NRDC

October 27, 2021

Joshua Cunningham, Chief
Advanced Clean Cars Branch
California Air Resources Board
Emissions Compliance, Automotive Regulations & Science Division
P.O. Box 2815
Sacramento, CA 95812

Re: Comments on Advanced Clean Cars II Public Workshop (October 13, 2021)

Dear Mr. Cunningham,

On behalf of the Natural Resources Defense Council (NRDC), I am submitting these comments in response to the California Air Resources Board's on-line, public workshop on Advanced Clean Cars II held on October 13, 2021. We thank ARB for the opportunity to provide public comments. The Natural Resources Defense Council is an environmental organization with more than three million members and online activists, including in California. We make recommendations around the following areas:

I. Principles: guiding the design of the regulatory structure
II. Stringency: urging staff to strengthen the MY2026 and MY2030 targets and associated ramp up for ACCII,
III. Equity: ensuring the stringency levels are updated so that there are no trade-offs with vehicle numbers versus the prior proposal
IV. Credit usage: improving the proposal around ACCI and ACCII credit usage
V. Section 177 provisions: support for the pooling provisions
VI. Cost modeling: urging staff to update their assumptions
VII. PHEV-specific provisions

I. Regulatory Structure Principles

The impact of the ACCII regulation will be determined by the combined operation of several factors--stringency, equity provisions, allowable use of credits, and flexibility for Section 177 states. All these factors must work in concert to:

- Fully support California's environmental and equity goals, without sacrificing California outcomes to satisfy Section 177 state needs, but also
- Ensure that Section 177 states can successfully adopt and implement the regulation given their disparate circumstances and starting positions.

This is a complex balancing act. We are in the process of reviewing the impact of the credit changes outlined at the October 13 workshop, and the details of the equity provisions are still under active discussion. As a result, we do not have an integrated proposal to present currently, and we look forward to further discussions with staff in the coming weeks. In the meantime, we provide the following comments on the individual programmatic elements and how they interact.

II. Stringency: ARB should adopt more aggressive MY2026 and MY2030 targets, by considering the annual growth rates achieved in multiple jurisdictions, global EV investments, and automaker plans

We provide information below supporting a more aggressive MY2026 and MY2030 target, and we ask ARB to include an alternative in the Standardized Regulatory Impact Analysis (SRIA) reflecting the Clean Cars Coalition proposed stringency over this time period.

A. Bottom-up market forecasts suggest staff's proposed MY 2026 standard will be below baseline trends.

NRDC commissioned an independent automotive forecasting service, Baum & Associates, to conduct a bottom-up, model-by-model forecast of automaker sales of conventional hybrids, plug-in hybrids, battery electrics, and fuel cell vehicles through calendar year 2025. The U.S. and California sales forecasts are based on current production plans for these vehicles based on current regulatory policies on the books and market trends, which do not include the impact of future ZEV and GHG rules that will be adopted federally. The Baum forecast thus serves as a reasonable baseline case beyond which ACC II should result in additional sales.

The results show that across 32 traditional and EV-only OEMs (and start-ups), potentially 220 unique ZEV models (including battery electrics, fuel cell vehicles, and plug-in hybrids) are being produced or currently being planned. Of these models, Baum & Associates forecasts only 129 models will go into production and will be sold in California in 2025. Based on these estimates, Baum & Associates estimates sales under a BAU scenario will be at just above 20% in model year (MY) 2024 and 22% in MY 2025 as shown in Figure 1 below. Thes results are consistent with the baseline assessment that ARB staff estimates will occur through the same period, based on their assessment of automaker plans. ARB staff estimated during the May 6, 2021 public workshop that the auto industry would deliver a 23% EV market share in MY2024 and a 24% EV market share in MY2025.[1] The specific models considered by the Baum forecast are listed in the attached appendix.

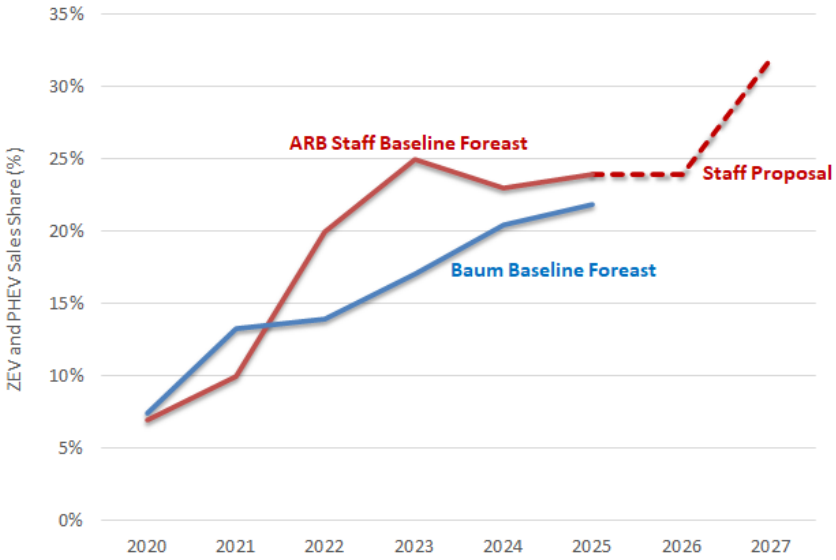
The average annual growth rate (compound) for the Baum baseline from 2019 to 2025 is estimated to be at 19% year-to-year for ZEVS (BEVs, PHEVs, and FCEVS) based on this bottom-up forecast. However, ARB staff's proposed standard for MY2026 is expected to require a 9.4% annual growth between MY 2025 to MY2026, or a 24% sales level. That is, the initial start of the ACC2 does not deliver the large jump desired and achievable to pull forward sales. In fact, it would suggest a slowing of trends over the MY2019 through MY2025 period that should be driven higher by Advanced Clean Cars II. If one compares ARB staff's proposed MY2026 level to its baseline forecast, there is virtually no growth in actual sales assumed for three entire model years, as observed in the Figure 2 below.

[1] Air Resources Board, Advanced Clean Cars II Workshop, May 6, 2021. https://ww2.arb.ca.gov/events/public-workshop-advanced-clean-cars-ii.

Figure 1: Sale forecasts for California market through MY2025. (Source: Baum & Associates)

Model Year							
OEM	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
BMW	9,900	4,000	8,600	8,100	8,950	8,700	7,850
Daimler	3,800	5,200	2,900	4,100	8,200	9,200	9,800
ELMS	-	-	-	3,000	5,000	7,500	10,000
Fisker	-	-	-	-	8,800	12,200	14,000
Ford	4,000	2,300	6,200	21,500	30,000	39,400	39,400
GM	13,100	7,900	11,300	16,000	22,600	34,400	35,900
Honda	11,621	4,182	2,340	200	-	8,500	16,600
Hyundai	6,105	6,408	9,340	10,900	13,950	13,850	13,750
Lordstown Motors	-	-	-	100	400	700	1,100
Lucid	-	-	-	1,400	5,600	16,200	16,200
Mazda	-	-	-	200	500	600	700
Mitsubishi	800	500	300	200	200	200	200
Nissan	4,600	2,000	4,500	5,600	8,300	8,000	7,300
Rivian	-	-	-	5,300	8,000	10,700	13,500
Stellantis	3,400	1,900	6,600	12,700	14,200	14,700	15,600
Subaru	800	1,200	1,500	1,600	2,200	2,200	2,200
Tata	800	1,200	1,400	800	800	800	800
Tesla	86,000	69,400	114,000	106,200	118,200	100,900	96,600
Toyota	14,194	6,594	24,200	27,200	29,300	28,900	28,300
Via	-	1,700	1,900	2,000	2,100	2,100	2,000
Volvo	1,200	1,400	6,700	8,300	12,900	17,100	16,900
VW	5,100	6,100	14,400	18,400	25,200	31,100	33,700
Grand Total	165,520	121,984	216,180	253,800	325,400	367,950	382,400
	2019	2020	2021	2022	2023	2024	2025
% ZEV Market Share (BEV, FCEV, PHEV)	7.9%	7.4%	13.3%	14.0%	17.1%	20.4%	21.9%

Figure 2: Baseline forecasts and ARB staff proposal



We also note that the MY2026 standard should be designed by ARB staff to send a signal to OEMs to encourage additional investment in deployment increases from MY2023 to MY2025 beyond the baseline, such that a larger step-increase in the regulatory requirements can and should occur for MY2026. As we discuss below, a large step increase in sales over a two-year period (MY2025 to MY2026) is not only possible but has been achieved in numerous other jurisdictions.

B. The sale growth rates proposed for the MY2026-2030 period by ARB staff fall below those that have historically been achieved in California the past decade, as well as numerous other jurisdictions.

