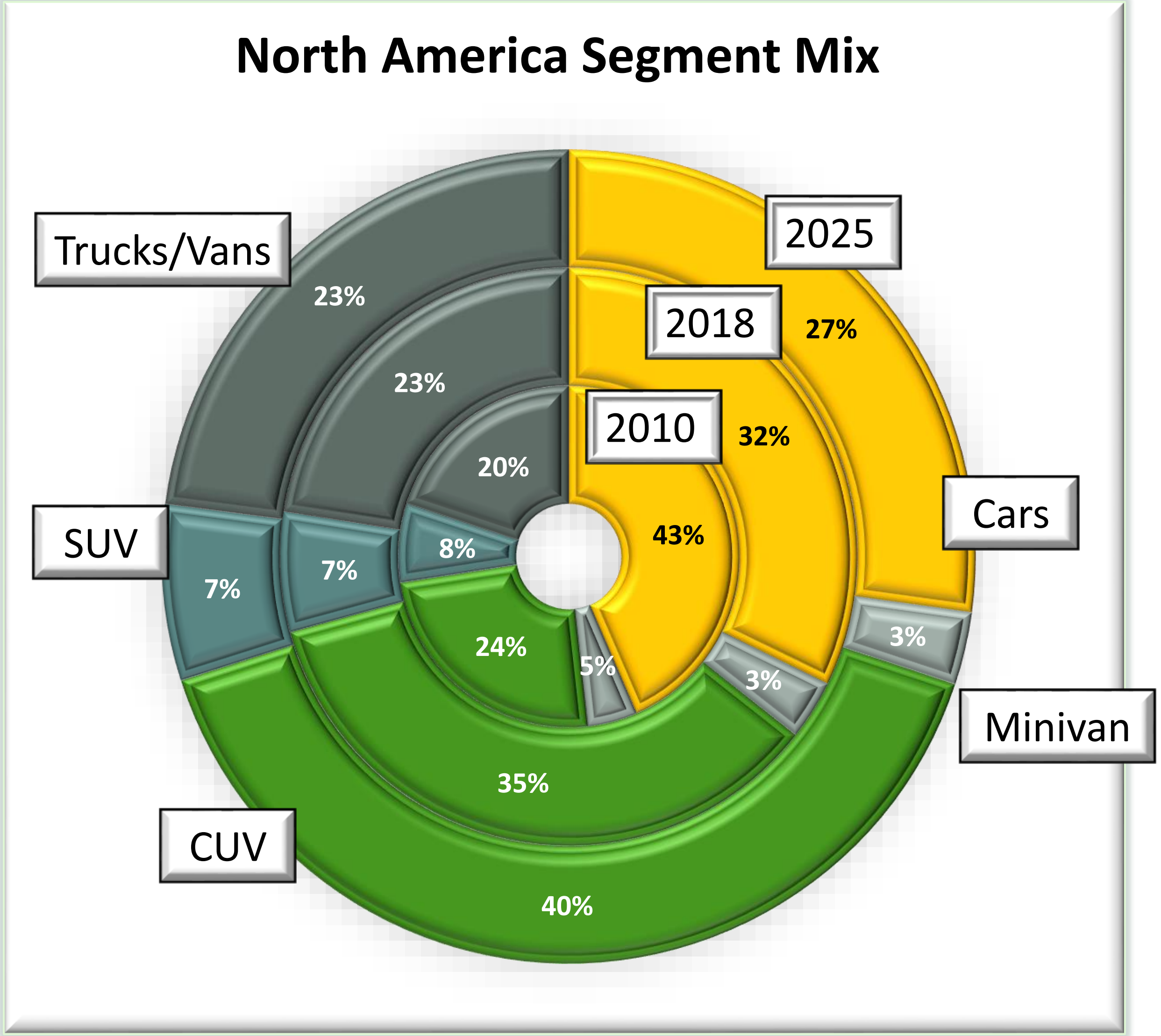
- **BMW San Luis Potosi, Mexico (2019)**
  - BMW (2-Series Coupe, 3-Series)
- **COMPAS (RNNS + Daimler) Aguascalientes, Mexico (2017)**
  - Infiniti QX50
  - Daimler (A-Class, GLB)
- **Giant Motors Hidalgo, Mexico (2017)**
  - JAC (Refine S2, S3)
- **Toyota Guanajuato, Mexico (2018)**
  - Toyota Tacoma

CANADA

- **Ford (via Multimatic) Markham, Ontario (2017)**
  - Ford GT

Source: AutoForecast Solutions – June 2018

North America – The Changing Product Mix



Factors Driving Investment & Assembly Decisions

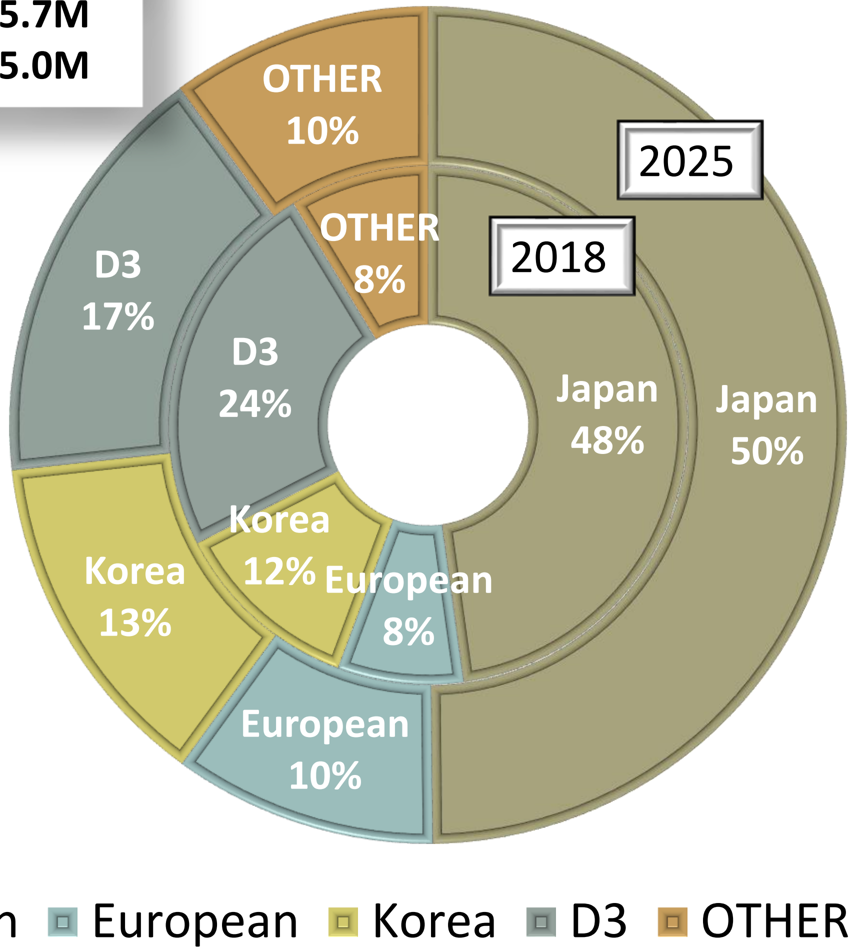
- Fuel Prices vs. Fuel Economy
- Funding Access
- Consumer Confidence
- New players / Brand loyalty
- Technology / Safety
- Market Stability
- Employment
- Pent-Up Demand
- Regulation
- Government Involvement

CONSUMER PREFERENCE!

