2022 AUTOMOTIVE SUPPLIER OUTLOOK

Reshaping Automotive Supply Base –
Can Suppliers Position Themselves For Success?

September 15, 2022

Today's Presenters

9:00-9:45

TOM ALONGI

National Manufacturing & Automotive Leader
Managing Director
UHY Advisors

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9:00-9:45

DAN BRUCE

Senior Manager
Strategy Consulting
UHY Consulting

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9:45-10:15

DOUGLAS PETERSON

Founder
3-Dimensional Service Group
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10:30-11:30

JEFF SCHUSTER

President, Americas Operation and Global Vehicle Forecast
LMC Automotive

jschuster@lmc-auto.com

Electric Vehicle Revolution?

Case In Support Of EV Revolution

OEMs Have Announced $300B+ of Investment In EVs Since 2020

$100B

$80B

$50B

$47B

STELLANTIS $36B

$35B

$35B

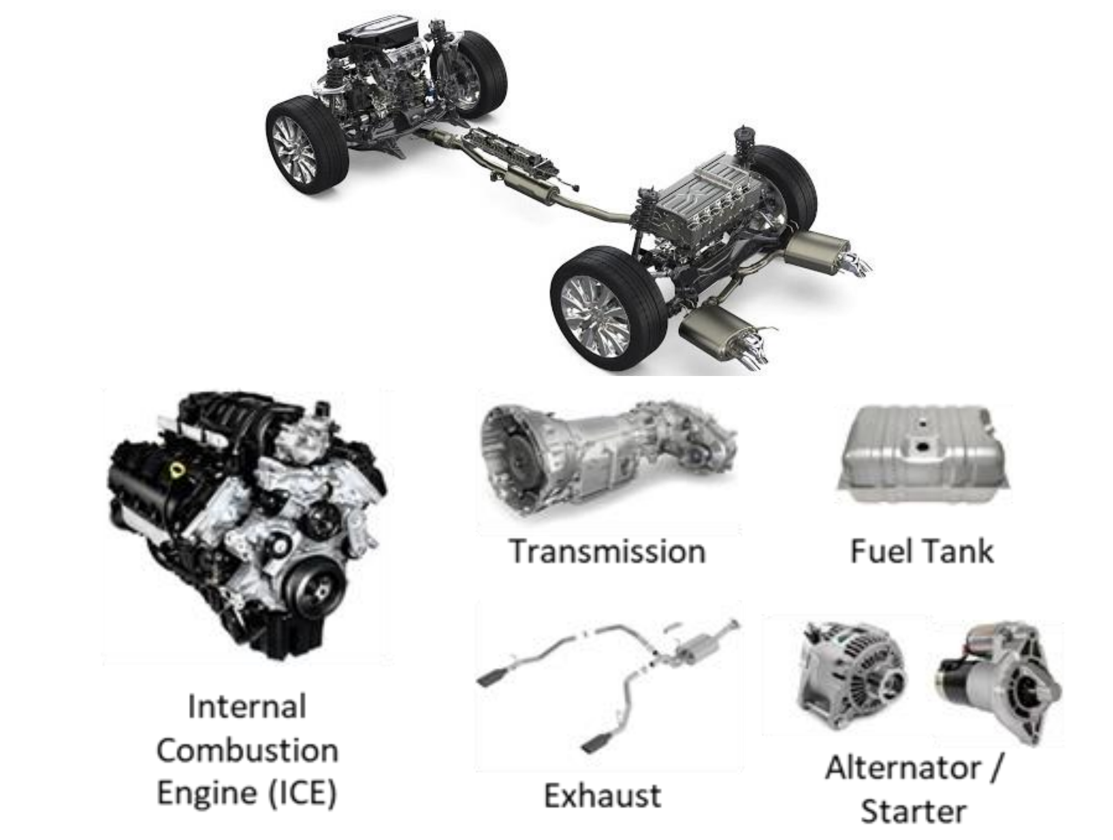
$32B

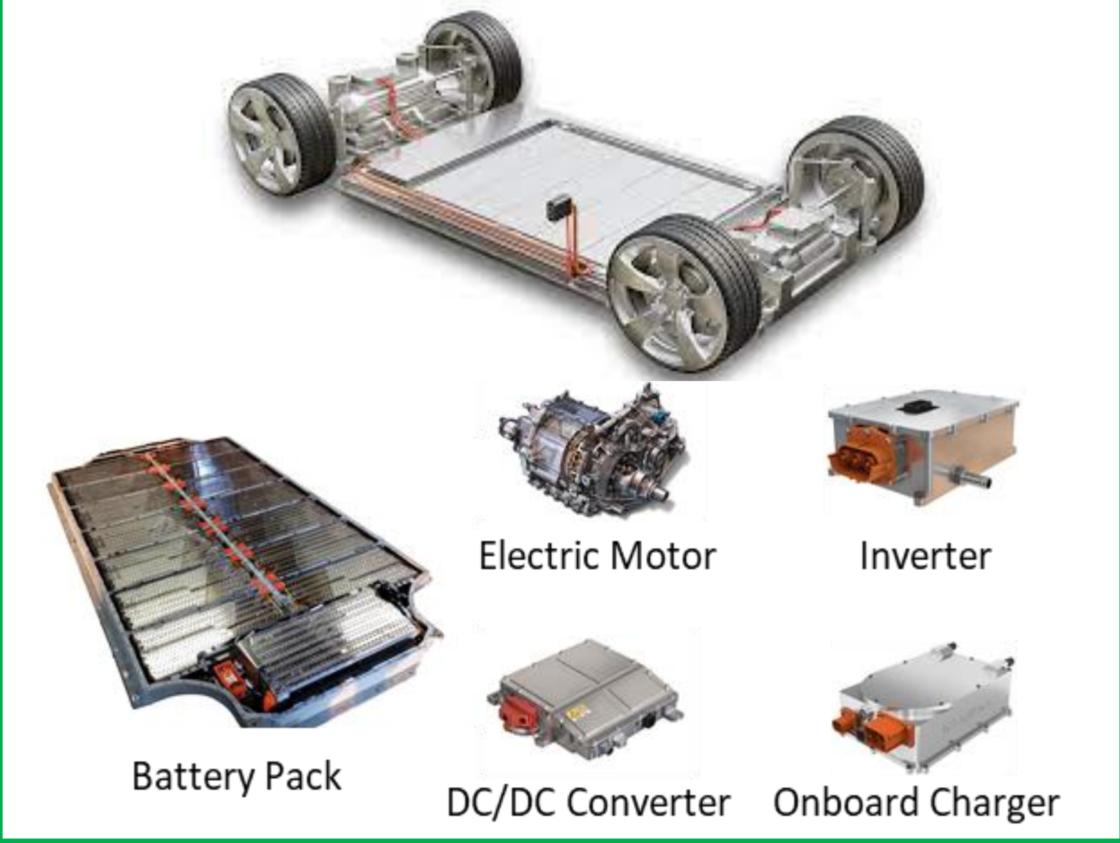
$12B

Source: Crain's Detroit Business

Case In Support Of EV Revolution

Reductions in Number of Components and Maintenance Costs





Internal Combustion Engine Vehicle (ICE)

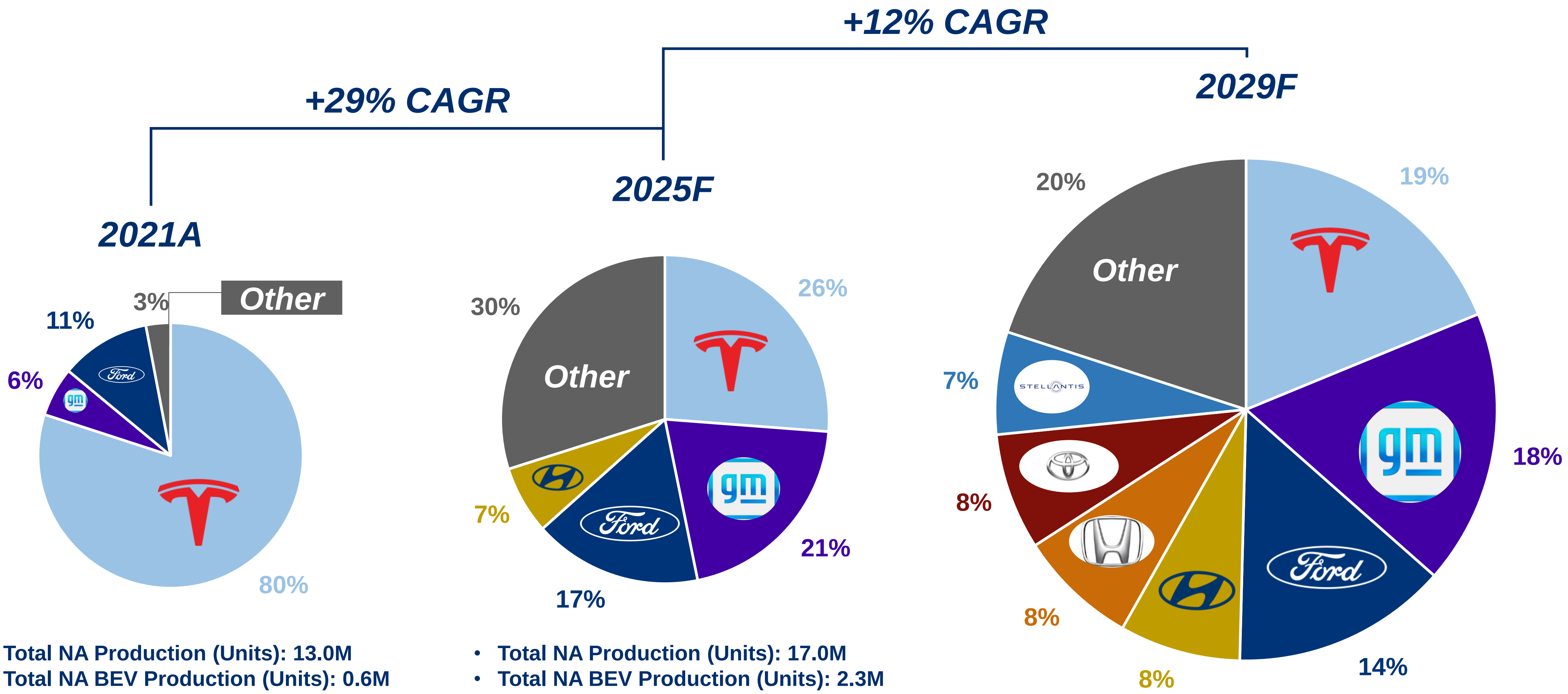
~1,400 components

Battery Electric Vehicle (BEV)

~200 components

Case In Support Of EV Revolution

BEV/Hybrid Growth and OEM Diversification Over Time



- Total NA Production (Units): 13.0M
- Total NA BEV Production (Units): 0.6M
- Total NA Hybrid Production (Units): 1.5M

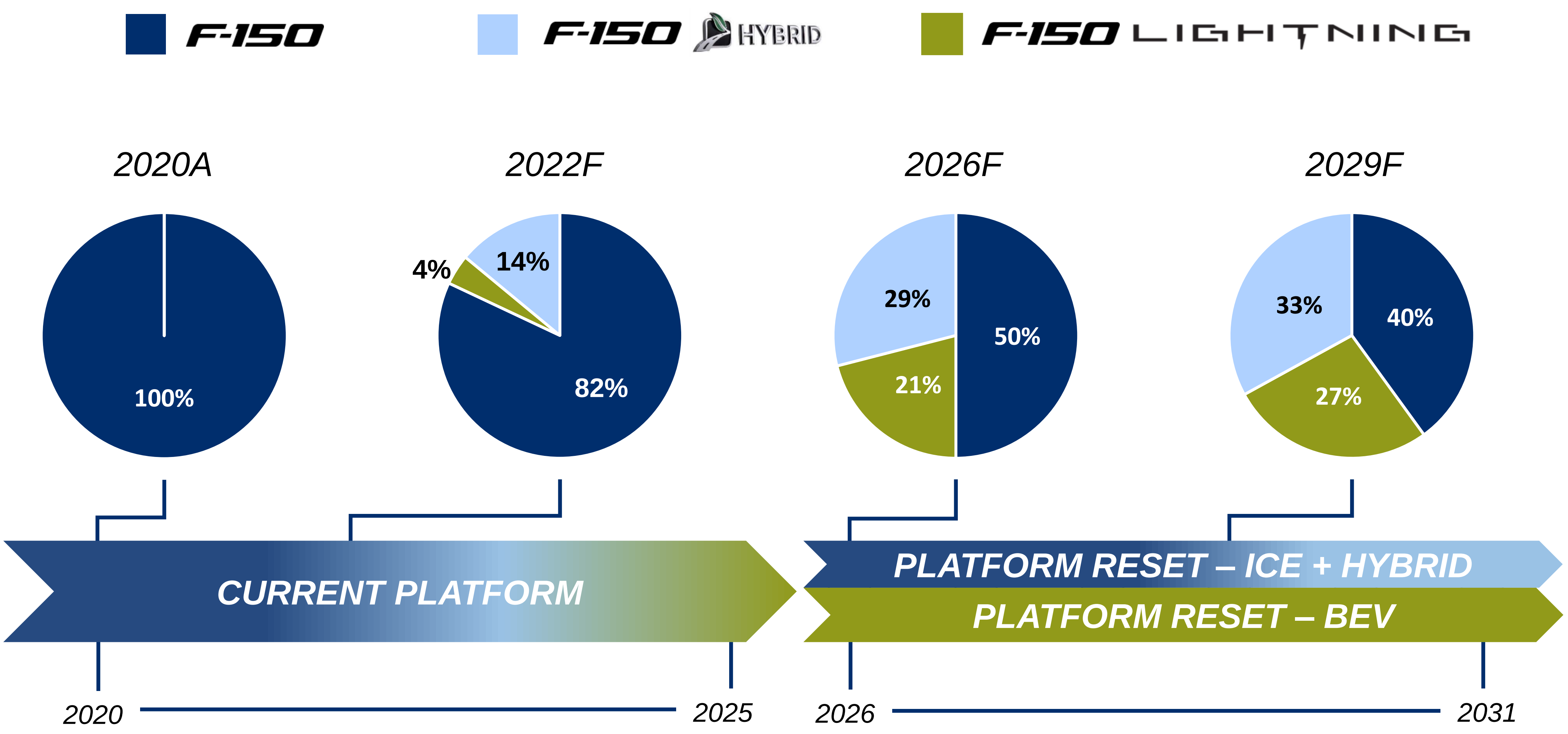
- Total NA Production (Units): 17.0M
- Total NA BEV Production (Units): 2.3M
- Total NA Hybrid Production (Units): 3.4M

- Total NA Production (Units): 17.6M
- Total NA BEV Production (Units): 5.1M
- Total NA Hybrid Production (Units): 3.8M

Source: LMC Automotive

Case In Support Of EV Revolution

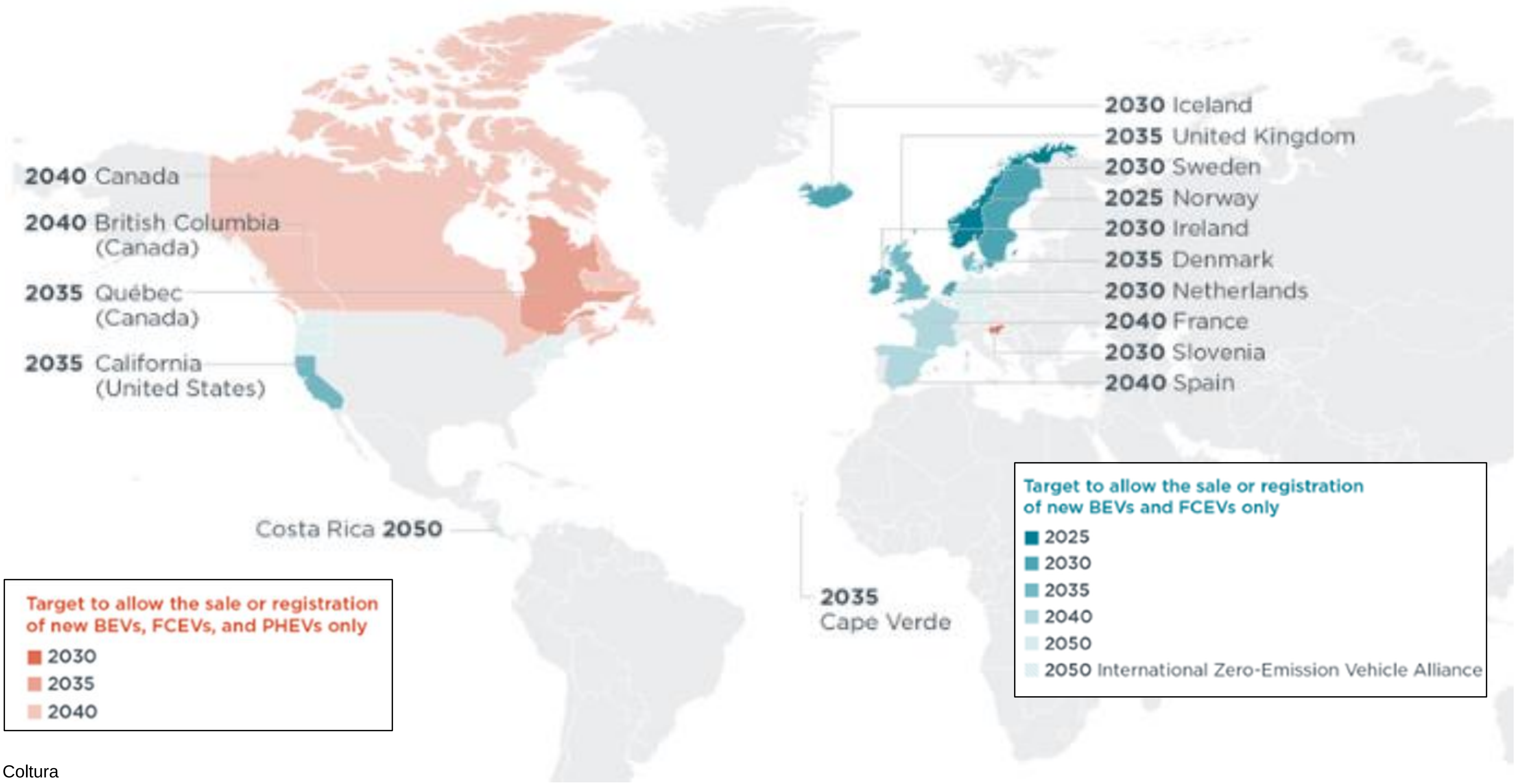
Case Study: Ford F-150 Projected NA Production Volumes



