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https://ww2.arb.ca.gov/public-comments/comment-log-advanced-clean-cars-ii-amendments-june-workshop

Liane Randolph, Chair
California Air Resources Board
1001 I Street
Sacramento, CA 95814
CC: E-mail: cleancars@arb.ca.gov

Re: Comments on the California Air Resources Board's (CARB) June 26, 2024, Public Workshop on Amendments to the Advanced Clean Cars Regulations

Dear Chair Randolph:

Pursuant to the California Air Resources Board's (CARB) Public Workshop on Amendments to the Advanced Clean Cars II (ACC II) Regulations held on June 26, 2024,[1] Tesla respectfully submits the following comments. Tesla incorporates by reference its written comments in response to previous ACC II workshops, presentations, and comments periods.[2]

Tesla continues to support CARB and the state of California in defending the state's authority under §209 of the Clean Air Act and the state's vehicle greenhouse gas (GHG) emissions standards.[3] Tesla shares and appreciated the goals, direction, and leadership CARB has exhibited in its ACC II process and proposal. Indeed, Tesla is grateful to CARB staff for the ongoing engagement and technical conversations with staff throughout the process.

Tesla believes the pace of electric vehicle innovation, cost-reduction, and deployment coupled with the public health and welfare imperatives to address criteria air pollution and accelerating impacts of climate change

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[1] California Air Resources Board, Public Workshop on Amendments to the Advanced Clean Cars II (June 26, 2024) *available at* https://ww2.arb.ca.gov/sites/default/files/2024-06/2024_06_26_ACC%20II%20Amendments%20Workshop%20Presentation_ADA.pdf

[2] See, Tesla, Comments on CARB's ACC II Amendment Kickoff Workshop (submitted Jan. 15, 2024) *available at https://ww2.arb.ca.gov/system/files/webform/public_comments/7951/Tesla%20Comments%20CARB%20ACC%20II%20Amend%20Kickoff%20Workshop%201-16-24.pdf;* Tesla, Comments on the Proposed Advanced Clean Cars II Regulations (submitted May 31, 2022) *available at* https://www.arb.ca.gov/lists/com-attach/364-accii2022-VjcGYMwNhBDYGm0d.pdf

[3] See e.g., Tesla, Comments to EPA in Support of a Clean Act Waiver for ACC II (Feb. 27, 2024) available at https://www.regulations.gov/comment/EPA-HQ-OAR-2023-0292-0197; *Ohio , et al. v, Environmental Protection Agency*, Docket No. 22-1081 (D.C. Cir. filed May 12, 2022) (Challenging EPA's waiver authority)(Tesla intervening as part of the National Coalition for Alternative Transportation); See also, *Union of Concerned Scientists v. NHTSA*, Docket No. 19-1230 (Consolidated with 19-1239, 19-1241, 19-1242, 19-1243, 19-1245, 19-1246, 19-1249) (D.C. Circuit filed Nov. 15, 2019) (challenging EPA's CAA waiver withdrawal and protectively challenging NHTSA's EPCA preemption rule); *California, et al. v. EPA,* Docket No. 18-1114 (consolidated) (D.C. Circuit, Oct. 25, 2019). Tesla, Comments to EPA on Reinstating California Waiver (July 6, 2021) *available at* https://www.regulations.gov/comment/EPA-HQ-OAR-2021-0257-0136; Tesla, Comments on NHTSA Preemption Regulations (June 11, 2021) *available at* https://www.regulations.gov/comment/NHTSA-2021-0030-0398

support an increase in overall stringency of the ACC II proposal.[4] Tesla seeks to ensure CARB adopts final rules and regulations that achieve the maximum technologically feasible and cost-effective GHG and criteria air pollutant emissions reductions that protect the health and welfare of all the state's residents and its environment. Accordingly, Tesla provides the following comments to ensure that pace of electrifying the light duty fleet accelerates, facilitates maximum consumer acceptance, and remains unburdened by unnecessary technical barriers.

I. Tesla Employees' Public Health and Welfare Are Adversely Impacted by California's Harmful Air Quality and Stringent ACC II GHG Standards Are Necessary to Reduce Tailpipe Air Pollution

Tesla is the largest manufacturing employer in California and employs more than 42,500 people in state. It thus has a unique interest not only in the manner in which this regulation affects the products it produces, but in the protection of its workforce as well.

Tesla manufactures and assembles battery electric vehicles, its advanced 4680 lithium-ion battery cells, and battery packs at its factories in Fremont, CA.[5] The Tesla Design Studio is located in Hawthorne, CA, and the company also produces Megapack, a utility-scale grid storage battery, at its factory in Lathrop, CA.[6] In 2021, Tesla's investment in California helped deliver $10.4 billion ($28.5 million per day) to California's gross state product.[7]

Like most Californians, Tesla employees are impacted by the state's poor air quality.[8] This is especially true of Tesla employees who live in serious and severe non-attainment areas like the San Francisco metro area and the Central Valley.[9] Not only do these California residents regularly confront the health impacts associated with these harmful levels of air pollution, as climate change accelerates these impacts are only forecast to increase. This "climate penalty" is already negating some of the progress California's policies have made to combat dangerous levels of, *inter alia*, ground level ozone and fine particulate matter.[10] Indeed, a recent study found that the "climate penalty" has directly impacted California, and that:

In California alone, the average number of Green Days seen across the state has decreased from 136 to 93 (-32%), and the average number of Yellow Days has decreased from 200 to 146 (-27%). Subsequently,

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[4] See e.g., Dimanchev, et al., The 4Ds of Energy Transition: Decarbonization, Decentralization, Decreasing Use and Digitalization, Chapter 8:Electric Vehicle Adoption Dynamics on the Road to Deep Decarbonization (July 15, 2022) (Peer reviewed study finding that achieving a ZEV share consistent with 1.5°C pathways would require a combination of a relatively early ban on non-ZEV vehicles by around 2030).

