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CAR CENTER FOR AUTOMOTIVE RESEARCH

Supplier Strategy Reset

Emissions regulations still in focus

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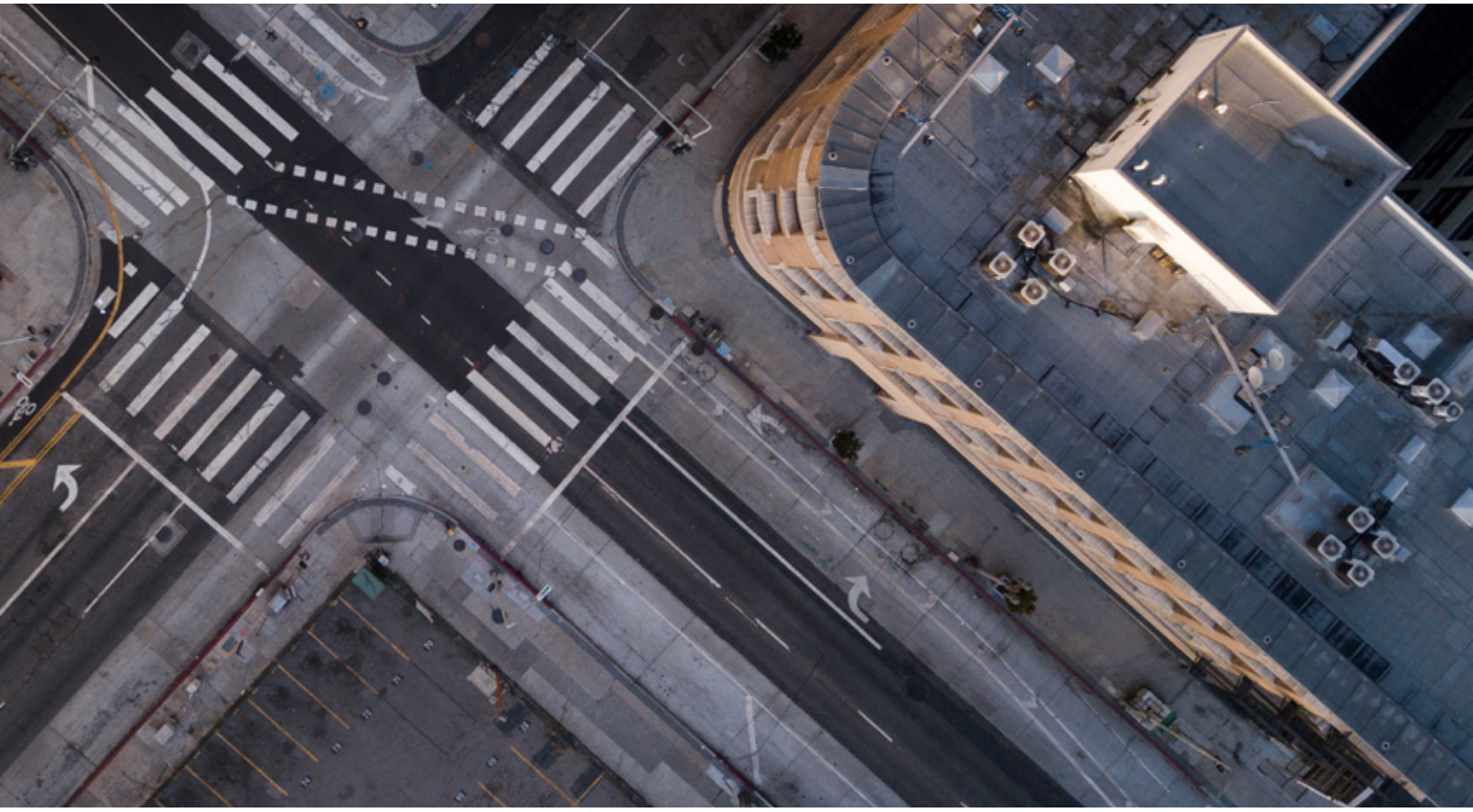


Executive Summary

- North American electrified propulsion will directionally continue to be adopted despite the impact of coronavirus disease 2019 (COVID-19)
- A shifting vehicle value equation will alter future competitive dynamics within the supply base
- In light of reduced capital/liquidity and lower risk tolerance — suppliers need to re-evaluate strategy planning

Introduction

Given the unprecedented market and disruption impacting the automotive ecosystem — the industry is at the critical crossroads of increasing levels of vehicle propulsion, automated vehicle content, and navigating the negative impacts of COVID-19-driven volume reductions. Specifically, the importance of understanding the dynamics surrounding the growth of propulsion electrification, the pace of adoption, and the strategies behind these have led IHS Markit and Center for Automotive Research (CAR) to jointly consider the way forward. Suppliers of all tiers need to re-examine their strategies considering shifting market dynamics, shrinking research-and-development (R&D) budgets, as well as delayed/rescoped vehicle programs and technology integration paths—time for a strategy reboot.