Source: LMC Automotive

Case In Support Of EV Revolution

Governments Targeting Phase Out of Sales or Registrations of New ICE Vehicles



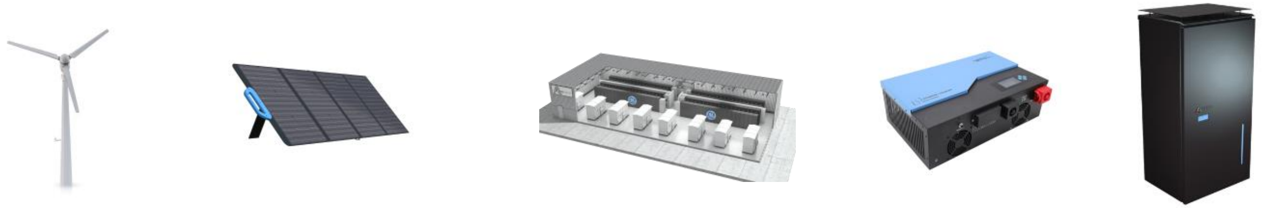
Source: Coltura

Case In Support Of EV Revolution

UHY

INFLATION REDUCTION ACT

Section 45X Credit



Battery Plant Facilities

saft

A123 SYSTEMS

AKASOL

iM3NY

SK innovation

LG Chem

solid energy

microvast

Material Sourcing

Case In Support Of EV Revolution

Governments Targeting Credits To Accelerate Adoption Of Electric Vehicles

Headwinds - EV Adoption

TECH \ TRANSPORTATION \ CARS

Electric vehicle owners are fed up with broken EV chargers and janky software

A JD Power survey finds that EV charging is still a huge mess

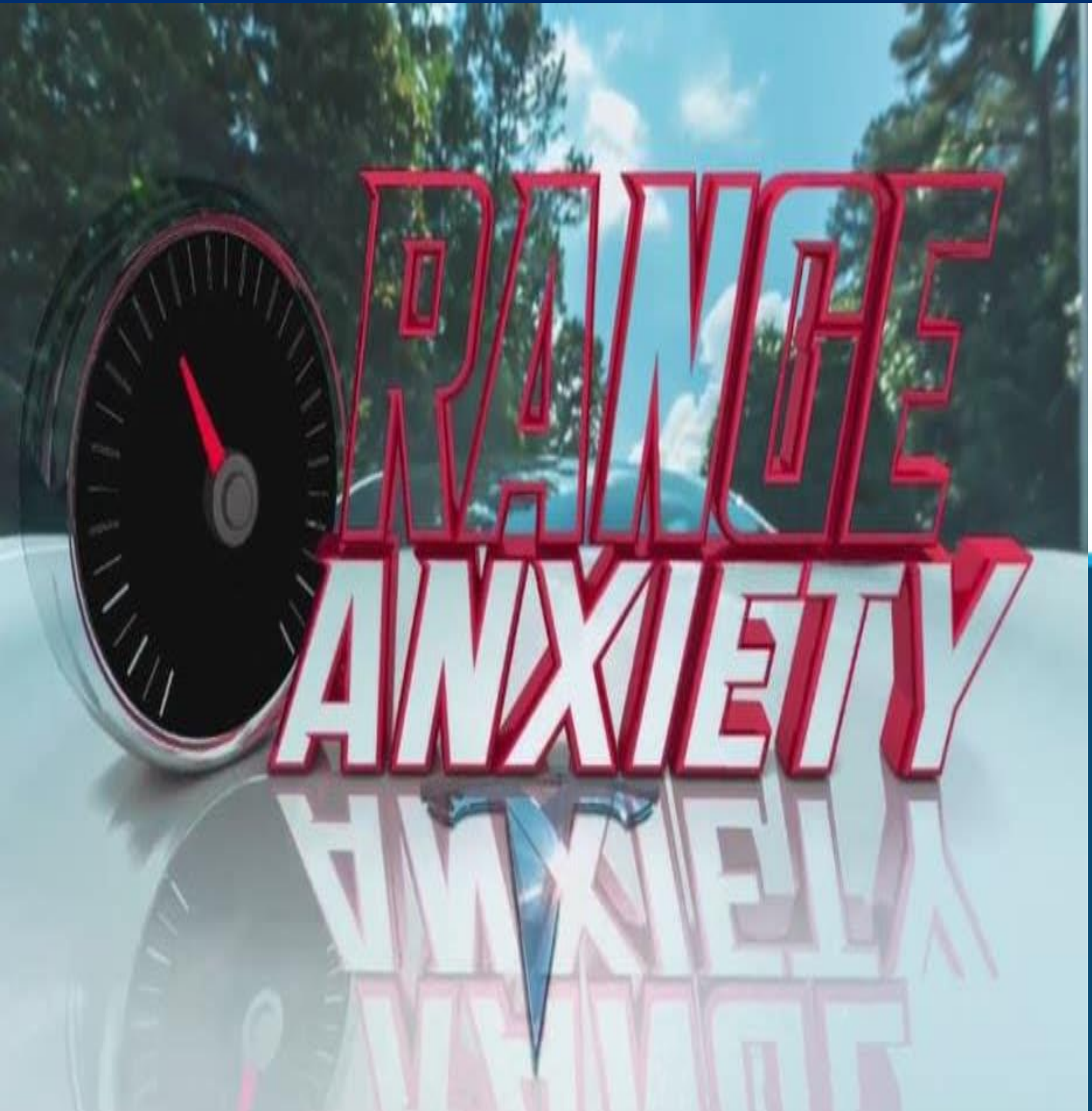
2022 Rivian R1S / MSRP

From $72,500

2022 GMC HUMMER EV / MSRP

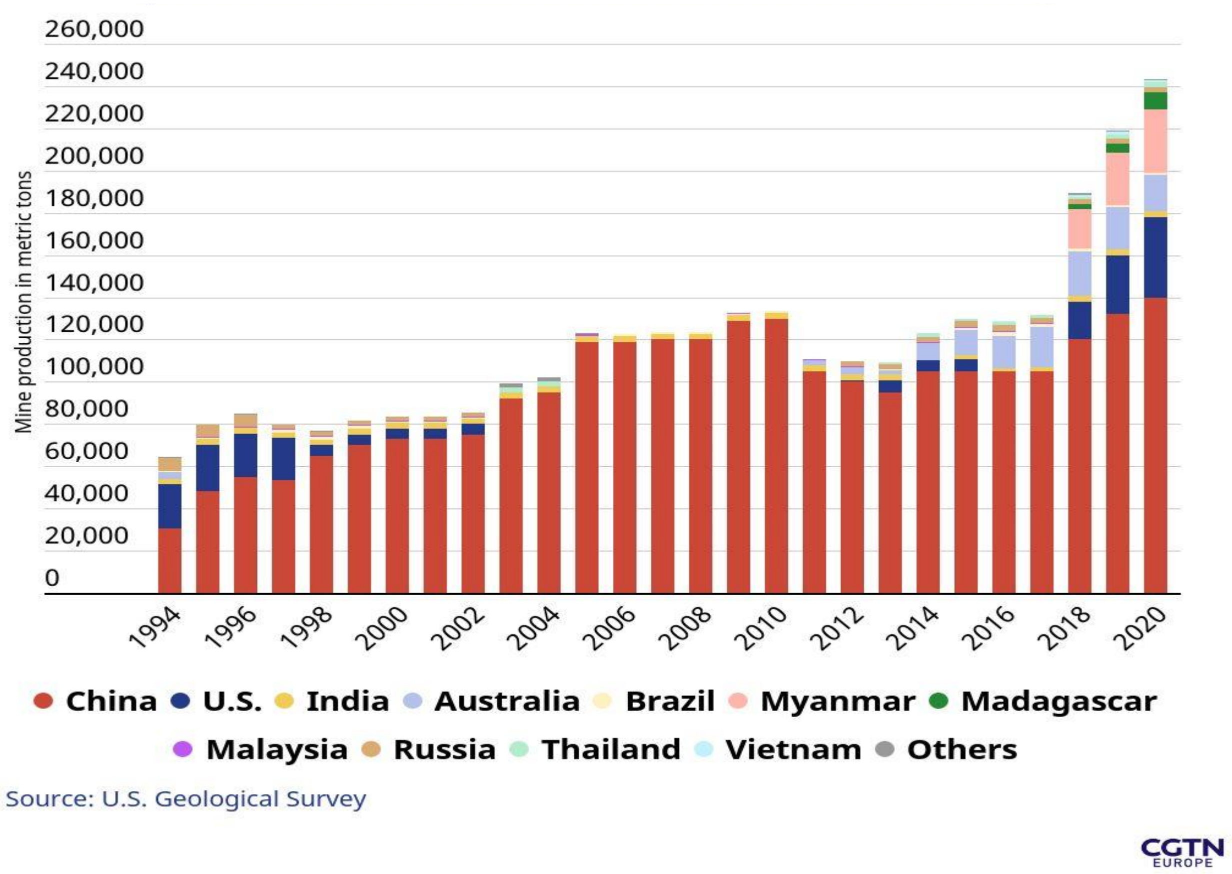
From $108,700

Headwinds - EV Adoption



Huge Investments Will Take Time…..

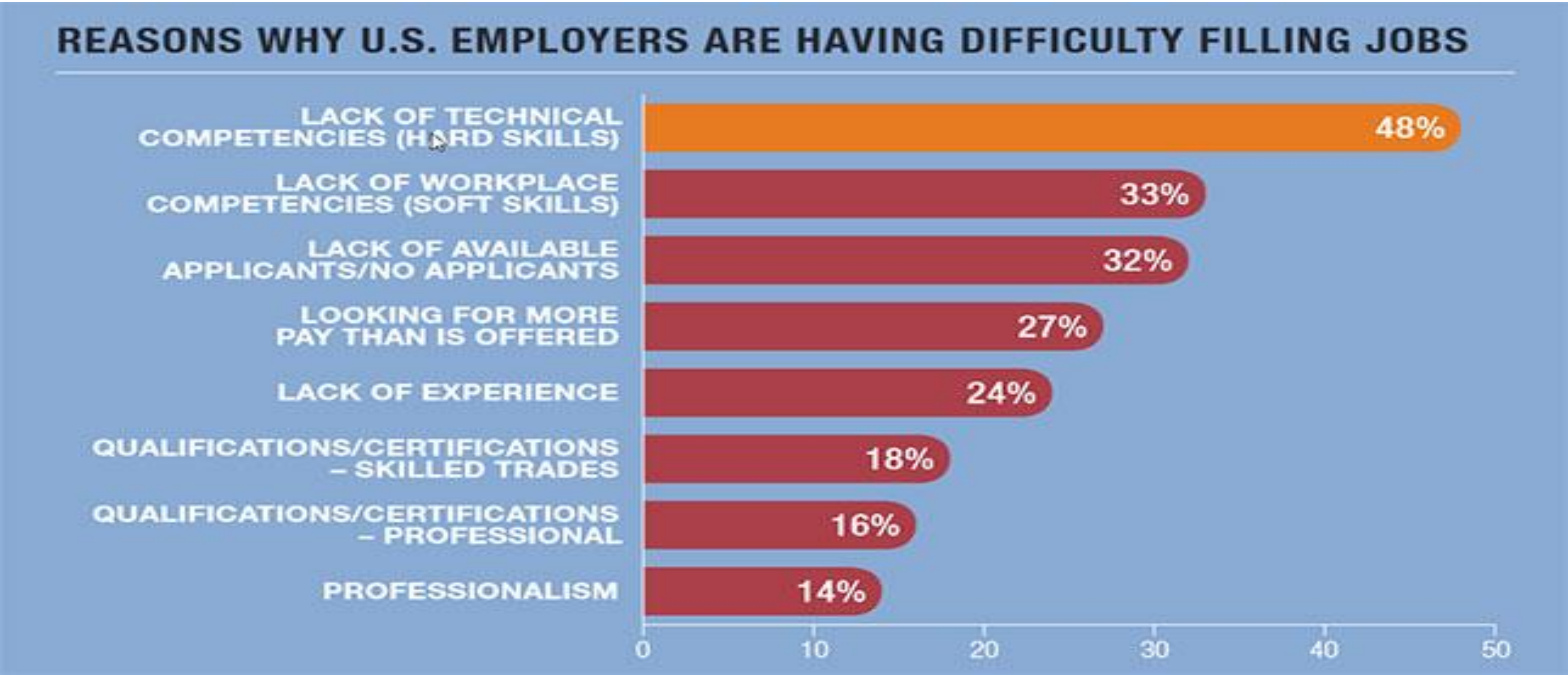
GLOBAL MINE PRODUCTION OF RARE EARTHS



U.S. CHIP AND BATTERY PLANT FACILITIES INVESTMENT

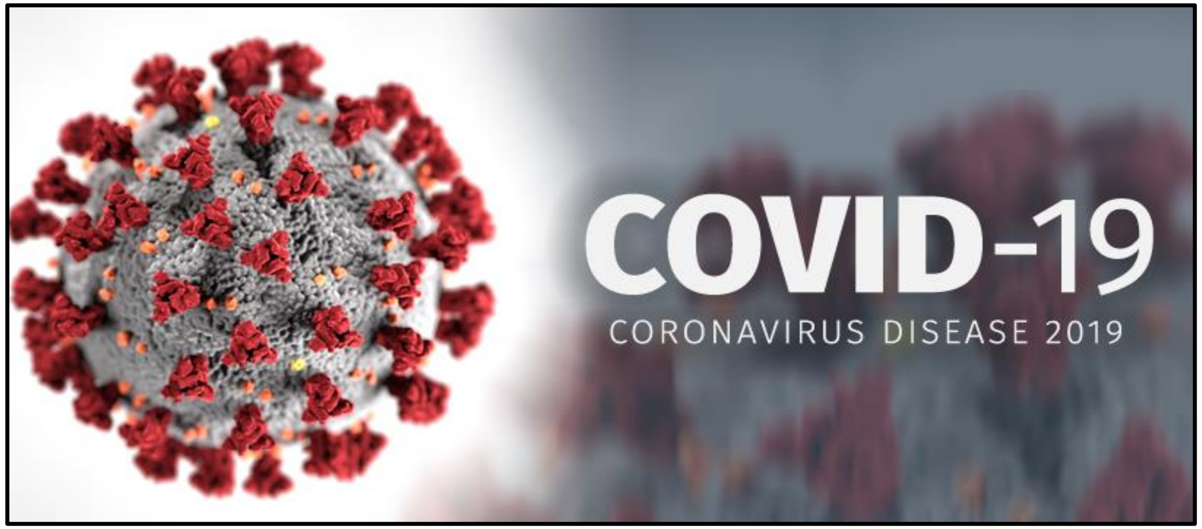
Headwinds - EV Adoption

Where Is All The Skilled Labor?



Headwinds - EV Adoption

Macro Issues Could Impact Economy & Consumer Demand…..



We Want To Avoid This Supplier Response To Uncertainty!

Time To Hit The Panic Button?

NO!

However, NOW Is The Time To Develop An Electrification Strategy

Disruption = Opportunity

Develop a strategy to position your company for success

Where Does EV Disruption Leave Suppliers?

Develop strategies to position your company for success

Start With A Product Portfolio Assessment

What category do your products and/or services fall into?