[5] See, Inside EVs, Tesla 4680 Cell Production Ramping Quickly, Won't Impact Cybertruck (Oct. 20, 2022) *available at* https://insideevs.com/news/617588/tesla-4680-cell-ramp-wont-impact-cybertruck-other-models/

[6] Tesla, Megapack *available at* https://www.tesla.com/en_eu/megapackhttps://www.tesla.com/en_eu/megapack

[7] IHS Markit, The Economic Contributions of Tesla to the California Economy, 2018–2021 (October 2022) (detailing Tesla's positive economic impact in California) *available at* https://www.tesla.com/blog/teslas-california-footprint

[8] See, EPA, Research on Health effects from Air Pollution (last visited Feb. 26, 2024) ("Decades of research have shown that air pollutants such as ozone and particulate matter (PM) increase the amount and seriousness of lung and heart disease and other health problems.") *available at* https://www.epa.gov/air-research/research-health-effects-air-pollution#:~:text=Decades%20of%20research%20have%20shown,disease%20and%20other%20health%20problems.

[9] See, CARB, Waiver Request Support Document at 35-36; See also, EPA, Green Book, California Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants *available at* https://www3.epa.gov/airquality/greenbook/anayo_ca.html

[10] Atmospheric Environment, Characterizing changes in extreme ozone levels under 2050s climate conditions: An extreme-value analysis in California (Nov. 11, 2022) *available at* https://www.sciencedirect.com/science/article/pii/S2590162122000491#:~:text=Our%20results%20show%20increases%20in,ppb%20across%20California%20ppb%20(Fig.

the average number of Orange Days has increased from 15 to 55 (+267%), Red Days increased from 10 to 16 (+60%), Purple Days increased from 1 to 17 (+1,600%), and Maroon Days from 3 to 38 (+1,167%).[11]

The study further found that "[p]laces like California's Central Valley, the San Francisco metro area, and much of Southern California are all expected to experience poor air quality up to 3 months' worth of days in a bad year."[12] Indeed, as EPA has previously explained "[c]limate change is expected to increase regional ozone pollution, with associated risks in respiratory illnesses and premature death."[13]

Furthermore, California's peer-reviewed Fourth Climate Change Assessment found that state-specific impacts of climate change have continued and intensified since 2009.[14] The average summer temperatures in California have risen by approximately 3 degrees F (1.8℃) since 1896, with more than half of that increase occurring since the early 1970s.[15] The state is likely to experience further warming by more than 2 degrees F more by 2040, more than 4 degrees F by 2070, and by more than 6 degrees F by 2100.[16] The Assessment also projects that environmental conditions will continue to worsen into the future. Among other consequences, the study indicates that heat-related illnesses and deaths will increase, and more severe wildfires, more frequent and longer droughts, rising sea levels, increased flooding, and more extreme weather events will all uniquely and increasingly impact the state.[17] Notably, droughts in California are among the climate-related impacts linked to increased ground level ozone exposure in the state.[18]

As a result, significant GHG emissions reductions from ACC II are necessary to address these extraordinary conditions and to contribute to the state's efforts to attain the State and National Ambient Air Quality Standards (NAAQS) for criteria air pollutants. The need for the program's air quality gains is especially acute to address the burden of air pollution throughout the State's overburdened communities near roadways and other high traffic areas and reduce statewide GHG emissions by at least 85% below 1990 levels to achieve the State's goal of carbon neutrality by 2045.[19]

II. Stringent Light Duty Greenhouse Gas Standards Are Necessary for California

[11] 1 First Street., Atrocious Air (Feb. 12, 2024) *available at* https://firststreet.org/research-library/atrocious-air
[12] Id.
[13] EPA, Endangerment Finding, 74 Fed. Reg. 66496, 66525 (Dec. 15, 2009) ("There is now consistent evidence from models and observations that 21st century climate change will worsen summertime surface ozone in polluted regions of North America compared to a future with no climate change."); (While ozone "is a local or regional air pollution problem, the impacts of global climate change can nevertheless exacerbate this local air pollution problem.")
[14] *See* California Fourth Climate Change Assessment, Statewide Summary Report (2019), *available at* https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf
[15] Scripps/UC San Diego, Climate Change in California, (last visited Feb., 22, 2024) *available at* https://scripps.ucsd.edu/research/climate-change-resources/faq-climate-change-california
[16] Id.
[17] Cal. Dep't of Nat. Res., California's Fourth Climate Change Assessment: Key Findings (Aug. 27, 2018) *available at* https://www.climateassessment.ca.gov/
[18] Environmental Research, Drought and ozone air quality in California: Identifying susceptible regions in the preparedness of future drought (Jan. 1, 2023) *available at* https://www.sciencedirect.com/science/article/abs/pii/S0013935122017881
[19] Office of Governor Gavin Newsom, California Releases World's First Plan to Achieve Net Zero Carbon Pollution (Nov. 16, 2022) *available at* https://www.gov.ca.gov/2022/11/16/california-releases-worlds-first-plan-to-achieve-net-zero-carbon-pollution/

