XIII. AFTERMARKET CONFERENCE

Paul T. McCarthy

President & CEO

MEMA Aftermarket Suppliers

Organizatör Kuruluşlar / Powered By

OTOMOTİV ENDÜSTRİSİ İHRACATÇILARI BİRLİĞİ OİB

TAŞIT ARAÇLARI TEDARİK SANAYİCİLERİ DERNEĞİ taysad AUTOMOTIVE SUPPLIERS ASSOCIATION OF TURKEY

OSS 1995 Otomotiv Satış Sonrası Ürün ve Hizmetleri Derneği

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Impact of Electrification and Advanced vehicle Technologies on the Aftermarket:

A US case study

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Headline

Paul McCarthy

President & CEO

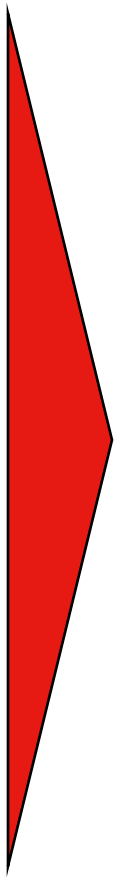
mema.
Aftermarket Suppliers

Who are MEMA Aftermarket Suppliers Members?

The suppliers of the …

- Parts
- Tools
- Chemicals
- Diagnostics
- Accessories
- & Technologies

That keep vehicles running safely and reliably throughout their lifecycle



To:

Automotive and Commercial Vehicle

New & Remanufactured

AGENDA

1 CASE TECHNOLOGY & THE INNOVATOR'S DILEMMA

2 WHAT EVS MEAN FOR AFTERMARKET REPAIR

3 AFTERMARKET TECHNOLOGY OPPORTUNITIES

4 CONCLUSIONS & STRATEGIC IMPLICATIONS

What do we mean when we say “CASE” technologies?

C — Connected

- Internet of Things (IoT), cybersecurity, V2X, infotainment
- Data analytics, 4th Industrial Revolution, Right to Repair, etc.
- Becoming a technology industry: mechanical → software/electronics

A — Automated

- ADAS / driving assistance increased safety
- Driving automation / Level 4-5 true “autonomy”

S — Shared

- Changing ownership/usage patterns, value propositions, and business models
- Changing customers, competitors, partners