DECLINE


ICE Engine


ICE Transmission


Axle


Brakes


Fuel System


Exhaust System

STAGNANT


Suspension

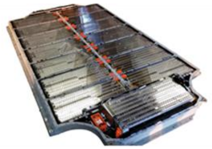

Steering


Chassis/Frame


Body


Seats

GROWTH


Battery Pack


Electric Drivetrain


Electronics


Climate Control


Wheels


Tires


ADAS/Sensors


Interior

Decline Category – Potential Options

DECLINE

ICE Engine

ICE Transmission

Axle

Brakes

Fuel System

Exhaust System

- **Sell or divest business**

- **Diversify into non-automotive markets**

- **Transition into automotive products in the Stagnant or Growth categories**
  - *Organic or M&A*

Growth / Stagnant Categories – Potential Opportunities

STAGNANT


Suspension

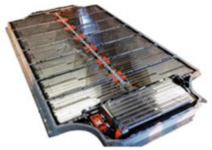

Steering


Chassis/Frame


Body


Seats

GROWTH


Battery Pack


Electric Drivetrain


Electronics


Climate Control


Wheels

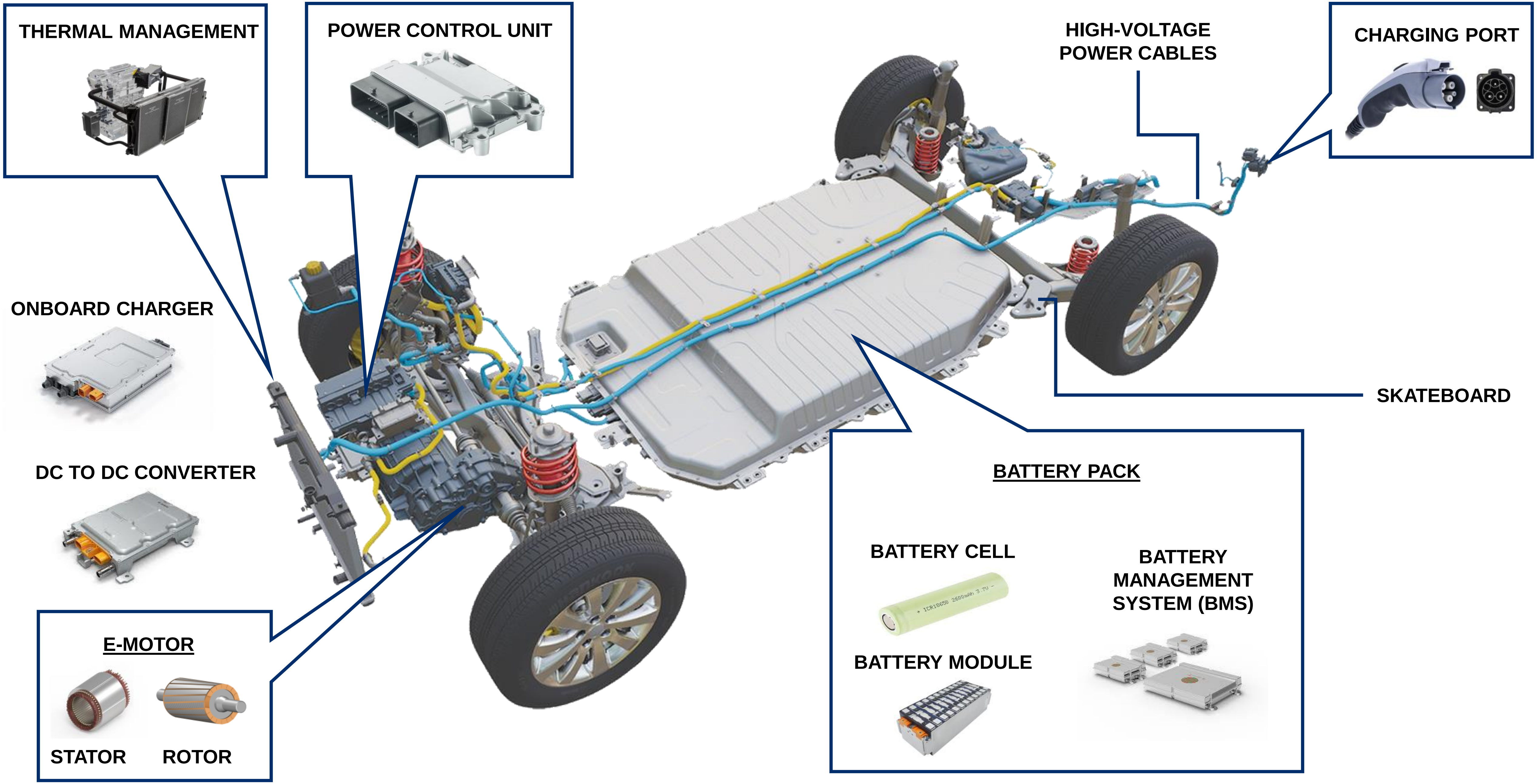

Tires


ADAS/Sensors


Interior

- **Product Expansion**
- **Customer Diversification**
- **Product Integrator**
- **Regional Expansion**
- **Market Expansion**

Automotive Product Expansion

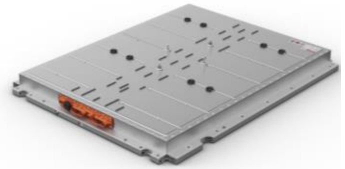


Automotive Product Expansion – Battery Pack Example

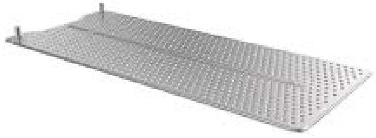
Equipment	**Stamping Press Capacity & Applications** • 500 – 2,500 U.S. tons • Cutting, Blanking, Bending, Embossing **Die Casting** battery pack box/tray
Materials	**Steel, Aluminum, & Copper** battery pack covers and cooling plates **Advanced High Strength Steels (AHSS)**
Processes	**Cold Forming -** lightweight, faster **Hot Forming** - thinner, higher strength

Example Metal Sub-Components

Upper & Lower Covers



Cooling Plate



Tray/Box

Sample of Battery Pack & Component Suppliers

thyssenkrupp

DANA

SHILOH

ESTRA ADAPTED THERMAL SOLUTIONS

Novelis

Gestamp

voestalpine

Constellium

MODINE

SANHUA

Source: Stamping Journal, Automotive News, Metal Forming Magazine

Automotive Product Expansion – Skateboard Example

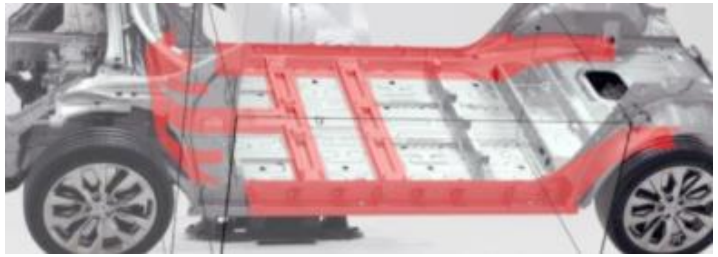
Equipment	**Stamping Press Capacity & Applications** • 500 – 3,000 U.S. tons • Cutting, Bending, Extrusion
Materials	**Steel and Aluminum** **High Strength Steels (HSS)**
Processes	**Cold Forming** **Hot Forming** **Welding Capabilities**

Sample of Tiered Suppliers

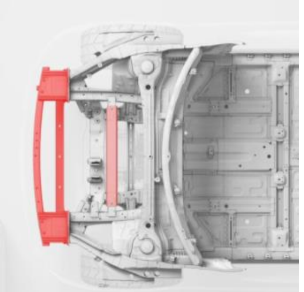
BENTELER, MAGNA, Multimatic, FMi, Gestamp, AUTOKINITON, MARTINREA, Metalsa, THE ELECTROMAC GROUP

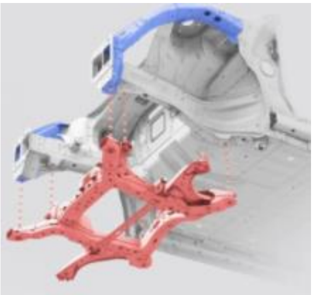
Examples of Metal Sub-Components

Structural and Safety Components

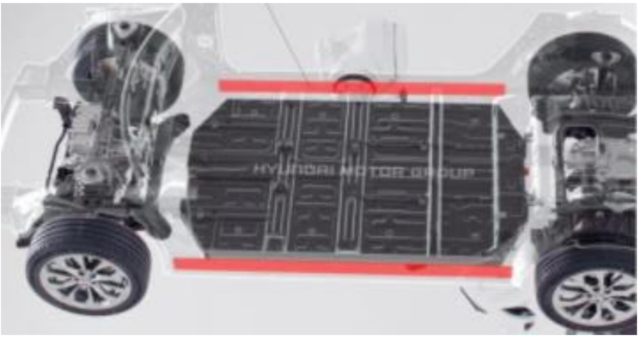


Crossbar & Subframe Joining Structure

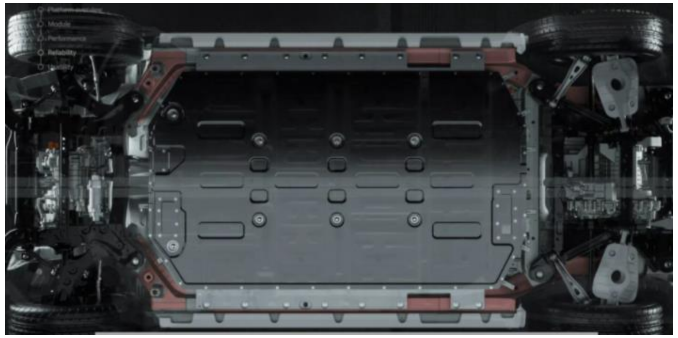




Vehicle Side Stills

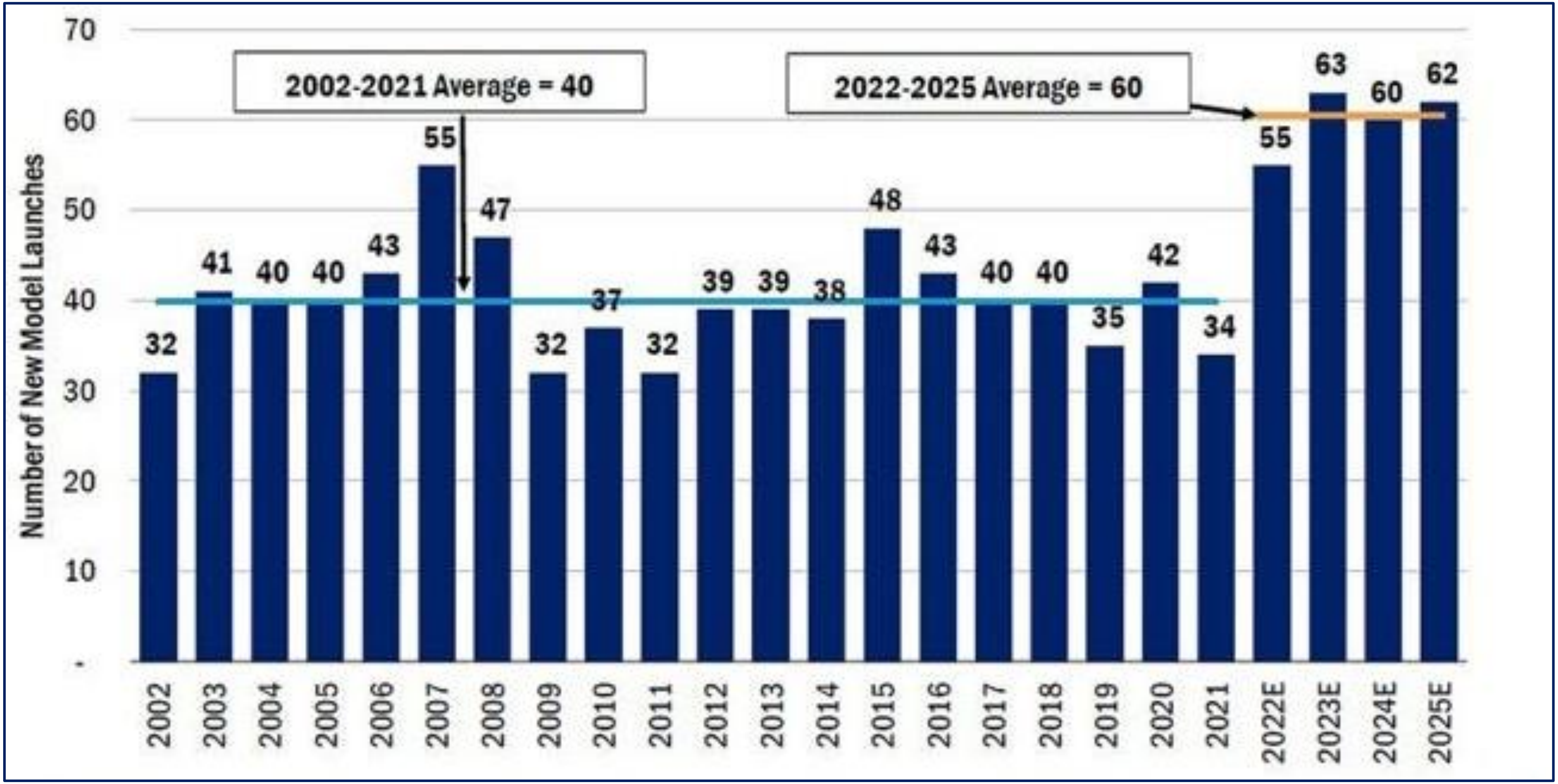


Structural Components Surrounding Battery



Source: Rivian, Stamping Journal, Hyundai, Automotive News, Metal Forming Magazine

Complimentary Product / Service Expansion



Source: Bank of America Global Research Estimates

Customer Diversification

UHY

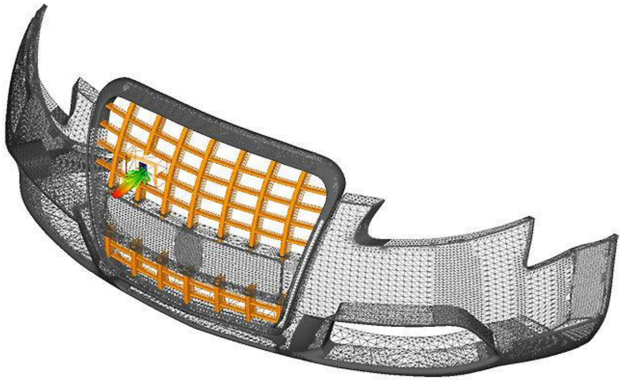
Traditional OEMs

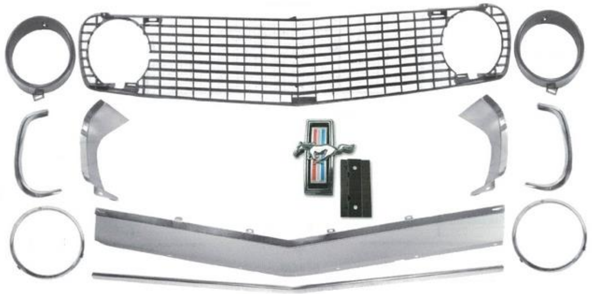
New Entrant OEMs

Suppliers

Technology

Product Integrator

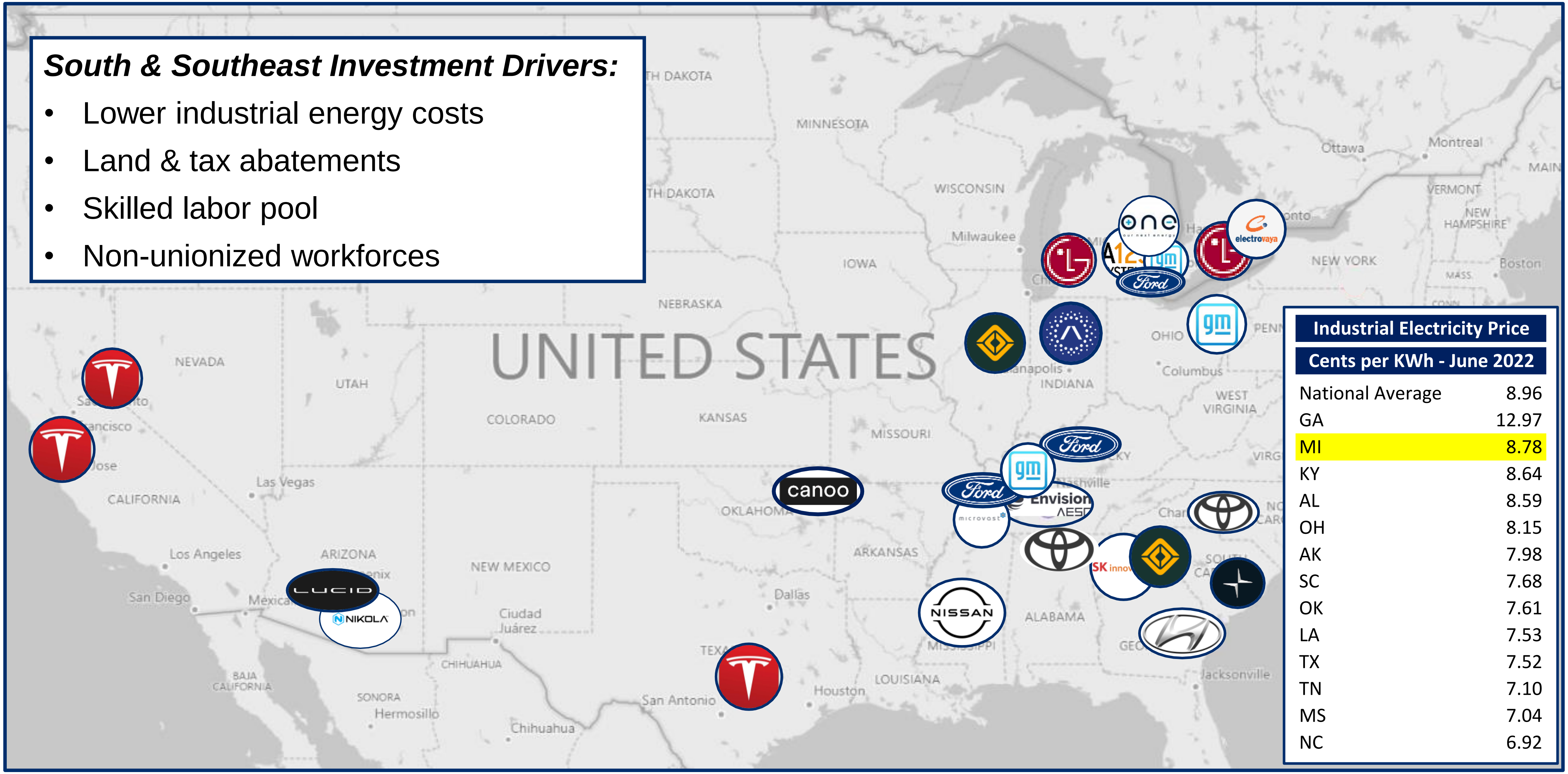




Regional Expansion

South & Southeast Investment Drivers:

- Lower industrial energy costs
- Land & tax abatements
- Skilled labor pool
- Non-unionized workforces



Industrial Electricity Price	
Cents per KWh - June 2022	
National Average	8.96
GA	12.97
MI	8.78
KY	8.64
AL	8.59
OH	8.15
AK	7.98
SC	7.68
OK	7.61
LA	7.53
TX	7.52
TN	7.10
MS	7.04
NC	6.92

Source: U.S. Energy Information Administration

Market Expansion

Powersports

Marine

Heavy Equipment

Commercial Vehicles

Disruption = Opportunity

Where Are You In Your Business Journey?