Source: AutoForecast Solutions – June 2018

North America: Passenger Car Segment Contribution

Annual Volume
2018 = 5.7M
2025 = 5.0M

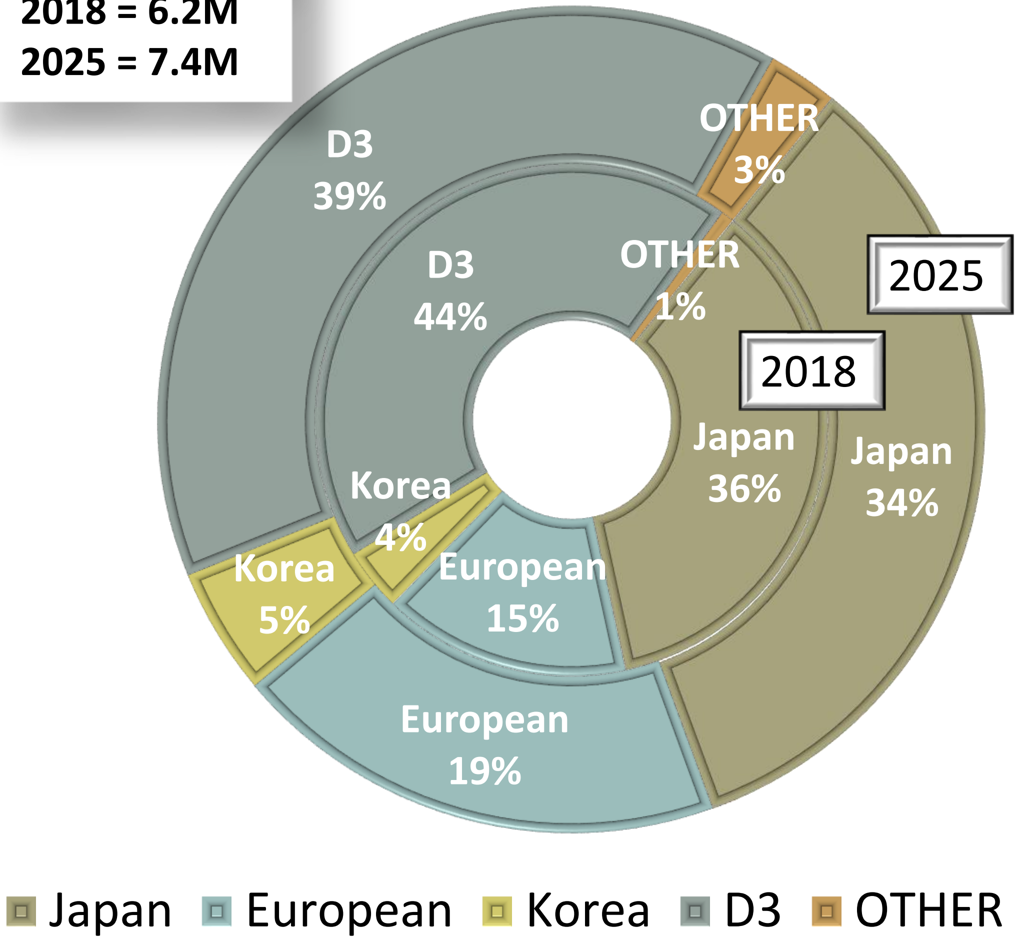


- D3 reduce car footprint by 500K+
- Korean OEMs remain flat
- European OEMs gain 60K
- Japanese OEMs reduce footprint by 200K+
- Other – primarily Tesla – adds 15K

Source: AutoForecast Solutions – June 2018

North America: Crossover Vehicle Segment Contribution

Annual Volume
2018 = 6.2M
2025 = 7.4M



- European OEMs add 400K+ units
- Japanese OEMs add 270K units
- Korean OEMs add 120K units
- The "Other" group includes Tesla, other EV players – adding about 200K
- D3 add 180K (but loses market share?)
  - Consider these imported models…
    - Jeep Renegade from Italy – 100K+
    - Buick Encore from Korea – 90K+
    - Ford EcoSport from India – 50K pace

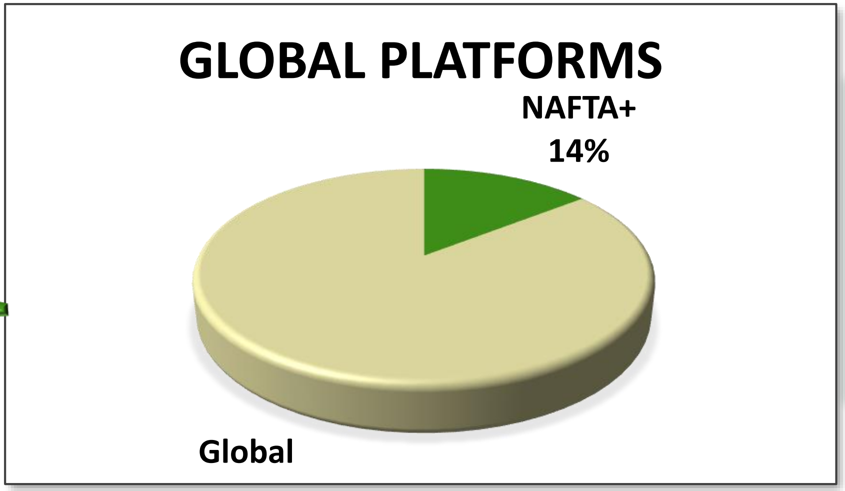
Source: AutoForecast Solutions – June 2018