Pre-COVID-19: A Challenging Environment Was Already Forming

	2018	2019	2020	2019/2018	2020/2019
Global LV Production (mil)	94.2	88.9	69.5	-5.6%	-21.8%
NA LV Production (mil)	17	16.3	12.6	-4.1%	-22.7%

Source: July 2020 IHS Markit Forecast

The global automotive market was already feeling the impact of tepid demand in key markets as it entered 2020. Global light vehicle production volume declined over 5 percent in 2019 from 2018. A second straight year of weaker demand in China, ongoing trade disputes, and the GM-UAW labor dispute in late 2019 all placed the industry on its back foot. The ongoing shifts of electrified propulsion and ADAS content growth were already top of mind for the industry. With light vehicle production volumes over 16 million units since 2013, suppliers in North America had enjoyed a robust—albeit stagnant market.

Pre-COVID-19, production volume forecasts by IHS Markit highlighted a slight gain for the

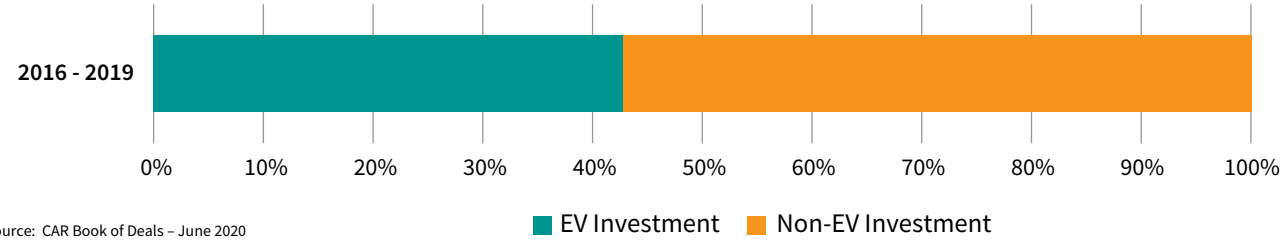
North American market in 2020. However, clouds were already on the horizon. Despite relatively low fuel prices and strong economic fundamentals, the march of increasing vehicle prices (driven by higher content and compliance costs) is illustrated by steeper average monthly payments and extended-loan length terms. Affordability will continue to challenge the industry. Case in point, according to IHS Markit, compared with 2015, the US full-size half-ton pickup market witnessed a 16 percent rise for the average monthly payment to USD 672 in the third quarter of 2020 with the average loan length increasing to 74 months—up five months from 2015.

The industry was also preparing for structural changes driven by increasing levels of propulsion electrification—spurred principally by stiffening emissions legislation in several major regions. Before COVID-19, IHS Markit forecasts outlined U.S. battery electric vehicle (BEV) share more than tripling between 2019 and 2025 and hybrid electric vehicle (HEV)* share rising by five times over the same period.

	2019	2025
US Battery EV	2.5%	8.5%
US Hybrid EV	3.4%	17.6%
Global Battery EV	2.3%	7.3%
Global Hybrid EV	6.0%	18.9%

Source: February 2020 IHS Markit Alternative Powertrain Forecasts

NA OEM EV-related investment reached 43% of total over the 2016-19 period



Source: CAR Book of Deals – June 2020

Pre-COVID-19, stiffening regulations and government incentives were critical to supporting electrified propulsion market share growth in North America. Announcements late in the past decade underscore the industry's commitment to increasing electrification. According to the CAR Book of Deals, announced investments by the vehicle manufacturers in North American assembly, powertrain, and component manufacturing facilities were USD 41.2 billion from 2016 to 2019. Over USD 17 billion or 43 percent of which were focused on electrified propulsion output. Further, more than 90 percent of the announced EV-related investment for the period was centered in the United States. This U.S. investment focus was driven by a strategic decision to keep electrified propulsion, and, specifically, BEV production, close to the manufacturer's technology development centers in the United States. It also may be a response to pressure from the Trump administration to re-shore manufacturing.