GROW

- **Business strategy and financial advisory:** strategic vision, acquisitions targets, market trends, data and analytics
- **Buy side advisory**: quality of earnings, financial, commercial, and tax due diligence; purchase price allocation, operational diligence, cyber diligence, capital raise advisory services
- **Consulting**: Organizational integration, financial and operational optimization, organizational design, project management

MANAGE

- Audited financials statements
- Reviews and compilations
- Financial forecasting, projections, reporting
- Strategic tax planning
- Tax credits & incentives
- Research & development
- Cost segregation
- Accounting automation
- Professional search & placement
- Forensic accounting
- Internal controls
- Cybersecurity

TRANSITION

- Maximize business value
- Exit strategy
- Sell side planning
- Transition planning
- Estate planning
- Tax planning
- Quality of earning
- Business valuations
- Sell side execution
- ESOP
- Wealth management
- Financial advisory

Planning

Execution

Exit

TRANSFORM

- Supply chain strategies
- Financial close and reporting
- Process automation
- Operational improvements
- Change management
- Finance strategy
- Improve finance & operating costs
- Digital transformation
- Technology automation
- Software selection & implementation
- Resource solutions

JOIN US!

Confronting Uncertainty
Annual Manufacturing Supplier Outlook

Thursday October 20, 2022
9:00 AM – 12:00 PM EST
Detroit Athletic Club & Virtual

3-Dimensional Services Group

PROTOTYPE. PRODUCTION. PROVEN.

“What it takes to be a top performing EV supplier."

The beginning.

- We started in 1992 with 5 employees in a plant that was 25,000 sq.ft. and a couple of machines with a laser cutting machine
- In 1996 we formed Urgent Plastic Services to handle injection molded parts
- In 2000, we added Urgent Design & Manufacturing where we expanded our technology base with two subsequent expansions
- We have added three additional plants and are now in 3 cities, with 7 plants and over 600 employees and 500,000 sq.ft. of manufacturing

Our purpose.

- Design and production-process validation
- Pre-development manufacturing
- Manufacturing validation
- Soft tooling to support
  - Prototype parts
  - Production-intent parts
  - Bridge & low-to-mid volume production parts
- Assembly

Never settle for the “Trailing Edge.”

Always be on the “Leading Edge…”

3-Dimensional Services Group
PROTOTYPE. PRODUCTION. PROVEN.

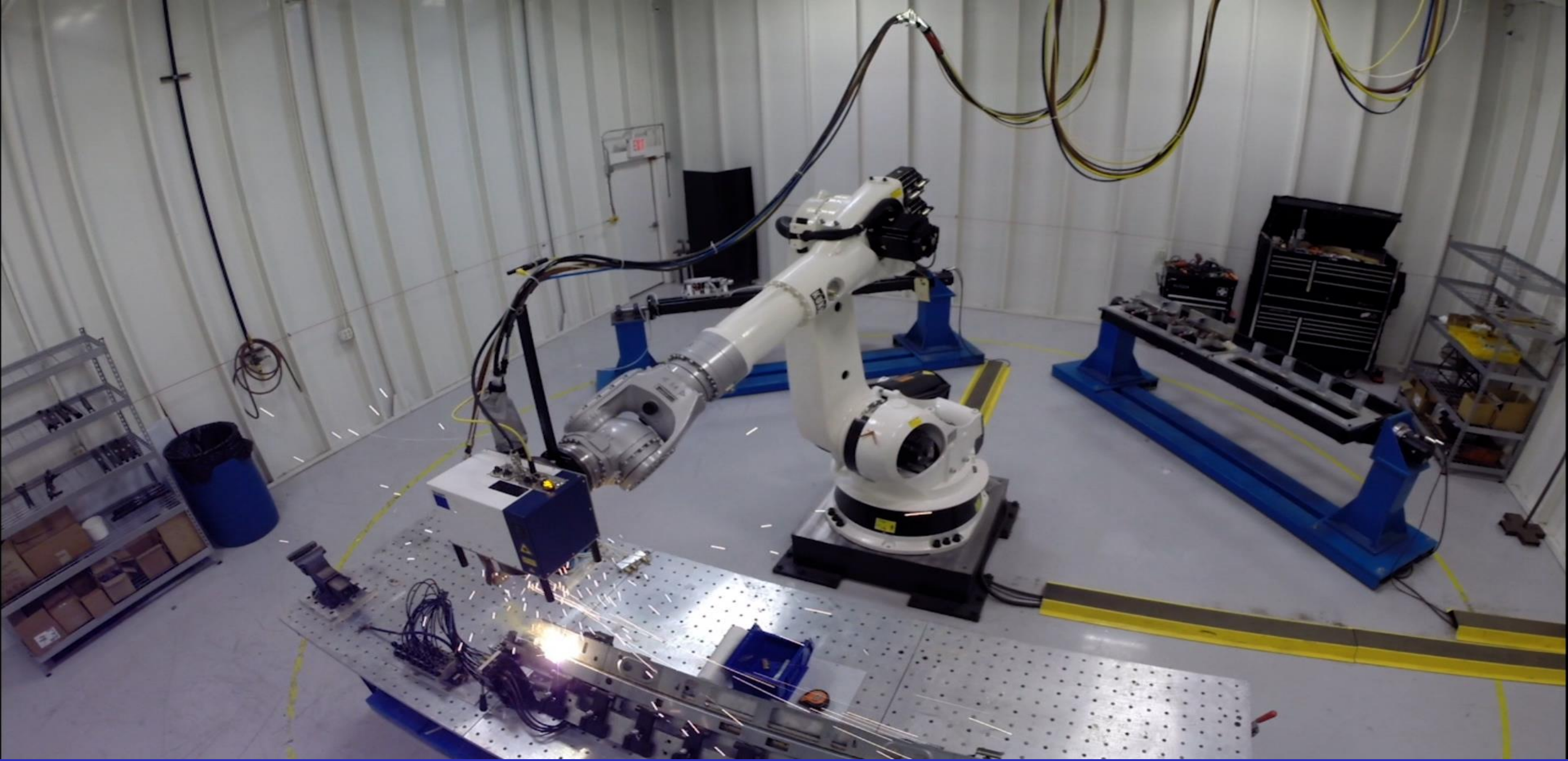
…In technology

Our resources…

- Employees
- The most advanced manufacturing technologies….
  - 48 3 and 5-axis laser machines
  - 116 CNC machining centers
  - 194 stamping presses to 5,000-ton capacity
  - Robotic fiber laser welding cells
  - Hot stamping, hydroforming

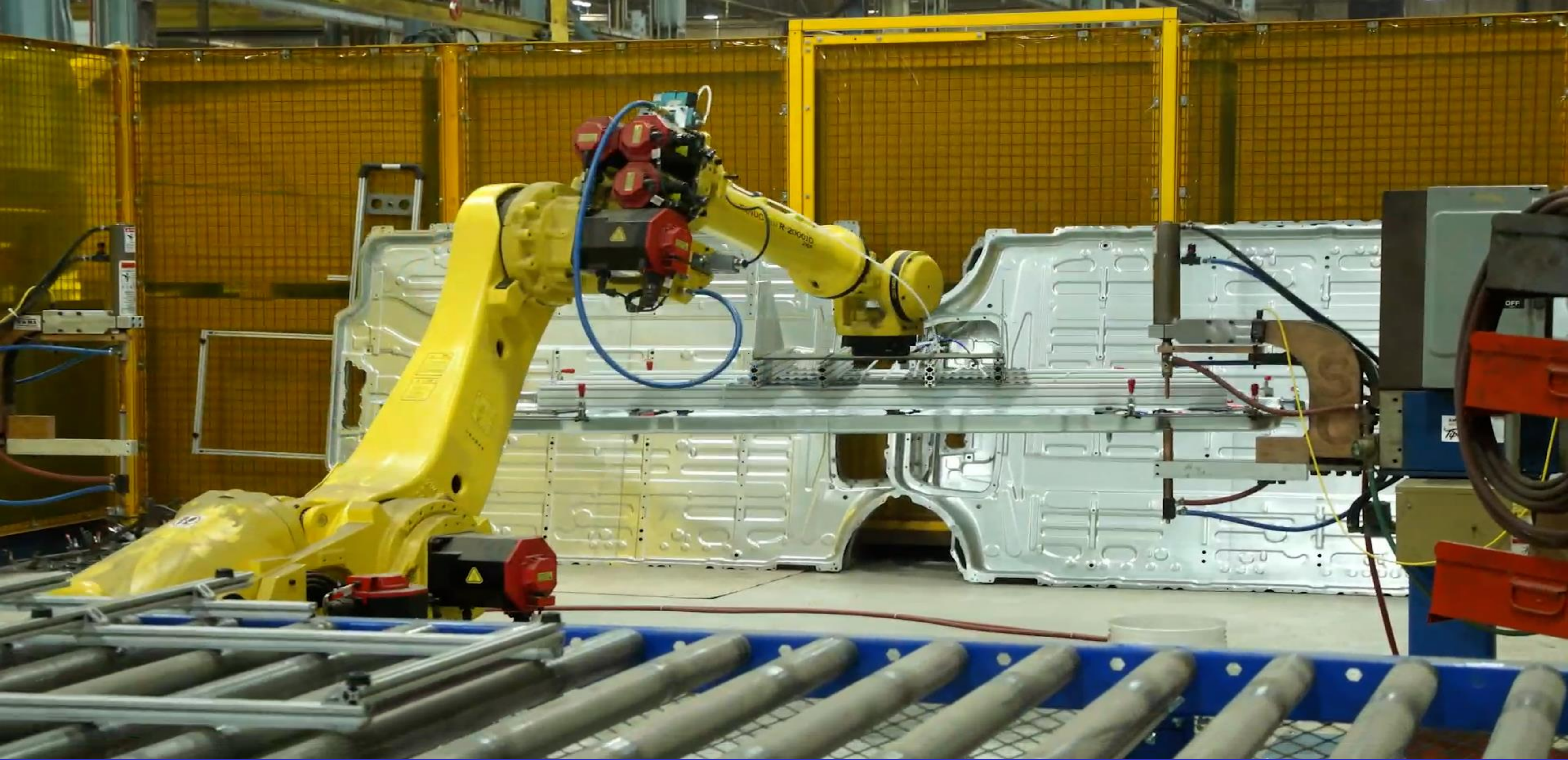
…Our resources continued

- AS9100 Rev D (for Aerospace), ISO 9001 & ISO 14001 (Environmental Management System) certifications
- Satellite communications development
- Vertically integrated…most, if not all work is done inhouse
- Available capacity
- Ability to respond fast and help customers navigate startups
- Automation in all facets of our operation

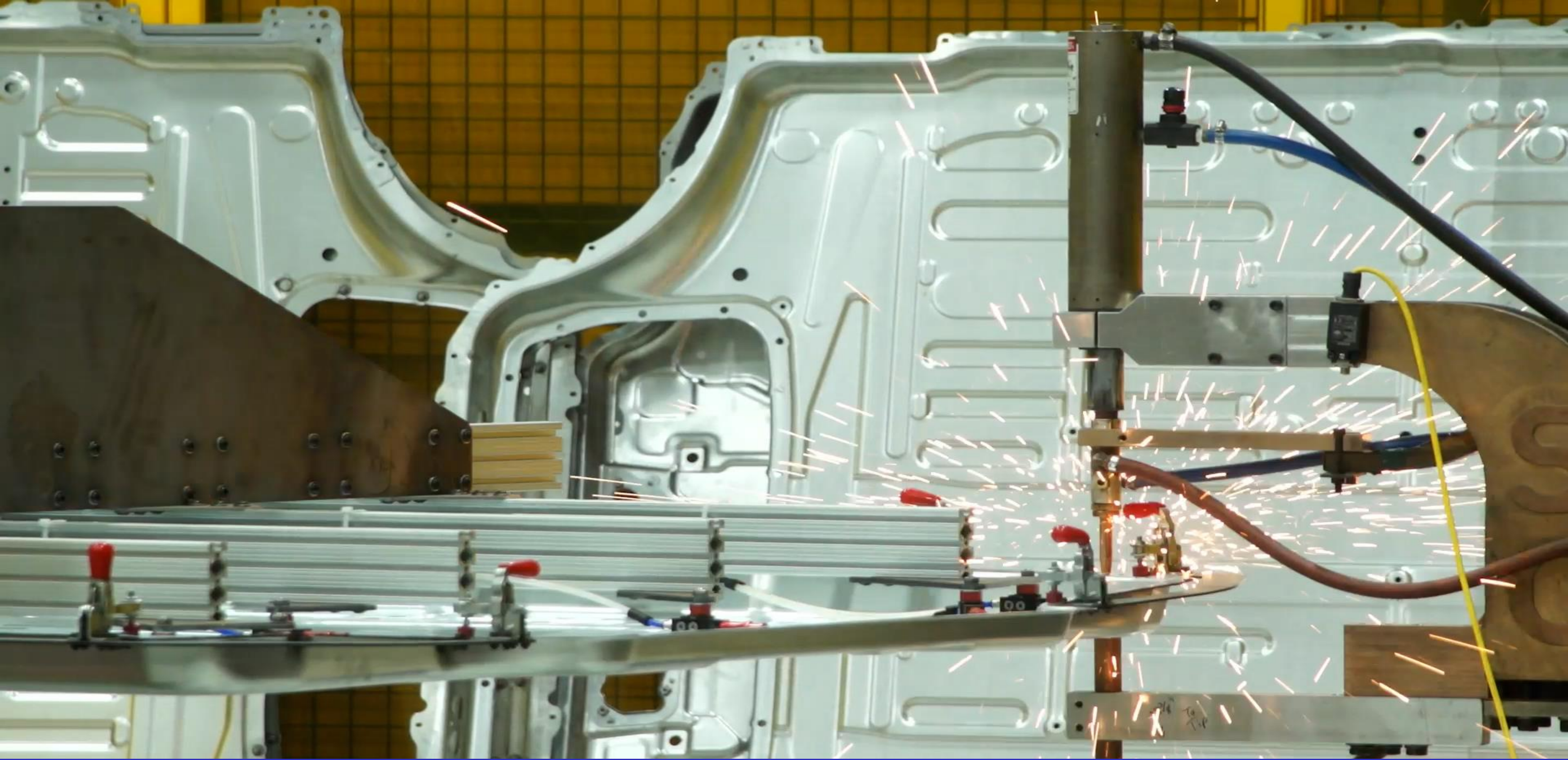


3-Dimensional Services Group
PROTOTYPE. PRODUCTION. PROVEN.


TRUMPF
TruLaser Robot 6602
Control Room
TruLaser Robot 6602



3-Dimensional Services Group
PROTOTYPE. PRODUCTION. PROVEN.



3-Dimensional Services Group
PROTOTYPE. PRODUCTION. PROVEN.

3-Dimensional Services Group
PROTOTYPE. PRODUCTION. PROVEN.

…In personnel

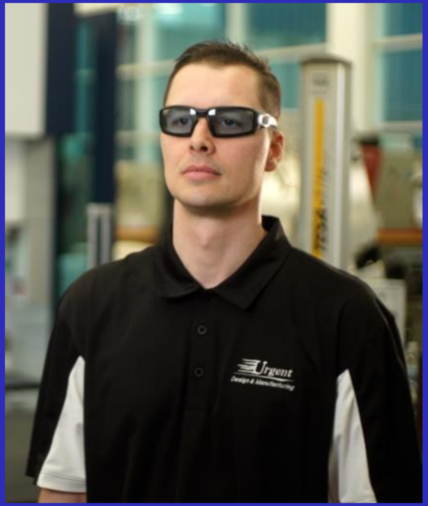
3-Dimensional Services Group
PROTOTYPE. PRODUCTION. PROVEN.







3-Dimensional
Services Group
PROTOTYPE. PRODUCTION. PROVEN.



3-Dimensional
Services Group
PROTOTYPE. PRODUCTION. PROVEN.

…In manufacturing

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3-Dimensional
Services Group
PROTOTYPE. PRODUCTION. PROVEN.

What it takes to be a top EV supplier.

- Available capacity to “scale” production runs
- Full-service, vertically-integrated capabilities
- The right technology, equipment & facilities
- Highly-skilled personnel
- Design and manufacturing
- Speed to market
- Continuous improvement
- Always focus on what’s next!!!

3-Dimensional
Services Group
PROTOTYPE. PRODUCTION. PROVEN.

3-Dimensional Services Group

PROTOTYPE. PRODUCTION. PROVEN.

Questions?

Global Light Vehicle Outlook

Global Light Vehicle Recovery Track, Trends and Path Forward

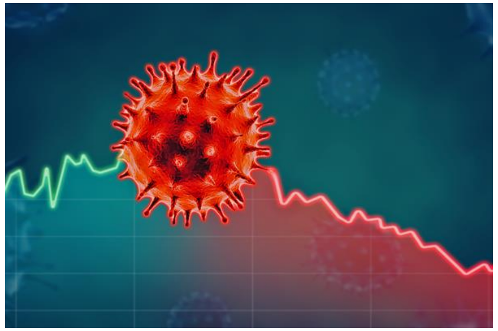
Jeff Schuster, President, Americas and Global Vehicle Forecasts

September 15, 2022

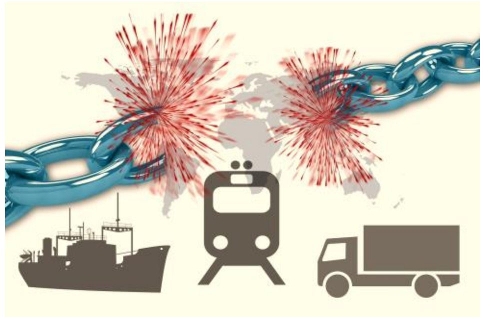
Outline

- **Near-term Disruption Recovery**
- Long-term Trends and Outlook

A world of uncertainty!