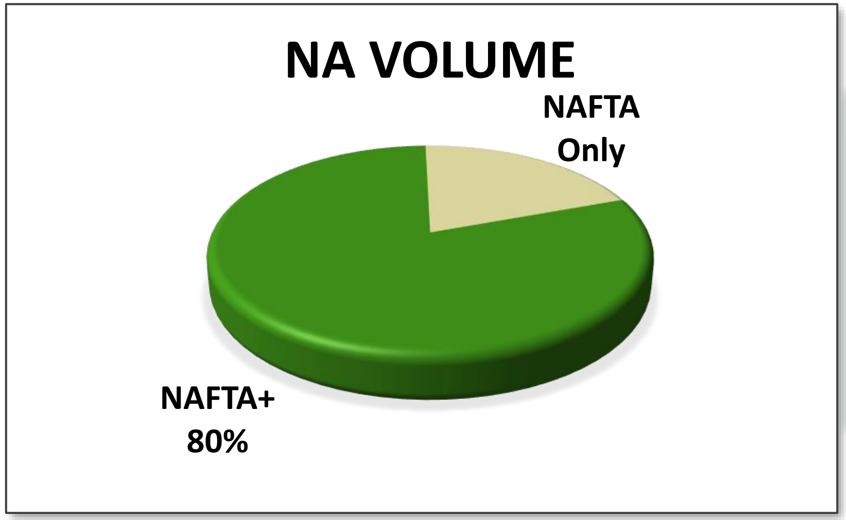
NAFTA +

THE GLOBALIZATION IMPERATIVE

NAFTA+ (2025)

Light Vehicle Platforms containing NAFTA production and at least one other country in ROW





423 Platforms Produced Globally

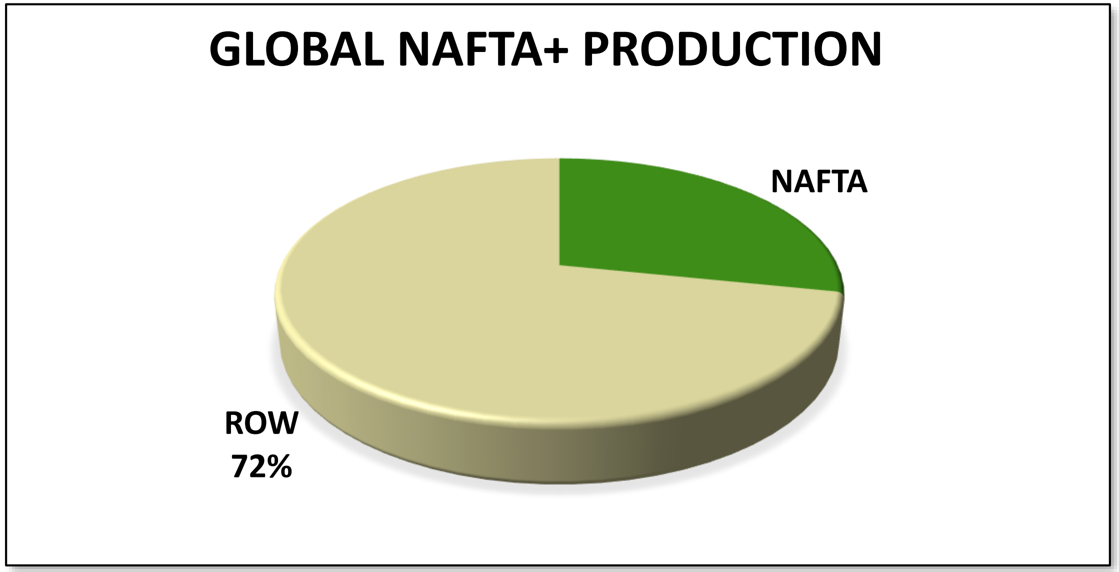
61 NAFTA+ Platforms
14% of total

80% of North America vehicle volumes are part of NAFTA+

14.7 Million vehicles

Source: AutoForecast Solutions – June 2018

NAFTA+ Opportunity/Risk (2025)



