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March 20, 2017

Chairman Mary Nichols California Air Resources Board 1001 I Street Sacramento, CA 95814

RE: California's Advanced Clean Cars Midterm Review

Dear Chairman Nichols and members of the Board:

Thank you for the opportunity to comment on *California's Advanced Clean Cars Midterm* Review. The Union of Concerned Scientists (UCS) recognizes the time and effort expended to produce this comprehensive review of the Advanced Clean Cars (ACC) program, as well as the Air Resources Board staff's contributions to the 2016 Draft **Technical Assessment Report.**

The ACC program is a vital program to address the state's ongoing air pollution challenges and to reduce climate changing emissions needed to avoid further harm to the state. The existing ACC standards are the largest single contributor to California's global warming emissions reduction plans, resulting in an estimated reduction of greater than 1,000 million metric tons of CO₂ equivalent emissions from 2020-2050.¹

The midterm review analysis of the ACC program clearly demonstrates the ability of automakers to comply with the existing global warming pollution, criteria pollutant, and zero emission vehicle (ZEV) requirements through 2025. Automakers are advancing conventional efficiency technologies faster than anticipated and meeting the standards at lower costs than originally estimated. We strongly support the recommendations for extending the ACC program after 2025 to ensure continued progress in lowering global warming pollution and criteria emissions and achieving higher deployment of ZEV technologies.

¹ Jeffery B. Greenblatt, "Modeling California policy impacts on greenhouse gas emissions," *Energy Policy* 78, http://www.sciencedirect.com/science/article/pii/S0301421514006892 (2015).

We have joined other advocacy groups in joint comments on the criteria pollutant recommendations in the Midterm Review, sent separately. We offer the following comments on staff recommendations from the Midterm Review of the global warming and ZEV components of the ACC program:

California should maintain its global warming emission standards through 2025 and continue its participation in the National Program unless US EPA and NHTSA adopt changes that undermine California's ability to meet it 2030 climate goals.

The national standards on the books today for 2022-2025 global warming fleet emissions are supported by years of research and analysis, including vehicle testing and simulation, studies on consumer acceptance, and multiple analyses of the costs for automaker compliance. This data is extensively documented in the EPA's Proposed Determination and accompanying Technical Support Document, its response to comments on the Proposed Determination, and the Draft Technical Assessment Report jointly released by NHTSA, EPA, and ARB. It is clear from this data that the current federal program provides a cost-effective way to reduce harmful emissions from the light-duty fleet while providing consumers valuable net savings.

As staff accurately noted, the standards have sparked significant investment in technologies aimed at improving the efficiency of conventional, gasoline-powered vehicles, resulting in an even broader selection of technologies on which to draw for future improvements in efficiency. This ensures that consumers have more efficient vehicle choices with low-cost conventional technologies, regardless of the size or type of vehicle in which they are interested.

Despite the extensive research and analysis by both ARB and the federal agencies in support of the maintaining the program through 2025, the recent action by the Trump Administration to reopen the federal midterm evaluation process raises uncertainty about the future of the federal program. California should continue to engage in the federal process and ensure robust, technical analysis continues to inform the newly reopened review. However, if the review results in changes to the federal program that are inconsistent with California's own finding and analysis, less protective of public health, or threaten California's ability to meet its climate change goals, then California must exercise its right to enforce its own standards as allowed under the federal Clean Air Act.

ARB should maintain the current ZEV stringency for California through model year 2025 including the existing regulatory and credit structure and work with the California state legislature, the Governor, and other state agencies to support the further deployment of zero emission vehicles and infrastructure to achieve the goal of 1.5 million ZEVs by 2025.

The Midterm Review shows the existing ZEV program will likely require 8% or less ZEV (including plug-in hybrids) sales by large volume manufacturers (LVMs) for MY2025. Given current sales by market leaders such as General Motors compared to the future ZEV requirements, compliance with the 2018-2025 ZEV requirements by leading LVMs is achievable, likely years ahead of the current compliance schedule. Additionally, the sales from new, electric-only manufacturers (such as Tesla) will enable LVMs that choose not to invest in the development and deployment of ZEVs in California the ability to purchase credits through the existing ZEV credit banking and trading flexibility.