Driven by trade disputes, advanced technology development costs, and profitability challenges, suppliers and manufacturers were already reviewing their strategies before the pandemic. The current operational climate has intensified these efforts.

By early 2020 there was a noticeable de-emphasis on Autonomous Driving (AD) development—principally driven by cost, safety, and consumer acceptance challenges. In turn, there was an increased interest in automated driver assist systems (ADAS) technologies, especially within the SAE J3016 Level 2 and Level 3 area. Many suppliers had also been investing in advanced development for vehicle electrification, with minimal return as of yet. These two critical technology pathways require massive investment and resource focus with a questionable short-term payback. Many companies were struggling to balance their short-term profitability with these long-term strategic positions. As 2019 ended, automotive stakeholders were already facing a capital-constrained, investment-heavy future. Introducing a pandemic to the mix rapidly accelerated a shift.

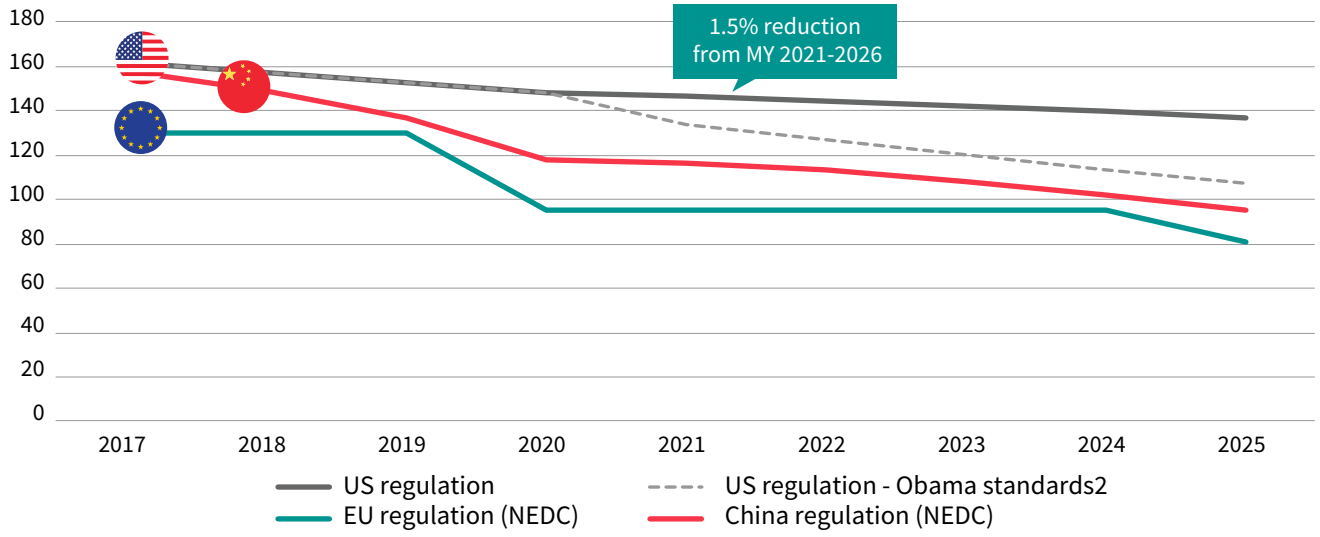
* HEV = (FHEV – Full Hybrid electric Vehicle) + (PHEV - Plug-in Hybrid Electric Vehicle) + (MHEV – Mild Hybrid Electric Vehicle)

Automotive stakeholders were already facing a capital-constrained, investment-heavy future

Emissions Regulations: Pathways Diverge

Vehicle manufacturers and suppliers rely on long-term, consistent governmental regulations for certainty in product planning and capital decisions. Especially for propulsion and material planning, a longer horizon is critical for investment efficiency. Chinese and European Union greenhouse gas (GHG) regulations have provided some sense of certainty for companies operating in those markets. Pre-COVID-19, China and Europe were aggressively implementing regulations to support vehicle electrification. However, the United States had yet to confirm its fuel economy and GHG regulatory processes. On 31 March 2020, amid an emerging global pandemic, the Trump administration finalized the SAFE regulations for fuel economy in the United States through 2026. It is important to note that the U.S. market accounts for roughly 75 percent of North American Light Vehicle output and, as such, significantly impacts the trajectory of technology adoption into the fleet of vehicles produced in North America.