52 Million NAFTA+ vehicles

Over 72% Produced OUTSIDE of NAFTA

43% of vehicles assembled OUTSIDE NAFTA are part of NAFTA+

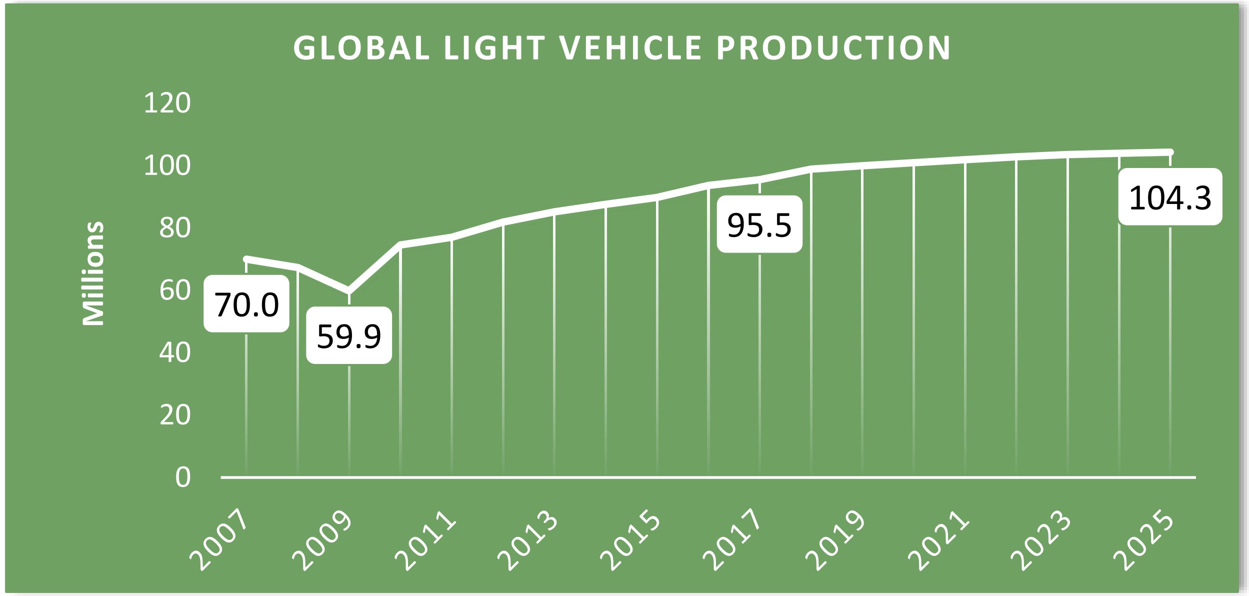
37.4 Million vehicles

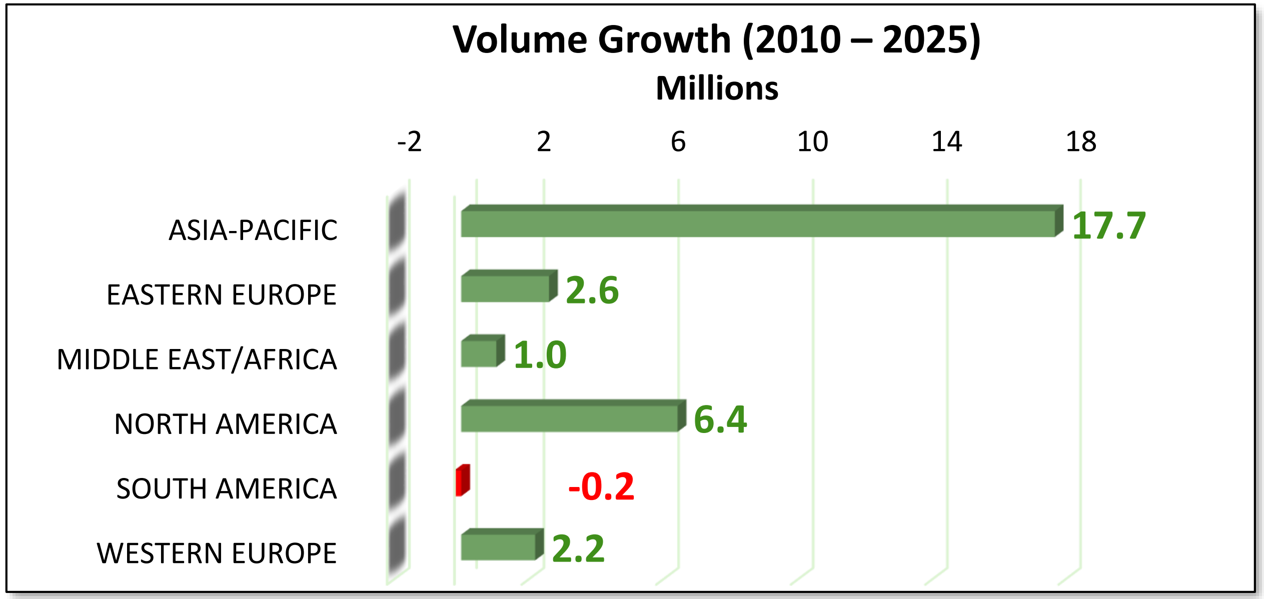
Source: AutoForecast Solutions – June 2018

GLOBAL VEHICLE OUTLOOK

Global Light Vehicle Production

(2010 – 2025)



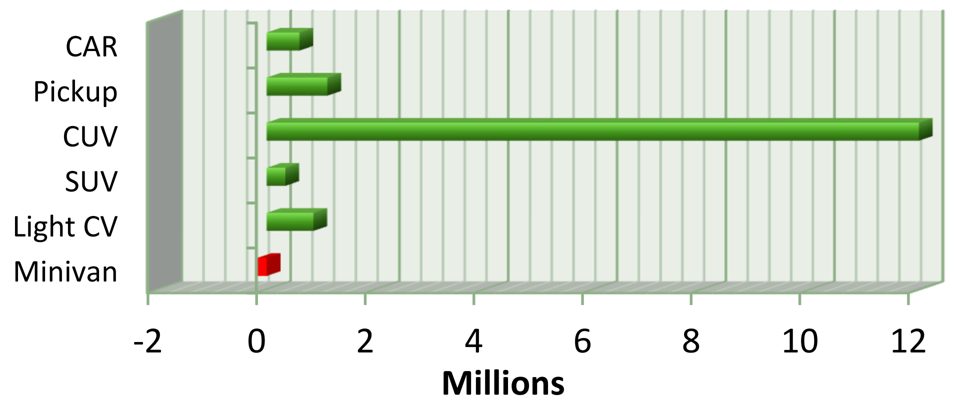


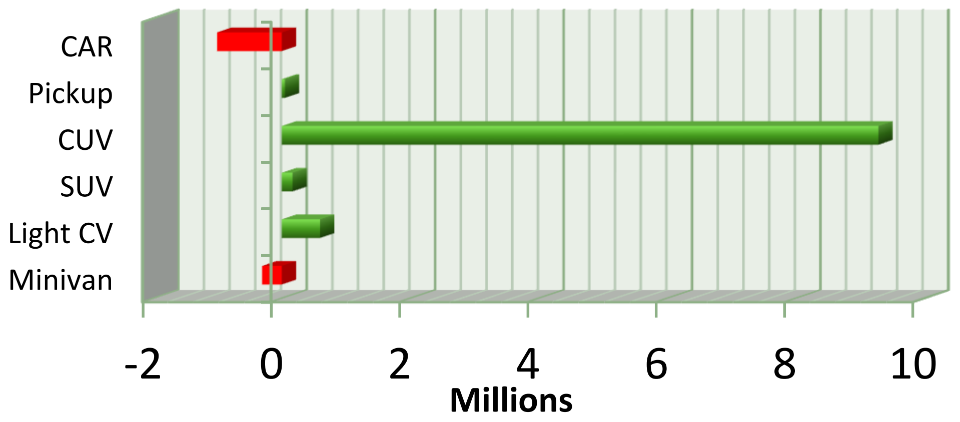
Region	2017 (Mil)	2018 Forecast (Mil)	2025 Fct (Mil)	CAGR (2017 – 2025)
NA	17.11	17.54	18.37	0.9%
SA	3.27	3.59	3.94	2.4%
WE	14.94	15.47	15.55	0.5%
EE	7.46	7.86	8.61	1.8%
AP	50.22	51.78	54.65	1.1%
ME/A	2.51	2.65	3.20	3.1%
TOTAL	**95.52**	**98.89**	**104.31**	**1.1%**

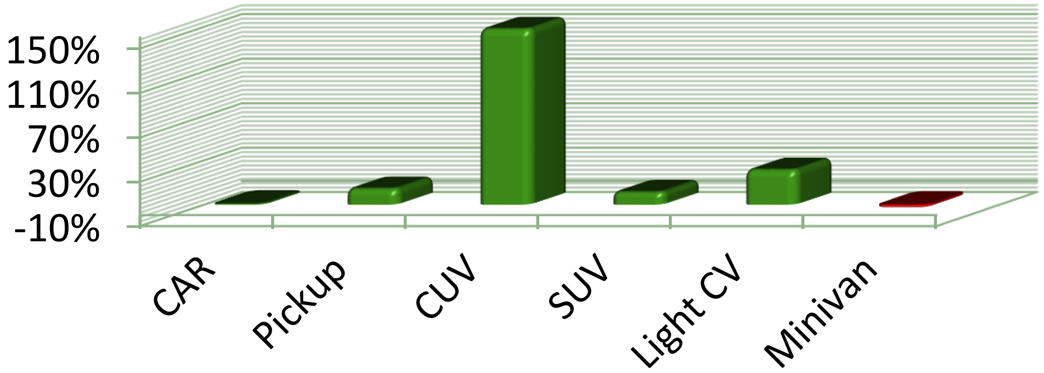
Source: AutoForecast Solutions – June 2018