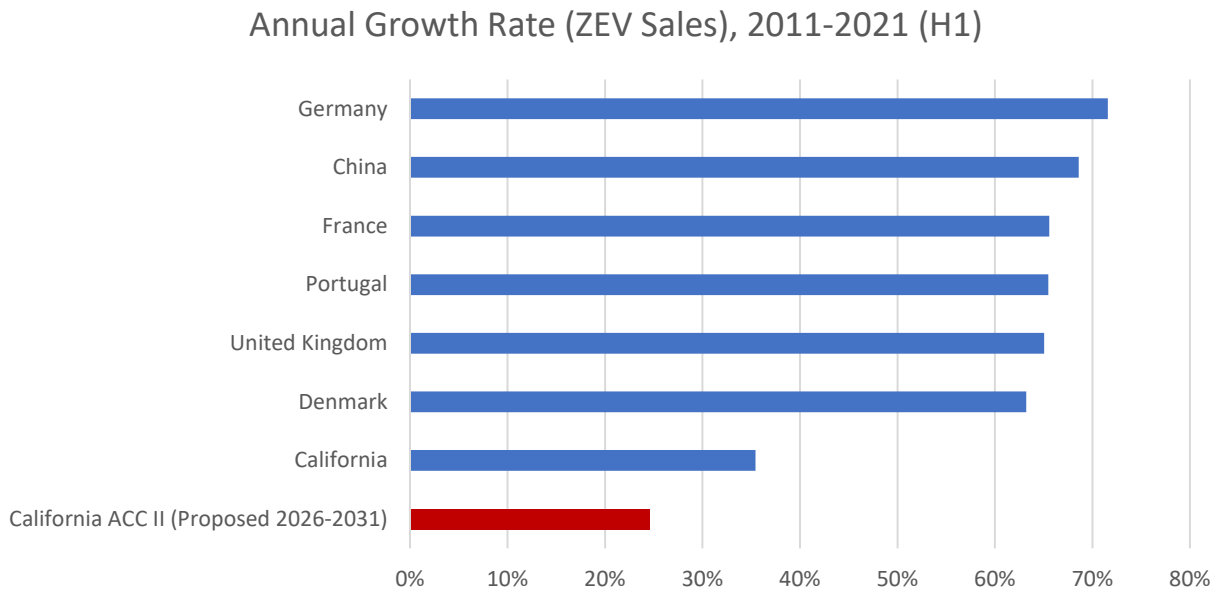
ARB has historically embraced technology-forcing regulations to ensure the industry develops technologies and emission control systems at the speed and scale necessary to address environmental, public health, and climate needs. California has been a leader in the U.S. and globally precisely because of this historic role. Unfortunately, the climate needs necessitate drastic action to avoid the worst impacts of climate change – including the public health and air quality disasters that are becoming evident from wildfires to frequent extreme heat and smog days throughout the state and West. ARB's role is not to ask for business-as-usual progress that is being driven by the market

and the industry anyhow, but for fundamental and rapid transition by the industry in manner commensurate with the speed that climate change and the public health crisis must be addressed.

But a look at the compound annual growth rate between the proposed MY2026 to MY2031 standards shows an average 25% year-to-year growth rate based on staff's proposal. As noted earlier, this growth rate is only slightly above the 19% annual growth rate expected over 2019 to 2025. And when compared to the 35% annual growth rate (compound average) achieved between 2011 through 2021 (H1), ARB staff's proposal represents a slower growth rate than what has been historically achieved.

California's historic growth rate, as well as ARB staff's proposed growth rates under ACCII, are both dwarfed by growth rates in numerous other jurisdictions, including the 63 to 72% growth rates achieved by the countries highlighted in the figure below for the same period (Germany, China, France, Portugal, United Kingdom, Denmark). ARB can and must ensure technology diffusion of BEVs and PHEVs occurs at an even faster growth rate, not a slower rate of growth than we have historically observed.

Figure 3: Annual growth rates of ZEV sales from 2011-2021 (H1). [note that data for China was obtained for 2012-2021]



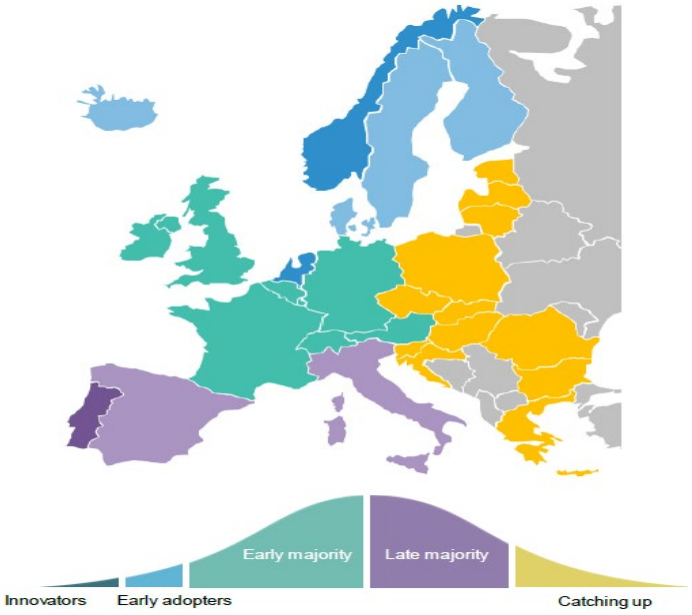
C. President Biden set a national goal of 50% electric vehicle sales by 2030. Staff's model year 2030 target must be raised to plausibly enable the achievement of this goal.

Clean car ZEV states currently represent one-third of the U.S. market.[2] The ZEV states will undoubtedly be the primary early market leaders to enable President Biden's goal of 50% electric vehicle sales in 2030 nationally.[3] Based on other jurisdictions, it would be reasonable to assume that the ZEV states could have 20% or more higher sales than the rest of the country by 2030. This is approximately equivalent to a 2 to 3 years sales lag for non-ZEV states compared to California based on the ramp rate staff assumes. This 2-to-3-year lag may be very conservative, especially if we compare the current trends in Northern-Western-Southern Europe, where the spread is currently between 6% (Greece)

[2] This includes the most recent ZEV states such as Minnesota, Nevada, Washington, and Virginia (to be finalized).
[3] https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/05/fact-sheet-president-biden-announces-steps-to-drive-american-leadership-forward-on-clean-cars-and-trucks/

and 82% (Norway) in terms of EV sales.[4] Figure 4 shows the various phases and the diverse spread in the markets.[5]

Figure 4: E.U. countries based on their EV adoption. Source: BNEF and Transport & Environment.

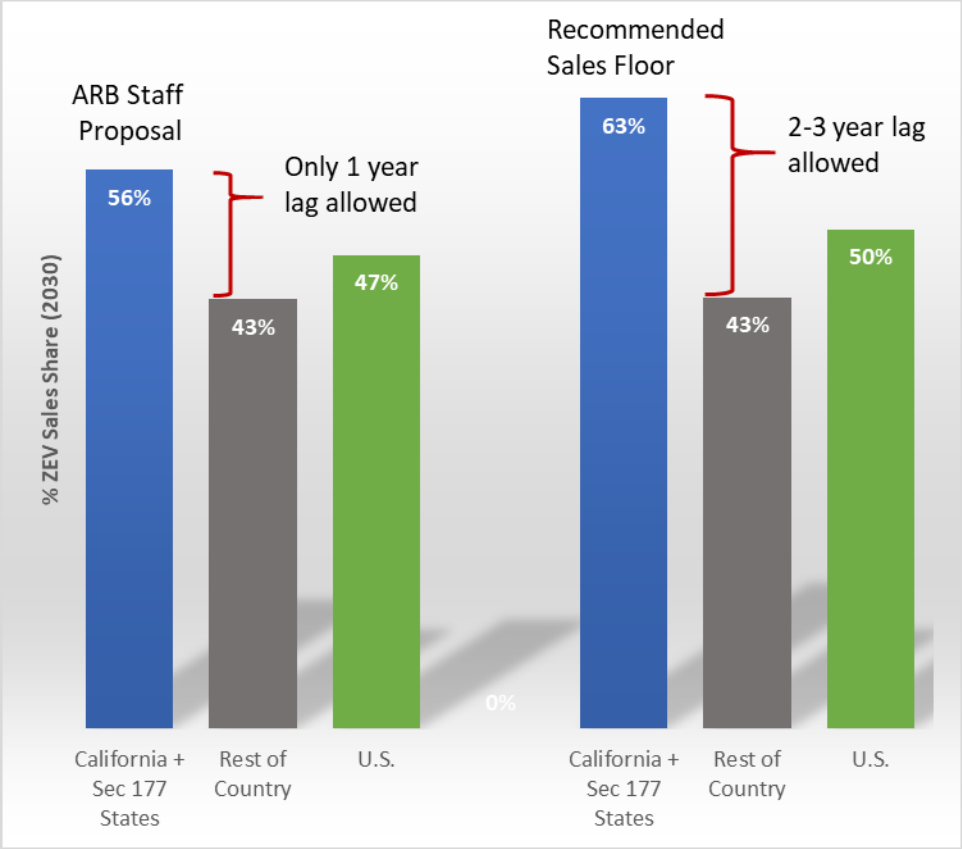


However, ARB staff's MY2030 vehicle stringency of 56% in MY2030 just crosses over the 50% sales mark. To reach Biden's 50% EV goal by 2030, the rest of the nation (non-ZEV states) would need to achieve a 47% market share, as shown in Figure 5. That all non-ZEV states would be only 9% lower in sales compared to CA – or lagging by only about one year in sales - appears to be an unreasonable assumption. California should set standards for MY2030 that are more consistent with meeting and exceeding the 50% national goals. We ask that ARB set the MY2030 sales floor to be at least 63% in order to allow for a minimum 2–3-year sales lag and for the nation to reasonably achieve Biden's Executive Order.

[4] A broad definition of Western Europe is utilized. https://insideevs.com/news/506478/european-countries-plugin-share-2021q1/

[5] BNEF and Transport & Environment (May 2021), *Hitting the EV Inflection Point*, https://www.transportenvironment.org/wp-content/uploads/2021/08/2021_05_05_Electric_vehicle_price_parity_and_adoption_in_Europe_Final.pdf

Figure 5: Staff proposal and the allowed sales lag in non-ZEV states to still enable Biden Executive Order (50% sales by 2030) to be achieved.