Comparison between EU, US and China CO_2 standards



Source: IHS Markit Industry Survey – March 2020

As the COVID-19 recovery proceeds, regulations and government incentives will continue to drive propulsion electrification. Although the SAFE regulation is less stringent than the prior rule, the industry will still likely rely on some form of propulsion electrification to meet the U.S. standards. And, for manufacturers and suppliers operating in the United States, the uncertainty of the 2020 presidential election makes it critical to keep propulsion technology plans flexible. Post-COVID-19, government stimulus strategies will accentuate differences in key regions. Germany, France, and other European countries have shown a clear directive to connect stimulus incentives with propulsion electrification. And, China, while easing some financial incentives for BEVs, continues to support propulsion electrification as a long-term national goal. Conversely, there are few signals that the current U.S. administration will follow the same route.

The divide between the Trump administration, and the State of California and other Section 177 states drives further uncertainty in the U.S. market. Under the SAFE regulation, starting in 2021, California is not legally allowed to enforce the Zero-Emissions Vehicle (ZEV) program, although this is the subject of ongoing legal action. While the new SAFE regulations will be in place through 2026, there is a low likelihood that a significant structural policy shift (towards more stringent emissions regulations) would be enacted over SAFE's five-year tenure. Should a change in political power (towards the Democratic party) occur, there may be incremental incentive programs to promote efficiency efforts and an effort to set more stringent standards post-SAFE (2026). With these shifting market dynamics, the industry needs to consider all regional emissions standards when establishing innovation priorities.

Post COVID-19: Slow But Steady Recovery

The industry continues to grapple with the potential long-term impacts of COVID-19. The production and sales interruption in spring 2020, in combination with a slow restart, is a significant driver of lost liquidity and profitability. In March 2020, CAR estimated that a one-week shutdown of the

U.S. automotive industry would result in an annual loss of 94,400 total U.S. jobs, a USD 7.3-billion decrease in overall earnings, and USD 2 billion in lower government tax receipts from personal income taxes, contributions for social insurance programs, and current transfer payments. The shutdown ranged from 8 to 12 weeks depending upon the OEM and region. The depth of the impact of COVID-19 is further outlined by reduced capital available within the entire ecosystem. Ford, FCA, and General Motors burned through over USD 8 billion in cash during the first quarter of 2020—capital that would have otherwise been destined for future investment, shareholder dividends, and funding operations.

Automotive suppliers are also experiencing a significant liquidity squeeze as a result of the COVID-19 pandemic. As suppliers typically operate under 45–55-day payment terms, they are now experiencing substantially reduced customer payments. For example, payments from automakers in June fell approximately 58 percent to USD 9.4 billion (from USD 22.3 billion in May). Payments will likely fall another 76 percent in July, to USD 2.3 billion, as a result of North American vehicle assembly plants idled from March through May. The current situation affecting cashflow is approximately two times worse for suppliers than experienced during March 2009, the worst period during the 2008–09 Great Recession.

To compound the current issue facing suppliers, they also had to restart production with increased health and safety protocols that increased operational costs.

A production forecast reduction compared with pre-COVID-19 (adjusting to pressure on available capital vis-à-vis the pace and focus of R&D spending, and shifting rates of electrification for hybrid and BEV segments in major markets) offers an opportunity to recalibrate.

	2018	2019	2020	2019/2018	2020/2019
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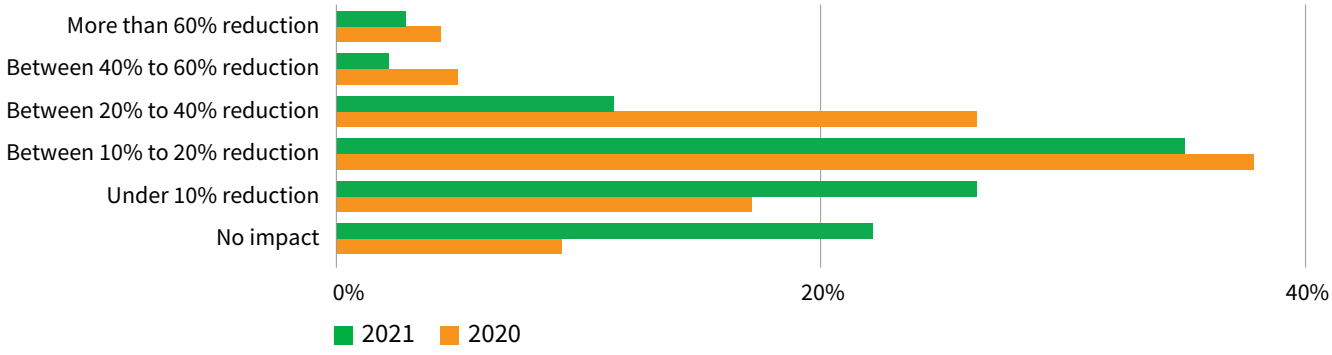
Source: June 2020 IHS Markit Forecast

COVID-19 has accelerated a downward recalibration of production volumes. The new outlook is a result of decreased capital availability vehicle demand and shifting propulsion electrification rates in major markets. As such, suppliers are adjusting to these fluid industry dynamics.