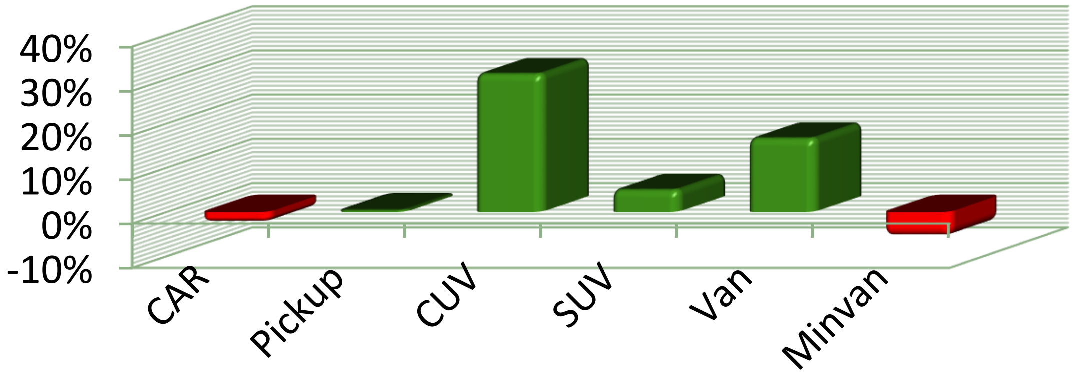
Global Segment Growth Analysis

2010 - 2017 21 Million Units Volume Growth	2017 - 2025 9 Million Units Volume Growth



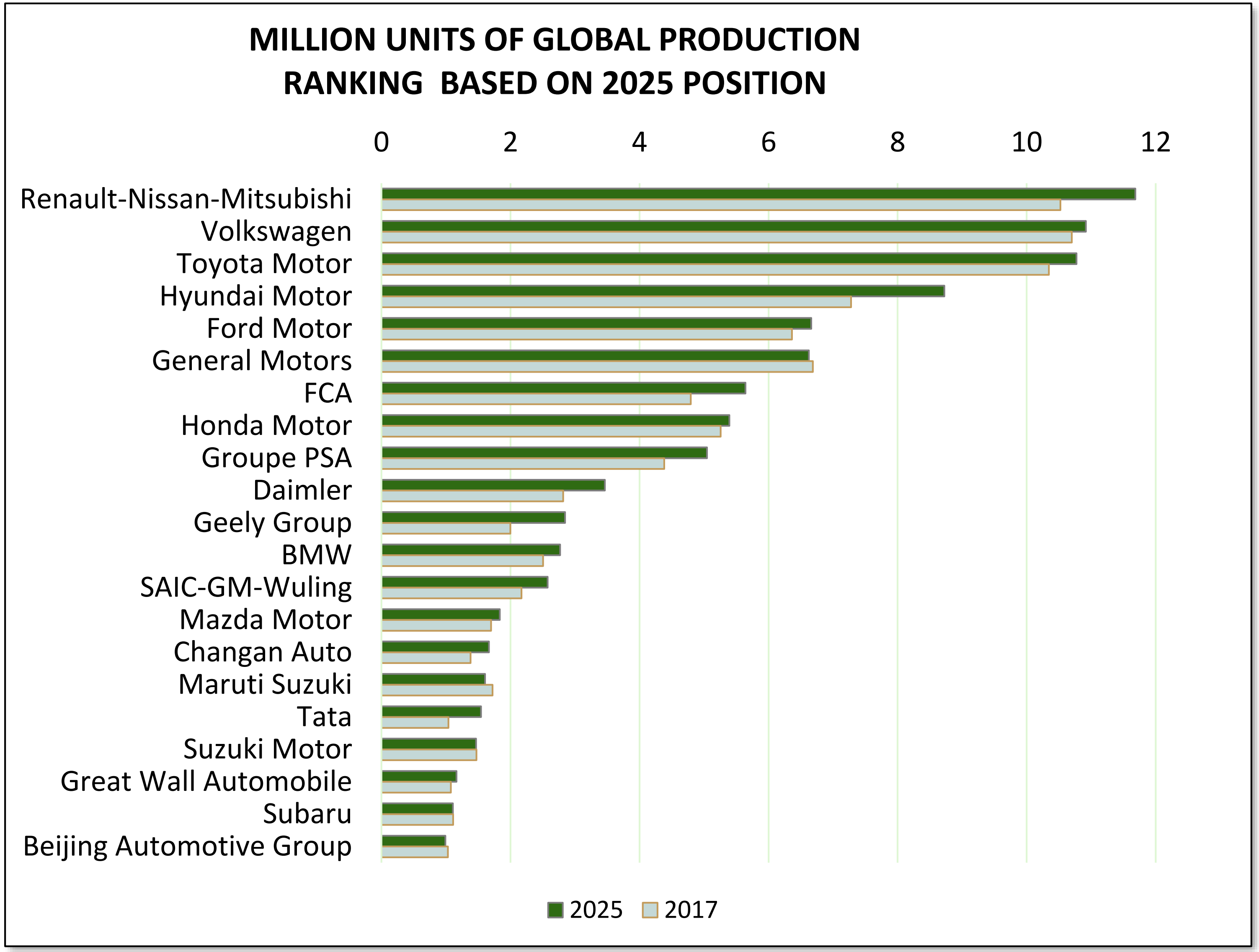






Source: AutoForecast Solutions – June 2018

"1 Million Unit Club" Brand Owner Analysis (2017 vs. 2025)