2020

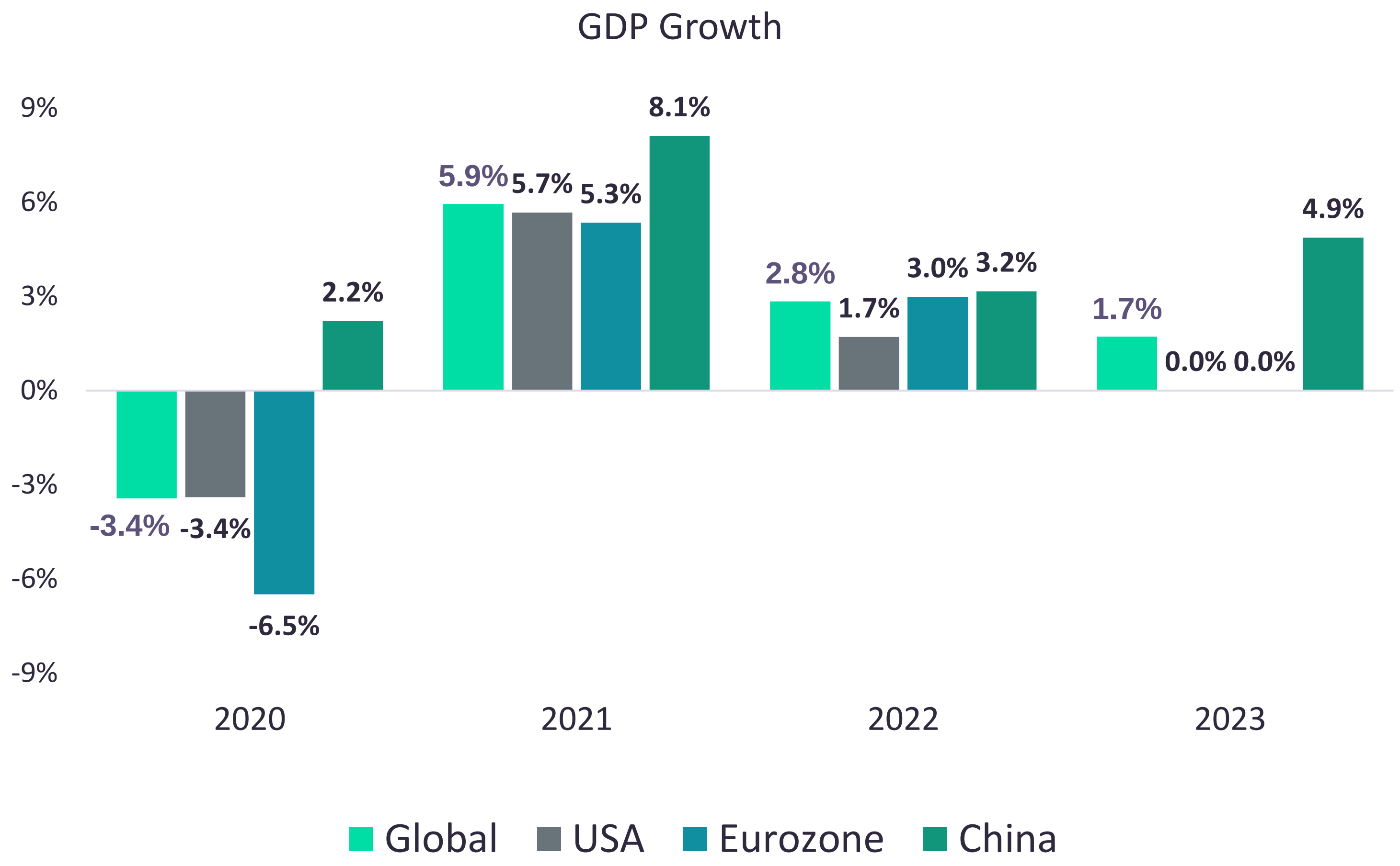


2021

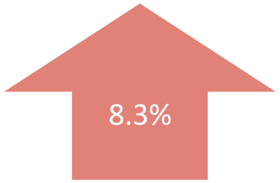
2022

Disruptors remain layered lending to delayed recovery and demand destruction

GDP Growth revised down across the board – no growth expected in Eurozone or US

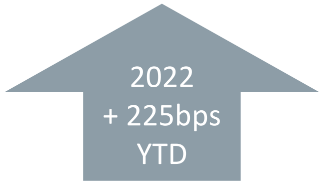


US Inflation



CPI in August, rose 0.1% from July and 8.3% over last year, but still off the high posted in June.

US Interest Rates



Fed expected to raise rates by 75 bps in Sept. 2022 targe now at 3.68.

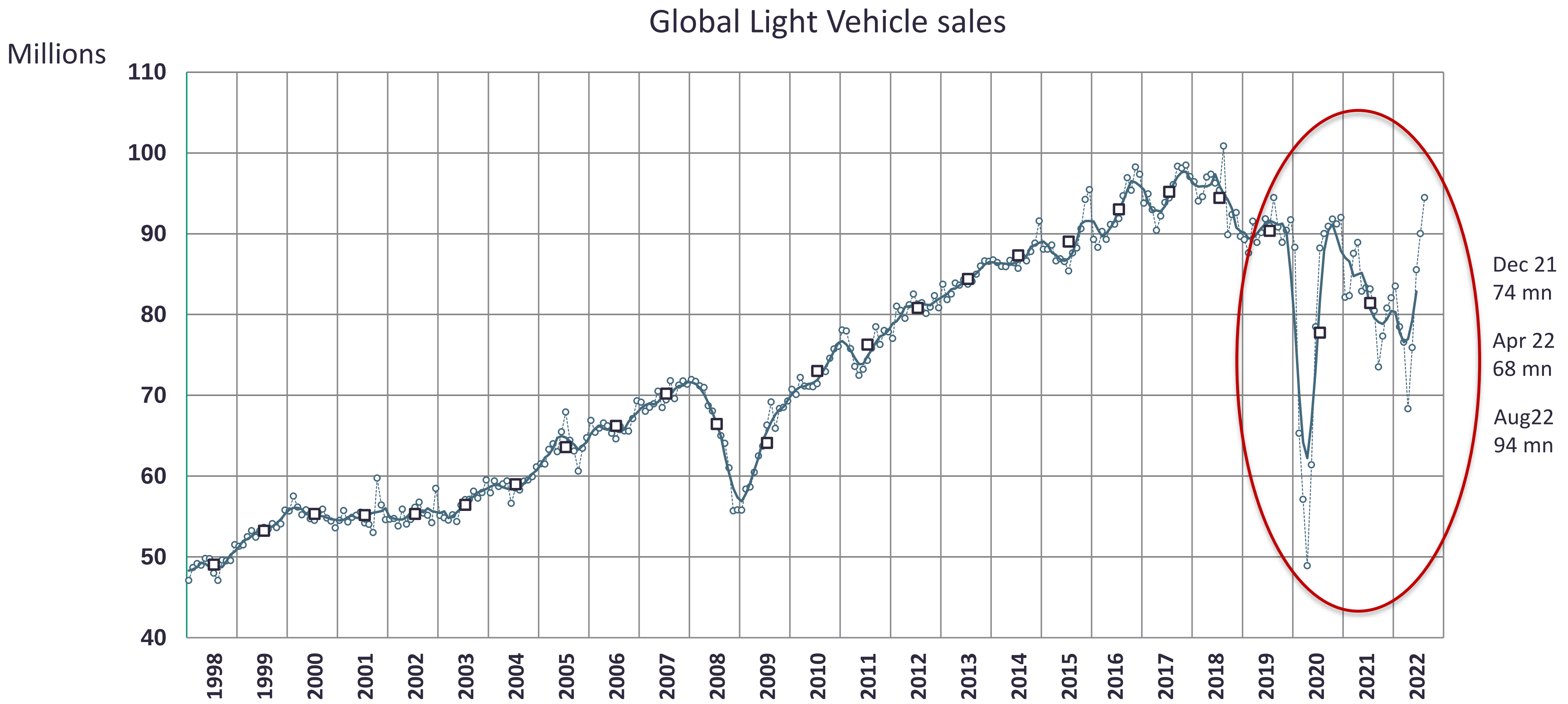
US Consumer Sentiment

UofM measure falls below 40 and is nearly 4 points below the pandemic average

GlobalData.

Source: LMC Automotive/Oxford Economics

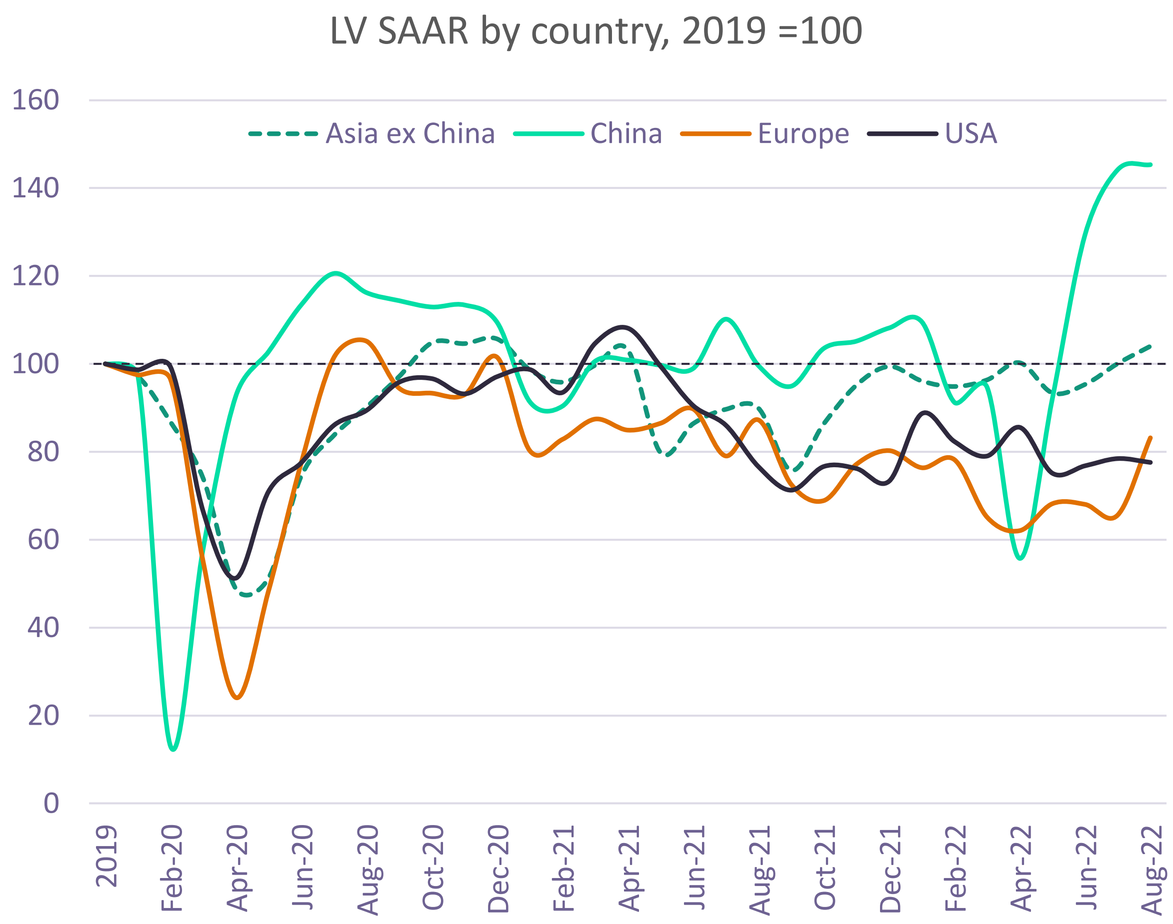
Can China pull the global market back into recovery?



Source: LMC Automotive/GlobalData

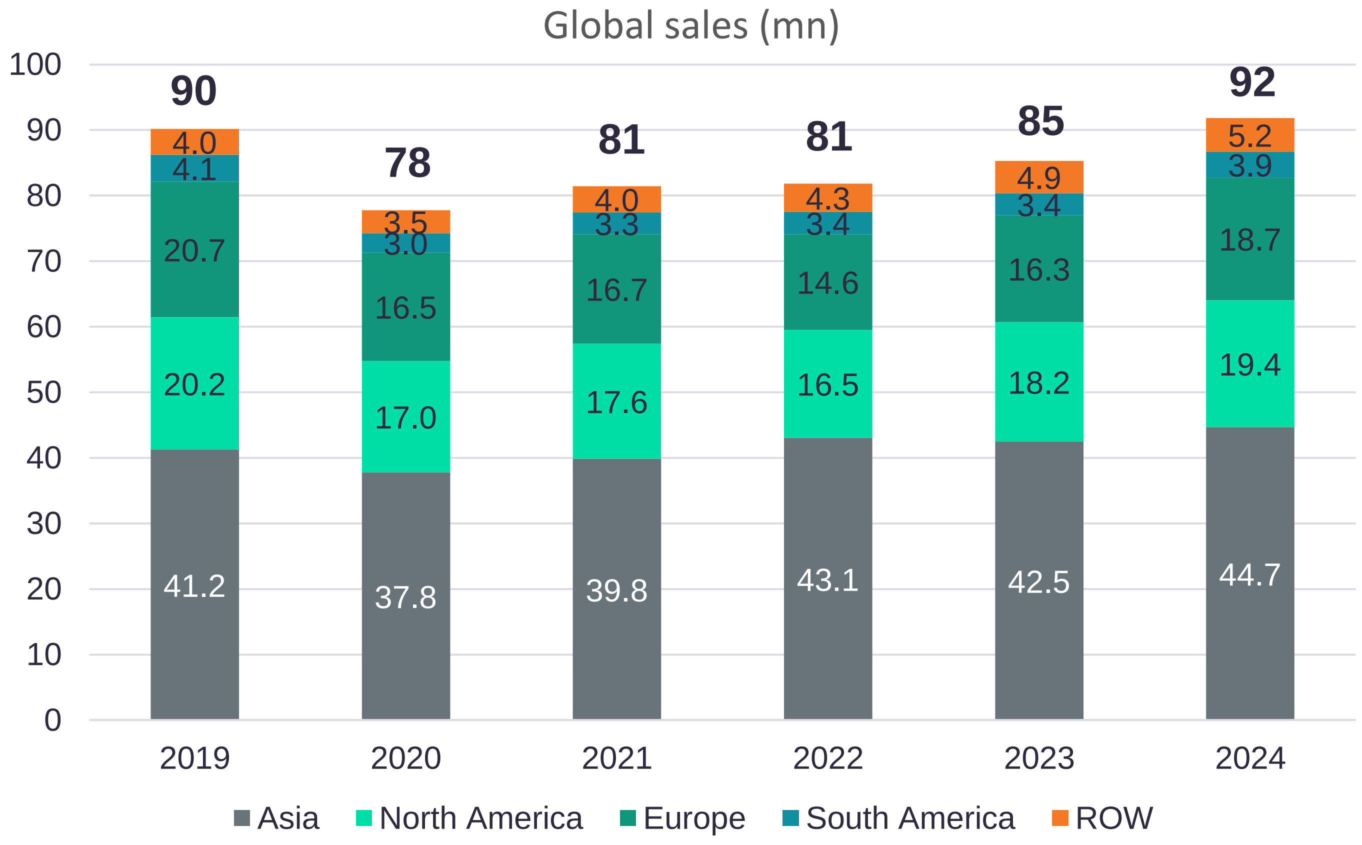
Market backdrop by region

- All markets exhibited strong recovery following initial lockdowns in spring of 2020. Summer saw selling rates rebound as pent-up demand and government support measures came through.
- 2021 presented challenges with further movement restrictions in some countries, followed by supply disruption, with recent headwinds to activity only added to by war in Ukraine.
- China has hit all-time high selling rates recently on incentives and reopening. Risks of production not keeping up and additional lockdowns.