D. California and other Section 177 states should accelerate the trends by automakers to increase electric, zero-emission powertrain offerings and design standards based on the first movers, rather than the laggards

The standards ARB sets should ensure that automakers are issuing attractive EV and PHEV powertrains throughout the segments. For example, Bank of America's Global Research (BofA) forecasts for the U.S. show that over MY2022 through 2025, 119 out of the 383 nameplate offerings will have an electric powertrain (or 31%) not including fuel cell and hybrid offerings. However, we see that in the BofA breakdowns by OEM (and support by the Baum & Associates analysis), automakers such as Toyota, Honda, and Nissan will only electrify an extremely low 6% to 19% of their powertrains, whereas other automakers are upwards of 35% to 66% (BMW, VW, GM). ARB, as well as the federal EPA, should be designing standards to ensure that automakers are increasing the

number of electric powertrains well above the laggard's levels, and even higher levels than the leaders for the MY2026-2030 timeframe. Staff should design its standards to push and reward and reflect growth of the market leaders, rather than to design its standards to accommodate laggards. Staff should also not presume that automakers can only stay with traditional product cadence (design cycles and turnover rates) and product refresh rates. The rapid growth by EV-only manufacturers, changes to design and manufacturing processes, increased competitive pressures, and global regulatory requirements are resulting in fundamental shifts.

Finally, despite nearly a decade of ZEV requirements, many of the models that automakers issued were ZEV "compliance" vehicles that had neither the range, design, or price-point that was attractive for the consumer market. Many regulators, industry experts, and reporters have recognized that numerous automakers have gamed the system to some extent by bringing compliance vehicles into the market (often only to CA and other ZEV states), in some cases nixing a product once enough credits were generated.[6] Going forward, best-selling market leaders in California, including Honda (compact) and Toyota (mid-size car, compact SUV, mid-size SUV, luxury mid-size SUV) - together with other OEMs - should be expected and pushed to electrify their product line-up certainly by the MY2026 timeframe.

[6] https://cleantechnica.com/2019/01/13/new-electric-cars-on-the-market-in-usa-2019/; https://www.usatoday.com/story/money/cars/2013/05/09/electric-cars-compliance-cars/2144853/

Figure 6: Electrification of Powertrains over MY2022-2025.

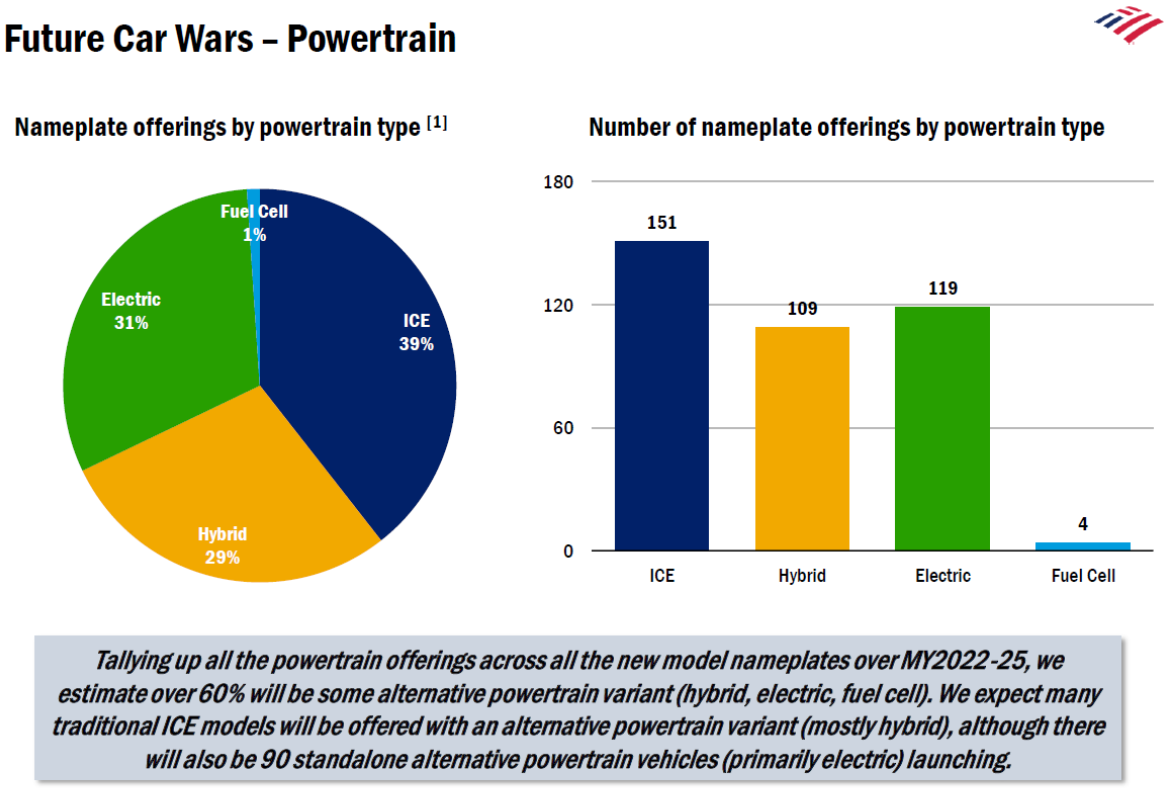
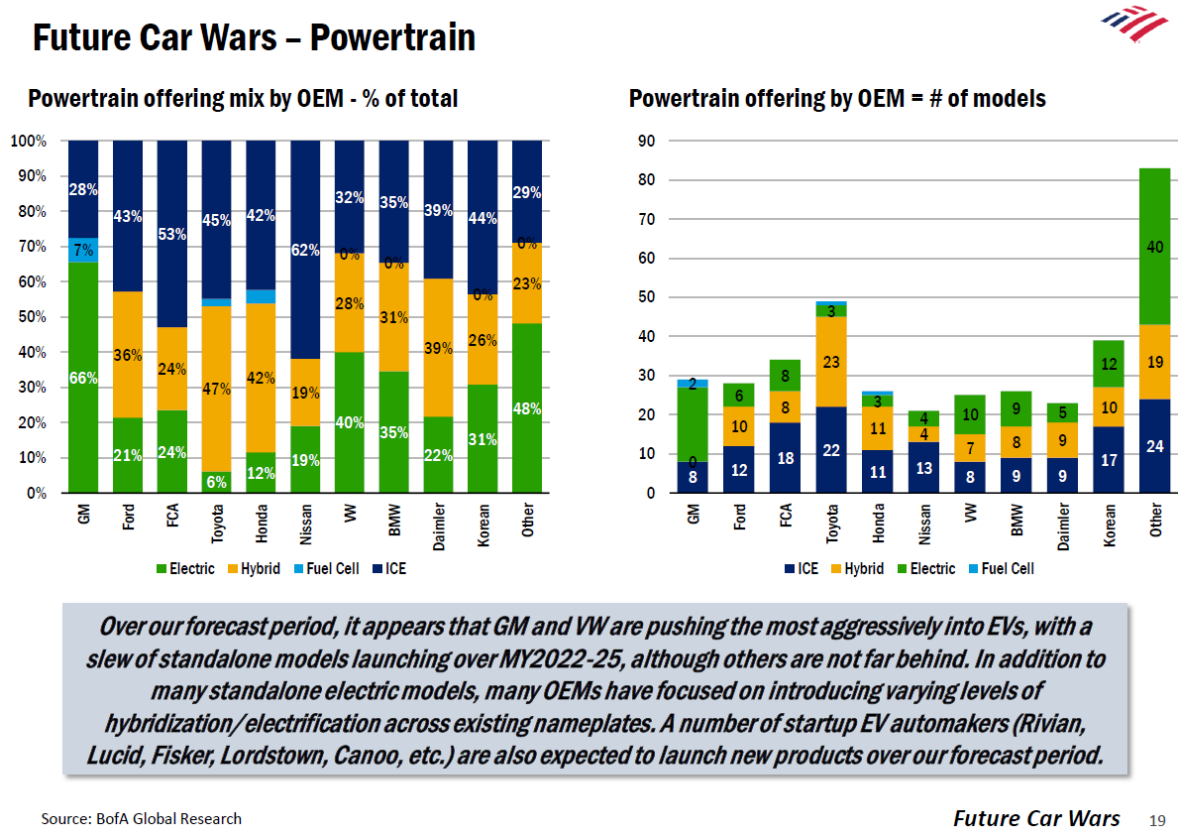


Figure 7: Electrification of Powertrains by OEM over MY2022-2025.



E. Today, sixteen countries are now over 10% plug-in vehicle sales with six countries over 20% sales, with many of these countries doing so rapidly.[7]

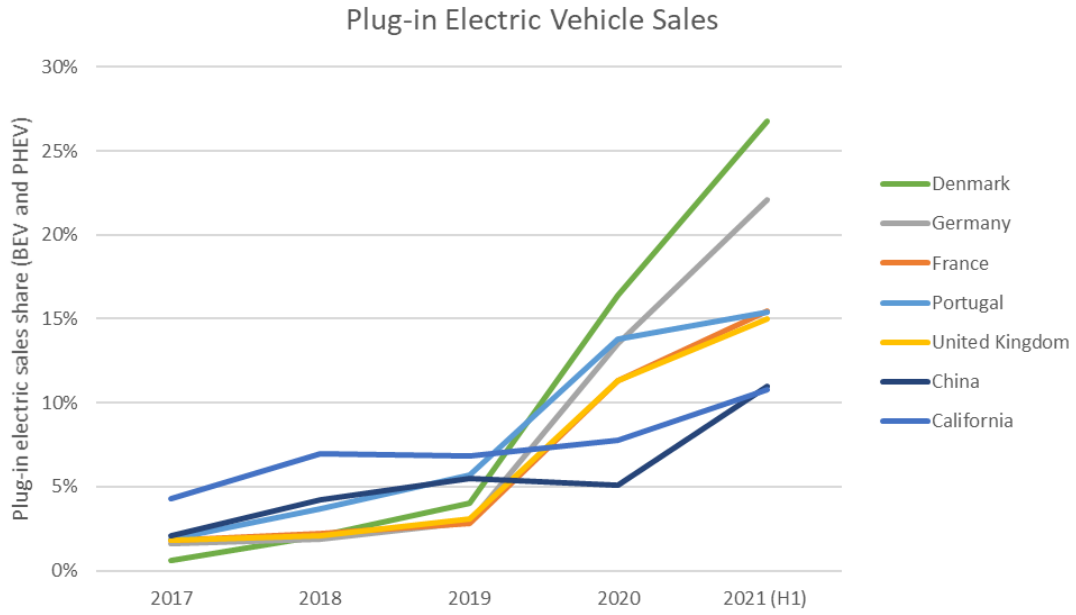
Numerous countries in Western Europe have seen tremendous growth over the past two years largely driven by EU GHG standards becoming stricter and binding, leading to manufacturers moving to comply by offering attractive, new EV models into the market. Many of these include non-Nordic countries that are already at 28% to 83% EV sales. In numerous instances this has led to increases between 10% to 23% percent jump in the sales fraction of EVs over a year and a half period, despite COVID disruptions and chip shortages to boot. A snapshot of this data is shown below in Figure 8 and Figure 9.