21 Brand Owners in 2025 over 1 Million units of Annual Production

- 91% of total global output

Top 10 brand owners maintain 72% of the global automotive production volumes

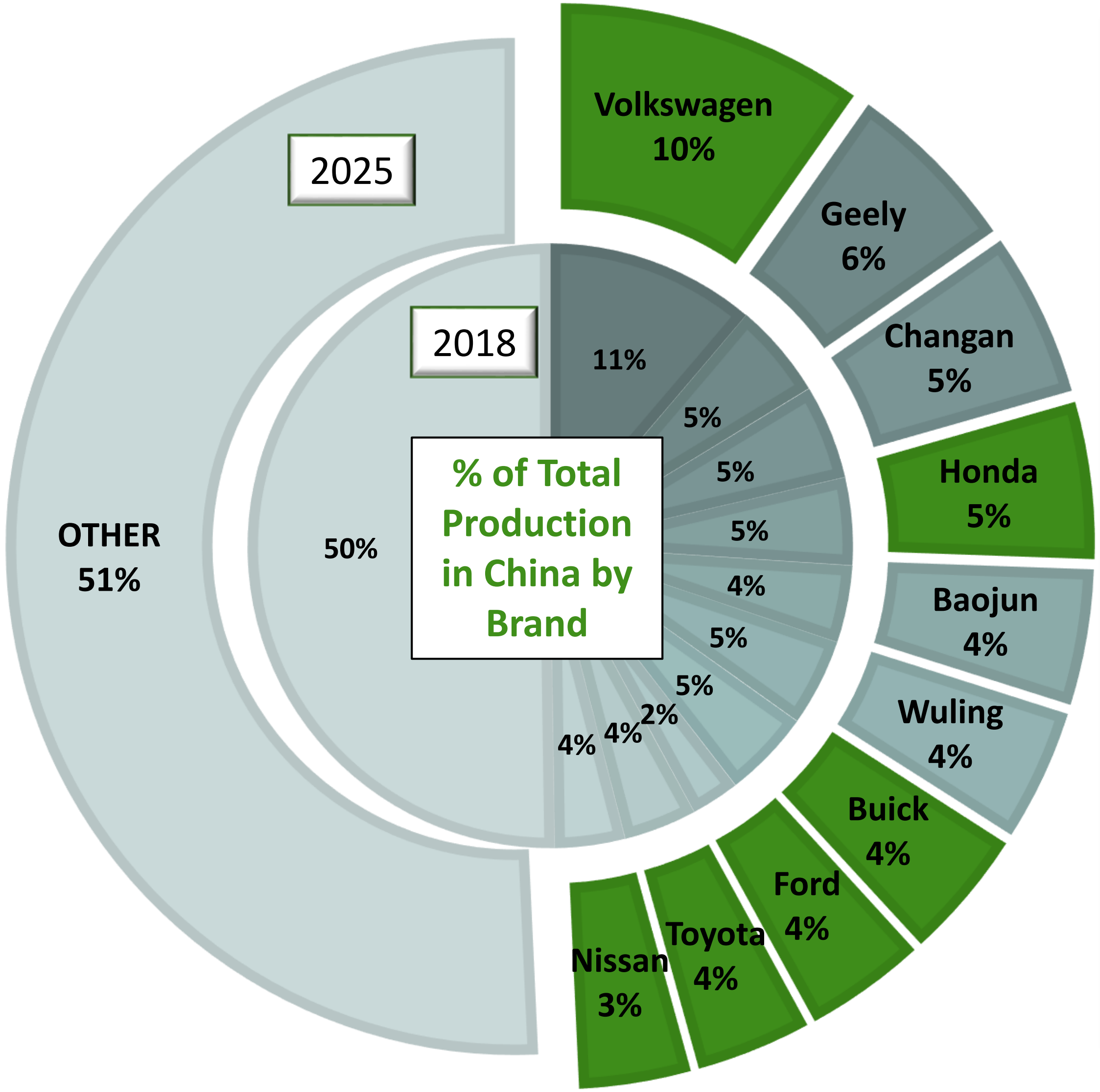
- Renault/Nissan moves from 3rd (2016) to the lead by 2025 as a result of the Mitsubishi acquisition

Inductees since 2010

- Beijing Automotive Group
- Great Wall Automobile
- Geely Group (Leveraging Volvo purchase)
- Tata
- Subaru

Source: AutoForecast Solutions – June 2018

China: Fractured Decision Making



Competing in China requires a firm understanding of the customer base

- **30 million light vehicles to be produced in 2025**
- **10 Brands** representing **50% of the Chinese market** will have annual production **over 1 million units by 2025**
- **22 Different Vehicle Manufacturers** assemble these top 10 vehicle brands
- **60%** of those brands have **foreign ownership**
- **Decision Makers** can be from a variety of sources and locations, creating a difficult competitive terrain to navigate

Source: AutoForecast Solutions – June 2018

North America Risk Assessment – Protectionism

Tariff Impact

- Brand Imports by Sales Volume (50K+/yr.)
  - Nissan, Toyota, Mazda, Subaru, Hyundai, Jeep, Kia, Buick, Honda, Mercedes
  - Represents over 1.8M units
- Canadian Footprint
  - GM product consolidation and plant closures
  - Future of dedicated capacity?
- Plant in Focus: Lordstown
  - Consolidate Global Delta platform?
  - Replace capacity with high volume imports?