The proposed ACCII GHG standards should continue to ensure that California's program significantly outperforms the federal MY 2027 -2032 light duty multipollutant and GHG standards.[20] Maintaining this historic trajectory will allow the state to remain the national leader in battery electric vehicle (BEV) sales and accelerate the electrification of the light duty fleet.[21]

One overarching goal of CARB's emission standards regime should be to continue to design a program that incentivizes, accelerates, and rewards the deployment of the best performing vehicles. Accordingly, Tesla believes that BEVs should continue to be recognized for their best-in-class performance and the emission reduction that they contribute toward meeting California's GHG reduction targets.

A. BEVs Should Be Included in the Policy Design of the 2030 and Beyond GHG Standards

Regardless of the application, BEVs have long been the most effective mobile source pollution mitigating technology. As the Environmental Protection Agency (EPA) stated over a decade ago, "[f]rom a vehicle tailpipe perspective, EVs are a game-changing technology."[22] Additionally, study after study shows BEVs are a superior technology for reducing air pollution and GHG emissions over their lifetime.[23] On a well to wheels analysis that includes upstream emissions, the U.S. Department of Energy (DOE) has repeatedly found BEVs to be far superior in emission performance than internal combustion engine (ICE) technology.[24] For example, a Tesla Model 3 or

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[20] See 89 Fed. Reg. 27842 (Apr. 18, 2024).

[21] See e.g., Clean Technica, Electric Vehicle Market Share At 21.4% In California — BEV Models #1 In 4 Vehicle Classes (July 20, 2024) *available at* https://cleantechnica.com/2024/07/20/electric-vehicle-market-share-at-21-4-in-california-bev-models-1-in-4-vehicle-classes/; Edmunds, What Is the Percentage of Electric Cars in the U.S.? (Jan. 12, 2024) *available at* https://www.edmunds.com/electric-car/articles/percentage-of-electric-cars-in-us.html#num4

[22] 77 Fed. Reg.62624, 62815 (Oct. 15, 2012); See also, IPCC, AR6 Climate Change 2022: Mitigation of Climate Change (April 4, 2022) at 2-78 (Electric vehicles (EVs) powered by clean electricity can reduce GHG emissions and such policies are important for spurring adoption of such vehicles and GHG emission reductions); at 10-41 (BEVs manufactured and operated can lower emission by 85% compared to ICE vehicles) *available at* https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_FullReport.pdf (last visited Sept. 12, 2022).

[23] See e.g., McKinsey, Battery 2030: Resilient, sustainable, and circular (Jan. 16, 2023) (In the worst case scenario, with no low-carbon electricity, total life-cycle emissions for BEVs are about 50 percent lower in Europe and 72 percent lower in the United States compared with ICE vehicles) *available at* https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/battery-2030-resilient-sustainable-and-circular?stcr=032392E457A548838A737BD614EB8B24&cid=other-eml-alt-mip-mck&hlkid=38d0ad0585af40979275683ed8a9d167&hctky=10204926&hdpid=b8cb9677-a52c-48a1-b6ae-ded25e562aac; Environmental Research Letters, Mapping electric vehicle impacts: greenhouse gas emissions, fuel costs, and energy justice in the United States (Jan. 11, 2023) (finding that over 90% of vehicle-owning U.S. households would see reductions in both GHGs and transportation energy burden by adopting an EV) *available at* https://iopscience.iop.org/article/10.1088/1748-9326/aca4e6?utm_source=cbnewsletter&utm_medium=email&utm_term=2023-01-14&utm_campaign=Daily+Briefing+12+01+2023; ICCT, A global comparison of the life-cycle greenhouse gas emissions of combustion engine and electric passenger cars (July 20, 2021) *available at* https://theicct.org/publications/global-LCA-passenger-cars-jul2021 ; National Academies of Science, Accelerating Decarbonization of the U.S. Energy System (Feb. 2, 2021) at 97 ("Further, light-duty trucks and buses should be electrified, particularly in urban areas. Over the next decade, the United States needs to ensure that electric vehicles become the predominant share of new purchases."); *available at* https://www.nap.edu/read/25932; Environment International, Assessing the health impacts of electric vehicles through air pollution in the United States (Nov. 2020) *available at* https://www.sciencedirect.com/science/article/pii/S016041202031970X

[24] See, Department of Energy, Alternative Fuels Data Center, Emissions from Hybrid and Plug-In Electric Vehicles *available at* https://afdc.energy.gov/vehicles/electric_emissions.htmlhttps://afdc.energy.gov/vehicles/electric_emissions.html

Model Y charging on the U.S. grid has average lifecycle emissions almost 3.5 times less than an average premium ICE vehicle.[25] As a result, over a 17-year lifetime, a Tesla vehicle driver can avoid emitting over 55 tons of CO2e.[26]

Moreover, as the carbon intensity of domestic electricity generation continues to decline, BEV emission performance becomes better and better over time.[27]

In short, consistent with the federal Clean Air Act (CAA) Section 202(a), BEVs represent a completely designed vehicle and engine system that fully prevents and controls air pollution.[28] Historically, both EPA and CARB have recognized that BEVs can play a major role in achieving the CAA's pollution reduction goals. In proposing to eliminate BEVs from the ICE-only GHG standards for model years 2030 and beyond, CARB is unnecessarily departing from that successful approach. This will undermine incentives for the adoption of BEVs and sow uncertainty in setting the stringency level of future GHG emissions standards.