[7] Zachary Shahan, CleanTechnica, September 5, 2021. https://cleantechnica.com/2021/09/05/16-countries-now-over-10-plugin-vehicle-share-6-over-20/

We note the jump in sales level are **not** driven by significant changes in incentives or consumer preferences, or fundamental market conditions that are different in other countries versus California. The jump is simply driven by strict standards that required more EVs, exactly what an ACC2 ZEV program can and should do. The regulatory certainty provided by the EU standards have led to an increase in model offerings throughout Europe. In fact, six of the ten best-selling battery electric vehicles in the EU market are not available in California or the U.S.[8] ARB can and must be more ambitious in driving the investments and greater model introductions into CA and throughout the U.S, certainly in time for MY2026.

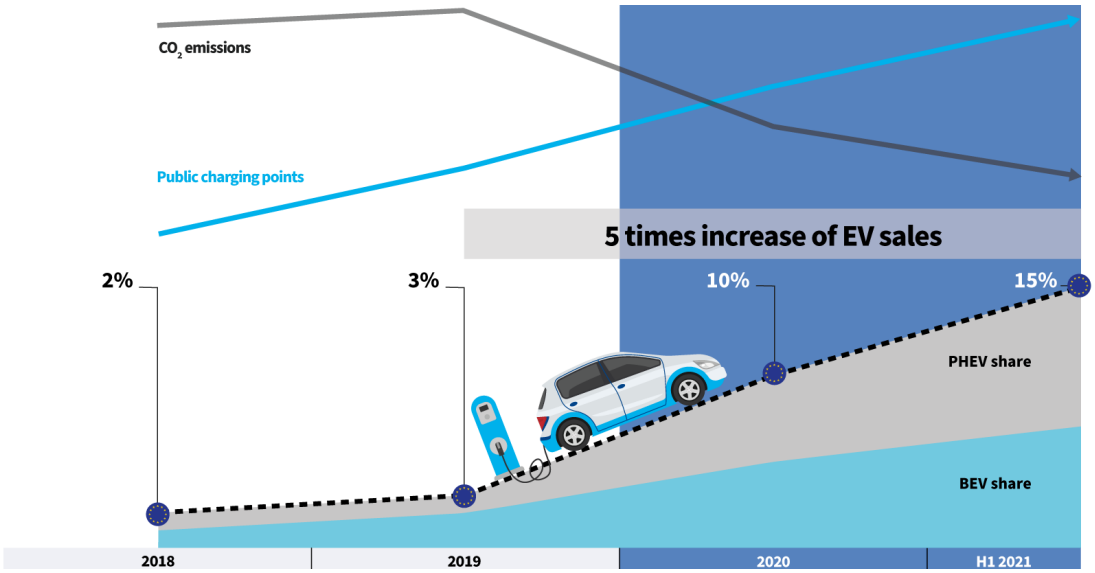
As noted at this year's UC Davis Asilomar conference, the new paradigm shift based on the data is that "policies are needed to create supply" for OEMs to produce more models, create higher volume production and lower costs, that in turn will generate demand upon release.[9]

Figure 8: EV sales by country. Sources: CleanTechnica, IEA Global EV Explorer.



[8] https://electrek.co/2020/12/15/ev-sales-surging-europe-electric-cars-not-available-north-america/
[9] Gil Tal, UC Davis ITS Asilomar, October 6, 2021, presentation.

Figure 9: EV sales in the European Union. Source: Used with permission from Transport & Environment (October 2021 Presentation)



As further evidence on this last point, in Deloitte's Global Auto Consumer Study, there are some minor differences in consumer concerns around battery electric vehicles, but they alone do not explain the differences in uptick in the EU versus the U.S.[10] The results are shown in Figure 10. Again, much of the evidence suggests regulatory policies were the main driver for rapid product and sales growth.

[10] *https://www2.deloitte.com/us/en/insights/focus/future-of-mobility/electric-vehicle-trends-2030.html*

Figure 10: Consumer priorities for EV adoption, 2018 and 2020.

Greater concerns are shown in orange.

2020 Global Auto Consumer Study												
	FRANCE		GERMANY		ITALY		UK		CHINA		US	
In your opinion, what is the greatest concern regarding all battery-powered electric vehicles?	2018	2020	2018	2020	2018	2020	2018	2020	2018	2020	2018	2020
Driving range	31%	28%	35%	33%	4%	27%	26%	22%	25%	22%	24%	25%
Cost/price premium	32%	22%	22%	15%	19%	13%	24%	16%	9%	12%	26%	18%
Time required to charge	11%	15%	11%	14%	18%	16%	13%	16%	12%	15%	10%	14%
Lack of electric vehicle charging infrastructure	16%	22%	20%	25%	44%	32%	22%	33%	18%	20%	22%	29%
Safety concerns with battery technology	4%	11%	5%	10%	7%	10%	6%	12%	22%	31%	8%	13%
Others	6%	2%	7%	3%	8%	2%	9%	1%	14%	0%	10%	1%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Sample size	1,083	1,266	1,287	3,002	1,048	1,274	965	1,264	1,606	3,019	1,513	3,006

Source: Deloitte Global Auto Consumer Study[18]

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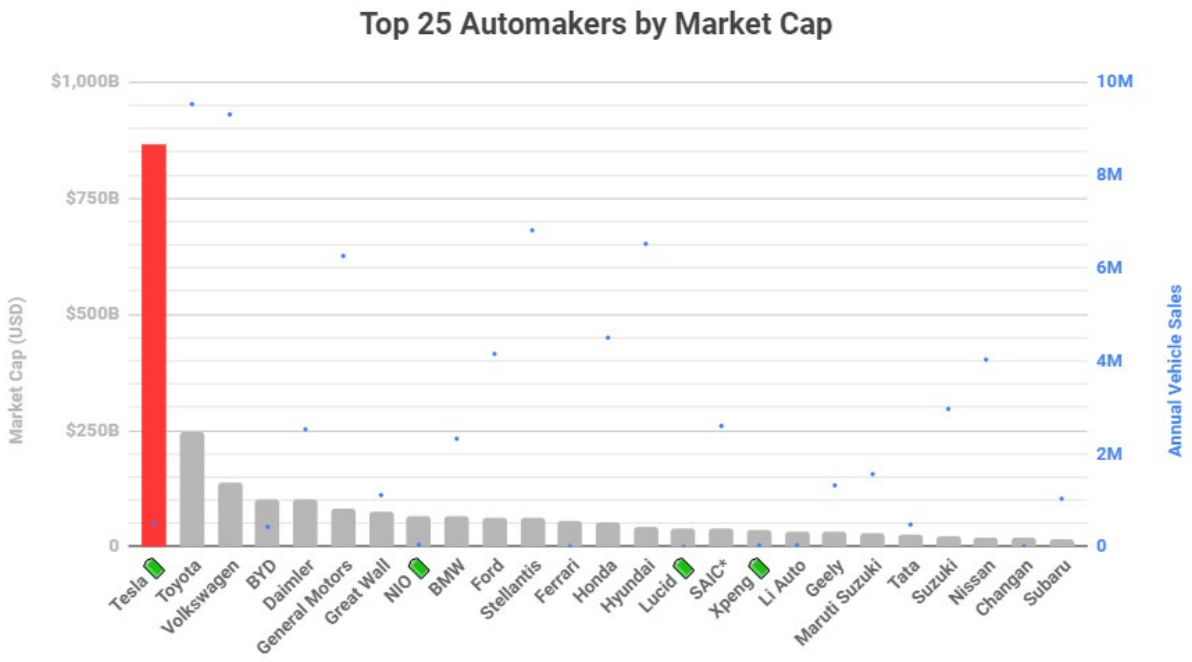
F. The level of global investments and automaker commitments suggests ARB can also expect faster growth rates in EV sales compared to earlier, prior periods.

The pace of change in the auto sector toward electrification is accelerating. The level of investment in EV production and market capitalization – versus when ARB established the rules in 2012 governing MY2018-MY2025 – is astonishing. Out of the largest 25 automakers by market capitalization (amounting to $2.3 trillion globally) nearly half of the value is from EV-only manufacturers (43%) or about $1 trillion globally. While Tesla is the dominant EV automaker, new entrants such as Lucid and Rivian are being assessed at capitalization levels such as Hyundai and General Motors respectively, suggesting that investments to scale-up and grow will be rapid and high as we are already beginning to see in the U.S.

ARB – together with Section 177 states – can create ZEV requirements that reflect and further drive utilization of capital to increase production and scale-up.