E — Electrified

- Electrification / decarbonization
- EVs

Aftermarket Living the **Innovator's Dilemma**

Managing Two Businesses

Maximizing the returns from existing, long-tail business

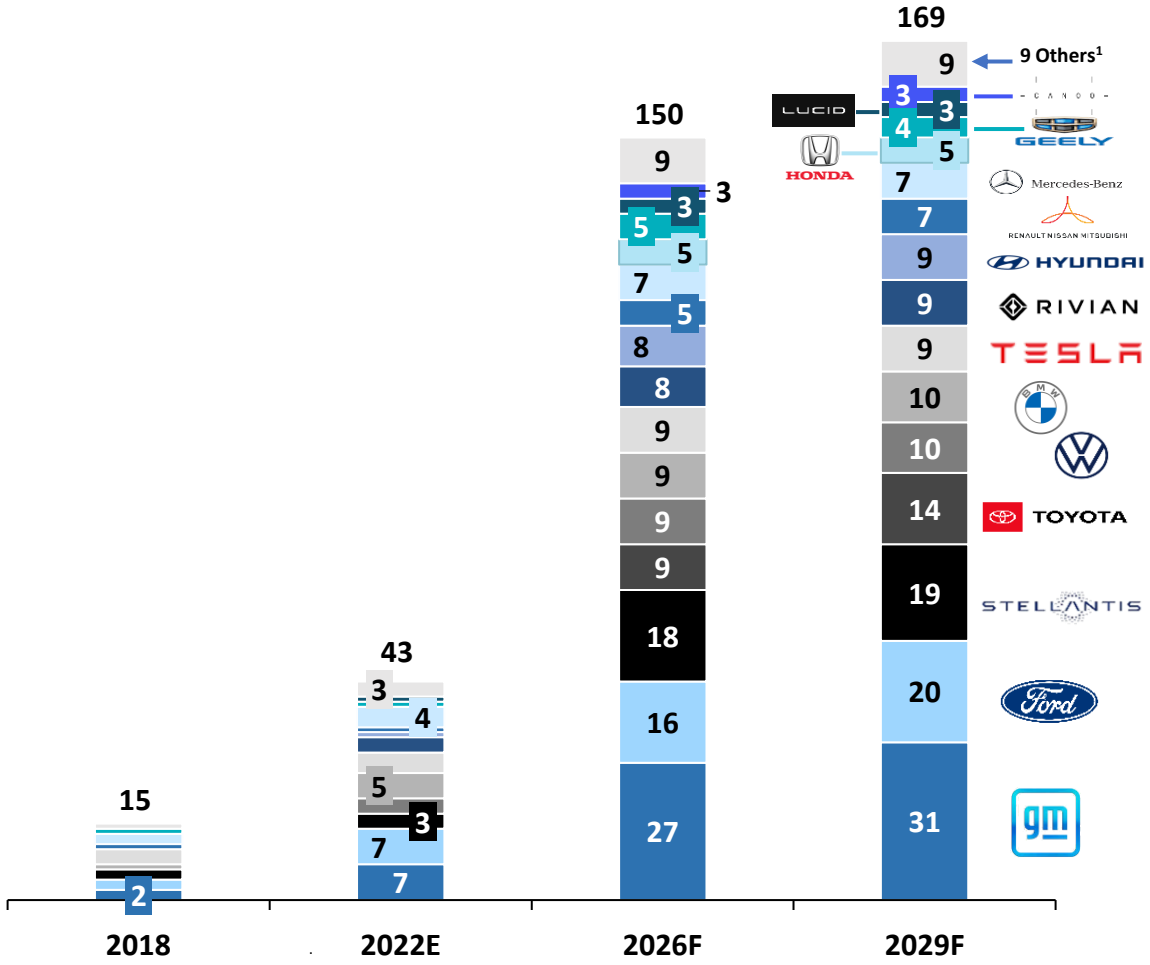
&

In parallel growing new, innovative businesses

WHAT EVs MEAN FOR THE AFTERMARKET

135 additional BEV models coming in North America

2018-2029F NORTH AMERICA BEV MODEL COUNT BY OEM



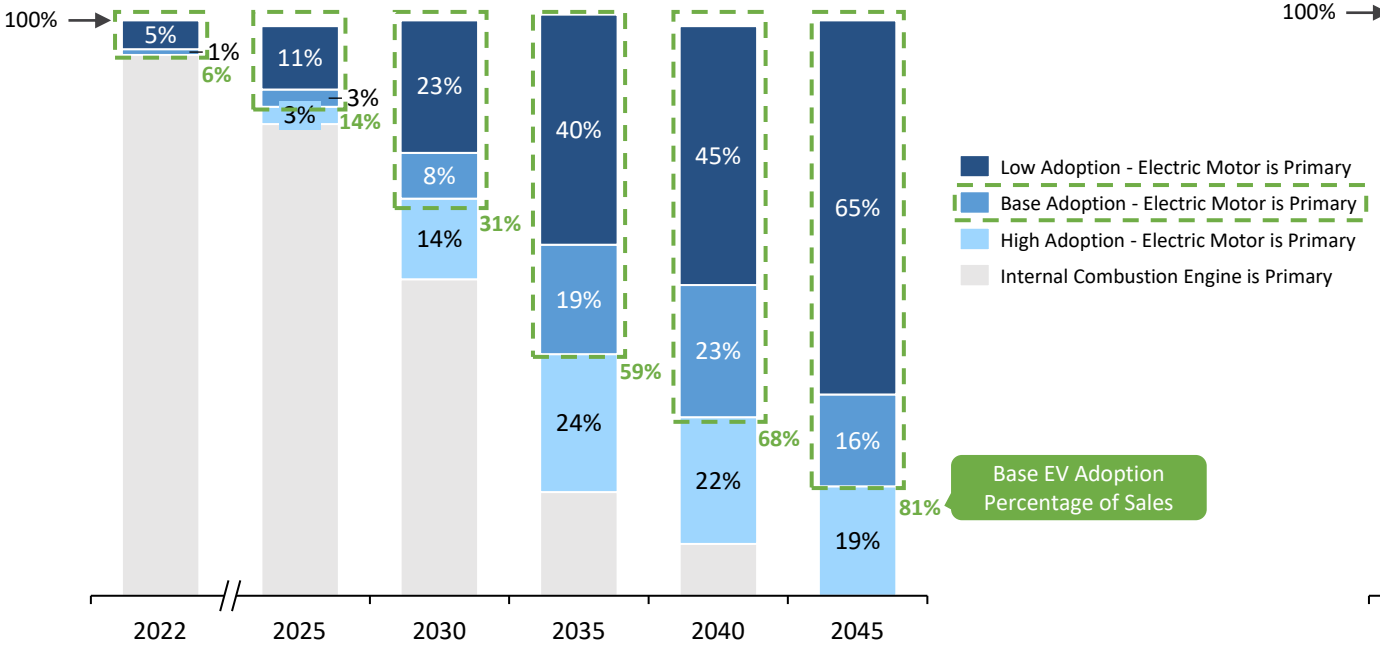
BEV MODEL COUNT BY REGION, 2029F

Segment	North America	Europe	China
CAR	24	121	180
VAN/MPV	21	46	110
Pickup	24	2	15
SUV	101	145	297

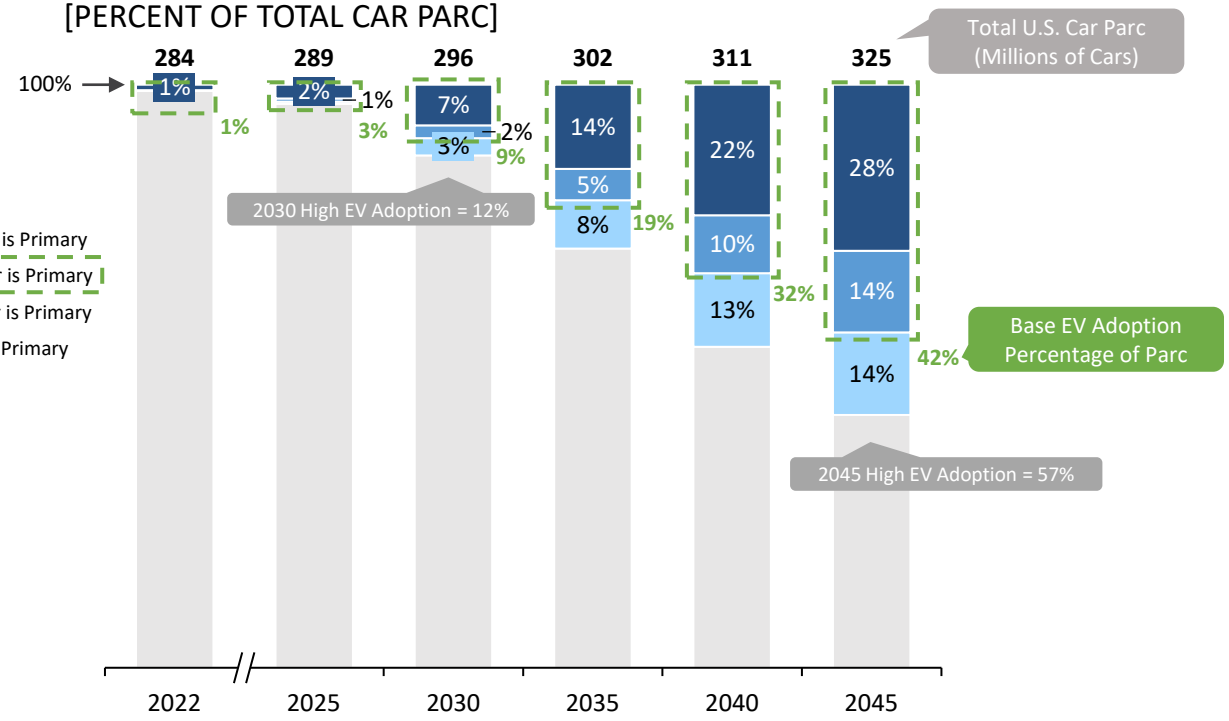
Source: MEMA Aftermarket + Auto Care Joint EV Forecast, AAPEX 2022
S&P Global Mobility (LV Production Forecast June 2022), DOT, Strategy& research

US EV new sales grow strongly after 2030; share of parc <20% in 2035; ICE still parc majority in 2045

2022-2045F U.S. PERCENT OF NEW CAR SALES BY PROPULSION TYPE
[PERCENT OF TOTAL NEW SALES]



2022-2045F PARC PENETRATION IN THE U.S. BY PROPULSION TYPE
[PERCENT OF TOTAL CAR PARC]



Key Observations

By 2035, **~20%** of the car parc will be from electric motor propulsion (PHEVs and BEVs); that number is expected to double **by 2045.**

Source: Joint MEMA Aftermarket /Auto Care Electrification Study released at AAPEX 2021

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New Biden Administration targets are over-aggressive