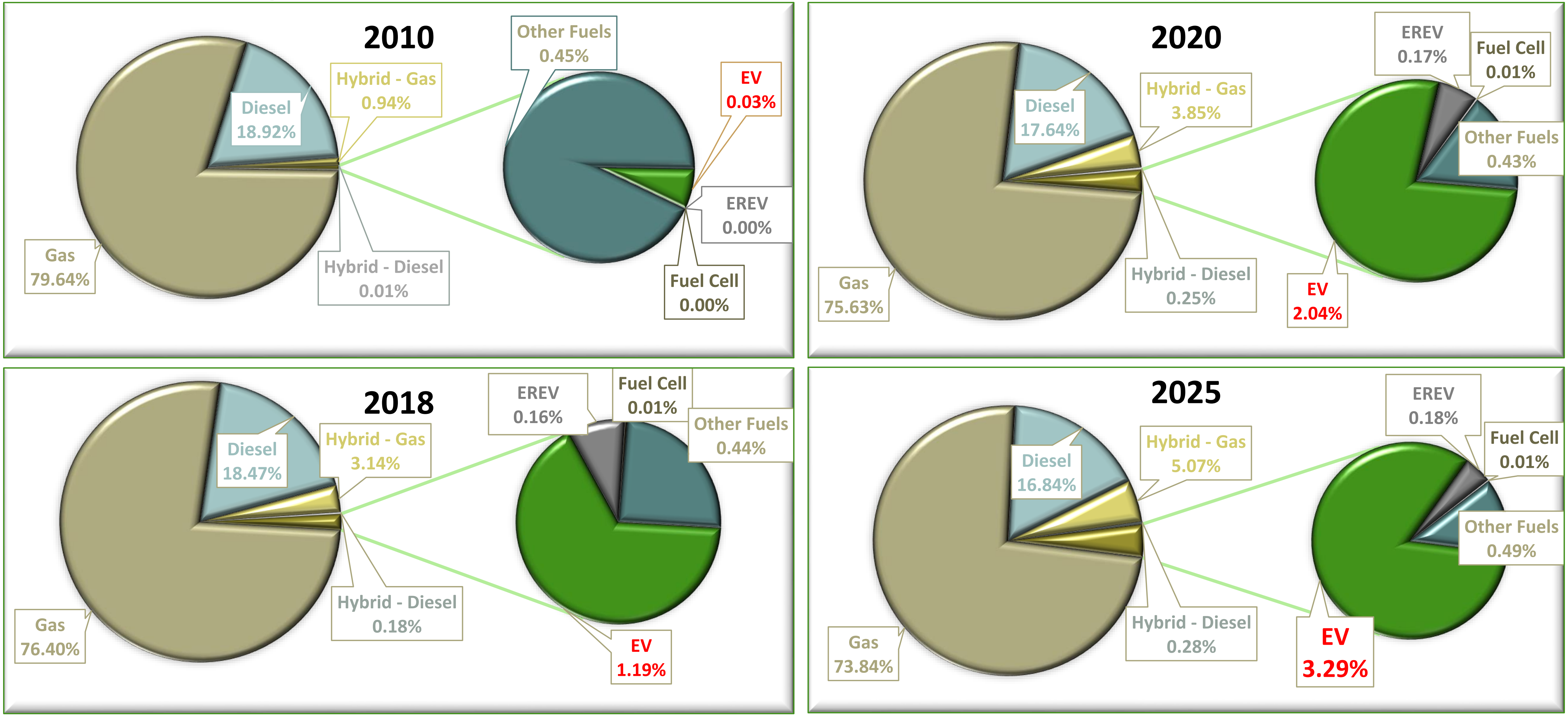
European OEMs

- Luxury Vehicles
  - BMW and Daimler will be able to “afford” to subsidize tariffs
- Main Stream Vehicles
  - VW, which is more subject to compete on price, will have a more difficult time
  - Additional costs will limit investment
  - Powertrains imported
- US a threat to EU automotive industry?
  - European’s do not consume US-built vehicles
  - Emission standard softening will further enforce the lack of interest in US-built vehicles