Source: LMC Automotive/GlobalData

Global & regional sales outlook — recovery with further risk



Downside Risk

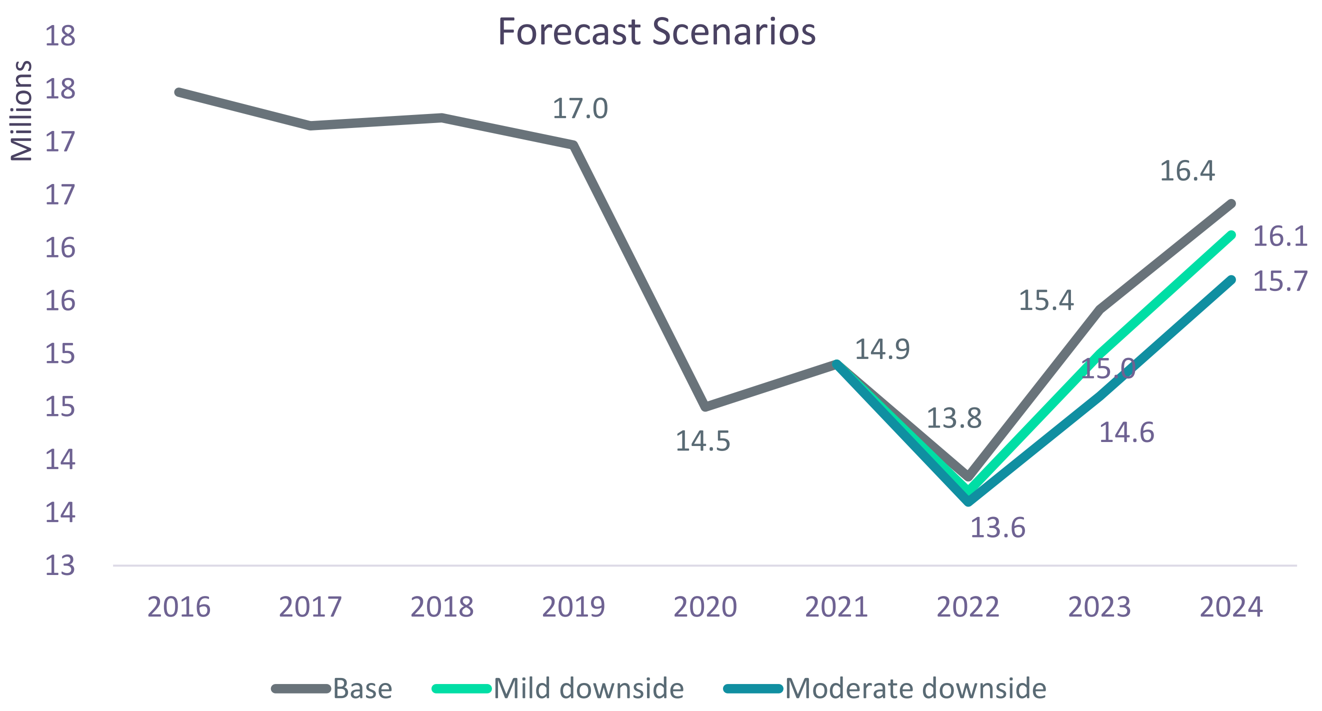
- Russia invasion of Ukraine drags on or conflict is expanded elsewhere
- Lockdowns return to China or elsewhere, disrupting manufacturing and supply chain.
- Advanced economy recession pulls down demand.
- Labor shortage is not resolved

Upside Risk

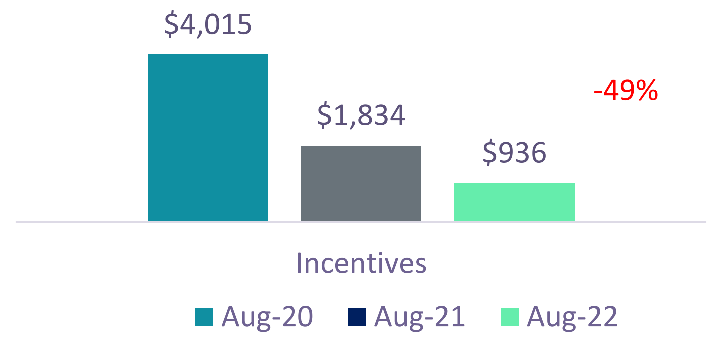
- Recession is avoided and growth returns with lower inflation
- Russia/Ukraine war is resolved, ending uncertainty and disruptions
- New or extended targeted automotive support beyond China.

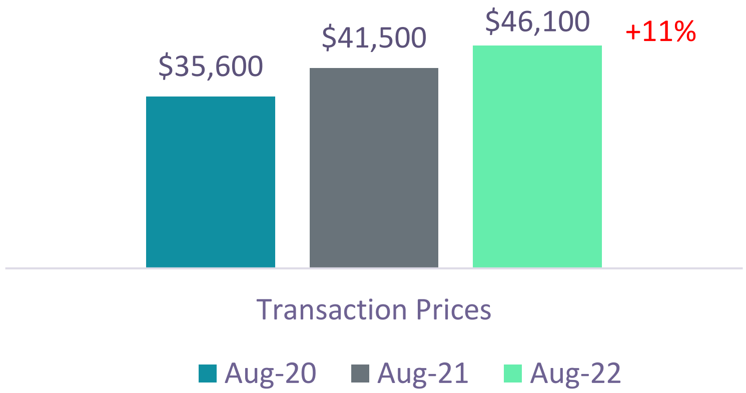
Source: LMC Automotive/GlobalData

US LV sales recovery patterns



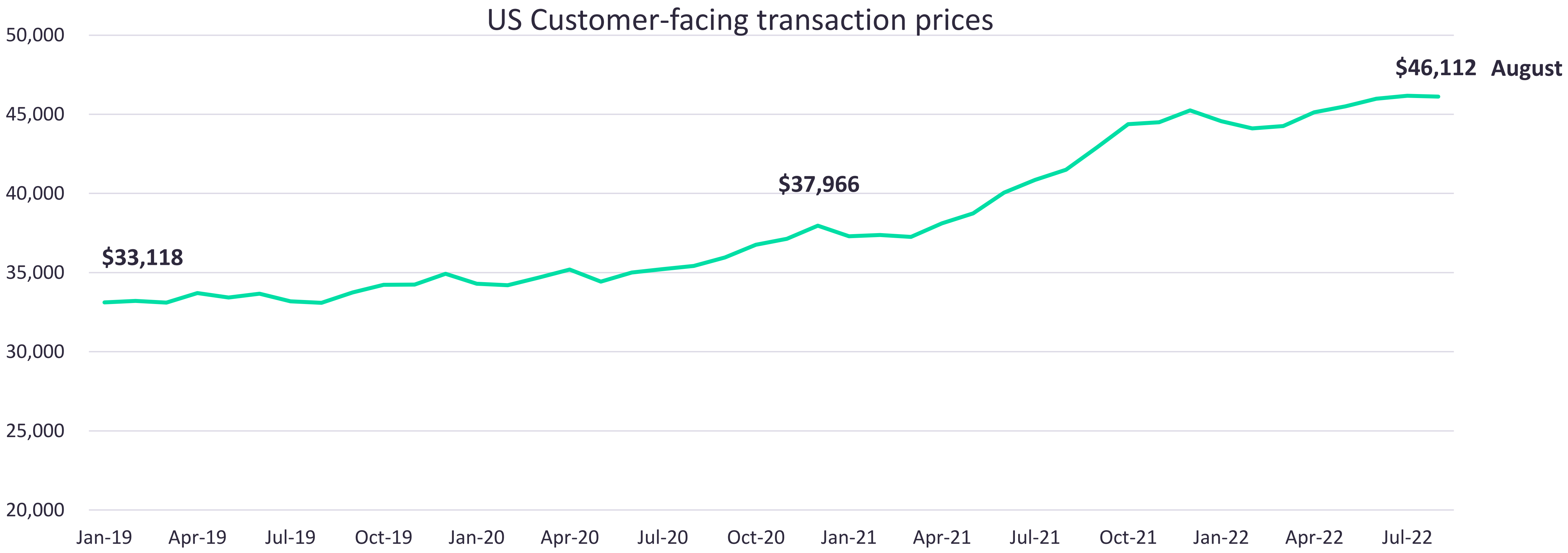
US LV Retail %	
2020	85.5%
2021	87.2%
2022	85.5%
2023	84.8%
2024	83.3%





Source: LMC Automotive, J.D. Power

Customer-facing transaction pricing back to all-time high

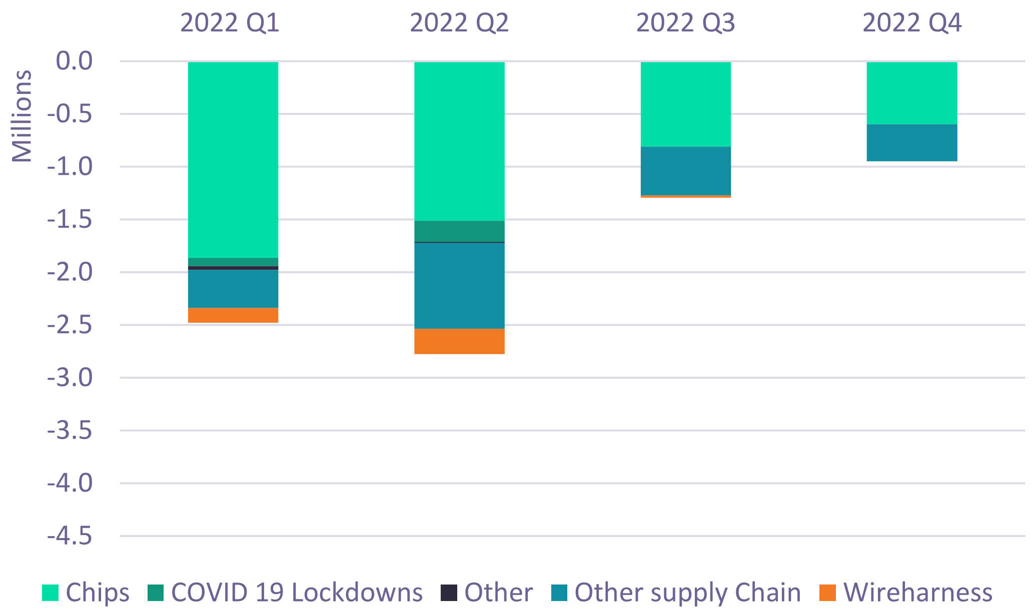


GlobalData.

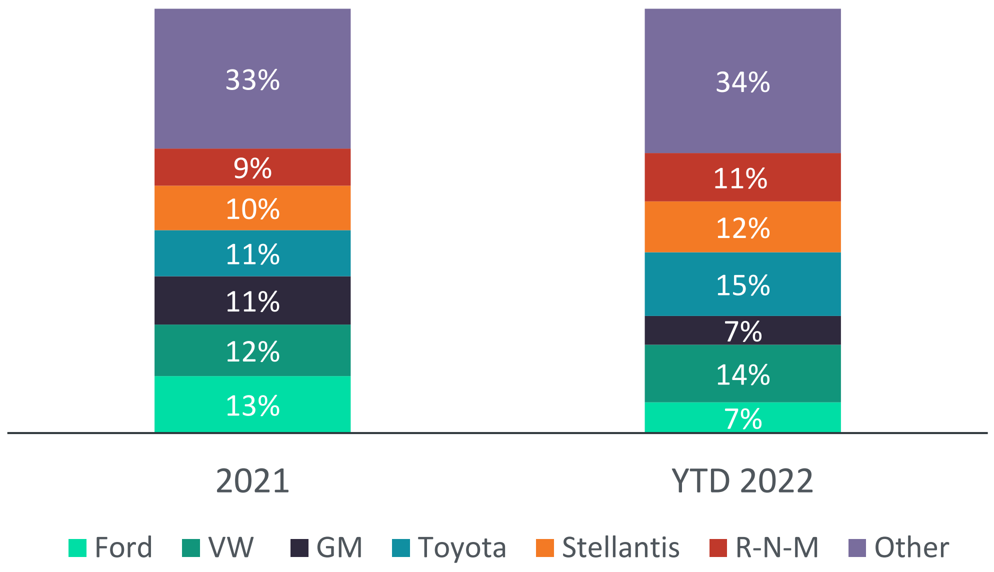
Source: LMC Automotive/GlobalData

Global LV output – disruption

Quarterly Allocation



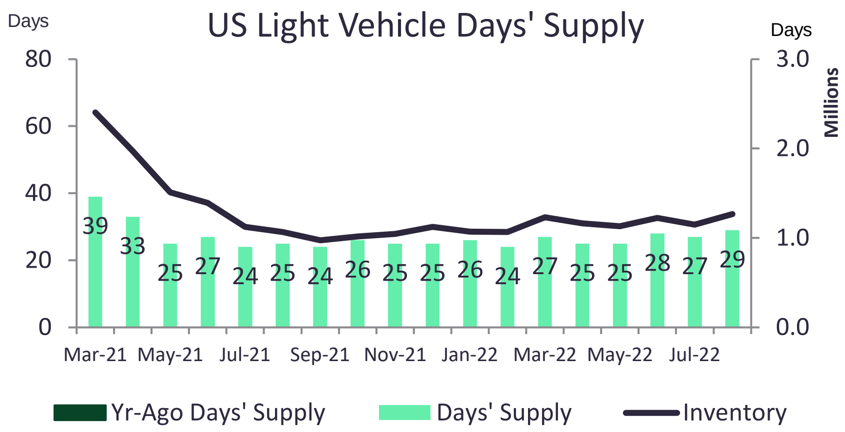
OEM Impact

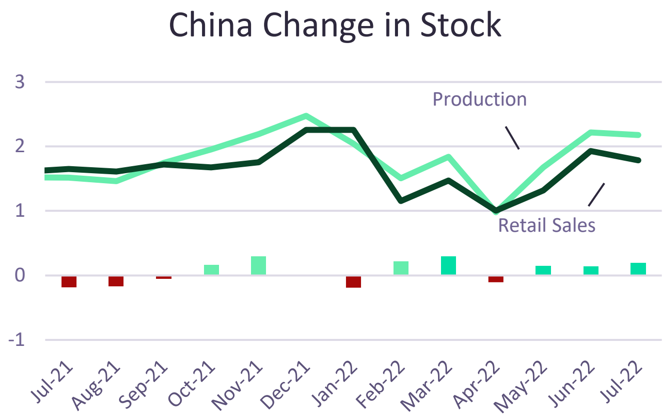


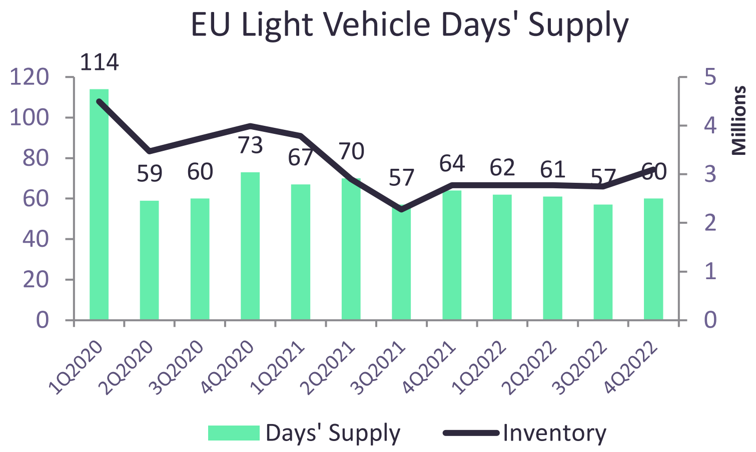
- Disruption in 2021 totalled over 10mn units from planned volume, with around 90% of volume due to semiconductor shortage. NA and Europe made up over half of the chip shortage global impact total.
- Although chip supply is starting to stabilize and improve, the impact of the Ukraine war has darkened the economic and LV market outlook for the region. Some changes in OEM impact have emerged as well.
- Overall, the disruption forecast for 2022 has improved slightly from last month. China's restart and lower demand in Europe has contributed to the change. Disruption in North America actually increased slightly. 2022 is now expected at 7.5mn units, down from 8.2mn last month.

Source: LMC Automotive/GlobalData

Inventory situation across markets





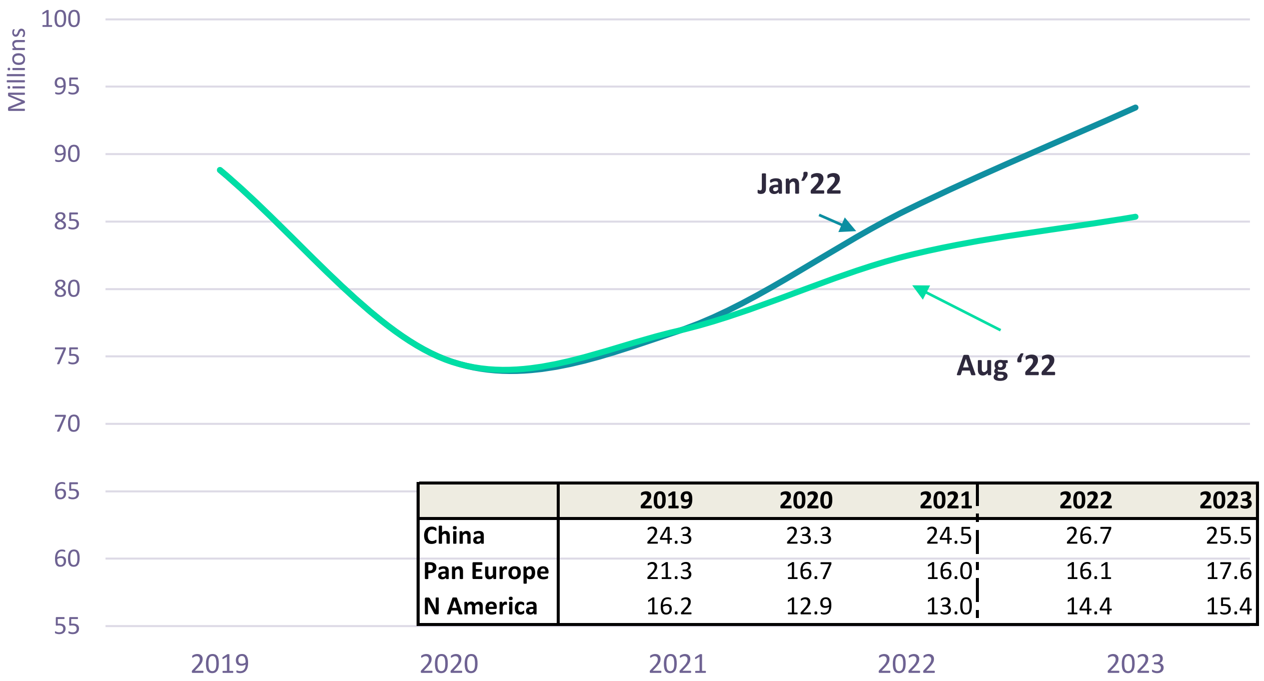


- US days' supply has improved marginally in August with inventory at the highest level since June 2021. Levels remain well below normal levels but a sign that production and sales are beginning to balance. Augusto was 10% higher than August 2021, but we do not expect any significant improvement before late in 2023.
- Despite the significant increase in sales volume, China's change in stock has been positive 5 out of the last 6 months, as the reopening has allowed China's production to keep pace with demand thus far. If the pace continues, it may be challenging by year-end.
- European inventories have essentially been flat since the start of the year with a pronounced recovery in Q4 expected, but levels remain subdued. Europe may have finally turned the corner, assisted by weaker demand and implications from war in Ukraine.