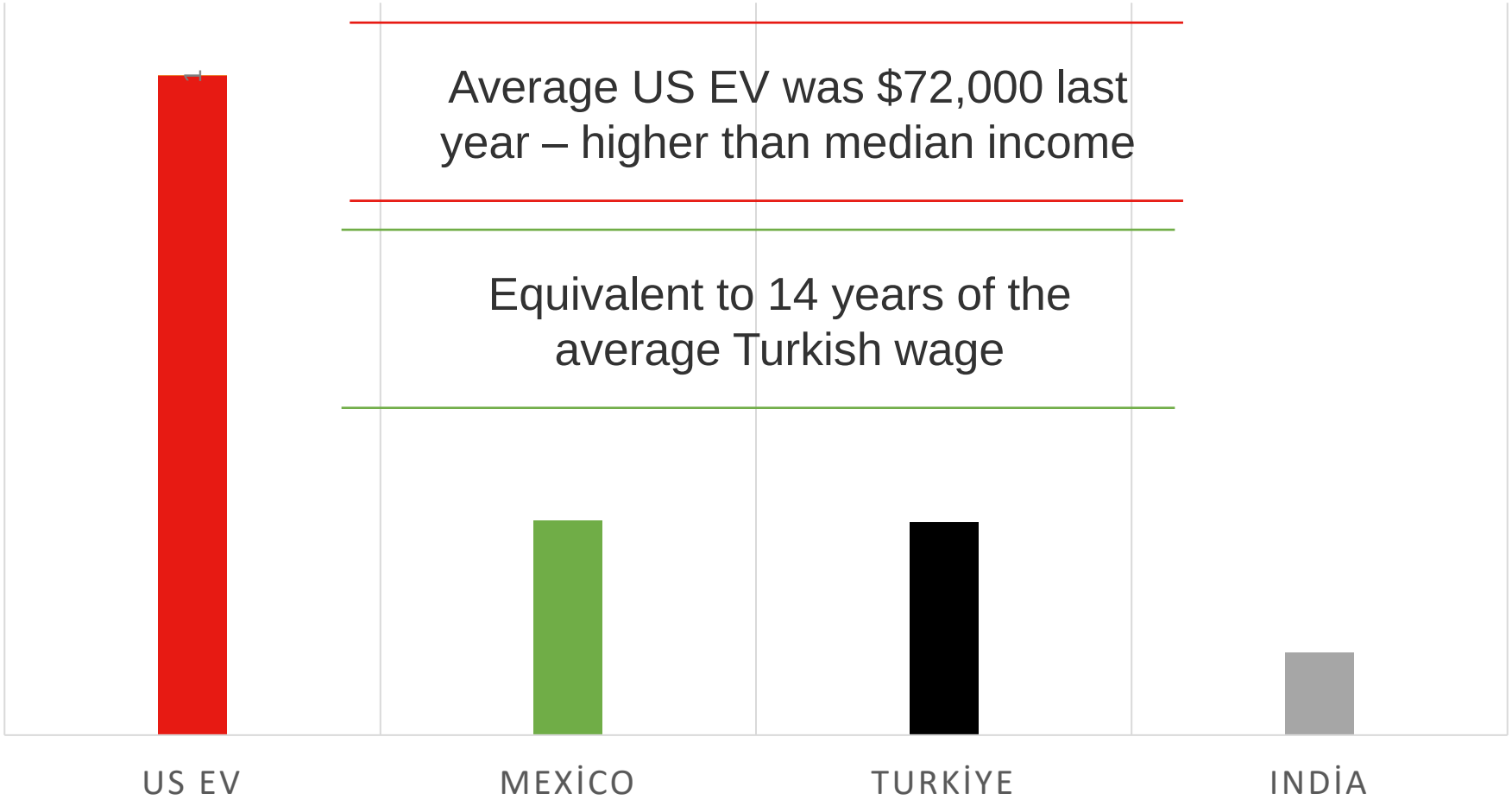
US (Proposed) - 2032

- **67% new light-duty** passenger vehicles will be "clean vehicles"
- 46% new medium-duty trucks
- 50% of new buses
- 25% new heavy trucks

Questions Remain

- Lack of clarity on what is a "clean vehicle": how many plug-ins allowed?; hydrogen, e-fuels?
- Where will rules end up?
- **Supplier consensus: not achievable and will be rolled back, but this creates even more planning risk**
- Push us closer to upside scenario, but will supply bottlenecks allow?
- Effect on equity, lower incomes, those in multi-family houses
- **Effects on new car costs and volumes – more, older vehicles?**

Affordability Challenge: EV costs



Grids and electric generation need enormous investment

Grids

"Global investment in electricity grids needs to average around USD 600 billion annually through to 2030 … double the current investment levels."

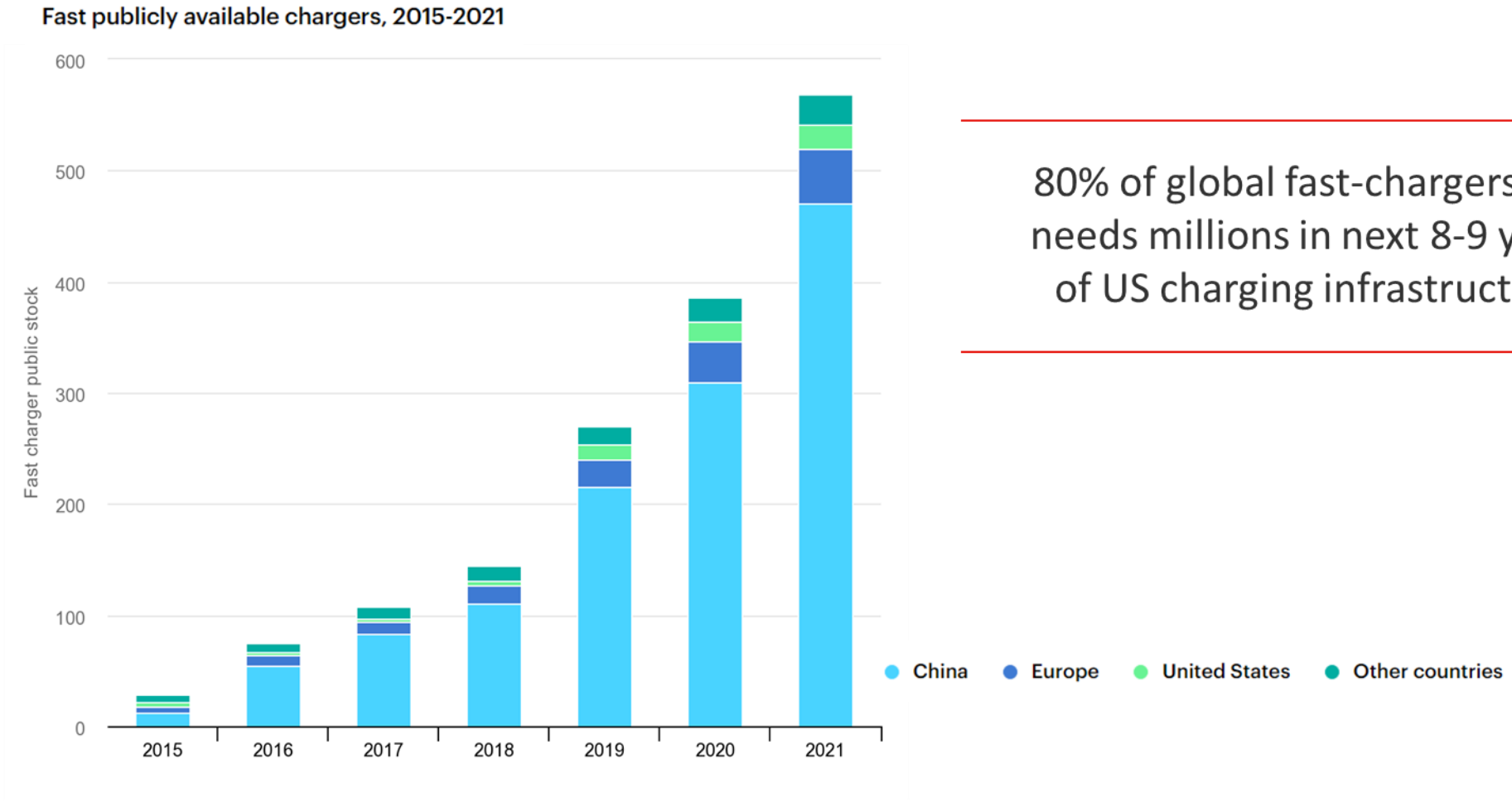
US needs 57% electric grid growth for 2032 targets. – *US Department of Energy*

Electric Generation

"Annual clean energy investment worldwide will need to more than triple by 2030 to around $4 trillion."

Source: International Energy Agency, US Department of Energy

Very long way to go on charging infrastructure



80% of global fast-chargers in China; US needs millions in next 8-9 years … & 1/3 of US charging infrastructure broken!

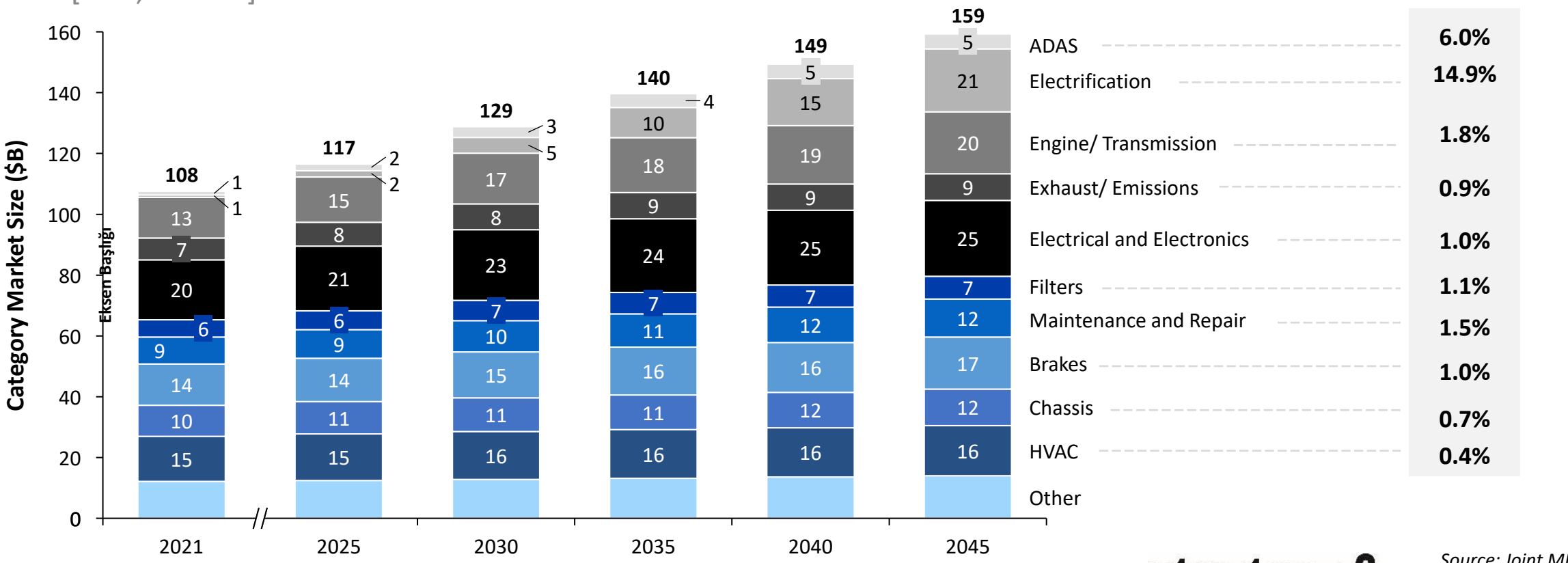
California shows challenge in pace of change