POWERTRAIN TRENDS

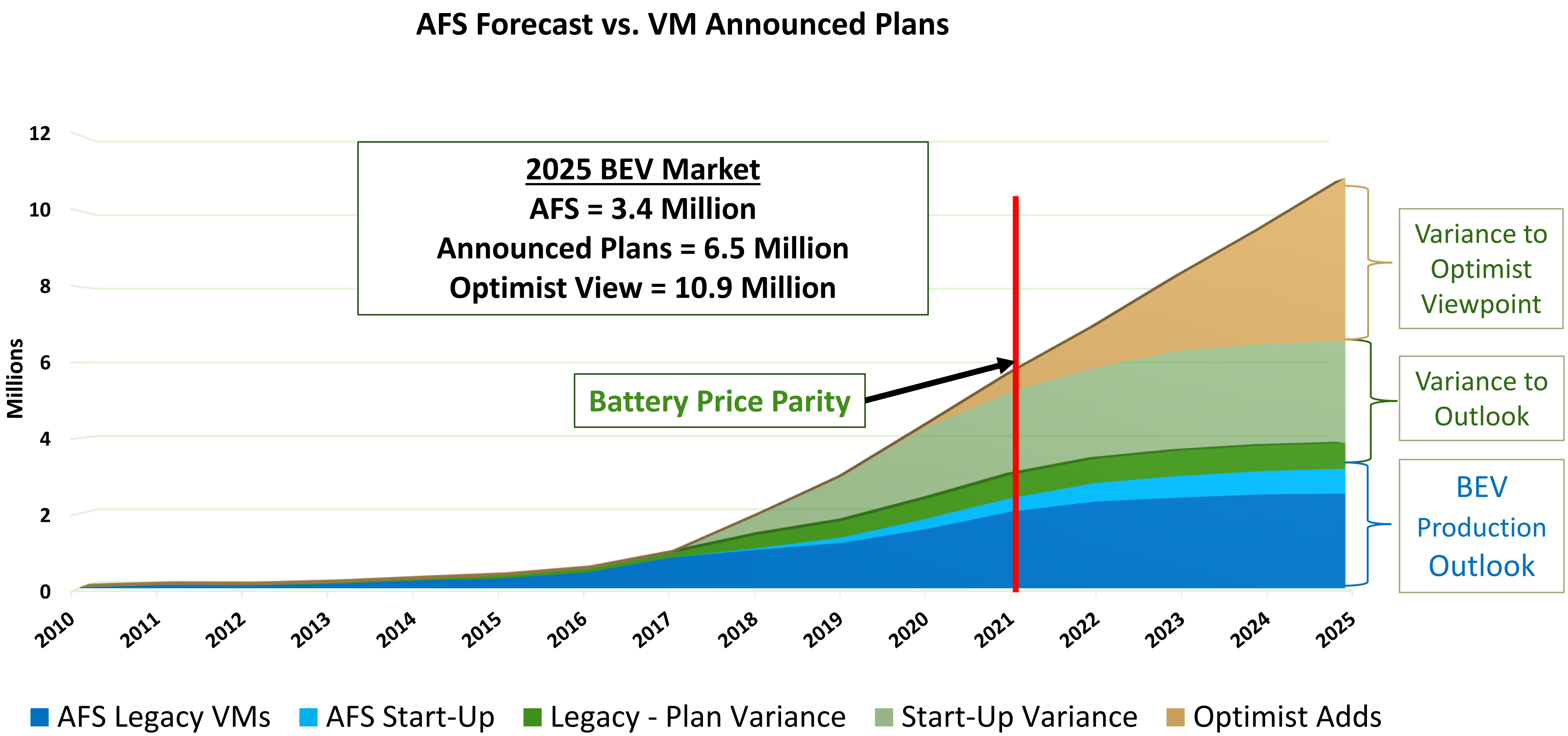
THE IMPACT OF ALTERNATIVE PROPULSION

Global Light Vehicle Production by Fuel Type



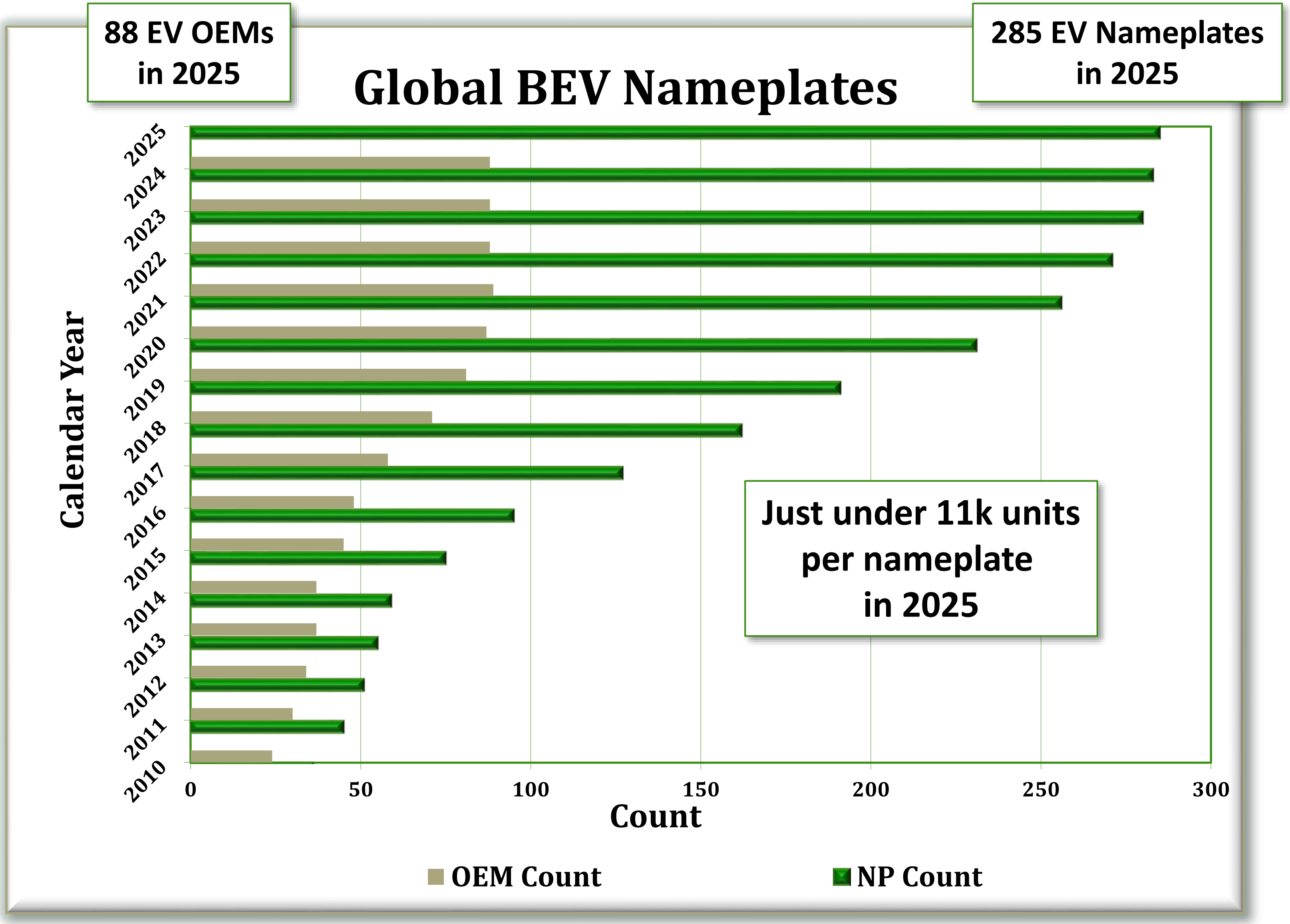
Source: AutoForecast Solutions – June 2018

BEV Market Outlook



Source: AutoForecast Solutions – June 2018

Global EV Analysis



- **Global EV market will remain highly fragmented in 2025**
  - Several OEMs command bulk of the volume
    - Top 5 OEMs account for 48%
    - Top 10 OEMS account for 64%
  - Top OEMs still have significant proliferation of EVs
    - Top 5 OEMs account for 82 nameplates, averaging 18k units per nameplate
    - Top 10 OEMS account for 114 nameplates, averaging 17k units per nameplate

- **Top 3 OEMS**
  - Volkswagen expected to produce the most
    - 372k units in 2025, with 31 nameplates
  - Tesla expected to be a close second
    - 340k units in 2025, with 5 nameplates
  - Geely expected to be third
    - 296k units in 2025, with 22 nameplates

Source: AutoForecast Solutions – June 2018

China EV Market Sizing

63 Manufacturers Adding BEVs **(# of EVs in 2025CY)**

- BAIC Motor (10)
- BAIC-Yinxiang (2)
- Beijing Benz (4)
- Beijing Hyundai (1)
- Beiqi Foton (2)
- BMW Brilliance (5)
- Brilliance Jinbei (1)
- BYD (7)
- **BYD Daimler (1)**
- **CH Auto (1)**
- Changan Auto (5)
- Changan PSA (1)
- Changhe Suzuki (1)
- **Chehejia (1)**
- Chery (4)
- Chongqing Lifan (2)
- Dongfeng Honda (1)
- Dongfeng Liuzhou (1)
- Dongfeng Motors (3)
- Dongfeng Nanchong (1)
- Dongfeng PV (2)
- Dongfeng Renault (1)
- Dongfeng Yu'an (1)
- Dongfeng Yueda Kia (1)
- Dongfeng –Luxgen (1)
- Faw Haima (1)
- FAW Toyota (1)
- FAW Volkswagen (3)
- **FDG Electric Vehicles (1)**
- Fujian New Longma (1)
- **Future Mobility (3)**
- GAC Changfeng (2)
- GAC Honda (1)
- GAC Motor (5)
- Geely Group (22)
- **Guojin Auto (3)**
- Haima Zhengzhou (2)
- **Harmony Futeng (1)**
- Hawtai (2)
- HK Motors (1)
- Hozon Auto (3)
- Jianghuai (8)
- Jiangjuai-VW (1)
- Jiangling Holdings (7)
- **Kandi Electric Vehicles (1)**
- **LeapMotors (1)**
- **LeEco (2)**
- Nanjing Iveco (1)
- **NEVS (2)**
- Qoros (2)
- SAIC Commercial (1)
- SAIC GM (1)
- SAIC Motor (2)
- SAIC VW (4)
- SAIC-GM-Wuling (1)
- Shanghai Maple (2)
- Sichuan Auto (3)
- South-east Automobile (2)
- **WM Motor (1)**
- **Youxia (1)**
- **Yudo Auto (2)**
- Zhengzhou Nissan (2)
- Zotye Auto (6)

Total EV models in 2025 =

165

Red Entries are OEMS that will only produce BEVs

Disruption: The Fine Line Between Risk and Opportunity

- New Products, New Players, Changing Landscape, and Highly Competitive Jurisdictions
- Input from all stakeholders necessary
- Creates the need for different strategies to be successful
- Consolidation of vehicle and powertrain platforms to leverage economies of scale will continue
- Globalization will continue to have a stronger influence on product design
- Relationship development throughout the entire supply chain is imperative
- Redefining Innovation: More than just products, now focused on business planning
- Balancing the need for innovation and creativity against a fickle consumer and Impatient
- All players are jockeying for position in a race with no clear finish line

The goal is to ***understand*** *the opportunities,*
develop *a value proposition to defend core operations,*
and ***identify*** *areas for growth.*

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