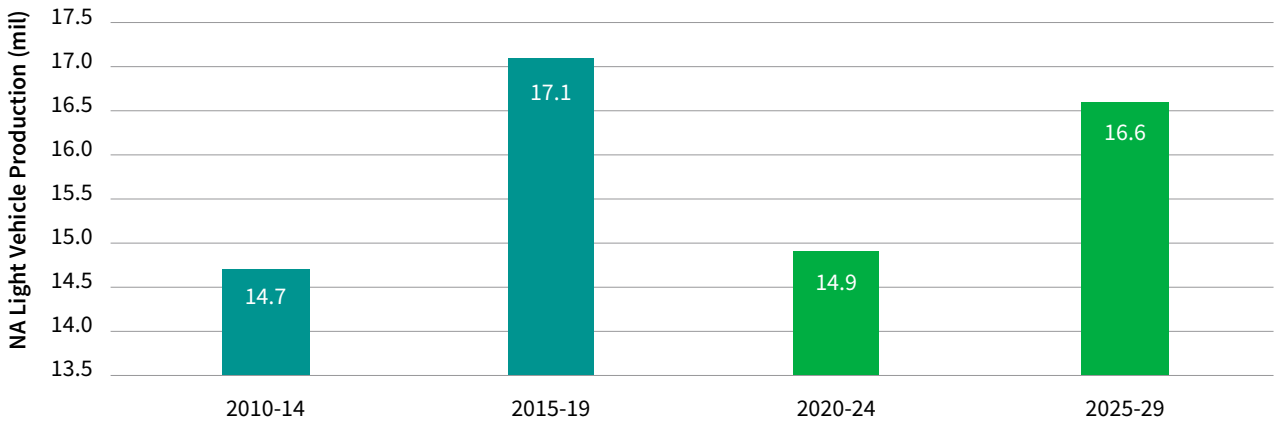
The industry is also reacting to pressure on liquidity, now and lingering into the future. Very early in the pandemic, IHS Markit surveyed OEMs and suppliers alike regarding expectations for effects on advanced research and development budgets. More than half of the respondents expected at least a 10-20 percent reduction in R&D for 2021.

Advanced R&D budget reduction



Source: IHS Markit

NA LV production volume - five year average



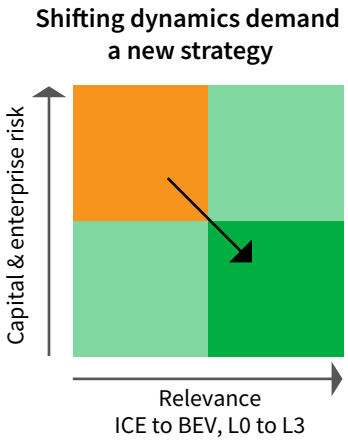
Source: IHS Markit July 2020 NA Light Vehicle Production Forecast

With pressure on available capital and a focus on risk reduction, suppliers are reacting to OEM decisions to slow the replacement of current offerings, pare underperforming nameplates, and find new, more efficient ways to comply with stiffening emissions standards. COVID-19's vehicle market impact is extensive; volumes, capital, inter-regional trade dynamics, and economic health are all impacted.

When considered in half-decade periods, the average volumes for the five years after the 2008/9 financial implosion and these next five years are very similar. According to IHS Markit forecasts, suppliers enjoyed average North American production volumes in the second half of the last decade of over 17 million units. Given cyclical dynamics and the impact of COVID-19 on overall volume, this next five-year period will likely be over 13 percent lower, on average. Outside of the volume decline and resultant reduced capacity utilization, suppliers will face increased competition and pressure to meet the new normal efficiently.

Summary – Impact on Supplier Strategy

In a post-COVID-19 environment, suppliers must re-evaluate existing R&D programs, resource allocations, upstream suppliers, partnership structures, and even portfolio strategies. Much has and will change, driven by the events of 2020.