Los Angeles VIO	San Francisco VIO
• 89% ICE • 3% BEV • 8% Hybrid/plug-in	• 85% ICE • 5% BEV • 10% Hybrid/plug-in

Source: Grant, *Contemporary Strategic Analysis*

Long, fat tail for existing product categories …

2021-2045F Selected aftermarket parts size by product category[1]
[USD, Billions]



Sources: IHS Markit. DOT. Strategy& research.
Notes: 1) "EV" includes BEV and PHEV propulsion types. "Non-EV" includes ICE and Hybrids (micro, mild, and full-hybrid)

strategy&
Part of the PwC network

Source: Joint MEMA Aftermarket /Auto Care Electrification Study released at AAPEX 2022

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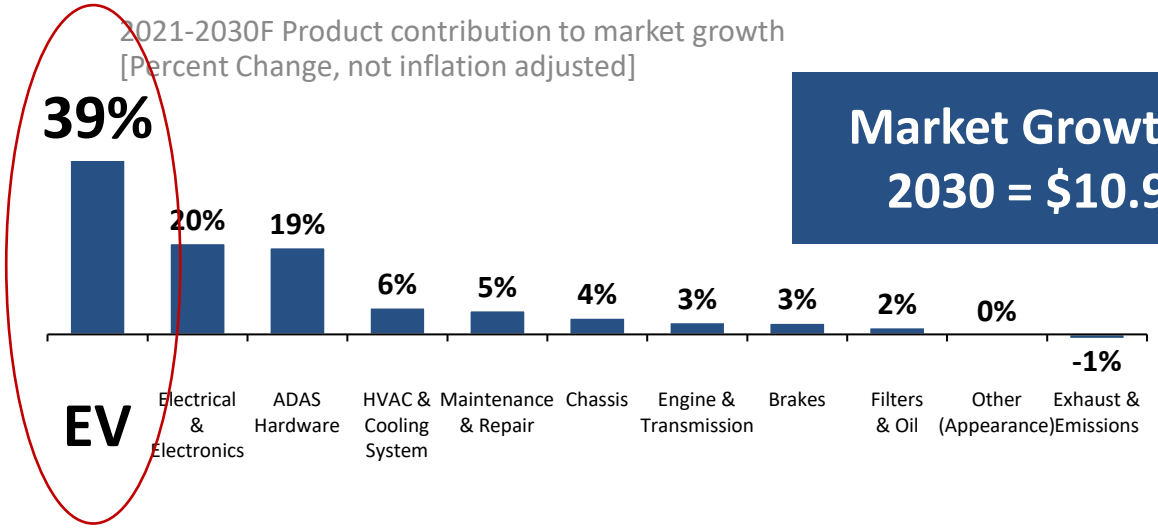
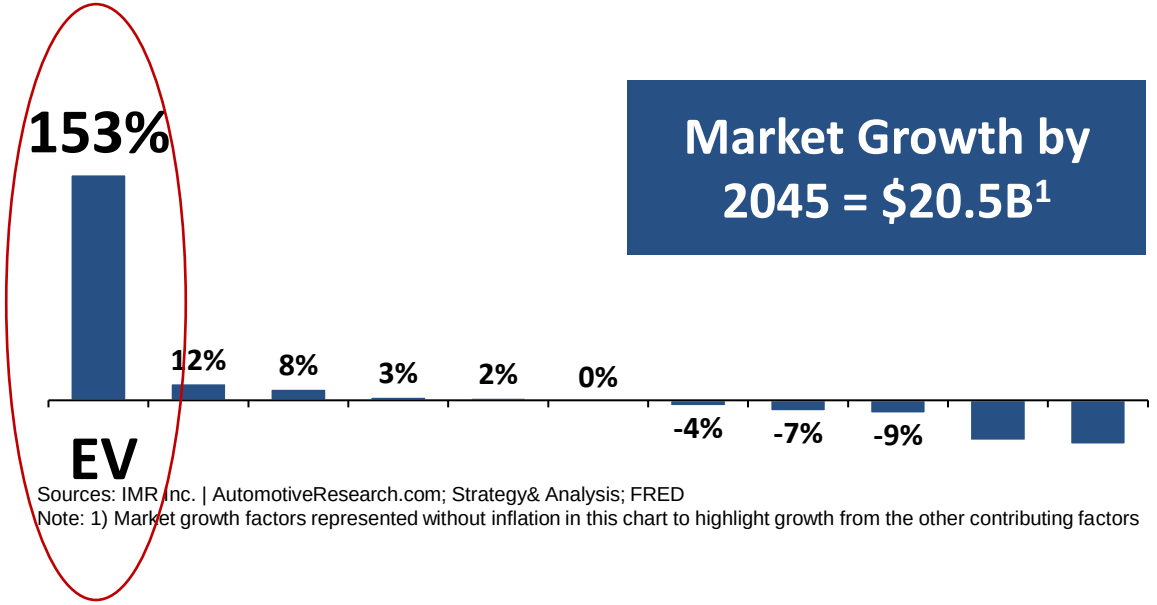
Electrification and ADAS are major **growth** contributors

2021-2030F Product contribution to market growth
[Percent Change, not inflation adjusted]



Market Growth by 2030 = $10.9B[1]



Market Growth by 2045 = $20.5B[1]

Sources: IMR Inc. | AutomotiveResearch.com; Strategy& Analysis; FRED
Note: 1) Market growth factors represented without inflation in this chart to highlight growth from the other contributing factors

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Part of the PwC network

Source: Joint MEMA Aftermarket /Auto Care Electrification Study released at AAPEX 2022

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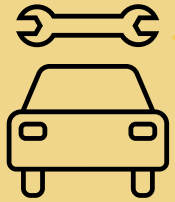
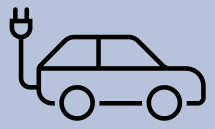
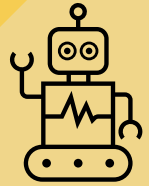
WHAT EVS MEAN FOR AFTERMARKET REPAIR



“Reports of my demise are greatly exaggerated”