Currently, ZEV credit generation is outpacing the model year 2009-2017 ZEV requirements. The aggregate credit banks across all automakers in California has grown to reach over 345,000 ZEV credits and 118,000 TZEV credits, with additional balances in other technology categories.² These banked credits alone are sufficient to meet the fleet-wide ZEV requirement through at least model year 2020, and it is highly likely that balances will continue to increase at least through this year.

Additionally, the electric range of both BEVs and PHEVs is much higher than was anticipated in the previous likely compliance scenario. For example, the label range of the average BEV sold in California in 2016 was over 140 miles³, while previously it was assumed the average BEV would achieve about 75 miles (constant from model year 2018 through 2025). This increase in range reduces the number of ZEV vehicles needed to meet the credit requirements of the 2018-2025 ZEV regulation, as the credit earned for each ZEV will be much higher than anticipated. When combined with the large credit balances, this increase in the ZEV credit per vehicle will significantly reduce the required ZEV deployment volumes during the model year 2017-2025 period. Therefore, to achieve the sales volume floor anticipated in the ACC rulemaking, the ZEV program would need to be strengthened through the adjustment of credit values or the system of banking and trading credits. However, at a minimum, ARB should not make any changes that would lower the stringency of the ZEV program and further erode the requirement for ZEV technology deployment prior to 2025.

Finally, the addition of complementary policies to increase ZEV adoption will be vital to accelerating the ZEV market, especially considering the revised estimates of the ZEV program's credit requirements and likely compliance scenarios that show a much lower

² CARB, "2015 Zero Emission Vehicle Credits," online at:

https://www.arb.ca.gov/msprog/zevprog/zevcredits/2015zevcredits.htm, (2016).

³ UCS calculation based on IHS Markit 2016 California new vehicle registration data.

effective ZEV sales floor. ARB has experience in designing and implementing programs to increase ZEV deployment, such as the Clean Vehicle Rebate Project, and the Board has also been active in expanding access to ZEV through programs targeted at low- and moderate-income car buyers. This work needs to continue and be expanded to support the acceleration of ZEV deployments during the model year 2018-2025 timeframe.

The "travel" provision must be phased out as currently scheduled to ensure automakers increase efforts to offer and sell zero emission vehicles in the Section 177 states.

Because of the "travel" provision, LVMs earn credits for BEV or fuel cell vehicles in the 177 ZEV states if they sold the vehicles in California prior to model year 2018. This provision had the effect of not requiring ZEV deliveries to the Section 177 states prior to model year 2018. For this reason, many automakers chose not to make ZEVs available outside of California or to greatly deemphasize sales outside of California. Some automakers explicitly limited sales to California, while others technically sold ZEVs in the 177 states but had little stock available for test drives or sales. For example, the Fiat 500e BEV is only sold in California and Oregon⁴ while the Chevy Spark EV was only available in two states outside California⁵. These explicitly geographically-limited BEVs were a non-trivial fraction of BEV sales in California. In 2014, the Chevrolet Spark EV, Fiat 500e, Honda Fit EV, and Toyota RAV4 EV made up over one third (34 percent) of all BEV sales in California. Their lack of availability in the 177 ZEV states undeniably had a negative impact in ZEV sales.⁶

Some automakers did make ZEVs available outside of California, but at a much lower level than California. UCS collected inventory data using the listing of a popular automotive website (Edmunds.com)⁷. The difference between metropolitan areas was stark. In just one example, between January and June of 2016, Boston had 90 percent fewer EV listings than Oakland, even when adjusted for relative car ownership. The inability for customers to see and test drive ZEVs at a local dealership will have negative effects on the perception of EVs and on customer's car buying decisions. In a survey conducted by UCS and Consumers Union, the attitude of drivers in the Northeast towards ZEV availability was clear; 89% said they would not buy a car without test driving it.⁸

Therefore, lower ZEV sales rates in the 177 states to date cannot be attributed solely to differences in consumer interest or state-level policies. Increased product availability,

⁸ UCS and Consumers Union, "Electric Vehicle Survey Methodology and Assumptions,"

⁴ Fiat 500e website, <u>http://www.fiatusa.com/en/500e/</u>, Accessed March 17, 2017.