Source: LMC Automotive/GlobalData

Near-term LV global production forecast

Forecast Evolution



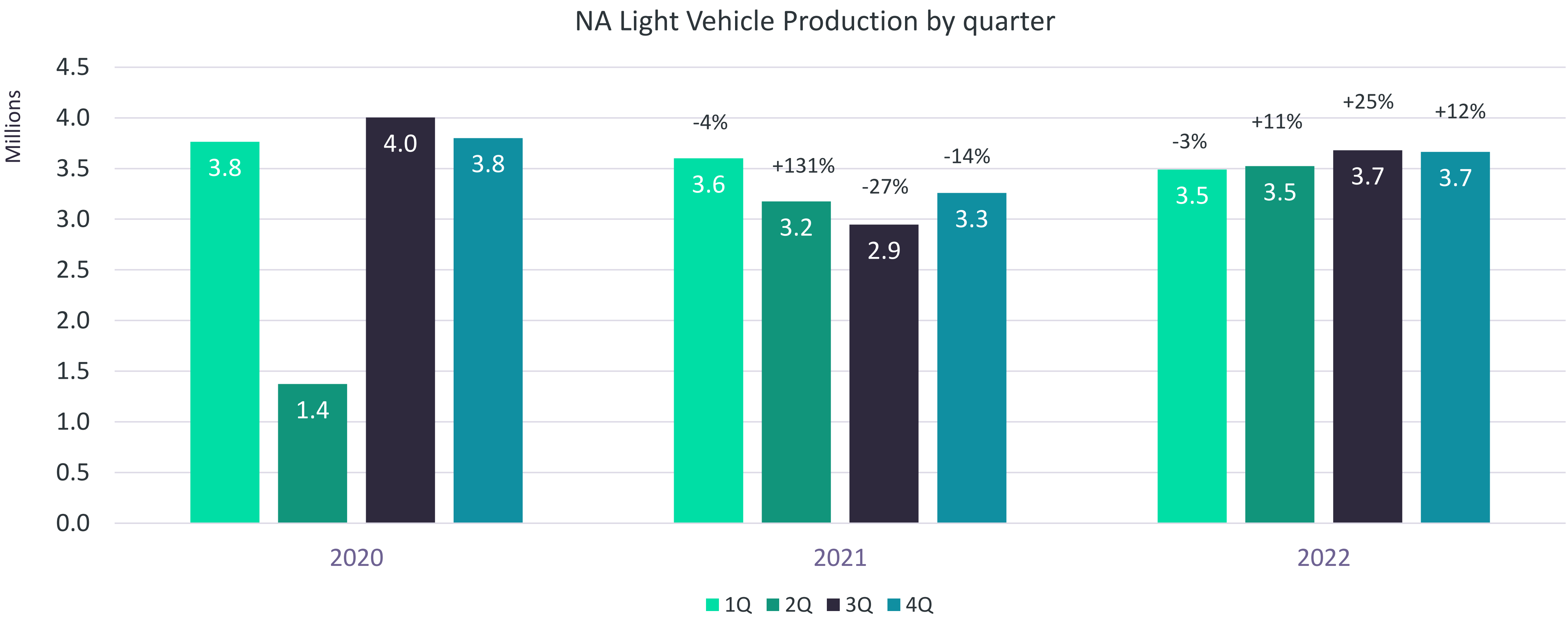
	2019	2020	2021	2022	2023
China	24.3	23.3	24.5	26.7	25.5
Pan Europe	21.3	16.7	16.0	16.1	17.6
N America	16.2	12.9	13.0	14.4	15.4

- Forecast recovery pace has been subdued as supply issues linger and demand weakens. Risk remains high given Ukraine war, COVID and the macro-economic environment.
- Since Jan'22, full-year 2022 cut has been cut by 3.4mn, an improvement since last month with some China pull forward expected. 2023 has been lowered by 8.1mn.
- Distribution strategy shift to reduce longer-run inventory requirements.
- Longer term is impacted as well. We downgraded the demand environment, as EV transition evolves and OEMs pursue margin over volume.
- Changes to mobility demand through altered working/commuting patterns.

GlobalData.

Source: LMC Automotive/GlobalData

North American production flattens in 2022 – recovery is slow but progressing



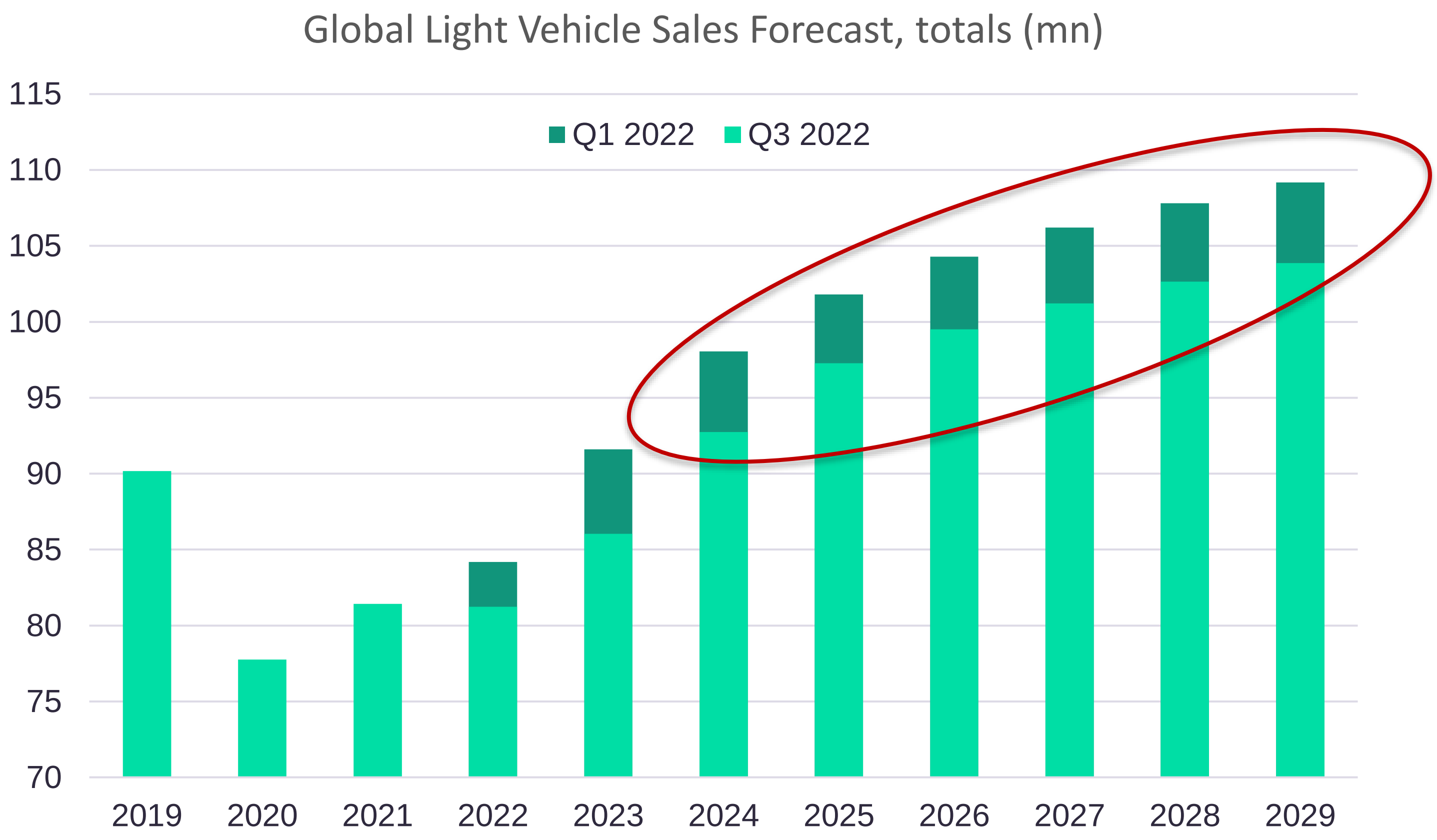
GlobalData.

Source: LMC Automotive/GlobalData

Outline

- Near-term Disruption Recovery
- **Long-term Trends and Outlook**

Global LV sales forecast downgrade



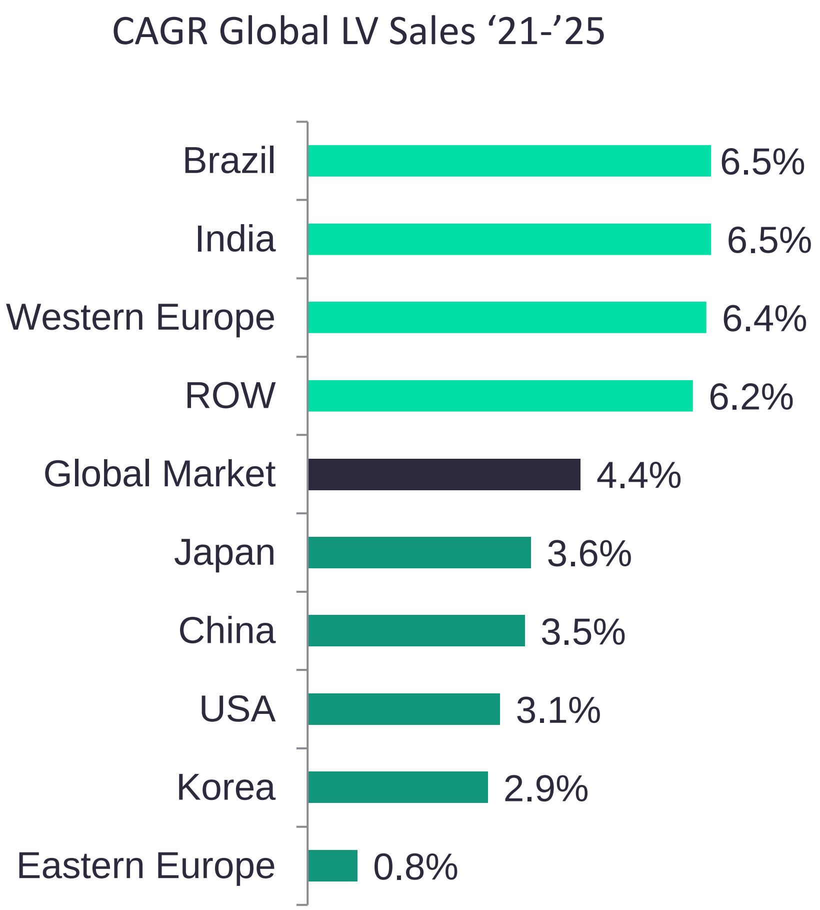
Near-term outlook down due to further supply issues and impact of war.

Longer-term baseline forecast lowered because of:

- greater caution as macro risks skewed to the downside.
- potential for other materials shortages in the future.
- mobility requirements being impacted by hybrid working.
- vehicle pricing remaining elevated.

Source: LMC Automotive/GlobalData

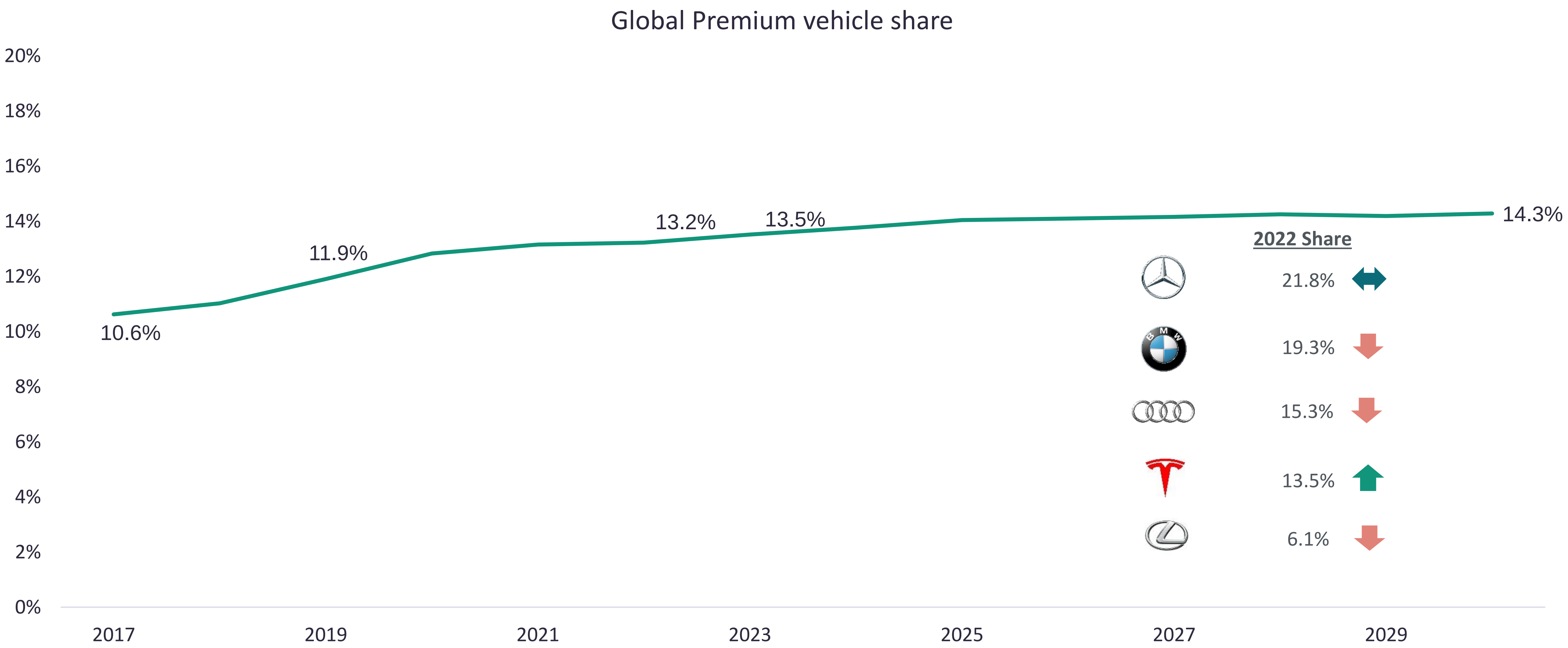
Medium-term recovery path for key markets



- Global CAGR at 4.4% 2021-2025, with most non-mature markets outperforming mature.
- Strong recovery in Western Europe after lagging in 2021/2022. Eastern Europe recovery at risk.
- US growth is flattening out
- In absolute volumes terms, China remains single largest engine for growth.

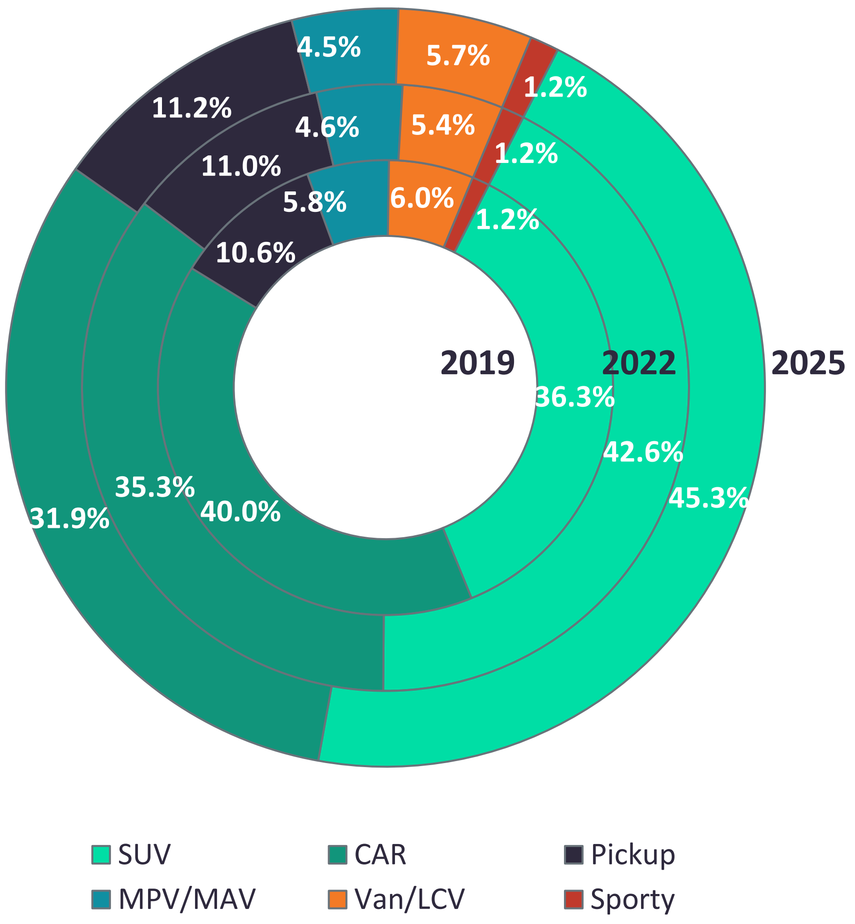
Source: LMC Automotive/GlobalData

Global Premium segment up 1.3 pp from 2019, but it is mostly a Tesla story



Source: LMC Automotive/GlobalData

SUVs continue to expand on top segment reign



- SUV overtook car in 2020 and will continue to expand thanks to all sizes and shapes and EV push.