Estimates of cost to service electric vehicles growing…

Estimates of Costs to Maintain EV vs. ICE Vehicle

2012	2017	2018	2020	2021
50%	60%	70%	82%	**85%**

Will be interesting to see how this develops as EVs age

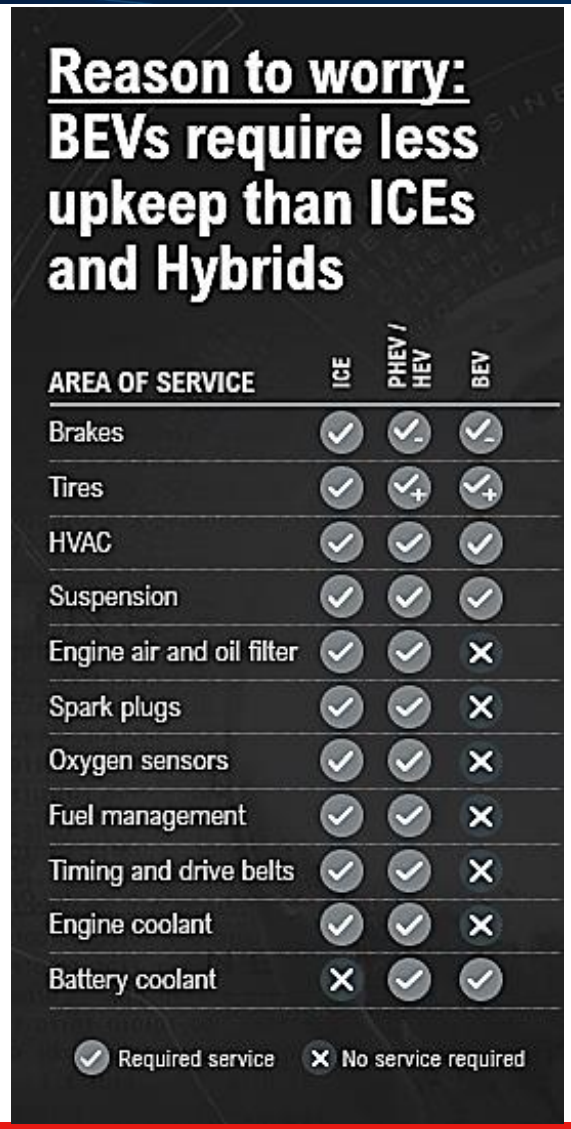
Sources: Strategy&, various consultancies, AAA Your Driving Costs 12/2020, 2021 Joint Electrification Forecast (AASA, ACA)

Current EVs: more dealer issues than ICE

Meanwhile, NADA data show EVs coming in for repairs at a higher rate than ICE and requiring more services

Sources: Strategy&, various consultancies, AAA Your Driving Costs 12/2020, 2021 Joint Electrification Forecast (AASA, ACA)

EVs mean less service …



Source: MEMA Aftermarket 2035 Study 4/22, Roland Berger, MEMA analysis

EVs mean less service … but more problems?

Parts/Replacement Rate Growth Opportunities

- Tires
- Suspension (more complex, more noticeable)
- Drivetrain (non-engine/transmission)
- More Reman?
- HVAC, Cooling systems
- Problematic new / revised technologies
- Battery refurbishment
- Infotainment
- Comfort/convenience

Example: Ford Mach-E Cooling System

Ford Mustang Mach-E Cooling system:

- 35 hoses
- 60+ feet of hose

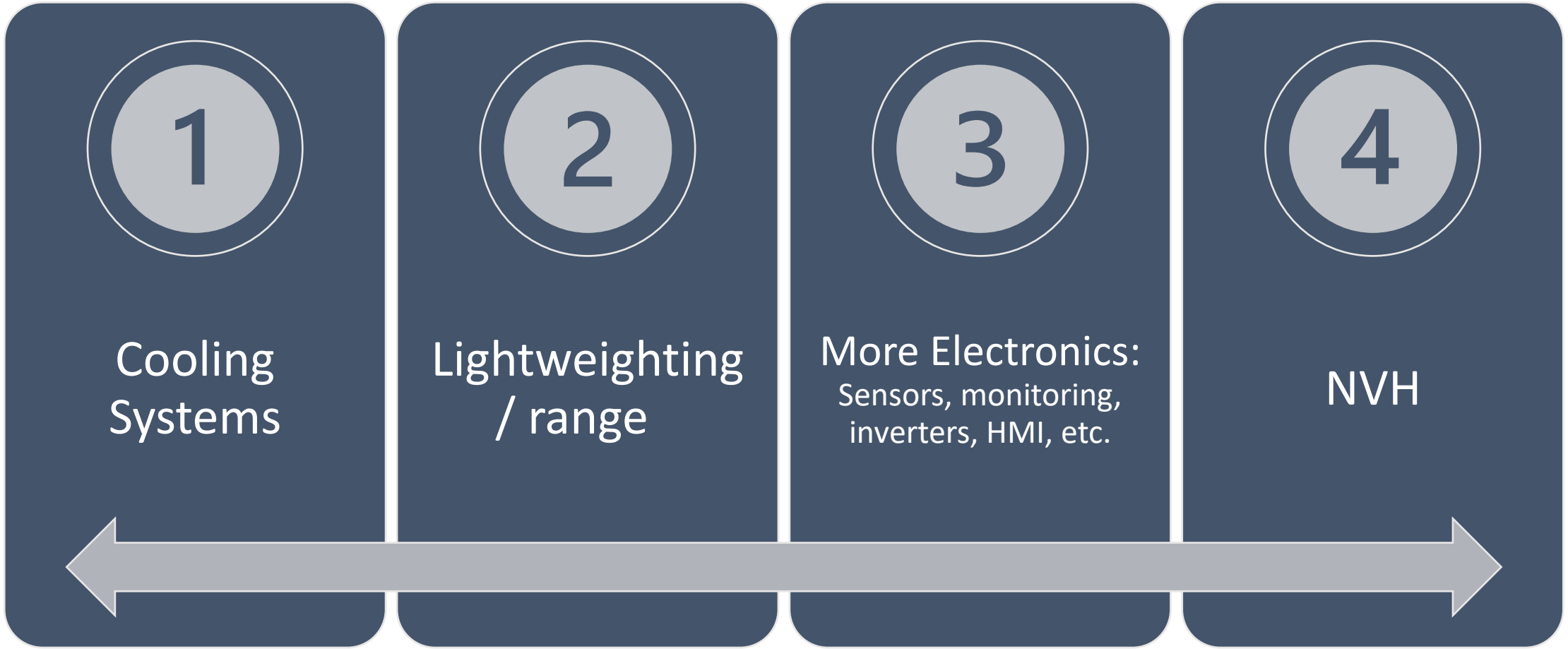
Photos and Data: Munro & Associates

Example: Tesla Heating and Cooling System

Photo: Munro & Associates

EV unintended consequences: CES was full of even more advanced EV HVAC …

Major drivers of EV parts redesign and repairs

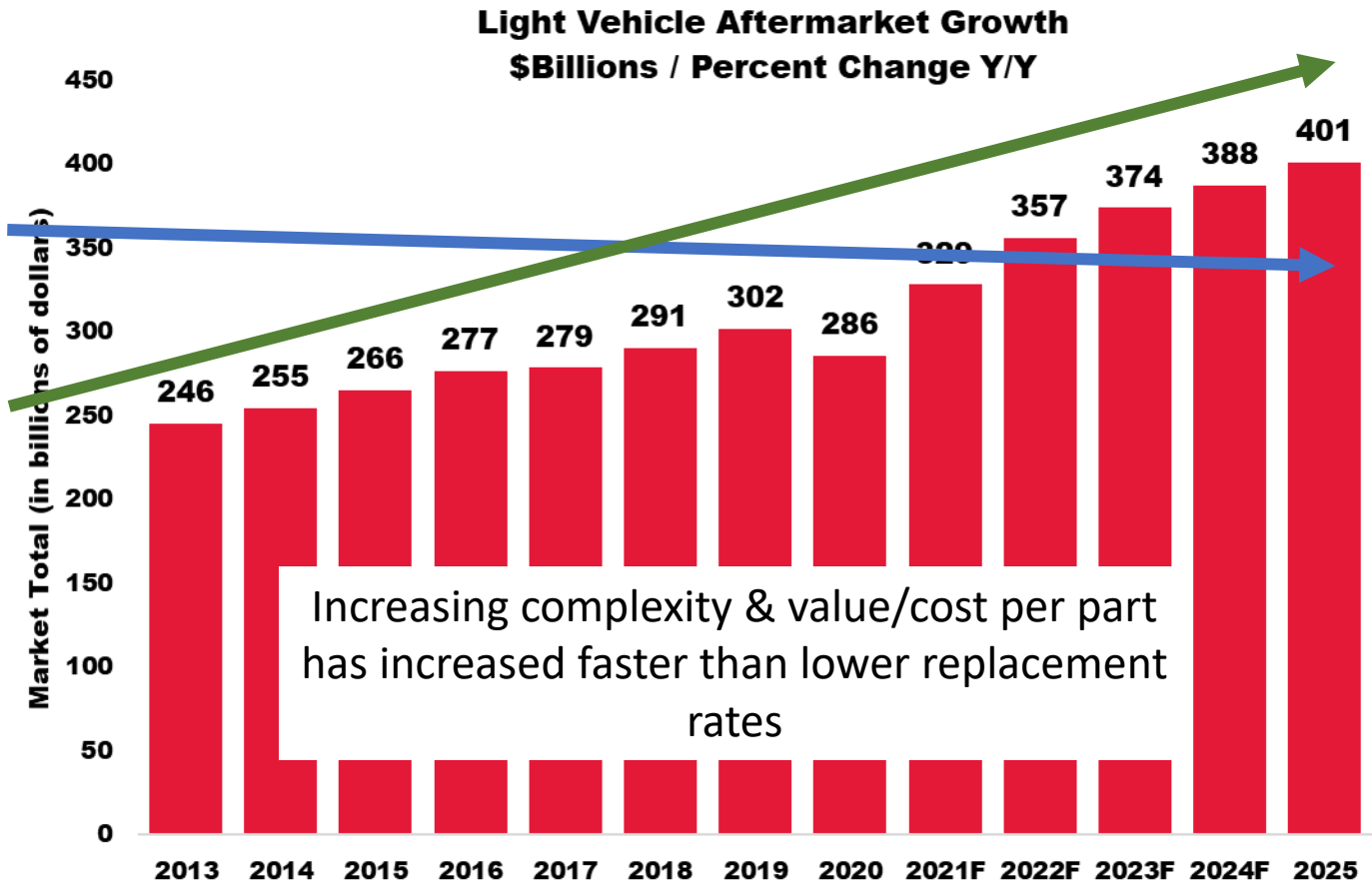


First generations of EVs will just continue the positive complexity story for the aftermarket

Aftermarket Story of the Last 30-40 Years:

Replacement Rates Decline

Aftermarket Revenue Up



↑ Complexity

↑ Vehicle Content

↑ Cost Per Part

Aftermarket Suppliers

ADAS: THE TECHNOLOGY REVOLUTION COMING SOONER

ADAS the opportunity, not autonomy

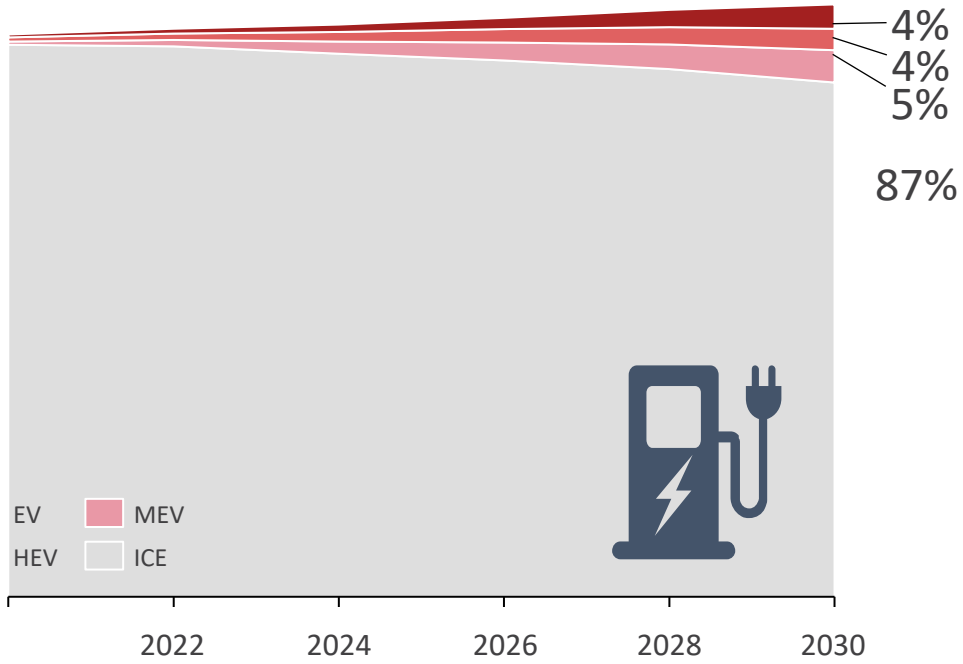
Automation case study: 2014-5

- Google autonomous car (at right)
- "NO steering wheel, NO gas pedal, NO brake pedal. 100% autonomous" – Forbes
- **Musk: "Autonomous driving is a solved problem"**

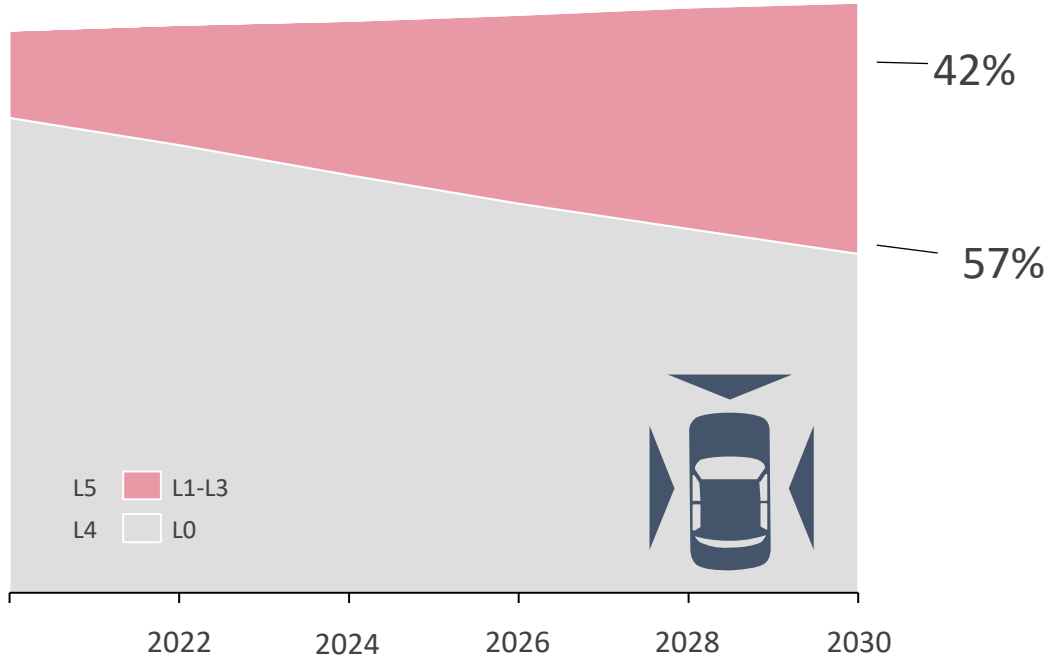
The Revolution Coming Sooner: ADAS

2020-2030F U.S. car parc penetration by technology [Percent of Total Car Parc]