Figure 11: Top 25 automakers by market cap and annual vehicle sales. Data derived from Yahoo finance on October 19, 2021.
https://docs.google.com/spreadsheets/u/1/d/1HfIVng6sYIb6Gs4pOKiDGtqU5YJ2-hgdM4pRNaT62gs/htmlview



In addition, automakers' public plans and commitments suggest that ARB can do more, particularly given California is an early adopter market as well as a policy leader globally. For example, Ford is targeting having 100% of its passenger vehicles in Europe have an electrified version by 2026. Volvo is committing to 50% electric sales by 2025 and 100% by 2030, and Volkswagen 70% in Europe by 2030. Even Stellantis (a ZEV laggard in the past) has identified 70% being possible in Europe in 2030. Figure 12 and Figure 13 show the OEM commitments and targets.

The European consumer market is not so fundamentally different from California that these levels cannot be reached here. In many instances, California's infrastructure, demand-side incentive, and other complementary policies are ahead of Europe.

Automakers have said they can do it elsewhere. ARB can and should require automakers to do so in California.

Figure 12: 18 of the 20 largest OEMs have committed to increasing model offerings and sales of EVs. Source: International Energy Agency's Global EV Outlook 2021. Note the figures are for PHEVs and BEVs and exclude conventional hybrids. https://www.iea.org/report/

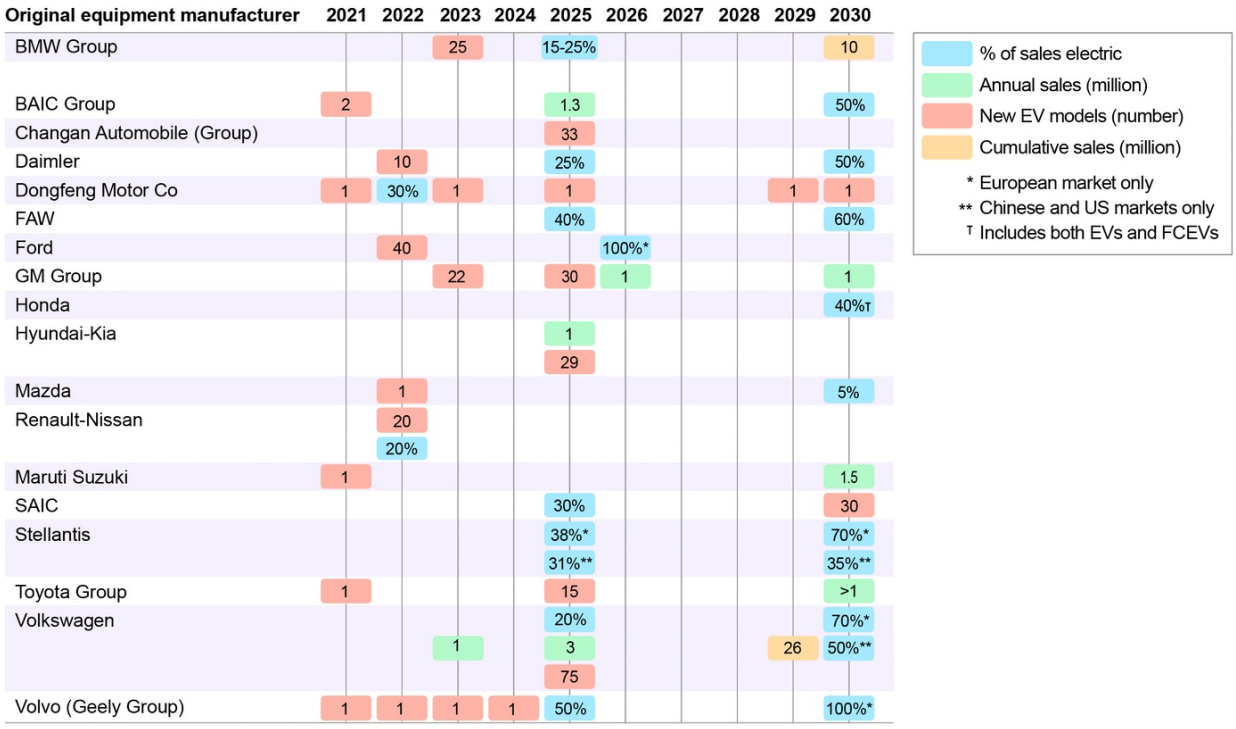
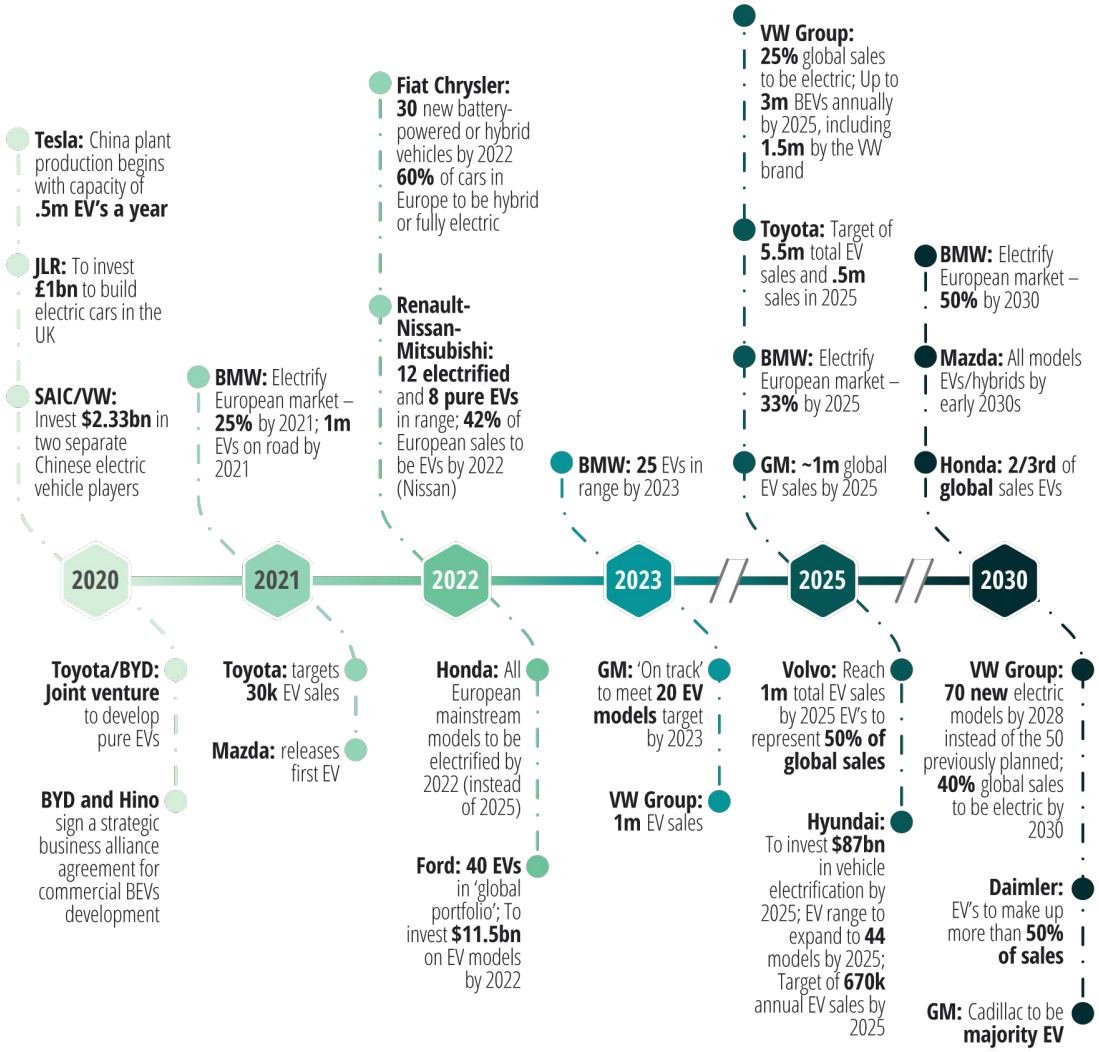


Figure 13: Timeline of strategic OEM targets for EVs



Source: Deloitte analysis[28]

III. Equity: Staff's recent proposed equity provisions should be incorporated in a manner that results in no trade-offs in overall vehicle numbers versus the earlier proposal.

Our detailed justification for additional stringency is provided above. Here we note that increased stringency, in addition to its statewide environmental impact, will help

achieve benefits in disadvantaged communities. Requiring more ZEVs in the early years means that automakers will need to produce affordable vehicles to appeal to the mass market. This will make the purchase of new ZEVs more feasible in pollution impacted and disadvantaged communities, and it will also result in additional affordable used ZEVs to feed into the used vehicle equity provision in later years. In addition, in the event that equity provisions are structured as voluntary rather than mandatory, increased stringency makes the equity alternative more attractive to automakers.

NRDC supports the concept of including equity-related provisions into the proposal, but we have similar concerns to those expressed by the California Clean Cars Coalition around the need to avoid tradeoffs between the overall ZEV numbers and the inclusion of equity provisions. We provide a potential solution to address this trade-off, and we look forward to further discussions with staff to improve staff's proposal.

Staff's current equity proposal, by allowing additional credits for equity placements, would result in fewer overall ZEVs when the equity option is used. This sets up a tradeoff between stringency and equity, which is inconsistent with staff's statement that "CARB and the State of California are committed to prioritizing the needs of historically under-served communities in our work – as such, environmental justice will be a core consideration within all CARB actions and programs moving forward"[11].

To avoid any such tradeoff, NRDC recommends that at a minimum the base stringency be increased to reflect the concerns outlined in Section 1 of these comments, and to ensure that the number of ZEVs required under the equity approach is the same as the number that would have been required under the original staff proposal if equity credits are not used. For example, Table 1 below shows that a 0.5% increase in 2026 stringency would result in the same number of vehicles under the equity approach as are required under staff's base proposal. The corresponding required stringency increases for model years 2027 through 2030 are shown Table 3 at the end of these comments.