Suppliers must reconsider several strategic issues. New volume and investment dynamics (and possible scenarios) are fundamental, and the industry will face these through this decade. These changes include a slow volume rebound to recent sales and production levels; delayed, altered, or canceled future product actions; and a re-prioritization of increasingly constrained capital focused on new programs. Other considerations include altered competitive structures within a supplier's key segments and a review of risk exposure.

Crucial for the majority of suppliers is the pace and trajectory of electrified propulsion. As outlined earlier, although COVID-19-driven challenges have likely altered the short-term trendline in some regions, emissions regulations will still drive increased adoption of vehicle electrification technologies.

The 'Shifting Dynamics' graphic underscores that suppliers need to ensure that their value equation is constant or bolstered as the industry adopts rising levels of propulsion electrification or ADAS content integration. Reducing enterprise and capital risk are core to future strategies. Even suppliers that are 'Electrification- or ADAS-agnostic' are impacted by the shifting value equation driven by both of these elements. Nobody escapes this consideration. COVID-19 has underscored the importance of financial viability in the face of extreme challenges. However, peering past the short term in adjusting future operational and business strategies given the new landscape is more critical than ever.

> Emissions regulations will still drive increased adoption of vehicle electrification technologies

Comparison Table: Supplier Strategy Reboot Checklist

Indice	Pre-COVID (January 2020)	Post – COVID (July 2020)	Change
NA Light Vehicle Volume in 2025	17.0 m	16.3 m	-4.2%
NA Light Vehicle Capacity Utilization in 2025	89.1%	84.7%	-4.9%
NA Hybrid Share in 2025	17.9%	18.4%	2.8%
NA BEV Share in 2025	8.4%	7.5%	-10.7%
NA BEV Nameplates in 2025	54	57	5.6%
Supplier R&D Budget Changes	Reduced capital, near-term focus on risk reduction		
WTI Oil Price in 2025 (2019 USD)	$60.01	$59.94	-0.10%
Supplier Pressure to consolidate	Pressure to consolidate and/or partner		

Source: IHS Markit

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About the Center for Automotive Research

The Center for Automotive Research is a nonprofit organization; its mission is to conduct independent research and analysis to educate, inform and advise stakeholders, policymakers, and the general public on critical issues facing the automotive industry, and the industry's impact on the U.S. economy and society.

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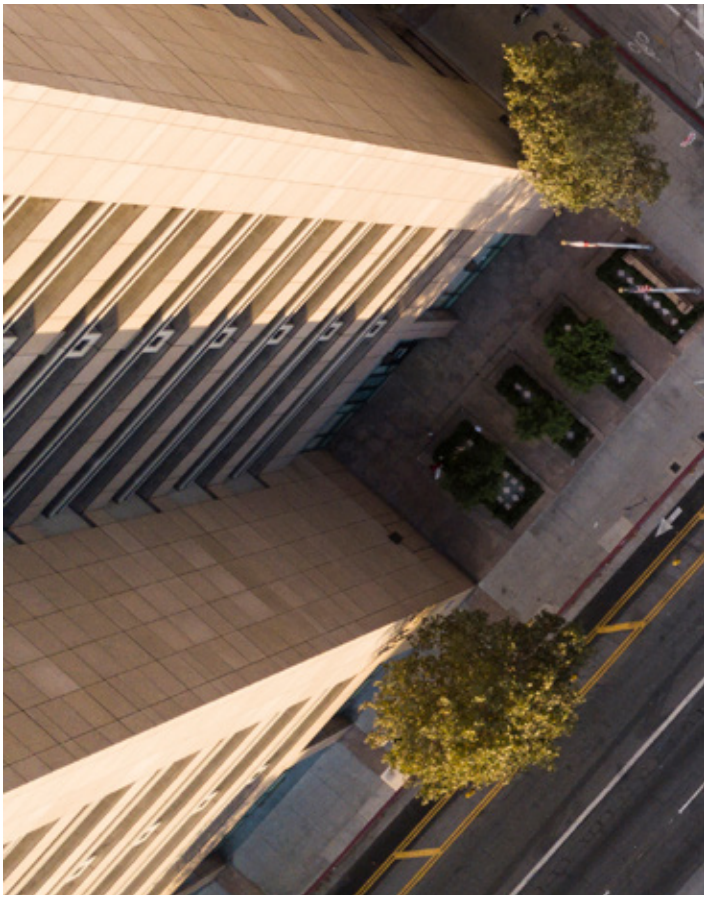

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