⁵ Mike Colias, "Chevy to expand Spark EV sales to Maryland," Automotive News. (2015) <u>http://www.autonews.com/article/20150122/OEM05/150129954/chevy-to-expand-spark-ev-sales-to-maryland</u>

⁶ IHS Markit New Vehicle Registration data

⁷ Union of Concerned Scientists, "Electrifying the Vehicle Market," <u>http://www.ucsusa.org/clean-vehicles/electric-vehicles/ev-availability</u>, (2016).

http://www.ucsusa.org/sites/default/files/attach/2016/05/Electric-Vehicle-Survey-Methodology.pdf, (2016).

combined with the existing credit banking flexibilities will allow manufacturers to comply with the existing ZEV program without modification. In order for car buyers in the Section 177 ZEV states to see ZEV models available (and in sufficient volume), no changes should be made to the requirements in these states nor should additional flexibilities be introduced.

ARB should begin development of post-2025 global warming pollution, zero emission vehicle, and criteria pollutant standards consistent with meeting federal air quality deadlines and the state's legislated 2030 climate targets.

The ARB should direct staff to start the process to develop a post-2025 ACC program. To meet the climate targets in legislation such as SB32 and air quality goals outlined in the Mobile Source Strategy, the ACC program will need continue to provide regulatory measures to reduce emissions from light-duty vehicles. These measures should include strong follow-on standards for the current ACC program's global warming pollution, criteria pollutant, and ZEV technology measures.

The Midterm Review shows that the existing ZEV standard has been successful in accelerating the deployment of low-emission transportation technologies in California. These ZEV technologies are vital to meeting state air quality and GHG emissions goals⁹ and the program should be strengthened to ensure that ZEV deployment continues at the required pace to protect air quality and public health.

The findings of the Midterm Review support the recommendation to increase certainty in vehicle deployment under a post-2025 ZEV program. The current program, while successful, has a structure such that compliance can be achieved with a wide range of ZEV deployment outcomes. The original likely compliance scenario was estimated in 2012 to require 15.4% ZEV (including plug-in hybrids) sales by 2025¹⁰. The most recent estimate in the Midterm Review now lowers the likely ZEV compliance floor to 8% sales. Analysis by UCS supports alternative scenarios that could produce a ZEV sales floor as low as 6% in 2025. The wide range of potential outcomes results in uncertainty in ZEV deployment, potentially having a negative impact on ZEV component suppliers and infrastructure developers. Some automakers cite the development of supportive infrastructure as critical to the ZEV market. Therefore, actions that achieve greater certainty in fleet-level ZEV deployment would benefit automakers through greater market certainty for infrastructure providers.

An effective ZEV floor of 6-8% sales for model year 2025 also fails to properly encourage increasing deployment of low-emission vehicles. In 2015, both General

⁹ CARB, "Mobile Source Strategy" (2016). CARB, "The 2017 Climate Change Scoping Plan Update" (2017).

¹⁰ CARB, "ZEV Calculator,"

https://www.arb.ca.gov/msprog/clean_cars/clean_cars_ab1085/zevcalculator.xlsx (2012).

Motors (5.7% ZEV) and Ford (4.7% ZEV) were already nearing these sale fractions¹¹, showing that compliance with the current 2018-2025 standard is feasible for automakers that have made efforts in ZEV deployment in California.

For these reasons, the post-2025 ZEV program should be designed to ensure that most manufacturers participate in the development and deployment of ZEVs. The changes should also ensure that actual deployment volumes are sufficient to put the state on a trajectory to meet long-term air quality and GHG emission targets.

California must continue to monitor and evaluate automaker compliance strategies to ensure the attribute-based standards are not resulting in greater emissions or changes to vehicle classifications.

The flexibility of an attribute-based standard raises concerns around the possibility for manufacturers to "game" compliance either by increasing the size of the vehicle ("upsizing") or by unduly classifying a vehicle as a truck. This is precisely the question to which staff responded in its midterm report.