Although the state should prevent accelerating BEV sales from causing a backslide effect that allows for higher tailpipe emissions from new ICE vehicles, Tesla does not believe that setting a post-2030 fleet average that excludes BEVs is warranted.

First, this approach disincentivizes BEV-only manufacturers from deploying greater numbers of BEVs starting in 2030. Indeed, as proposed, the standard penalizes BEV manufacturers for deploying more vehicles after 2030 by removing the ability of BEV manufacturers to benefit from the incentives inherent in overperformance of the standard and credit trading.[29] At that point, BEV-only manufacturers would be incentivized to focus their sales efforts outside of California. Furthermore, CARB's proposal to allow legacy manufacturers to put excess BEV credits when calculating their 2030 and beyond GHG ICE-only fleet averages directly discriminates against BEV-only manufacturers.[30] CARB should be rewarding the first movers and fully electrified manufacturers not creating a competitive penalty.

Second, issues of backsliding can be addressed by maintaining BEVs in the fleet averages but significantly increasing the overall annual stringency of the GHG standard. Further reducing the allowable g/mi of GHG emissions will make backsliding on any particular model more consequential – and disincentivized – for any manufacturer.

Third, CARB has better means to preventing backsliding. For example, CARB could establish g/mi bins based upon the light duty vehicle footprint and set individual vehicle maximum emission standards at the appropriate g/mi level within in each bin. Such an approach would limit over-deployment of big polluting vehicles while allowing BEVs to continue to be rewarded in their elimination of tailpipe GHG emissions.

Finally, CARB's proposal would undermine the benefits that flow from the harmonization of EPA and CARB's regulatory schemes. In addition to simplifying planning for manufacturers, the harmonized regimes also reflect a consistent—and accurate—view of the agencies' authority under the CAA. If CARB were to adopt the proposed divergent approach here, it could invite new challenges that may question the authority of either agency to regulate BEVs under the CAA. CARB's decision to separate out BEVs for distinct treatment would mark a distinct shift in course that could be seen as lending credence to the assertion that EPA's existing standards—which take

[25] Tesla, Impact Report 2022, at 31-34 *available at* https://www.tesla.com/ns_videos/2022-tesla-impact-report-highlights.pdf
[26] Id. at 22, 149.
[27] See e.g., IPCC, AR 6, Working Group III, Climate Change 2022: Mitigation of Climate Change (April 4, 2022) at 98 *available at* https://www.ipcc.ch/report/ar6/wg3/
[28] 42 U.S.C. §7521(a).
[29] ACC II Amendments, Second Public Workshop, Presentation (June 26, 2024) at Slide 39-40.
[30] Id; ACC II Amendments, Second Public Workshop, Recording (June 26, 2024) at ~1:15 *available at* https://www.youtube.com/watch?v=DVlYQ00Max8

BEVs into account—are an EV mandate, not a performance standard applicable to all vehicle technologies. Alternatively, challengers could argue that CARB is acting outside of its Section 209 authority by setting ICE-only standards that do not apply to the large and growing population of BEVs. Such an approach may be seen as constraining the compliance options available to legacy manufacturers and would shift the focus from a performance standard to what may be seen as tantamount to a mandate, subject to its attendant criticisms. In addition, shifting CARB's trajectory at this point would undermine the successful approach that has served all manufacturers well while achieving California's air quality and technology leadership goals.

In short, to ensure overall light-duty GHG emissions reduction, the standard should set a declining fleet average for all vehicles through 2035 that increases in stringency consistent and informed by the projected levels of emissions reduction need and BEV vehicle fleet penetration by 2035.

B. Focusing on Plug- in Hybrid Electric Vehicle Fossil Fuel Consumption is Good Policy.

CARB's proposal is appropriately revisiting the use of a PHEV Fleet Utility Factor because PHEV compliance to date has significantly underestimated CO2 emissions by overestimating their use of electricity.[31] Refocusing emissions compliance for PHEV away from the utility factor is appropriate and overdue.