Electrified

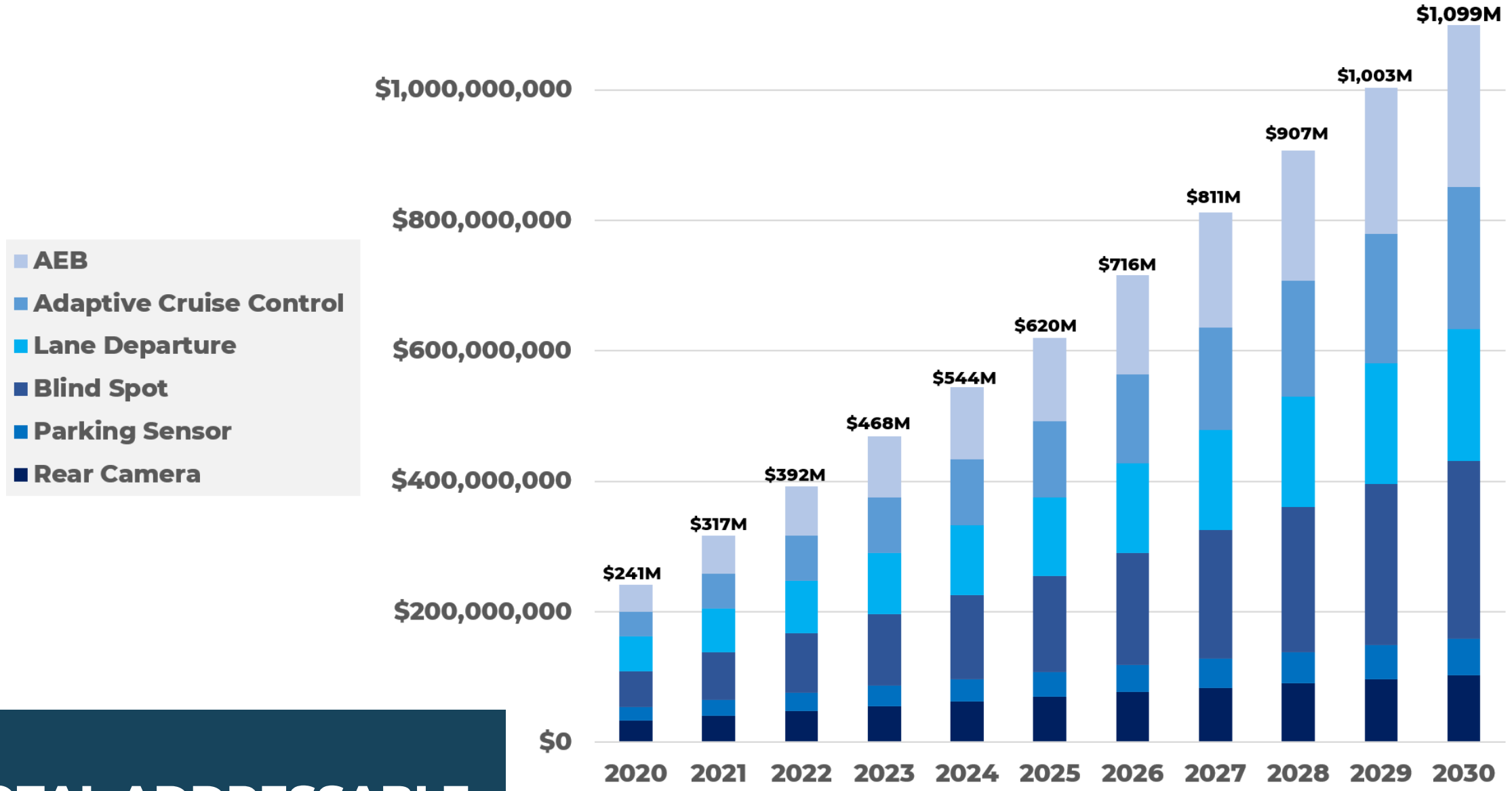


ADAS



Sources: : IHS Markit. Transportation Sustainability Research Center-UC Berkeley. IBIS World. DOT. Strategy& research and analysis.