We agree with staff's assessment that the data is insufficient to judge whether manufacturers are using upsizing as a fleetwide compliance strategy; however, we disagree with staff's assertion that there does not appear to be a reclassification of small SUVs from cars to truck. Our analysis shows quite clearly that the only statistically significant growth in market share that has occurred during the recent mix shift has been specifically in Small 4WD SUVs which would be classified as trucks; no commensurate growth was observed for the 2WD equivalents, which would be classified as cars.¹² This increase in "truck" small SUVs suggests that manufacturers are using 4WD as a compliance strategy. This observation is consistent with EPA's own data.¹³

ARB must continue to monitor these trends annually to ensure that any potential manufacturer gaming is identified and can be rectified in existing or future standard setting.

¹¹ Union of Concerned Scientists, "Electrifying the Vehicle Market," <u>http://www.ucsusa.org/clean-vehicles/electric-vehicles/ev-availability</u>, (2016).

¹² David W. Cooke, "The SUV Loophole: How a changing sales mix is affecting the efficacy of light-duty vehicle efficiency regulations,"<u>https://www.regulations.gov/contentStreamer?documentId=EPA-HQ-OAR-2015-0827-4016&attachmentNumber=2&contentType=pdf</u>, (2016).

¹³ EPA, Appendix to the Proposed Determination, p. A-101, (2016).

Under the current ZEV program through 2025, ARB should maintain the existing flexibilities for intermediate volume manufacturers (IVMs), and retain the existing credit structure and caps for PHEVs.

We agree with the analysis in the Midterm review that IVM companies have either demonstrated the ability to deliver ZEV products or have plans to do so in the near future. The IVMs also have additional flexibilities in the program, including the option to produce only plug-in hybrids to meet their ZEV requirements. However, IVMs can also choose to produce battery-electric or fuel cell vehicles to reduce the volume of vehicles needed to meet their credit requirements.

Some manufacturers have suggested that PHEVs are undervalued in the existing ZEV credit system.¹⁴ We agree with the analysis in the Midterm Review that PHEVs are correctly valued and incentivized in the current program. In the current likely compliance scenario, over half of the LVM vehicles earning ZEV credits are predicted to be PHEVs which demonstrates PHEVs will be well-represented under the current system. Increasing the maximum amount of PHEV (TZEV) credits that can be used to meet the ZEV requirement necessarily reduces the minimum requirement to produce battery electric or fuel cell electric vehicles. These ZEV technologies are critical to meeting long-term climate and air quality targets. ARB's Mobile Source Strategy¹⁵ finds:

"Near-zero technologies such as PHEVs can play an important role in reducing NOx and GHG emissions. However, with the majority of renewable fuels going to on-road and off-road heavy-duty applications in order to meet GHG reductions from those sectors, PHEVs operating on conventional gasoline with a more limited proportion of renewable gasoline are not sufficient for meeting longer-term goals beyond 2030."

In addition, recent data on the use of PHEVs shows the potential for higher than anticipated emissions due to the initial use of the gasoline engine occurring during high engine load conditions.¹⁶ While emissions regulations and testing can be changed to lower these emissions, the best route to reducing vehicle emissions is to eliminate the tailpipe altogether through complete electrification. Increasing credits for PHEVs or lowering the true ZEV requirements could slow the needed long-term shift away from combustion engines for transportation, running counter to the state's interest in reducing air pollution and its harmful effect on public health.

¹⁴ Robert Bienenfeld, "Honda's Testimony at the California Air Resources Board's Advanced Clean Car Hearing," October 24, 2013.

¹⁵ CARB, "Mobile Source Strategy" (2016).

¹⁶ Ryan Hart, "Analysis of Plug-in Electric Vehicle Usage," Advanced Clean Cars Symposium, <u>https://www.arb.ca.gov/msprog/consumer_info/advanced_clean_cars/oem_pev_driving_and_charging_char</u> <u>acteristics_ryan_hart.pdf</u>, (2016).

Conclusion

The ACC program has been successful in ensuring that the first generation of ZEVs were deployed, in reducing emissions from the entire light-duty fleet and establishing strong, science-based, achievable criteria pollution standards. The ARB should continue these standards as recommended through 2025 and start the hard work needed to design a strong ACC program for the post-2025 period.

Sincerely,

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