PHEVs have consistently been overrewarded compared to their actual emissions reduction performance.[32] In a 2020 study, the International Council Clean Transportation (ICCT) found that real-world PHEV fuel consumption and emissions were about 2-4 times higher than certified levels.[33] According to ICCT, one of the main reasons for this is that, "For private cars, the average utility factor (UF)—an expression for the portion of kilometers driven on electric motor versus kilometers driven on combustion engine—is 69% for New European Drive Cycle (NEDC) type approval but only around 37% for real-world driving. For company cars, an average UF of 63% for NEDC and approximately 20% for real-world driving was found."[34] Essentially, PHEV drivers utilize ICE engines for travel far more than electric drive when operated in real world conditions. Similarly, Transport and Environment found that emissions from three of the most popular PHEVs in the EU were 28-89% higher than certified levels even under ideal test conditions (e.g., fully charged battery).[35] Other studies suggest hybrids offer little benefit compared to ICE vehicles.[36] Accordingly, Tesla supports CARB's proposal to utilize PHEV combustion emissions in establishing a fleet average GHG standard.[37]

C. CARB Should Eliminate Off- Cycle Credits

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[31] ACC II Amendments, Second Public Workshop, Presentation (June 26, 2024) at Slide 45-48.
[32] See e.g., Guardian, Major plug-in hybrid cars pollute more than official measures suggest (Feb. 7, 2023) *available at* https://www.theguardian.com/environment/2023/feb/08/major-plug-in-hybrid-cars-pollute-more-than-official-measures-suggest
[33] ICCT, Real-World Usage of Plug-In Hybrid Electric Vehicles: Fuel Consumption, Electric Driving, and CO2 Emissions (Sept. 27, 2020) *available a*t https://theicct.org/publication/real-world-usage-of-plug-in-hybrid-electric-vehicles-fuel-consumption-electric-driving-and-co2-emissions/
[34] Id., at 1.
[35] Transportation & Environment, Fixing the PHEV loophole (Dec. 2021) *available at* https://www.transportenvironment.org/wp-content/uploads/2022/02/2022_TE_position_PHEV_UF_timeline.pdf;See also, Clean Technica, Plugin Hybrid Cars Pollute 200–400% More Than Official Ratings (Feb. 13, 2022) *available at* https://cleantechnica.com/2022/02/11/phevs-pollute-2-4x-more-than-official-ratings-lets-fix-the-eu-loophole/
[36] See e.g., Impact Living, Study on the consumption of plug-in hybrid vehicles in Valais topography (Jan. 11, 2022) *available at* https://impact-living.ch/wp-content/uploads/2022/01/Consommation-vehicules-hybrides-rapport-publie-IMPACT-LIVING-canton-Valais-11-01-22.pdf
[37] ACC II Amendments, Second Public Workshop, Presentation (June 26, 2024) at Slide 38.

CARB has indicated it will phasedown the amount of allowed off-cycle credits.[38] While reduced, continuing off-cycle crediting creates asymmetry in the regulation favoring ICE vehicles, diverts research and development investment away from the best emissions reduction technology of electrification, and unnecessarily weakens the stringency of the standard.

Ongoing utilization of off-cycle credit in only ICE and PHEV vehicles creates a disparity in the type of vehicles that are rewarded for deploying efficiency technology. Originally created in 2010, the federal off-cycle menu credits consisted almost entirely of technologies (i.e., Active Engine Warmup, Active Transmission Warmup, Engine Stop Start) applicable ***only*** for use on ICE vehicles. Subsequently, in its 2012 rules, EPA moved forward the timeline for generating these credits from a proposed MY 2017 to MY 2014. As a result, the off-cycle program has its origins in technologies now over thirteen years old. Despite being an antiquated part of the standard, CARB now proposes extending crediting rewards to manufacturers for deploying these technologies for indeterminate amount of time. This means ongoing off-cycle credits will reduce the stringency of any proposed GHG standard by rewarding many now commonly deployed efficiency technologies that provide, at best, negligible real-world emissions, or technology advancement benefits.

Moreover, previous analysis has shown that manufacturers reliance on off-cycle credits diverts investment and deployment away from the most efficient vehicle technologies. Continuing these credits rewards old technology and, to the extent recent technologies are deployed to generate off-cycle credits, focuses critical research and development budgets on tweaking legacy ICE and PHEV platforms rather than directing these budgets to full electrification and greater emissions reductions. In extending the off-cycle program and limiting it to ICE and PHEV vehicles, CARB's proposed extension half-heartedly confronts this built-in bias toward legacy technology. Especially at a time when manufacturers should be further developing next generation BEV technology and eliminating legacy technology, CARB should not maintain such perverse incentives and should eliminate all off-cycle crediting starting in MY 2026.[39]

D. Proposed Amendments on Motor Vehicle Air Conditioning Leakage & Efficiency Credits

Reducing short-lived climate pollutant emissions, such as HFC-134a, is a critical step toward mitigating climate change. Accordingly, Tesla supports CARB's actions to prohibit high GWP (> 150) refrigerants such as HFC 134a in new light-duty A/C systems post MY-2025.[40] As the proposal recognizes, the transition to lower GWP refrigerants is rapidly underway and all manufacturers can be compliant before the implementation of the proposed standards go into effect. Accordingly, CARB is correctly phasing down (with a small backstop) the A/C leakage credit.

Tesla also looks forward to technical discussions with CARB regarding the necessity and scope of a possible ZEV-specific leakage requirement.