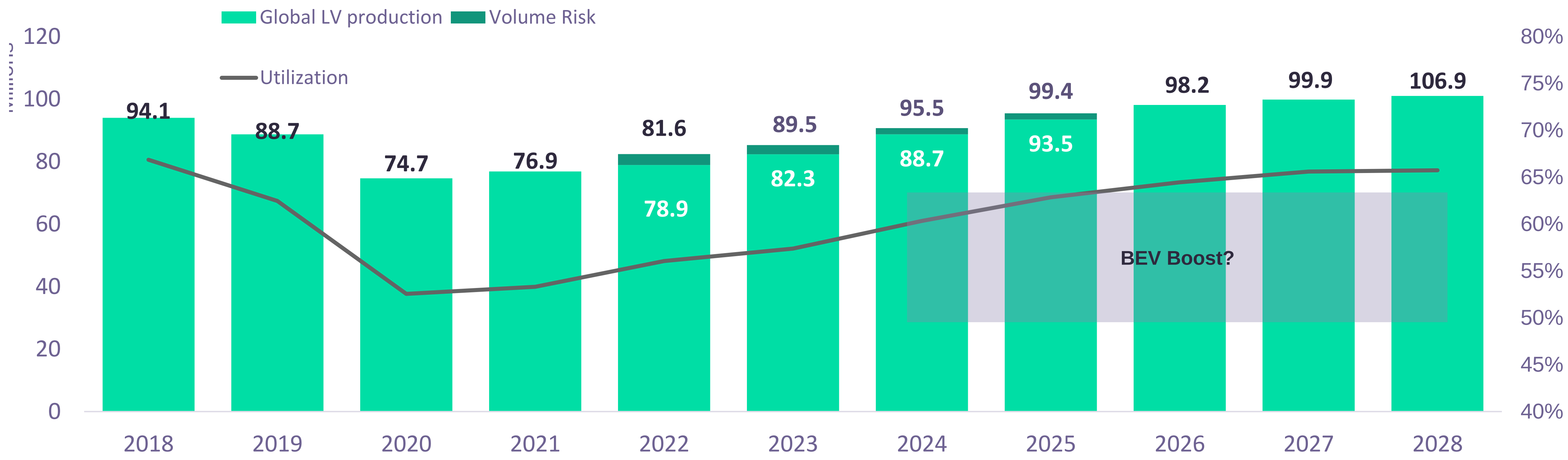
- MPV/MAV under pressure as SUVs continue to grow but segment dominated by Toyota with 26% share of segment.

- Car volume concentrate in some premium segments and low-cost markets.

- Pickups pass Cars in US this year, helping to drive global growth through 2025. EV activity adds volume as well.

Source: LMC Automotive/GlobalData

Global LV production gains traction after short-term chaos



– Production still struggling to keep up with demand but a rebalancing is starting to take shape. Uncertainty high in 2022 and into 2023, which will drive mid-term recovery. Risk include, parts shortages, geo-political conflict, logistic issues, labor shortages, inflation and return of COVID-19 lockdowns.

– CAGR 21-25 of 5% slightly outpaces demand as inventory rebuilds but there has been a shift in what inventory levels will return to.

– Mid-term forecast could get boost from BEV conversion; vehicle sharing and longer replacement cycle could be long-term volume risk to volume.

GlobalData.

Source: LMC Automotive/GlobalData

OEM Medium Term ‘Score-card’

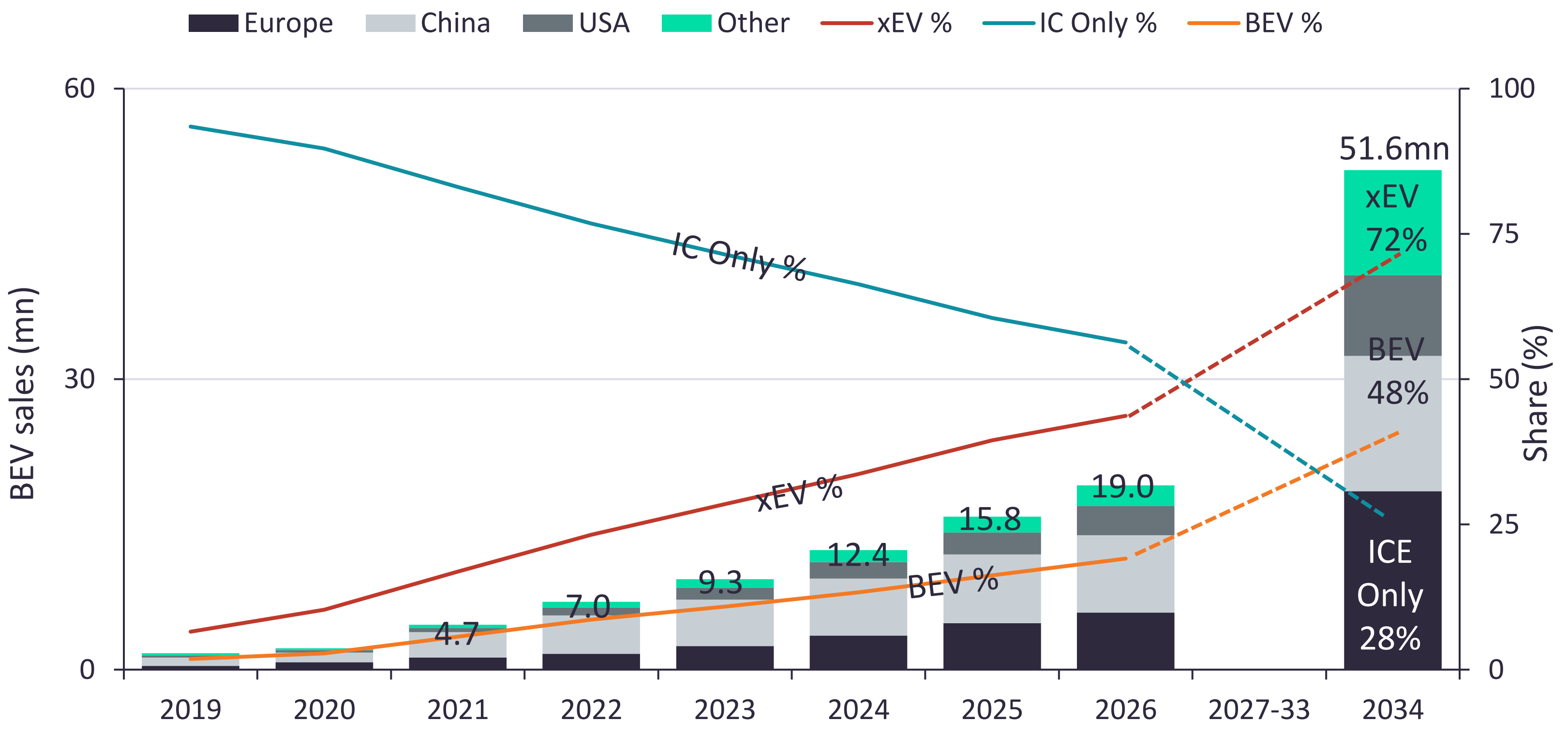
Global LV Production: 2019=100

	2020	2021	2022	2023	2024	2025
Global LV	84	87	93	96	102	108
Toyota	87	95	97	101	104	111
VW	82	76	80	80	88	97
Stellantis	79	82	89	95	103	107
Hyundai	84	88	92	96	101	105
RNM	71	71	71	77	83	87
GM	82	71	81	85	86	86
Honda	85	79	79	84	89	92
Ford	76	71	79	84	87	91
Suzuki	83	95	104	107	107	110
SAIC	96	111	106	101	104	106
Mercedes	86	83	90	93	98	99
BMW	88	96	97	99	102	108
Geely	93	95	100	99	117	128
BYD	96	170	378	365	372	385
Changan Auto	113	129	141	126	129	133
Tesla	140	254	384	460	487	543

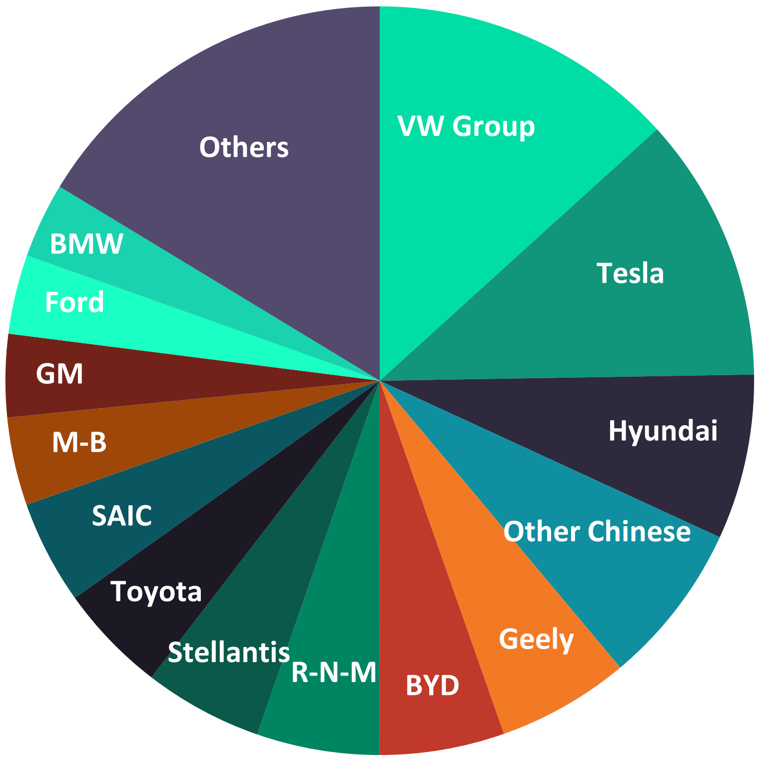
Source: LMC Automotive/GlobalData

World: BEV and xEV forecast by major market and leading BEV OEM outlook

World LV BEV market, xEV and IC Only share



2025 Global BEV market by group



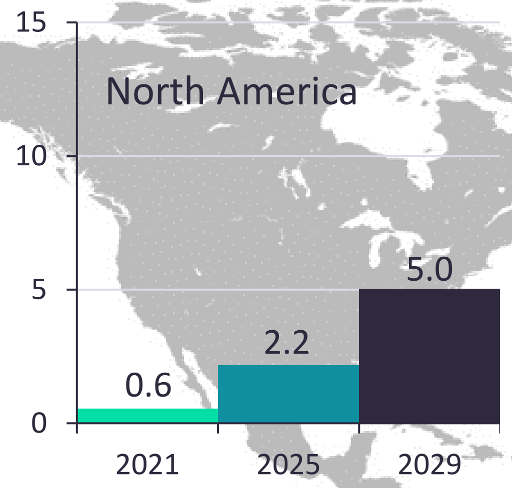
- BEV volume and share growth trajectory has been tempered and remains contingent on battery material availability & inflation containment.
- This forecast shows circa 3 mn units fewer in 2034 than previous forecast, as global sales topline was revised down.

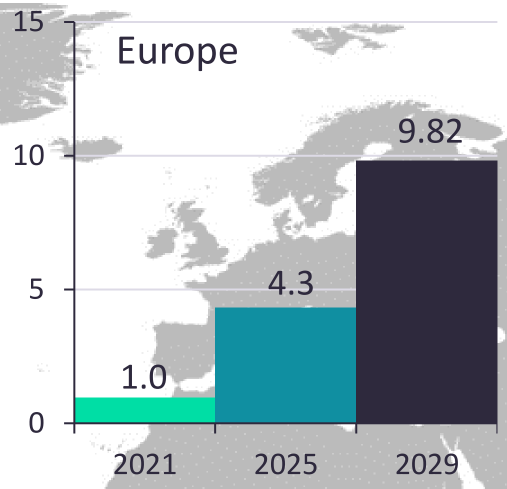
GlobalData.

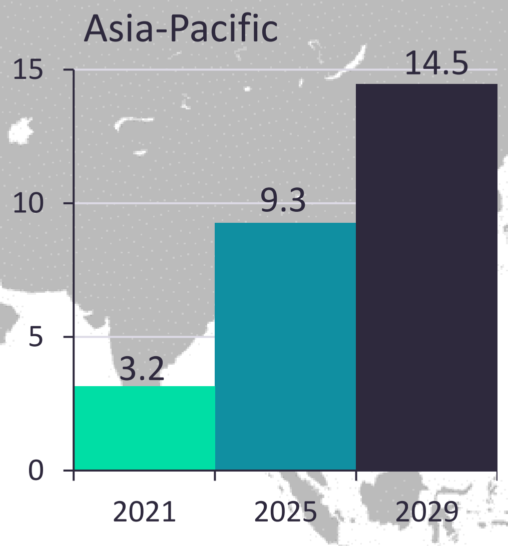
Source: LMC Automotive/GlobalData

World: BEV production outlook

Light vehicle BEV production (million units)





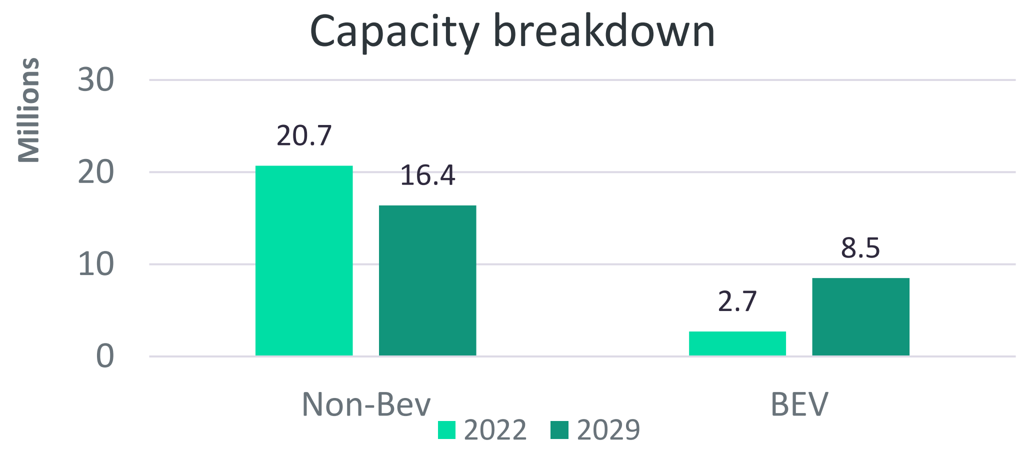


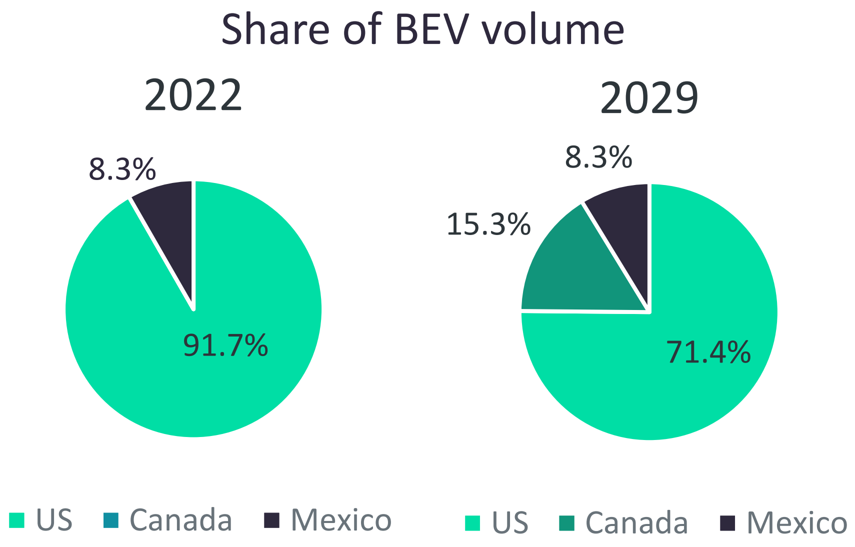
Share of global LV BEV production (%)

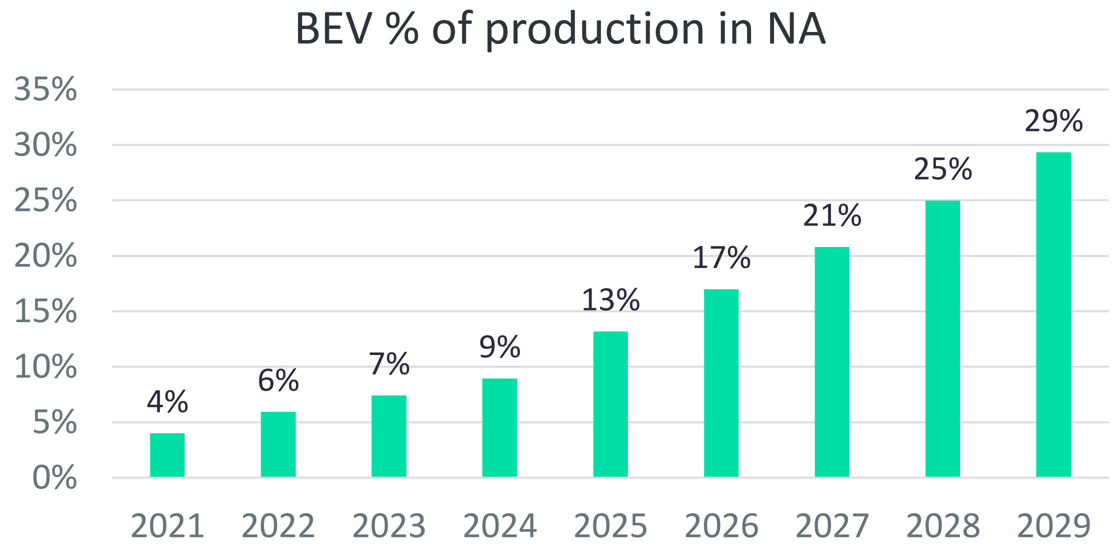
Region	2021	2025	2029
Asia-Pacific	67	59	49
Europe	21	27	33
N. America	12	14	17

Source: LMC Automotive/GlobalData

BEV grows as share of North American capacity and production







Source: LMC Automotive/GlobalData

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