[11] California Air Resources Board, DRAFT Advanced Clean Cars II Work Plan for Environmental Justice, May 27, 2021

Table 1: Adjustment of requirements needed to ensure no vehicle losses occurs due to the inclusion of equity provisions.

	Total Sales, 2026 (EMFAC)			
	1,871,764			
	If Equity Provision Used		If Equity Provision Not Used	
	Staff	No Loss Approach	Staff	No Loss Approach
Percent Requirement	30.00%	30.50%	30.00%	30.50%
Base Portion	28.50%	29.00%	30.00%	30.50%
Equity Portion (1.5% for 2026)	1.50%	1.50%	0.00%	0.00%
Base Credits	533,453	542,812	561,529	570,888
Equity Credits	28,076	28,076	0	0
Base Vehicles	533,453	542,812	561,529	570,888
Equity Vehicles	18,718	18,718	0	0
Total Vehicles	552,171	561,529	561,529	570,888

We recognize that staff takes the position that the regulatory stringency must be feasible in the absence of any credits. As we have demonstrated above, increased early stringency beyond the staff proposal is entirely feasible. Moreover, the stringency increase needed to "hold harmless" the number of ZEVs achieved if equity credits are used is small in absolute terms but significant as a signal of CARB's approach and commitment.

To maximize the additional air quality benefits of the proposed EJ provisions, we encourage ARB to direct placements to such programs as the "Clean Cars 4 All program," formerly known as the Enhanced Fleet Vehicle Modernization Program. The placement of either used or new EVs into this program could lead to (1) faster retirements and scrappage of vehicles that are typically older and higher-emiting than the normal population, (2) more vehicles being replaced that are pure ZEVs compared to conventional vehicles or even PHEVs, and (3) expansion of the program overall in terms of the numbers of households served. These three factors would contribute to additional emission benefits from the ZEV program than would otherwise occur absent

the EJ provision that focused on this program. We request ARB staff to explore the emission benefits associated with this approach.

IV. Credit usage: We support ARB staff's proposals for ACCI and ACCII credit usage as a starting point, but request improvements in several key areas.

A. ACCI Credits

We support staff's recognition of the need to restrict the use of banked ACCI credits and sunset their availability in MY2031. The staff presentation at the May 2021 ACCII workshop showed that the projected 2026 ACCI credit bank, when converted to ACCII credit accounting (1 credit per vehicle), would total more than 1.5 million credits. That amount is almost enough to fully satisfy the entire staff proposed ZEV obligation for all manufacturers for both MY2026 and MY2027. We recommend, however, that the use of credits be further limited beyond the 15% level proposed by staff as part of the increase in stringency recommended above.

We also suggest that staff consider separating the ACCI credit bank into already-banked credits versus new credits to be earned in MYs 2023 through 2035. Our projections show that under the current staff proposal, for many manufacturers additional credits earned in the latter years will be of little value because their MY2026 credit bank will exceed the maximum amount usable through MY2030. This reduces the incentive for manufacturers to place ZEVs in those years and could work against the acceleration of sales needed to meet an aggressive MY2026 target. As an alternative, newly earned credits for MY2023 through 2025 could be treated more favorably in some fashion than those already earned, and banked credits from earlier years could be further restricted.

B. ACCII Credits

We support the staff proposal to require manufacturers to first use any newly earned credits in a given model year, rather than being able to first use banked credits and carry over the new credits for future use. This will help guard against manufacturers amassing large banks as was the case under ACCI. We also support the sunset on the availability of ACCII credits.

We note that ZEV-only manufacturers such as Tesla will automatically generate substantial numbers of ACCII credits in the early years, because they will by definition greatly exceed the regulatory requirement. We originally thought that additional restrictions on ACCII credits would be necessary but given the crediting change noted above and the national pooling concept it no longer appears that such restrictions are needed.

V. Section 177: NRDC supports ARB's proposal to allow for pooling and recommend provisions be added to address lead-time issues for Section 177 states.

The current proposal made by a group of Section 177 states and NESCAUM to pool credits with appropriate guardrails appears to be an appropriate mechanism to provide states with the flexibility to address different circumstances and needs by the states.

The ability to pool ZEV credits generated during ACCII model years (MY2026 – 2030) is an appropriate mechanism to ensure that the total number of ZEVs among California and Section 177 states is not offset by utilizing older ACC I ZEV credits. We also see staff's proposed cap (MY2026-2030) as reasonable to provide a floor for all states so that the expected air quality benefits of the program will not be eroded.

To help understand the potential impact of the pooling provision we projected the number of surplus ACCII ZEV credits that might be generated by ZEV-only manufacturer sales (using Tesla as a surrogate for ZEV-only manufacturers) and compared that to the maximum number of pooled credits that can be used across the Section 177 states. We apply Baum & Associate's estimated MY2025 national Tesla sales (340,000) to MYs 2026 through 2030, and then assign 70 percent of those sales to California and the Section 177 states consistent with those states' share of national EV registrations.[12] Section 177 total sales relative to California are calculated using the 2020 sales fractions reported

[12] https://electrek.co/2021/08/24/current-ev-registrations-in-the-us-how-does-your-state-stack-up/

by the National Automobile Dealers Association. Using those assumptions, surplus ACCII credits from Tesla sales alone are sufficient to meet a large portion of the need, as shown in Table 2 below. Details of the calculation are shown in Table 4 following these comments. This estimate does not consider any potential overcompliance by other manufacturers, which would add to the available bank of ACCII credits. Thus, it appears that the pooling provision could allow for substantial mitigation of the early ramp up in Section 177 states while further incentivizing California sales.

Table 2: Impacts of Tesla Overcompliance

	2026	2027	2028	2029	2030
Tesla Overcompliance Credits	166,000	142,800	119,000	95,200	71,400
Tesla Credits as Percent of 177 Pool	75.5%	51.7%	39.8%	28.7%	20.1%

We also recommend that ARB design the program to also account for Section 177 state regulatory processes, which in some cases may automatically update their regulations to be consistent with California but in most cases will require a regulatory process that can take from 6 to 18 months. In those states where Advanced Clean Cars II may begin in MY2027, rather than MY2026, we recommend that ARB address this through the addition of a specific Section 177 provision.

This proposed Section 177 provision would (1) extend the applicability of ACCI standards in 177 states through MY2026, rather than sunsetting them after MY2025, and (2) allow automakers that voluntarily comply with ACCII MY2026 standards in MY2026 to carry forward a portion of those credits for use outside of the other ACCI credit restrictions. This is not dissimilar to an "early" crediting provision used in the past by ARB and by other Section 177 states. However, the amount of MY2026 credits allowed to be counted must not be excessive and must account for the fact that automakers meeting MY2025 ACCI standards should reasonably be expected to meet and exceed the requirements in MY2026 under a baseline scenario. Doing so will allow for a smoother transition for both states and automakers over MY2025 and MY2027.

Supporting Information

Table 3: Adjustment of requirements needed to ensure no vehicle losses occurs due to the inclusion of equity provisions.

	2026	2027	2028	2029	2030	2031
Projected CA Sales (EMFAC)	1,871,764	1,883,615	1,902,257	1,921,078	1,935,154	1,949,095
Staff Proposed ZEV Requirement	30%	40%	50%	60%	70%	76%
Allowable Equity Portion of Requirement	5%	5%	5%	5%	5%	5%
Allowable Equity Percentage of Sales	1.5%	2.0%	2.5%	3.0%	3.5%	3.8%
Allowable Equity Number of Credits	28,076	37,672	47,556	57,632	67,730	74,066
Number of ZEVs Using Equity Provision (@ 1.5 credit)	18,718	25,115	31,704	38,422	45,154	49,377
Number of ZEVs Not Using Equity Provision (@ 1 credit)	28,076	37,672	47,556	57,632	67,730	74,066
ZEVs Foregone Due to Equity Provision	9,359	12,557	15,852	19,211	22,577	24,689
Stringency Increase Needed for Equal Number of ZEVs	0.5%	0.7%	0.8%	1.0%	1.2%	1.3%

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Table 4: Pooling requirements and the impacts of Tesla sales (conservatively held flat) at MY2025 levels on the availaiblity of credits for pooling.

	2026	2027	2028	2029	2030
CA Total Sales (EMFAC)	1,871,764	1,883,615	1,902,257	1,921,078	1,935,154
177 Multiplier	2.618	2.618	2.618	2.618	2.618
177 Total Sales	4,900,620	4,931,646	4,980,456	5,029,731	5,066,584

ZEV requirement	30.0%	40.0%	50.0%	60.0%	70.0%
Pooling Cap, Percent of Obligation	15.0%	14.0%	12.0%	11.0%	10.0%
Pooling Cap, Percent of Total Sales	4.5%	5.6%	6.0%	6.6%	7.0%
Pooling Cap, Credits, 177 States	220,528	276,172	298,827	331,962	354,661

Tesla National Sales	340,000	340,000	340,000	340,000	340,000
Attribution to CA and 177 States	238,000	238,000	238,000	238,000	238,000
Tesla Overcompliance Credits	166,600	142,800	119,000	95,200	71,400
Tesla Credits as Percent of 177 Pool	75.5%	51.7%	39.8%	28.7%	20.1%

VI. Cost Modeling: ARB staff's assumptions are overly conservative and do not reflect the compliance costs of the program

The Advanced Clean Cars Coalition and several of its members have submitted detailed comments outlining concerns with the staff's incremental cost analysis for EVs. NRDC fully supports those comments and agrees that staff's incremental cost estimates are out of step with other credible analyses.

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We have quantified the impact of two specific staff assumptions—battery cost per kWh and average vehicle range—and found that they have a dramatic impact on incremental cost and the year in which EVs reach cost parity. For our analysis we inserted alternative assumptions into the staff incremental cost calculation spreadsheet (May 2021 Version):

- For battery cost per kWh, we used the most recent BNEF projections rather than the staff costs released at the October 13 workshop.
- For vehicle range, we assumed 250- and 350-mile average range for BEVs rather than the 300- and 400-mile average range for vehicles assumed by staff.