CARB's decision to limit voluntary A/C efficiency credits to only ICE vehicles starting in 2030 is bad policy.[41] In proposing this limitation, CARB runs the risk of creating a disincentive for manufacturers of BEVs to continue to improve and deploy the most efficient cooling systems. The agency instead should consider a technology neutral approach allowing the crediting of all vehicles and increasing the stringency of the overall standard consistent

[38] ACC II Amendments, Second Public Workshop, Presentation (June 26, 2024) at Slide 41
[39] See generally, Bloomberg Hyperdrive, Carmakers Start to Starve Combustion Models Out of Existence (July 11, 2022) *available at* https://www.bloomberg.com/news/articles/2022-07-08/carmakers-start-to-starve-combustion-models-out-of-existence?cmpid=BBD070822_hyperdrive&utm_medium=email&utm_source=newsletter&utm_term=220708&utm_campaign=hyperdrive
[40] ACC II Amendments, Second Public Workshop, Presentation (June 26, 2024) at Slide 42.
[41] Id. at Slide 43.

with the additional level of credit generation that will accumulate with BEV A/C efficiency credit generation eligibility.

E. Medium - Duty Passenger Vehicle Definition

Tesla supports CARB's decision to adopt EPA's updated medium-duty passenger vehicle definition starting for MY 2030.[42] However, if BEVs are prevented from participating in the light-duty GHG standards, CARB should allow manufacturers of MDP vehicles with GVWR greater than 8,500 lbs. but lesser than 9,500 lbs. to generate credits and participate in the Advanced Clean Truck regime. Failure to do so would be creating a significant disincentive for the rapid electrification of this vehicle sector.

III. CARB Should Amend the Section 1962.3 Charging Standards to Be Consistent with Industry Adoption of J3400 – the North American Charging Standard (NACS)

A. Amending the CCS1 and Adapter Requirement

In developing the ACC II regulation, CARB included Section 1962.3 with the intent of facilitating a common BEV charging inlet and common adapter. Since that time, manufacturers have unanimously committed to move away from the CCS standard toward the North American Charging Standards (NACS).[43] Adoption of NACS is anticipated to yield a number of benefits related to the availability, expansion, and use of charging infrastructure.[44] Additionally, it is important to reiterate that Tesla is continues to be committed to opening the network to non-Tesla EVs and plans to on-board more OEMs in North America by the end of the year who have committed to utilizing NACS.[45]

NACS is currently being standardized by SAE as J3400 via a rigorous standardization process that have received unprecedented industry and technical expert engagement. This process was launched in July 2023 and in mid-December the Technical Information Report (TIR) was released.[46] Since then, SAE has continued to push forward with its standardization work by releasing the first draft of the recommended practice for J3400, which is expected to be finalized and published in Q3 2024. The recommended practice builds off the technical information report (TIR) released in December 2023 and lays the foundation for a robust final standard expected in Q4 2024. While standardization can take time given the many entities involved and the significant interest in J3400, this standardization process will be complete well before the implementation of ACCII in before MY 2026. Given the significant industry shift to NACS J3400, CARB should amend the ACC II rules to include SAE J3400 as an equally satisfactory charger inlet option for MY 2026 and subsequent vehicles. Tesla also joined a joint auto manufacturer letter that was submitted on January 15, 2024, which recommends specific modifications to the language in13 CCR §1962.3 (c). The joint automakers submitted an additional letter on July 26, 2024, reiterating the commitment to SAE J3400, highlighting updates to the standardization process, and expressing urgency for CARB to evaluate these modifications expeditiously.

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[42] Id. at Slide 44.
[43] See, EV Station, Tesla NACS Charger Adoption Tracker *available at* https://evstation.com/tesla-nacs-charger-adoption-tracker/
[44] Electrek, SAE's NACS certification is ready, and it'll fix every EV charging problem at once (Dec. 15, 2023) *available at* https://electrek.co/2023/12/15/saes-nacs-certification-is-ready-and-itll-fix-every-ev-charging-problem-at-once/
[45] Tesla Q2, 2024 Earnings Report at 9 *available at* https://digitalassets.tesla.com/tesla-contents/image/upload/IR/TSLA-Q2-2024-Update.pdf
[46] SAE, SAE completes next step to standardize Tesla-developed EV charging connector (Dec. 19, 2023) *available at* https://www.sae.org/news/2023/12/sae-j3400-tir-released

Additionally, it is important to underscore that J3400 enables AC/DC pin sharing thereby there is no need to distinguish between AC and DC inlet and adapters when utilizing J3400. The benefit will be that customers have only one connector for both AC or DC and the car identifies and decides how to charge. Customers can still have the option to purchase a J1772 adapter, which is already widely available today. Tesla also offers an AC charging product called the universal wall connector which includes both J1772/J3400. As uptake of J3400/NACS, continues to grow, adapters will become unnecessary to enable broad EV charging infrastructure access. Finally, there are also several technical benefits to implement J3400 for AC charging including enabling 277V AC charging. [47]

B. Certification of OEM Provided Adapters Is Unnecessary at this Time

Adapter safety is an important topic being discussed in many forums. Today, Tesla manufacturers the NACS adapters at its factory and distributes these to automakers that are NACS partners. Safety is a top priority for Tesla when designing these adapters. Tesla utilizes in-house safety standards that are based on UL 2251 and has over ten years experience in designing and distributing adapters. It is important to recognize rigorous safety testing is already incorporated for any OEM provided adapters and additional certification may not be necessary given the limited timeframe any adapters will be available and utilized.