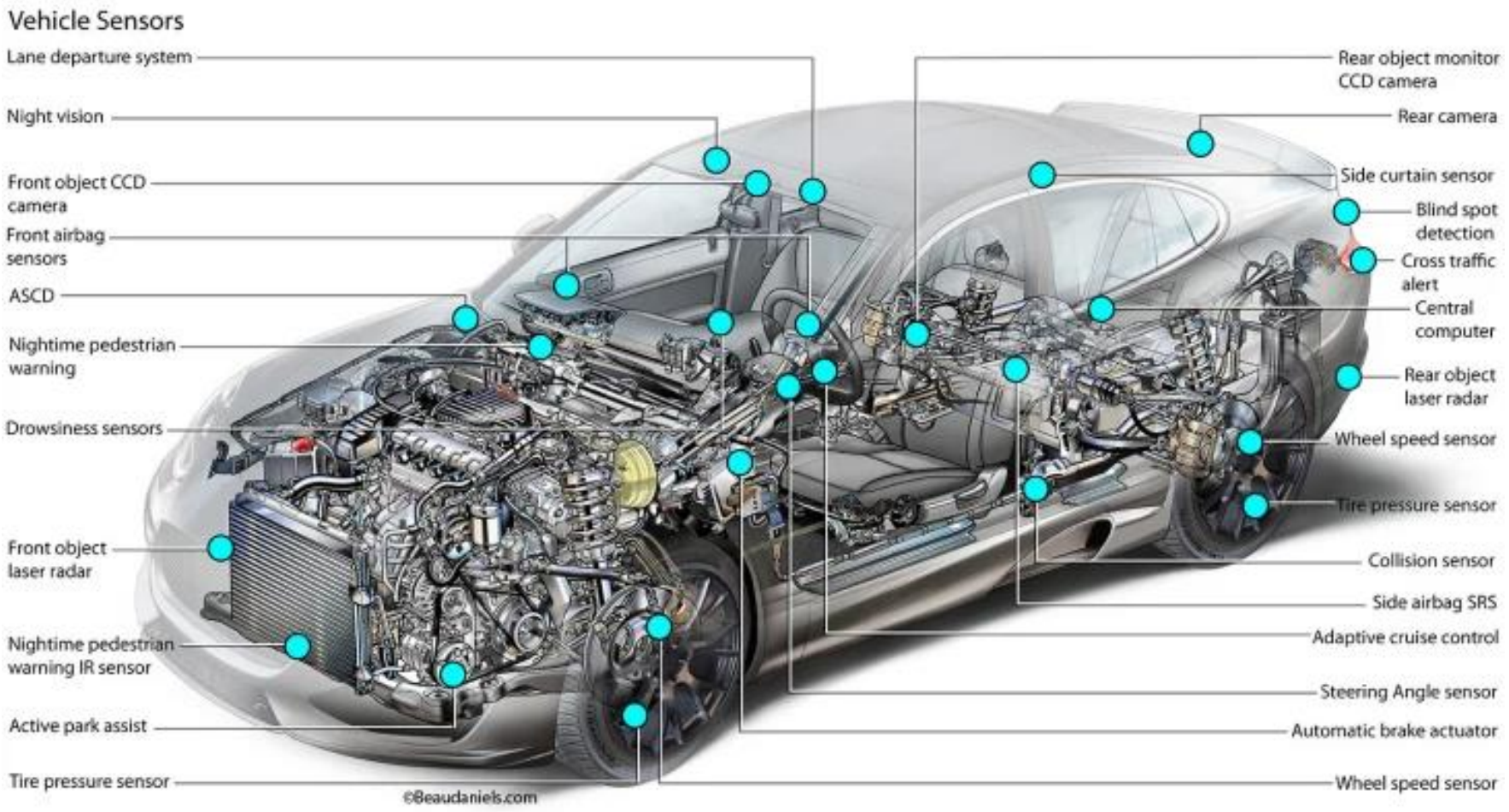
TOTAL ADDRESSABLE MARKET - ADAS PARTS



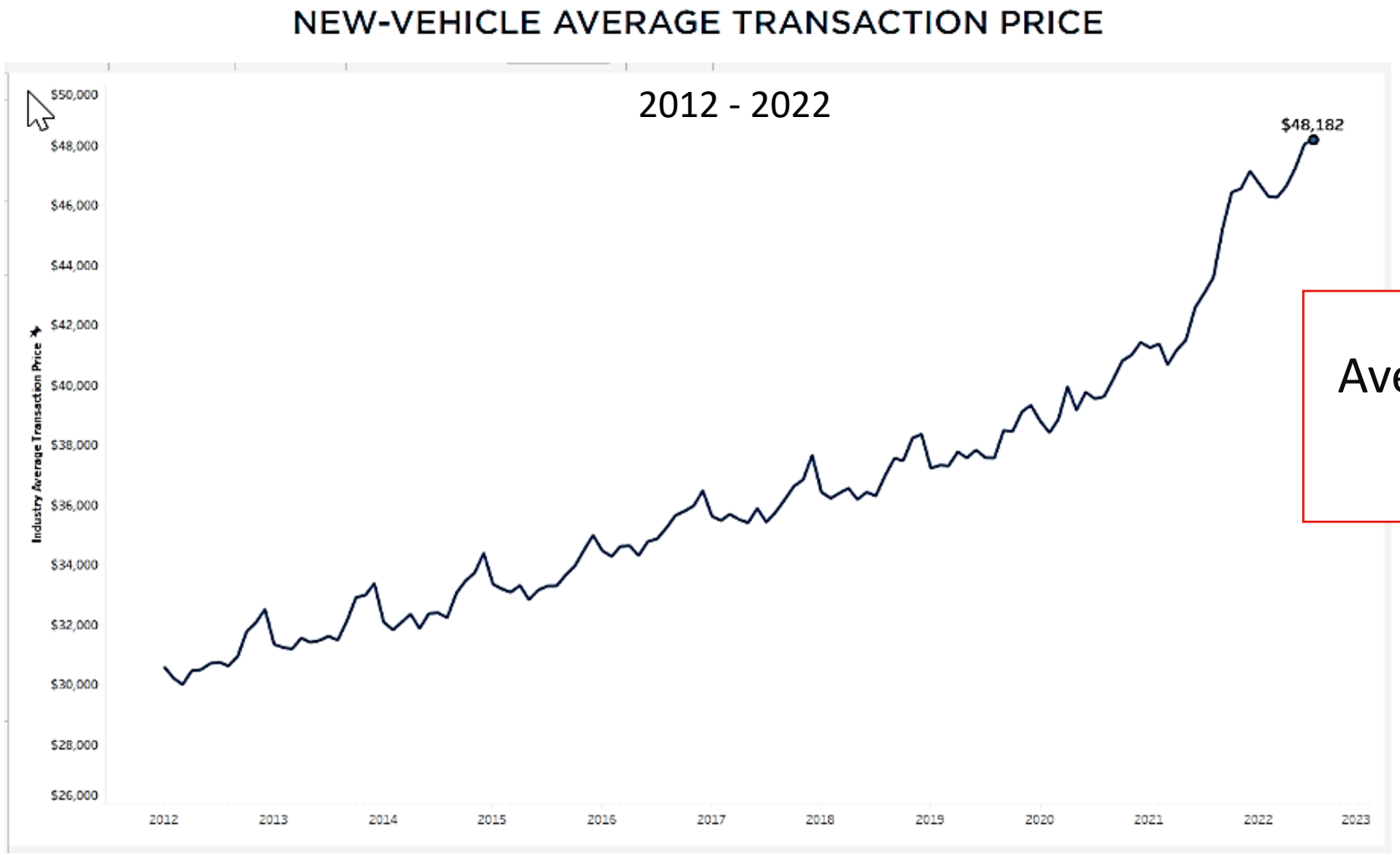
16.9% CAGR

Source: AASA ADAS Study, 12/21

ADAS helping drive the sensor revolution that is exciting aftermarket cash registers



Increasing vehicle content increases lifecycle opportunity



2012:
$30,000

12/2022:
$49,507

Average EV price:
~$70k

SOURCE: Kelly Blue Book; November 2022

Aftermarket Suppliers


VOICE RECOGNITION
Waiting For Command...
09:21
Self-Driving Mode
P
R
N
D
2
L
Power 1
Power 2
Energy1
Energy2
ABC
AUTO


SMART CAR APP
80%
Smart Car Application

SHARED MOBILITY: THREAT OR OPPORTUNITY?

Shared Mobility:
Real world data confirms means automotive growth

"**49% to 61%** of ride-hailing trips would have not been made at all, or by walking, biking, or transit."

These trips … are most likely adding vehicles to the road." – *UC Davis, 2022*

DATA: Uber and Lyft increase miles driven and car parc

"I**n every region, customers of Uber and Lyft *at least doubled* their total vehicle miles travelled**."

Example: "**Ride-hailing increased vehicle miles traveled of users by 114 percent in New York City**" - *Transport policy 1/21*

Ride-Hailing Industry Induces Car Ownership

"In more than 200 metro areas, researchers at Carnegie Mellon University found that **per-capita car purchases increased … after Uber, Lyft deployed**."

Carnegie Mellon 1/21

We are leaving the pandemic with a more auto-centric lifestyle than we went into it …

… and that bodes well for the future of the aftermarket

“Last mile” delivery growing at 13% global CAGR

Sources: Straits Research 7/22, Technavio, 4/22

STRATEGIC IMPLICATIONS

& CONCLUSION FOR THE AFTERMARKET

Aftermarket Living the **Innovator's Dilemma**

Managing Two Businesses

Maximizing the returns from existing, long-tail business

&

In parallel growing new, innovative businesses

Change equals opportunities for profit

Change = Profits

“Any external change creates opportunities for profit”

How companies and business models respond to the shifts will determine whether it increases or decreases profits

Change = Advantage

“The more turbulent an industry’s environment … the greater the dispersion of profitability within the industry”

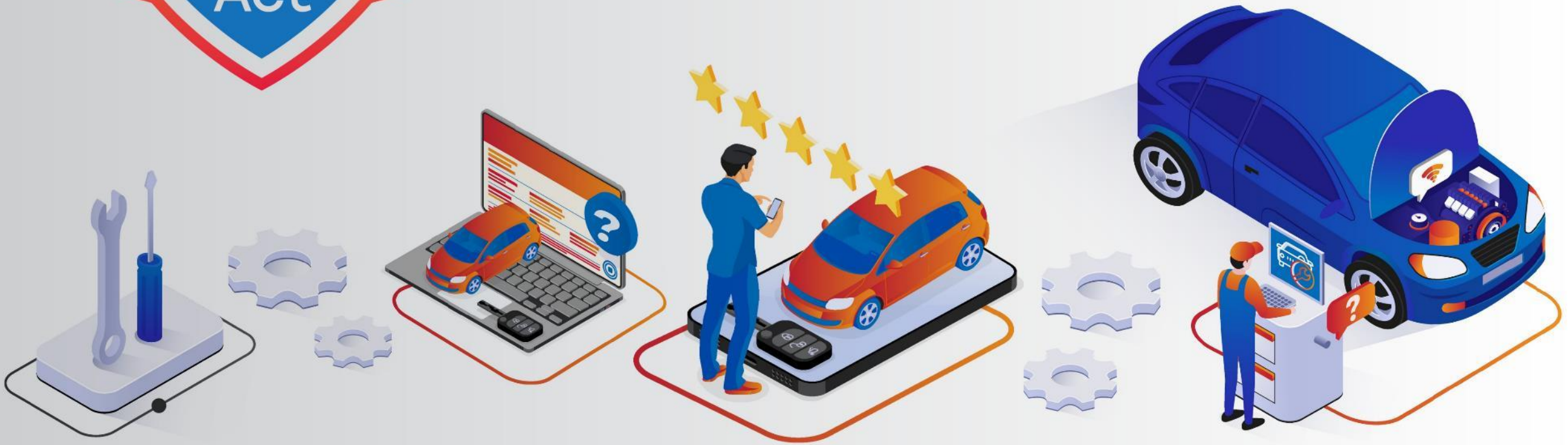
Competitive advantage “depends on firms’ ability to respond to change”

1. Ability to anticipate changes in the external environment
2. How well you respond to change

Source: Grant, *Contemporary Strategic Analysis*

REPAIR Act

The Right to Equitable and Professional Auto Industry Repair



Conclusions:
Aftermarket Should NOT be Afraid of the Future

Near-Term: Age of Volatility

Longer-Term:

- Anything but business as usual
- But significant aftermarket opportunity (and long-term growth)
  - Global mobility growth
  - Technology & content opportunity if entrepreneurial innovation
  - If Right-to-Repair legislation allows market competition & consumer choice

Teşekkür ederim!