Taken together, these two revisions have a dramatic impact on the projected incremental cost. Depending on the vehicle category, the per-vehicle incremental cost reduction in MY2035 ranges from about $1,800 to almost $3600, as shown in Table 1.

Table 5

Vehicle Class	Tech Type	Vehicle Type	CARB 2035 incremental cost (300 and 400 mi range)	Lower range plus BNEF revised battery cost	Savings from lower range and BNEF revised battery cost
SmallCar	BEV250	Base	$516	-$1,272	$1,788
SmallCar	BEV350	Premium	$2,705	$404	$2,301
MedCar	BEV250	Base	$1,003	-$863	$1,866
MedCar	BEV350	Premium	$3,541	$1,145	$2,396
SmallSUV	BEV250	Base	$895	-$1,009	$1,904
SmallSUV	BEV350	Premium	$3,117	$674	$2,443
MedSUV	BEV250	Base	$880	-$1,428	$2,308
MedSUV	BEV350	Premium	$3,252	$286	$2,966
Pickup	BEV250	Base	$1,736	-$1,031	$2,767
Pickup	BEV350	Premium	$4,995	$1,399	$3,596

Moreover, this change has a dramatic impact on the year in which EVs reach cost parity. Using the staff assumptions, no vehicles achieve cost parity by 2035. Using the alternative range and battery cost assumptions, all of the 250-mile vehicles reach cost

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parity by 2032 or earlier, as shown in Table 2, and several of the 350-mile vehicles approach cost parity by 2035.

Table 6: Effects of lowering range and use of BNEF battery costs

Vehicle Class	Tech Type	Vehicle Type	Breakeven Year, staff Estimates (with October 13 Revised Battery Cost)	Breakeven Year, Lower Range and BNEF Revised Battery Cost
SmallCar	BEV250	Base	NA	2029
SmallCar	BEV350	Premium	NA	NA
MedCar	BEV250	Base	NA	2031
MedCar	BEV350	Premium	NA	NA
SmallSUV	BEV250	Base	NA	2031
SmallSUV	BEV350	Premium	NA	NA
MedSUV	BEV250	Base	NA	2030
MedSUV	BEV350	Premium	NA	NA
Pickup	BEV250	Base	NA	2032
Pickup	BEV350	Premium	NA	NA

CARB staff projections of incremental cost are critical because they will resonate far beyond the ACCII California rulemaking. The staff projections will be adopted by regulatory staff in the Section 177 states, who do not have the independent capability to conduct an in-depth analysis. They will also likely be used by USEPA and NHTSA staff, who will account for ARB staff's views on their own analysis of EV costs. Thus, it is imperative that the staff estimates provide a reasonable assessment of future trends, rather than a very conservative estimate of the ACCII rulemaking.

The staff cost estimates also raise a broader issue regarding the makeup and performance requirements of the future vehicle fleet. The staff's work assumes that every EV needs to be an exact functional replacement for today's ICEs. This is a short-sighted view of how the fleet is likely to evolve as EVs become mainstream. When many households have two or even three EVs, it is likely that one will be a long-range vehicle

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for trips and another will be shorter range, adequate for most of the household driving. This pattern is evidenced today in two car households with one ICE and one EV. Manufacturers appear to be considering this possibility— Lucid for example has expressed interest in offering a low-cost shorter-range EV aimed at the mass market. Green Car Reports quoted the CEO of Lucid as considering "a mass-market, $25,000 EV with a 150-mile EPA range from a 25-kwh battery pack as something its business plan might potentially lead to late in the decade—if the charging infrastructure is robust and more people can charge overnight."[13] The electric vehicle marketplace is evolving rapidly—far more rapidly than even advocates envisioned a few years ago—and CARB staff should not make the mistake of underestimating the pace of change.

Because the vehicle range utilized by ARB staff for 2030 and 2035 represents a new BEV fleet average, it can be assumed that there would be an equal distribution of both 200- and 600-mile range BEVs (for an average 400-mile range BEVs). However, the proposal also allows for a significant percentage (20%) of "strong" PHEVs through 2035, such that the compliance through a PHEV pathway would likely displace the costs of, say, a 600-mile range BEV. Thus, we believe it is reasonable to assume lower overall battery ranges for BEVs if "strong" PHEVs are a compliance option.

VII. PHEV-Specific and Battery Provisions: We support ARB's overall direction with the recent proposal and recommend the PHEV transition period be better targeted

We support ARB staff's proposed requirements around BEV durability and battery warranty as fundamental components enabling the vehicle's "zero emission"

[13] See https://www.greencarreports.com/news/1133872_efficiency-not-range-is-what-drives-lucid-is-it-the-first-true-rival-to-tesla

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performance to be maintained. New light-duty vehicle customers, as well as used-vehicle purchasers, will need to have assurances on the performance of the vehicle, including the longevity of the vehicle performance as a zero-emission vehicle. ARB's updated durability and battery requirements appear to take a reasonable approach while addressing some questions by stakeholders.

On the PHEV minimum requirements under ACCII, NRDC supports the inclusion of PHEV50 requirements and believes the auto industry could transition to PHEV60 and greater by MY2035. However, we suggest ARB staff consider differentiating the range requirements, centered around a 50-mile all electric range (AER) target in MY2028 and 60-mile AER in MY2035, by also accounting for the segment (e.g. a small compact car versus a full-size pick-up truck).

ARB staff has also proposed to provide automakers with a "transition" period over MY2026-2028 to allow for PHEV30s. Staff identified this was due to the desire to assume a full five-year product cadence cycle (e.g. a MY2023 new vehicle introduction would be allowed to remain unchanged until MY2028). We ask staff to modify this proposal or provide a better rationale since an automaker may be able to simply include an update to the battery pack size during a product refresh in MY2026, for example, rather than to wait for a complete produce redesign.

Finally, the crediting provision for PHEVs on slide 36 in the October workshop presentation was unclear. Assuming an AER of 50 miles and US06 capability for instance, leads to a credit of 50/100 + 0.35 = 0.85 credit using the equation as opposed to the maximum value of 1.0.

We thank ARB staff for this opportunity to comment, and request continued discussion on the issues we have raised. We note that a portion of these comments were

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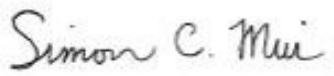
developed with input and analysis from Shulock Consulting as well as by Baum & Associates. All views expressed are those of NRDC.

Sincerely,



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VIII. Appendix

Baum & Associates: List of Vehicles Considered for California Market Forecasts

Brand	Model	Segment	Segment for EV	Type
Acura	Acura Utility	Truck	Luxury SUV	BEV
Acura	Acura TLX	Car	D Car	PHEV
Aston Martin	RapidE	Car	Luxury car	BEV
Audi	h-tron	Truck	Midsize crossover	FCEV
Audi	A6 e-tron	Car	D Car	BEV
Audi	e-Tron	Truck	Midsize crossover	BEV
Audi	eTron GT	Car	B Car	BEV
Audi	eTron Sportback	Truck	Small crossover	BEV
Audi	Q4 eTron	Truck	Small crossover	BEV
Audi	Q6 eTron	Truck	Midsize crossover	BEV
Audi	A3	Car	B Car	PHEV
Audi	A6	Car	D Car	PHEV
Audi	A7	Car	E Car	PHEV
Audi	A8	Car	E Car	PHEV
Audi	Q3	Truck	Small crossover	PHEV

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Audi	Q5	Truck	Midsize crossover	PHEV
BMW	X5	Car	Large crossover	FCEV
BMW	Active E (1-Series)	Car	A Car	BEV
BMW	i3	Car	B Car	BEV
BMW	i4	Car	D Car	BEV
BMW	i5	Car	C-Car	BEV
BMW	iX	Truck	Luxury crossover	BEV
BMW	3-Series	Car	D Car	PHEV
BMW	5-Series	Car	E Car	PHEV
BMW	7-Series	Car	E Car	PHEV
BMW	i8	Car	Sports car	PHEV
BMW	X3	Truck	Small SUV	PHEV
BMW	X5	Truck	Midsize SUV	PHEV
BrightDrop	EV410	Truck	Large van	BEV
BrightDrop	EV600	Truck	Large van	BEV
Buick	Enspire	Truck	Small crossover	BEV
BYD	e6	Car	C Car	BEV
BYD	F3	Car	C Car	PHEV
Cadillac	Celestiq	Truck	Luxury Car	BEV
Cadillac	Escalade	Truck	Luxury SUV	BEV
Cadillac	Large SUV	Truck	Large SUV	BEV
Cadillac	Lyriq	Truck	Midsize SUV	BEV
Cadillac	ATS	Car	C Car	PHEV

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Cadillac	CT6	Car	E car	PHEV
Cadillac	ELR	Car	C Car	PHEV
Chevrolet	Equinox	Truck	Midsize crossover	FCEV
Chevrolet	Bolt	Car	C Car	BEV
Chevrolet	Bolt EUV	Truck	Midsize crossover	BEV
Chevrolet	Silverado	Truck	Large pickup	BEV
Chevrolet	Spark	Car	A Car	BEV
Chevrolet	Unnamed Utility	Truck	Midsize SUV	BEV
Chevrolet	Volt	Car	C Car	PHEV
Chrysler	Large Crossover	Truck	Large crossover	PHEV
Chrysler	Pacifica	Truck	Minivan	PHEV
Coda	Coda	Car	C Car	BEV
Cruise	Origin	Truck	Midsize crossover	BEV
Detroit Electric	SP: 01	Car	D Car	BEV
Dodge	Challenger	Car	Sports car	BEV
Dodge	Hornet	Truck	Small crossover	PHEV
ELMS	UD-1	Truck	Small van	BEV
Faraday Future	FF91	Truck	Midsize crossover	BEV
Fiat	500	Car	A Car	BEV
Fiat	500	Car	A Car	BEV
Fiat	Doblo	Truck	Small van	BEV