C. Amending the Charging Cord Supply Requirement

Similarly, CARB should amend 1962.3 (c)(3) to allow customers to opt-out of receiving a charging cord at the point of sale or allow manufacturers to offer a charging cord as an accessory. The value of mobile charging cords to customers will diminish over time as electric vehicle charging infrastructure becomes more ubiquitous at public locations and workplaces, and EV owners install charging stations at their homes. Giving customers the choice of purchasing a mobile charging cord at the point of sale will reduce the purchase price of a vehicle for owners that choose to opt-out and will reduce electronic waste in the form of unused cords. Tesla also joined a coalition letter on this topic with a number of automakers and EV charging providers that was submitted on January 16, 2024.

D. Allowing Induction Only Wireless Charging

Currently, ACC II mandates electric vehicles be equipped with conductive tethered AC charge capability, and DC fast charge capability. In addition to failing address the adoption on NACS, the regulations prohibit the future of untethered EV using only inductive charging. Wireless charging is progressing rapidly. SAE International finalized SAE J2954 - its first standard for the technology in 2022[48] and continues to make additional progress towards mass production of wireless power transfer systems for electric vehicles.[49]

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[47] SAE, SAE J3400 and the game-changing advances in AC charging (Dec. 19, 2023) *available at* https://www.sae.org/blog/j3400-NACS-standard-rodney-mcgee

[48] SAE, Wireless Power Transfer for Light-Duty Plug-in/Electric Vehicles and Alignment Methodology J2954_202208 (Aug. 26, 2022) *available at* https://www.sae.org/standards/content/j2954_202208/

[49] SAE, SAE J2954 TF decides upon "Differential Inductive Positioning System" as alignment methodology in upcoming standard; finalizing set of requirements needed for mass production (Nov. 21, 2023) *available at* https://www.sae.org/blog/sae-j2954-DIPS

Wireless charging has the potential to expand electrification by making make BEV ownership more convenient and cost-effective.[50] Indeed, deployment of wireless EV charging is expected to play a key role in developing BEV fleet charging networks utilized in both commercial and government applications.

Accordingly, Tesla requests that CARB future proof the ACC II regulations by amending section 1962.3 to create alternatives to both conductive AC and DC charging and inlet requirements that allow manufacturers to deliver electric vehicles equipped with only inductive wireless charging capability.

IV. Proposed Elements of a New Consumer Facing BEV Labels[51]

Tesla continues to support CARB's interest in updating the consumer-facing labels and encourages the agency to work with the EPA to establish the supporting range and energy consumption test methodologies for BEVs that are more accurate, easier to test, and applicable to all ZEV platforms.

More specifically, Tesla believes CARB should explore ways to improve communication of driving range information. This should include CARB data gathering and revised testing protocols that would support meaningful new consumer information such as high-speed constant range, short/long trip range, and seasonality hot/cold weather range. Critical to such an effort is separating range and efficiency testing.

In general, Tesla supports CARB's desire to standardize fast charge reporting and adding the values to the label for consumers. Tesla understands CARB's desire to use the existing SAE J2953/4 methodology that has been worked on for many years. However, Tesla urges caution around the choice of parameters in the test for customer facing labeling.

CARB has chosen 10 minutes to be the testing and reporting interval, but fleet data (shown in Figure 1 (CBI)) that Tesla has collected for road trips indicates that very few (<5%) of its customers spend 10 minutes or less at a charger during road trips and the median duration is between 25-27 minutes, regardless of pack size or vehicle range. Advertising the miles recovered on only a 10-minute interval gives the customer a misleading impression of their expected charge performance over a more typical charge session.

SAE J2953/4 also calls for the charge to begin at 15-25 miles equivalent of displayed range remaining, which in a typical electric vehicle with 300 miles of range corresponds to 5-8% displayed SOE. Tesla's internal fleet data for road trips shows that this is an unrealistic condition for almost all customers. Only 1% of Tesla customers start their charge below 10% SOC during road trips as shown in Figure 2 (CBI). While starting at a low SOE would lead to the largest numbers advertised, it could potentially be misleading to the customer as it is not a condition the customer would experience often and could lead to complaints. Tesla does have a future roadmap of algorithmic and UI improvements that will help users be more comfortable driving down to lower SOCs. But, as of now, it is hard to predict its impact on customer behavior.

Tesla plans to reach out and join the committee that drafts the SAE 2953/4 procedure to voice its concerns there, but in general it supports CARB's desire to standardize the advertised charge metrics using an agreed upon SAE procedure.

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[50] See McKinsey, Perspectives on wireless and automated charging for electric vehicles (Apr. 3, 2023) *available at* https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/perspectives-on-wireless-and-automated-charging-for-electric-vehicles

[51] ACC II Amendments, Second Public Workshop, Presentation (June 26, 2024) at Slides 52-56.

[Confidential Business Information]

Figure 1: Observed Charge Time During Road Trips for Select Tesla Trims.[52]

REDACTED

[Confidential Business Information]

Figure 2: Average Start SOC During Road Trips for Select Tesla Trims.[53]

REDACTED

V. Comments on Proposed Charging Interoperability[54]

Tesla appreciates CARB's consideration for establishing new interoperability requirements for MY 2028 and beyond that could help facilitate a more seamless charging experience for EV drivers in CA. It appears that CARB's focus is mostly on the communication protocol between the EV charger and the EV that can help authenticate a charging session. Solely mandating a specific communication protocol on the vehicle-side, will not necessarily achieve CARB's desired outcomes. There are three key items that need to be addressed in order to enable seamless plug and charge for DC fast charging: (1) ISO 15118-2 is used to communicate between the EV and EVSE; (2) a list of mutually recognized Public Key Infrastructures (PKI) needs to be agreed upon by all participants in the charging ecosystem, which can be achieved efficiently through the use of a Certificate Trust List (CTL)"); and (3) OCPI must be utilized for back end communication between network providers otherwise it is not possible to confirm whether a plug and charge session can be initiated.

In its previous comments from January 2024, Tesla highlighted that CARB should first clearly define its objective, undertake a market readiness assessment (similar to what the CEC has done for charging infrastructure) and then evaluate *IF* market intervention is needed. As CARB acknowledged during the workshop, ISO 15118 is currently not mandated on the infrastructure side outside of public funding programs, so mandating a protocol on the vehicle is well beyond the scope of the existing frameworks. Tesla is not opposed to exploring ISO 15118-2 for MY 2028 and believes the industry is already moving in this direction. However, it is important to clearly identify which features of ISO 15118-2 are necessary in order to ensure any conformance testing only focus on the appropriate core features. At the same time, it is unclear whether a market assessment has been undertaken indicates there is a lack of readiness without CARB intervention.

At the same time, Tesla agrees that conformance testing of any standard can be valuable to ensure it works as planned in the field. However, prior to evaluating adoption of any single conformance test standard on the vehicle, additional validation needs to be done on what is most representative of what is needed to ensure seamless plug and charger interoperability. For instance, an OEM may utilize components of existing test standards and write its own test cases to best meet its need and then engage in field interoperability testing to

[52] Information contained in Figures 1 and 2 is Tesla confidential business information (CBI) pursuant to Title 17 of the CCR § 91000-91022, HSC § 39660 and the California Public Records Act § 6254.5.
[53] Id.
[54] ACC II Amendments, Second Public Workshop, Presentation (June 26, 2024) at Slides 57-60.

ensure compatibility. Self-certification that demonstrates robust evaluation and assessment of test cases should be a pathway forward that is available to automakers in compliance with a future requirement on ISO 15118-2 features.

VI. Clarification and Modification to Section 1969 Propulsion Related Parts Definition

Tesla also requests that CARB make technical amendments to Section 1969(j) to provide greater clarification related to the definition of propulsion related parts.

As currently provided in the regulations, Section 1969(j) reads as follows:

> *"(j) Motor vehicle manufacturers and engine manufacturers shall not utilize any access code, recognition code or encryption to prevent a vehicle or engine owner from using an emission-related motor vehicle or engine part (with the exception of the powertrain control module, engine control modules and transmission control modules, as applicable) or propulsion-related part that has not been manufactured by that motor vehicle manufacturer or engine manufacturer or any of its original equipment suppliers."*
>
> *""Access codes, recognition codes and encryption" mean any type, strategy, or means of encoding software, information, devices, or equipment that would prevent the access to, use of, or proper function of any emission-related part."*

Under this wording, there is an exception for things like "powertrain control module, engine control modules and transmission control modules" but the exceptions exist in a parenthetical clause after the words "emission-related motor vehicle or engine part." CARB should ensure parity between all vehicle technologies and clarify that these exceptions also apply to "propulsion-related parts" and battery electric vehicles.

Tesla recognizes CARB intent under Section 1969(j) to prevent outcomes where, for example, a modified powertrain control module in an ICE car sacrifices emissions control in exchange for more power. An identical concern exists on the BEV side. A modified powertrain control module could trade off a reduction in vehicle efficiency for increased performance or other characteristics.

Accordingly, Tesla encourages CARB to make a technical amendment as follows:

> *"(j) Motor vehicle manufacturers and engine manufacturers shall not utilize any access code, recognition code or encryption to prevent a vehicle or engine owner from using an emission-related motor vehicle or engine part or propulsion-related part (with the exception of the powertrain control module, engine control modules and transmission control modules, as applicable) that has not been manufactured by that motor vehicle manufacturer or engine manufacturer or any of its original equipment suppliers."*

Conclusion

Tesla appreciates the opportunity to provide these comments on the issues presented at the June 26, 2024, Workshop, and Tesla looks forward to working collaboratively with CARB staff to address these issues.

As with past comments, Tesla seeks to ensure that the Advanced Clean Car II program will provide faster and greater deployment of BEVs, address the compelling and extraordinary air quality conditions in California by reducing criteria and greenhouse gas air pollutants, and protect the public health and welfare of its residents.

Respectfully submitted,

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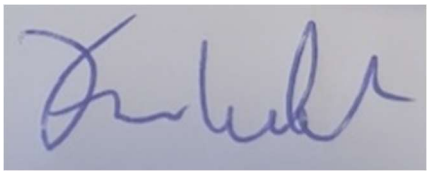

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