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Fisker	Ocean	Truck	Midsize crossover	BEV
Fisker	Unnamed	Car	C Car	BEV
Ford	F-150	Truck	Full size pickup	BEV
Ford	Focus	Car	C Car	BEV
Ford	Mustang Mach E	Truck	Midsize crossover	BEV
Ford	Transit	Truck	Large van	BEV
Ford	Transit Connect	Truck	Small van	BEV
Ford	Unnamed	Truck	Midsize crossover	BEV
Ford	C-Max	Truck	Small van	PHEV
Ford	Escape	Truck	Small crossover	PHEV
Ford	Explorer	Truck	Midsize SUV	PHEV
Ford	Focus	Car	C Car	PHEV
Ford	Fusion	Car	D Car	PHEV
Ford	Transit	Truck	Large van	PHEV
Genesis	eG80	Car	Luxury Car	BEV
Genesis	eGV60	Truck	Luxury crossover	BEV
Genesis	G70	Car	E Car	PHEV
GMC	Hummer Pickup	Truck	Large pickup	BEV
GMC	Hummer SUV	Truck	Midsize SUV	BEV
GMC	Sierra	Truck	Large pickup	BEV
Honda	Clarity	Car	C Car	FCEV

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Honda	Clarity	Car	C Car	BEV
Honda	Fit	Car	B Car	BEV
Honda	Prologue	Truck	Midsize SUV	BEV
Honda	Accord	Car	D Car	PHEV
Honda	Clarity	Car	C Car	PHEV
Hyundai	Nexo	Truck	Small crossover	FCEV
Hyundai	Tucson	Truck	Small crossover	FCEV
Hyundai	Ioniq	Car	C Car	BEV
Hyundai	Ioniq 5	Truck	Small crossover	BEV
Hyundai	Ioniq 6	Car	C Car	BEV
Hyundai	Ioniq 7	Truck	Midsize crossover	BEV
Hyundai	Kona	Truck	Small crossover	BEV
Hyundai	Ioniq	Car	C Car	PHEV
Hyundai	Santa Fe	Truck	Midsize crossover	PHEV
Hyundai	Sonata	Car	D car	PHEV
Hyundai	Sporty car	Car	Sports car	PHEV
Hyundai	Tucson	Truck	Small crossover	PHEV
Infiniti	LE	Car	C Car	BEV
Jaguar	I-Pace	Truck	Midsize SUV	BEV
Jeep	Grand Cherokee	Truck	Large SUV	BEV

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Jeep	Unnamed	Truck	Midsize SUV	BEV
Jeep	Compass	Truck	Small crossover	PHEV
Jeep	Gladiator	Truck	Full size pickup	PHEV
Jeep	Grand Cherokee	Truck	Large SUV	PHEV
Jeep	Wagoneer	Truck	Large SUV	PHEV
Jeep	Wrangler	Truck	Midsize SUV	PHEV
Karma	Atlantic	Car	Sports car	PHEV
Karma	Crossover	Truck	Midsize crossover	PHEV
Karma	Revero GT	Car	Sports car	PHEV
Kia	Sorento	Truck	Small crossover	FCEV
Kia	EV6	Truck	Midsize crossover	BEV
Kia	EV8	Truck	Large crossover	BEV
Kia	Niro	Truck	Small crossover	BEV
Kia	Soul	Truck	Small crossover	BEV
Kia	Niro	Truck	Small crossover	PHEV
Kia	Optima	Car	D Car	PHEV
Kia	Sorento	Truck	Midsize crossover	PHEV

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Land Rover	Range Rover P400e	Truck	Luxury SUV	PHEV
Land Rover	Range Rover Sport P400e	Truck	Luxury SUV	PHEV
Lexus	LS	Car	E car	FCEV
Lexus	RX	Truck	Midsize crossover	BEV
Lexus	Unnamed Crossover	Truck	Small crossover	BEV
Lexus	NX 450h+	Truck	Small crossover	PHEV
Lincoln	Unnamed	Car	D Car	BEV
Lincoln	Unnamed	Truck	Midsize crossover	BEV
Lincoln	Aviator	Truck	Midsize SUV	PHEV
Lincoln	Corsair	Truck	Small crossover	PHEV
Lordstown	Endurance	Truck	Large pickup	BEV
Lucid	Air	Car	C Car	BEV
Lucid	Gravity	Truck	Midsize SUV	BEV
Maserati	Levante	Truck	Midsize SUV	PHEV
Mazda	MX-30	Truck	Small crossover	BEV
Mazda	MX-30	Car	C Car	PHEV
Mercedes	A-Class	Car	A Car	FCEV
Mercedes	GLC	Truck	Midsize SUV	FCEV
Mercedes	B220	Car	B Car	BEV
Mercedes	B-Class	Car	B Car	BEV

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Mercedes	EQA	Truck	Small crossover	BEV
Mercedes	EQB	Truck	Small crossover	BEV
Mercedes	EQC	Truck	Midsize crossover	BEV
Mercedes	EQE	Car	D Car	BEV
Mercedes	EQE Utility	Truck	Large SUV	BEV
Mercedes	EQS	Car	E Car	BEV
Mercedes	EQS Utility	Truck	Large SUV	BEV
Mercedes	SLS	Car	Luxury Car	BEV
Mercedes	Sprinter	Truck	Large van	BEV
Mercedes	C-Class	Car	D Car	PHEV
Mercedes	E-Class	Car	D Car	PHEV
Mercedes	GLC	Truck	Midsize SUV	PHEV
Mercedes	GLE	Truck	Midsize SUV	PHEV
Mercedes	S-Class	Car	E car	PHEV
Mini	Cooper SE	Car	B Car	BEV
Mini	Mini E	Car	B Car	BEV
Mini	Countryman	Truck	Small crossover	PHEV
Mitsubishi	i	Car	B Car	BEV
Mitsubishi	Eclipse Cross	Truck	Small crossover	PHEV
Mitsubishi	Outlander Sport	Truck	Small crossover	PHEV
Myers	DUO	Car	A Car	BEV

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Myers	NmG	Car	A Car	BEV
Nissan	Unnamed	Car	C Car	FCEV
Nissan	Ariya	Truck	Midsize crossover	BEV
Nissan	Leaf	Car	C Car	BEV
Nissan	Sporty car	Car	Sports car	BEV
Nissan	Sedan	Car	C Car	PHEV
Polestar	Polestar 2	Car	Sports car	BEV
Polestar	Polestar 3	Truck	Midsize crossover	BEV
Porsche	Macan	Truck	Small crossover	BEV
Porsche	Taycan	Car	D Car	BEV
Porsche	Taycan Cross	Truck	Midsize crossover	BEV
Porsche	918	Car	Sports car	PHEV
Porsche	Cayenne	Truck	Midsize crossover	PHEV
Porsche	Panamera	Car	D Car	PHEV
Ram	Ram Pickup	Truck	Full size pickup	BEV
Ram	Ram Promaster	Truck	Large van	BEV
Ram	Ram Pickup	Truck	Full size pickup	PHEV
Rivian	Amazon Van	Truck	Large van	BEV
Rivian	R1S	Truck	Large SUV	BEV

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Rivian	R1T	Truck	Full size pickup	BEV
Scion	Scion (iQ)	Car	A Car	BEV
Smart	Fortwo	Car	A Car	BEV
Smith	Newton	Truck	Medium duty	BEV
Subaru	Solterra	Truck	Small crossover	BEV
Subaru	Crosstrek	Truck	Small crossover	PHEV
Tesla	Cybertruck	Truck	Full size pickup	BEV
Tesla	Model 3	Car	C Car	BEV
Tesla	Model R	Car	Sports car	BEV
Tesla	Model S	Car	D Car	BEV
Tesla	Model X	Truck	Midsize crossover	BEV
Tesla	Model Y	Truck	Midsize crossover	BEV
Toyota	Mirai	Car	B Car	FCEV
Toyota	Prius Full Electric	Car	C Car	BEV
Toyota	RAV4	Truck	Small crossover	BEV
Toyota	Unnamed Crossover	Truck	Small crossover	BEV
Toyota	Prius Prime	Car	C Car	PHEV
Toyota	RAV4 Prime	Truck	Small crossover	PHEV

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Toyota	Unnamed	Car	C Car	PHEV
Via	eTrux	Truck	Large pickup	PHEV
Volvo	C40	Car	C Car	BEV
Volvo	Unnamed	Truck	Midsize crossover	BEV
Volvo	XC40	Truck	Small crossover	BEV
Volvo	XC90	Truck	Large crossover	BEV
Volvo	S60	Car	D Car	PHEV
Volvo	S90	Car	E car	PHEV
Volvo	XC40	Truck	Midsize crossover	PHEV
Volvo	XC60	Truck	Midsize crossover	PHEV
Volvo	XC90	Truck	Midsize crossover	PHEV
VW	E-Up!	Car	A Car	BEV
VW	Golf	Car	C Car	BEV
VW	ID AeroE	Car	B Car	BEV
VW	ID Buzz	Truck	Van	BEV
VW	ID.4	Truck	Midsize crossover	BEV
VW	ID.4	Truck	Midsize crossover	BEV
VW	ID.8	Truck	Large crossover	BEV

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VW	ID.Buzz	Truck	Large crossover	BEV
VW	ID3	Car	C-Car	BEV
VW	Atlas	Truck	Midsize crossover	PHEV
VW	Passat	Car	D Car	PHEV
VW	Tiguan	Truck	Small crossover	PHEV
Wheego	LiFe	Car	A Car	BEV
ZAP	Alias	Car	Sports car	BEV

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